



## Sri Lakshmi Narayana Institute of Medical Sciences

Date 02/07/2017

From  
Dr.K.R.Jothikumar,  
Professor and Head,  
otorhinolaryngology,  
SLIMS  
Bharath Institute of Higher Education and Research,  
Puducherry.

To  
The Dean,  
SLIMS  
Bharath Institute of Higher Education and Research,  
Puducherry.

**Sub: Permission to conduct value-added course: :** Hands on training on Audiological Evaluation Using Pure Tone Audiometry reg.

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: Simulation Based Training In Audiology on July 2017 to Dec 2017. We solicit your kind permission for the same.

Kind Regards

Dr.K.R. Jothikumar

### FOR THE USE OF DEANS OFFICE

Names of Committee members for evaluating the course:

The Dean:

The HOD:

The Expert:

The committee has discussed about the course and is approved.


Dean 

(Sign&Seal)

**DEAN**  
Prof.K.BALAGURUNATHAN,M.S  
(General surgeon)  
SRI LAKSHMI NARAYANA  
INSTITUTE OF MEDICAL SCIENCES  
OSUDU PONDICHERRY

  
Dr. R. VENKATARAMANAN, MS.  
Reg. No: 72549  
Professor ENT  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502.

SUBJECT EXPERT  
(Sign &Seal)

  
Seal & Signature of the HOD  
PROFESSOR & HOD  
DEPARTMENT OF E.N.T  
Sri Lakshmi Narayana Institute Of Medical Sciences  
PONDICHERRY - 605 502



OFFICE OF THE DEAN

## Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P-II ) dt. 11/07/2011 ]  
[ Affiliated to Bharath University, Chennai - TN ]

**Ref. No. SLIMS/Dean Off/VAC/024**

**Date:03/07/17**

**From**

The Dean  
Sri Lakshmi Narayana Institute of Medical sciences,  
Pondicherry – 605502

**To**

The Registrar,  
Bharath Institute of Higher Education and Research,  
Chennai - 600073.

Respected Sir

**Sub:** Request for permission and approval of Syllabus for certificate course (Value Added course) for the academic year 2017-18 - Reg  
**Ref:** Requesting letter received from Departments  
\*\*\*\*\*

With reference to the above, herewith forwarding the proposed list of Value-added courses for necessary permission and approval of syllabus to conduct the same.

This is for your kind information and needful action.

Thankingyou

Yours faithfully

[DEAN]

**DEAN**  
Prof.K.BALAGURUNATHAN,M.S  
(General surgeon)  
SRI LAKSHMI NARAYANA  
INSTITUTE OF MEDICAL SCIENCES  
OSUDU PONDICHERRY

**Encl's:**

1. Requesting letter received from department
2. Syllabus of thecourse
3. Details of faculty handlingcourse

**Sri Lakshmi Narayana Institute of Medical Sciences,  
Puducherry**

**VALUE ADDED COURSE : Hands on training on Audiological Evaluation Using Pure Tone  
Audiometry**

**COURSE CO-ORDINATOR DETAILS**

**Faculty Name:** Dr. Kalaiarasi. R

**Email ID:**entslims@gmail.com



# Bharath

INSTITUTE OF HIGHER EDUCATION AND RESEARCH  
(Declared as Deemed - to - be - University under section 3 of UGC Act 1956)

**Ref. No. BHIER/ VAC/B-02**

**Date:05.07.2017**

**From**

The Registrar,  
Bharath Institute of Higher Education and Research,  
Chennai - 600073.

**To**

The Dean  
Sri Lakshmi Narayana Institute of Medical sciences,  
Pondicherry – 605502

Sir / Madam,

**Sub:** Approval of Syllabus to conduct certificate course (Value Added course) for the academic year 2017-2018 – Reg.

**Ref:** Ref. No. SLIMS/Dean Off/VAC /024 Dated: 03.07.2017

\*\*\*\*\*

With reference to the above, it is to inform that the proposal submitted to conduct Value Added Course has been accepted and approved by BIHER, council meeting. List of the VAC are mentioned below for the academic year 2016– 2017. The abstract of the VAC course completion detail should be submitted to the Registrar office.

Thanking you

Yours faithfully

  
REGISTRAR



OFFICE OF THE DEAN

## **Sri Lakshmi Narayana Institute of Medical Sciences**

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,

PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P-II ) dt. 11/07/2011 ]

[ Affiliated to Bharath University, Chennai - TN ]

### **Circular**

07/07/2017

**Sub: Organising Value-added Course:** Hands on training on Audiological Evaluation Using Pure Tone Audiometry **reg.**

With reference to the above mentioned subject, it is to bring to your notice that SLIMS, **Bharath Institute of Higher Education and Research**, is organising “**Hands on training on Audiological Evaluation Using Pure Tone Audiometry**”. The course content and registration form is enclosed below.

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before 15/07/2017. Applications received after the mentioned date shall not be entertained under any circumstances.

DEAN

**DEAN**  
Prof.K.BALAGURUNATHAN,M.S  
(General surgeon)  
SRI LAKSHMI NARAYANA  
INSTITUTE OF MEDICAL SCIENCES  
OSUDU PONDICHERRY

Encl: Copy of Course content

## VALUE ADDED COURSE

### 1. Name of the programme & Code

Hands on training on Audiological Evaluation Using Pure Tone Audiometry–  
A value added course for the medical students.

**&ENT 05**

### 2. Duration & Period

30 hrs & July 2017-Dec 2017

### 3. Information Brochure and Course Content of Value Added Courses

*Enclosed as Annexure- I*

### 4. List of students enrolled

*Enclosed as Annexure- II*

### 5. Assessment procedures:

Pre test and post test which includes 10 mcqs - *Enclosed as Annexure- III*

### 6. Certificate model

*Enclosed as Annexure- IV*

### 7. No. of times offered during the same year:

1 time July 2017- Dec 2017

### 8. Year of discontinuation:2018

### 9. Summary report of each program year-wise

Value Added Course- July 2017- Dec 2017					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	ENT 05	Hands on training on Audiological Evaluation Using Pure Tone Audiometry	1.Dr.Venkataramanan 2. Dr. Sreedhar.B 3.Dr. kalaiarasi.R	3 <sup>rd</sup> year MBBS students	9 students & 2017

### 10. Course FeedBack

*Enclosed as Annexure- V*



**RESOURCEPERSON**

1. Dr.K.R.Jothikumar
2. Dr.R.Venkataramanan



**COORDINATOR**

**Dr.R.Kalaiarasi**

## **COURSE PROPOSAL**

### **1. NAME OF THE PROGRAMME**

Hands on training on Audiological Evaluation Using Pure Tone Audiometry– A value added course for the medical students.

### **2. AIM**

Training the students in Hands on training on Audiological Evaluation Using Pure Tone Audiometry

### **3. OBJECTIVES**

- a) To teach the students how to use Pure tone audiometry for audiological evaluation and to interpret the same
- b) Hands on training on PTA in normal subjects and patients with hearing loss

### **4. METHODOLOGY**

Students who are interested in participating in value added course are enrolled and the course is conducted for them during the non college hours for a period of 30 hours from July 2017 – Dec 2017 . This course is conducted every 6 months.

**Course Audience: 3<sup>rd</sup> year MBBS students**

**Course Coordinator: Dr. Kalaiarasi .R**

**Course Faculties with Qualification and Designation:****1.Dr.K.R. jothikumar****2.Dr. Sreedhar.B****3.Dr. R. Venkataramanan****Schedule followed during the course**

No	Topic	Title	Duration	Date and time
1	Hands on training on Audiological Evaluation Using Pure Tone Audiometry	Introduction on pure tone audiometry	2hrs	4pm-6pm(7/7/17)
		Self recording computerised audiometry -lecture	3hrs	4pm-6pm(16/8/17),4pm-5pm(18/8/17)
		Interpretation of audiograms	4hrs	4pm-6pm(12/9/17),4pm-6pm(14/9/17)
		Limitations and fallacies	4hrs	4pm-6pm(13/10/17),4pm-6pm(15/10/17)
		Other tests using PTA	5hrs	4pm-6pm(23/10/17),4pm-6pm(17/10/17),4pm-5pm(4/11/17)
		Demonstration of pure tone audiometry in normal subjects and patients with hearing loss	6hrs	4pm-6pm(9/11/17),4pm-6pm(15/11/17),4pm-6pm(21/11/17)
		Hands on training on PTA in normal subjects and patients with hearing loss & DOPS	6hrs	4pm-6pm(2/12/17),4pm-6pm(6/12/17),4pm-6pm(10/12/17)
		TOTAL	30HRS	

REFERENCE BOOKS: 1) SCOTT BROWN 7th edition

2) ANIRBAN BISWAS 1st edition



# PURE TONE AUDIOMETRY

# INTRODUCTION

- Pure tone audiometry is used to measure auditory threshold of an individual
- The instrument used in this measurement is known as the audiometer
- This is a subjective investigation, the accuracy of which is dependent on the response of the patient

# AUDIOMETER



- This has been defined by International Electrochemical Commission 1976 as an instrument used to measure the acuity of hearing and auditory threshold.
- There are two types of audiometers: subjective and objective ones.
- Pure tone audiometer – subjective
- Impedance / BERA - Objective

# PURE TONES

- Simplest of all sounds
- Specific and single frequency
- Described by their frequency, amplitude, phase and duration
- Pure tone amplitude is quantified in decibel
- Pure tone audiometry provides information about the type of hearing loss and also helps in quantifying frequency specific threshold elevation.
- Increase in stiffness of middle ear causes low frequency hearing loss, where as increase in mass effect of middle ear causes high frequency hearing loss

# FEATURES OF AN AUDIOMETER

- It generates pure tone
- Frequency of the tone generated can be selected
- Intensity of the tone generated can be selected
- It has the ability to route tonal stimuli to either ear
- Tone generated may be of intermittent / continuous type. This is controlled by the presence of an interrupter switch

# TYPES OF PURE TONE AUDIOMETERS

- Type I audiometer – Full fledged audiometer
- Type II audiometer – Does not have speakers hence free field audiometry is not possible with this.
- Type III audiometer – Portable audiometer without speech audiometry facility
- Type IV audiometer – Basic screening audiometer. Has only ear phones

# TYPE I AUDIOMETER

- Most comprehensive equipment
- It can measure air conduction thresholds between 125 – 8,000 Hz and bone conduction threshold ranging between 250 – 6000 Hz
- Maximum intensity for air conduction threshold is 120 dB and bone conduction maximum intensity is about 50 dB lower than this value. Bone oscillators produce distortions above this level.

# COMPONENTS OF AN AUDIOMETER

- Oscillator
- Interrupter switch
- Equalization circuit
- Output power amplifier
- Hearing level attenuator
- Output transducers

# OSCILLATOR

- This generates pure tones
- Its accuracy ranges between +/- 3% within the specified frequency range
- Frequencies generated include 125, 250, 500, 750, 1000, 1500, 2000, 3000, 4000, 6000, and 8000 Hz.
- These sounds are electronically generated

# INTERRUPTER SWITCH

- Tones should be either switched on or off.
- Continuous tone undergoes decay
- Patient fatigability should also be considered
- It controls the duration of signal presented to the patient
- It is typically in off position when pure tones are presented and can be turned on only on pressing the button.
- It is typically in on position for speech signal

# EQUALIZATION CIRCUIT

- This contains resistors which help in equalization of sound generated
- Human threshold for various frequencies are variable
- Human ear is highly sensitive to 2Khz frequency
- It is insensitive to high and low frequencies.

# OUTPUT POWER AMPLIFIER

- Signals produced by oscillator needs to be amplified
- This amplifier produces very little distortion
- It has a good signal to noise ratio

# HEARING LEVEL ATTENUATOR

- It controls the level of signal from the audiometer within 110-120 dB
- The intensity can be varied in steps of 5 dB
- Attenuator steps should be very accurate

# OUTPUT TRANSDUCERS

- Ear phones
- Bone vibrator
- Loud speaker

# HEAD PHONES



- Used to test pure tone Air conduction thresholds
- These are supra-aural ear phones
- Should always be calibrated before use
- This type of supra aural ear phones are easy to calibrate
- It has a flat frequency response
- Delivers high output sounds

# BONE VIBRATORS



- These have a limited dynamic frequency range
  - At low frequencies vibrators show distortions
- Pure tone bone conduction thresholds can be measured
- Placed over mastoid process (8-15 dB lower thresholds)

# LOUD SPEAKERS

- Used in free field audiometry
- Used to test infants and children
- Can be used to perform behavioral audiometry

# CALIBRATION

- Used to define audiometric zero
- Calibration involves calibration of audiometer, ear phones and bone vibrators
- Can be performed using human volunteers and artificial ears

# PROTOCOLS

- Should be tested in sound proof room
- Claustrophobic patients should be handled with care
- Patients with collapsed ear canal should be tested using special ear phones
- Malingerer's should be tested only by an audiologist
- Pt should be seated comfortably
- Otoscopy should be done prior to audiometry
- Test procedure should be fully explained to the patient
- Glasses / ear rings should be removed

# PLACEMENT OF HEAD PHONES



- Red head phone is placed over right ear
- The diaphragm is placed over ear canal
- It should fit snugly
- Head band should not be tight

# FAMILIARIZATION

- Testing is begun at 1000 Hz and 30 dB
- At this frequency the testee is likely to have residual hearing. At this frequency testing retesting response is reliable
- Testing usually begins with the examinee's self reported better ear, to decide whether masking is necessary for testing the other ear
- Pulsed tone is used

# HUGHSON - WESTLAKE ASCENDING TECHNIQUE

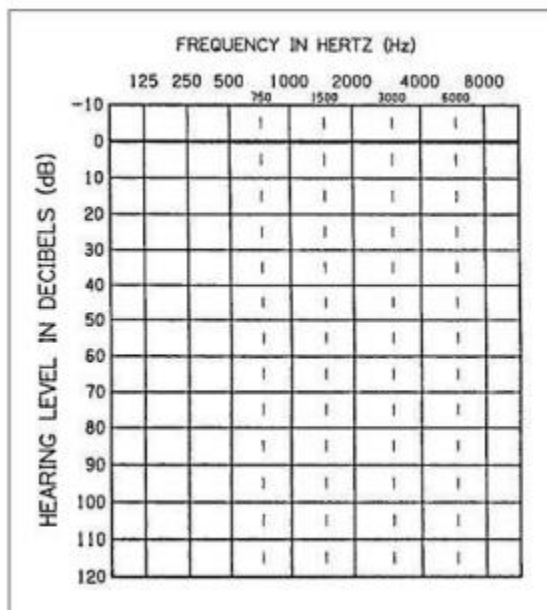
- Up 5 and down 10 method
- Tones of short duration is used
- Better ear is tested to decide whether masking is necessary
- Started at 1000 Hz at a level above threshold. This frequency is selected because it is an important frequency
- In pts with profound hearing loss the test should be started with 250 Hz because these patients have residual hearing only in low frequencies
- Stimulus is started at 0 dB and increased in steps of 10 dB till the patient responds
- On positive response the volume is decreased by 10 dB. If the pt responds it is decreased by 10 dB and repeated till he does not respond
- On no response the intensity is increased by 5 dB till the pt confirms hearing the tone
- This should be repeated till the pt gives positive response in two out of three attempts at the same dB level
- Tone presented should last between 1-3 seconds

# PLOTTING

- The readings are plotted with red color indicating right side and blue colour on left side

# AUDIOGRAM CHART

chart



Legend

MODALITY	Response			No Response		
	LEFT	UNSPECIFIED	RIGHT	LEFT	UNSPECIFIED	RIGHT
AIR CONDUCTION-EARPHONES						
UNMASKED	X		O	X		O
MASKED	□		△	□		△
BONE CONDUCTION-MASTOID						
UNMASKED	>	↑	<	∩	↑	∪
MASKED	]		[	∩		∪
BONE CONDUCTION-FOREHEAD						
UNMASKED		∨			∨	
MASKED	∩		∪	∩		∪
AIR CONDUCTION-SOUND FIELD	X	\$	Ø	X	\$	Ø
ACOUSTIC-REFLEX THRESHOLD						
CONTRALATERAL	>		<	∩		∪
IPSILATERAL	∩		∪	∩		∪

# DEGREE OF HEARING LOSS

Degree of Loss	Northern and Downs (2002)	Goodman (1965)	Jerger and Jerger (1980)
None	<16	>26	<21
Slight	16-25		
Mild	26-30	26-40	21-40
Moderate	30-50	41-55	41-60
Moderately severe		56-70	
Severe	51-70	71-90	61-80
Profound	>70	>90	>80

<sup>9</sup>Although all three references cited differ in the value accepted as a profound loss, a loss of 90 dB HL or more is widely accepted as representing a qualitative as well as a quantitative boundary between hearing and deafness.

# FACTORS AFFECTING RELIABILITY

- Poor test instructions
- Improper headphone placement
- Rhythmic tone presentation
- Clues from examiner

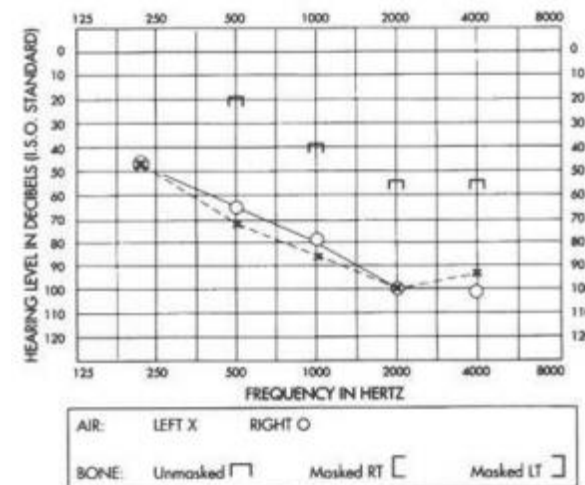
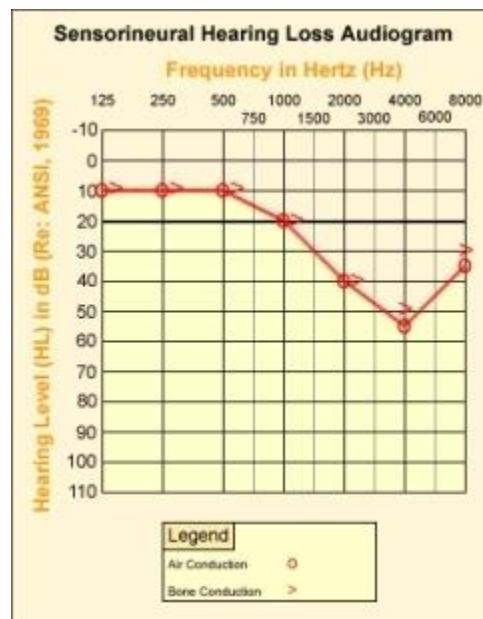
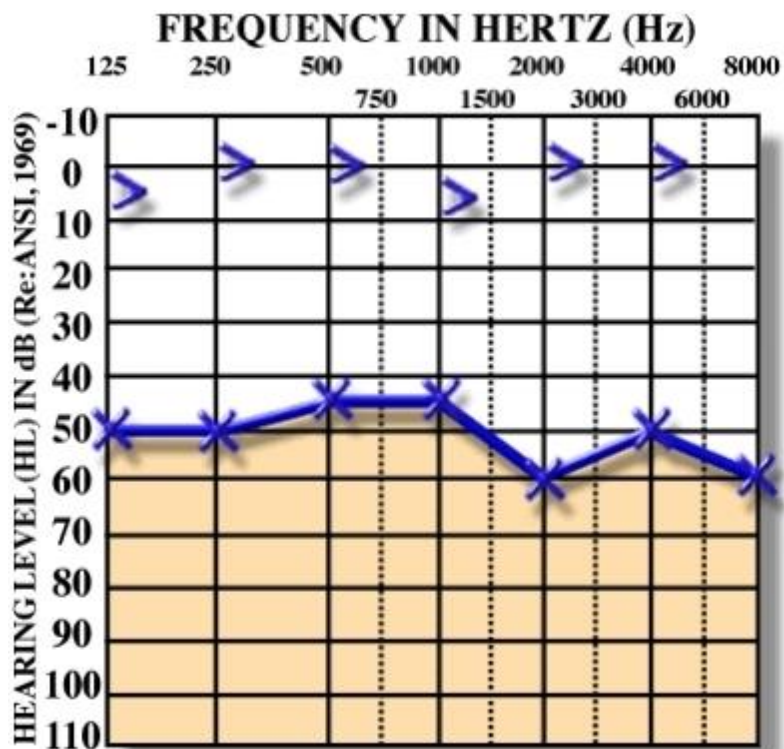
# ENVIRONMENTAL FACTORS AFFECTING RELIABILITY

- Excessive background noise
- Poor ventilation
- Poor lighting
- Invalid equipment calibration

# COMPARISON OF AUDIOGRAMS

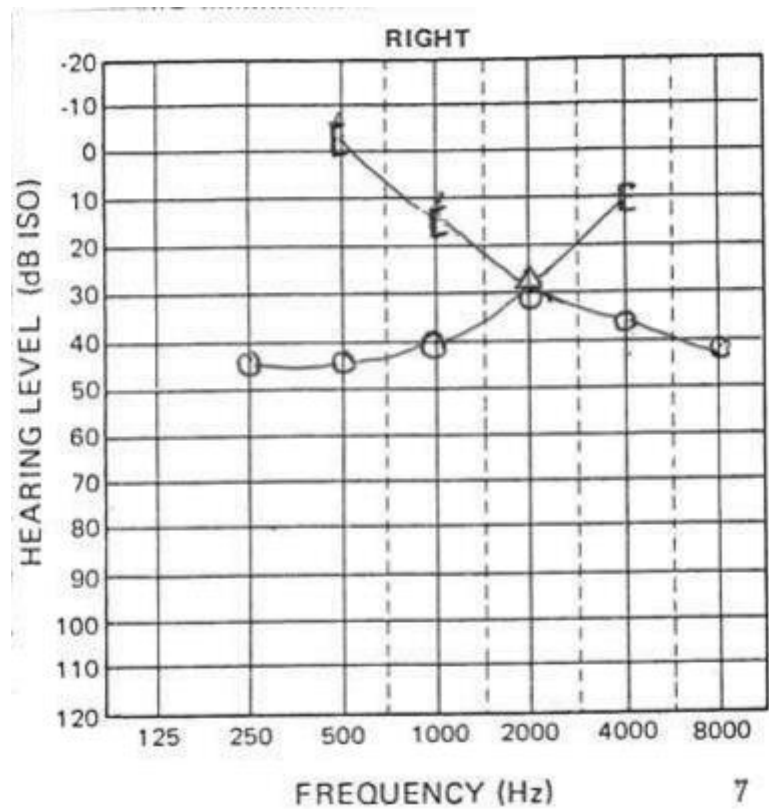
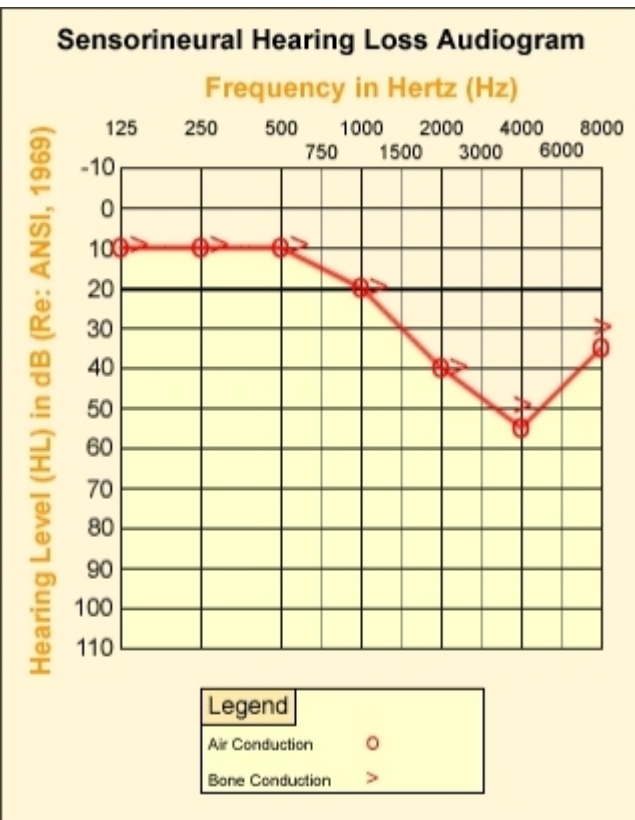
Term	Description
Flat	<5-dB rise or fall per octave
Gradually falling	5- to 12-dB increase per octave
Sharply falling	15- to 20-dB increase per octave
Precipitously falling	Flat or gradually sloping, then threshold increasing at 25 dB or more per octave
Rising	>5-dB decrease in threshold per octave
Peaked or saucer	20-dB or greater loss at the extreme frequencies, but not at the mid frequencies
Trough	20-dB or greater loss in the mid frequencies (1,000-2,000 Hz), but not at the extreme frequencies (500 or 4,000 Hz)
Notched	20-dB or greater loss at one frequency with complete or near-complete recovery at adjacent octave frequencies

# TYPES OF AUDIOGRAM



An example of a moderate to profound mixed hearing loss.

# SOME AUDIOGRAM TYPES



**Annexure 2**  
**Bharath Institute of Higher Education and Research**  
**SLIMS**

1	U14MB246	GAUTHAM. B
2	U14MB247	GOKUL. S
3	U14MB248	GUBENDIRAN. R.
4	U14MB249	HARIJAN BALASUBRAMANIAM KANNADASAN
5	U14MB250	HEMALATHA. K
6	U14MB251	HEMANTHKUMAR.T
7	U14MB252	HEMASH. P.A
8	U14MB253	HEMASRI. C
9	U14MB254	ILAMMATHI. K

ANNEXURE 3  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL  
SCIENCES  
PUDUCHERRY

TOPIC: Hands on training on Audiological Evaluation Using Pure Tone Audiometry (ENT 05)

STUDENT NAME:

UNIVERSITY NO:

1. Threshold for moderate hearing loss

- a.26-40db            b.56-70 db  
c.41-55 db        d.>90db

2. Subjective test of hearing is:

- a.pure tone audiometry    b.OAE  
c.BERA                            D.impedance audiometry

3.Weber Test in Conductive Deafness

- a.Sound louder in normal ear                            b.sound louder in diseased ear  
c.heard wih equal intensity in both ears            d.inconclusive test

4.Tough shaped curve audiogram seen in

- a. congenital SNHL                            b. Otitis media with effusion  
c. ototoxicity                                    d. menieres disease

5.positive rinne test is seen in

- a.otosclerosis                            b.csom  
c. impacted wax                            d.presbycusis

6. In pure tone audiogram the symbol X is used to mark:  
a. Air conduction in RE                      b. Air conduction in LE  
c. Bone conduction in RE                    d. no response in air conduction in right ear

7. high frequency audiometry is used in  
a. otosclerosis                                      b. ototoxicity  
c. non organic hearing loss                    d. menier's disease

8. SISI is specifically for  
a. acoustic trauma                                b. otosclerosis  
c. meniers disease                                d. facial nerve palsy

9. sternger test used in diagnosis of  
a. non organic hearing loss                    b. conductive hearing loss  
c. SNHL    d. Mixed hearing loss

10. hearing loss at 65 db . what will be the grade of deafness  
a. mild    b. moderate  
c. moderately severe                              d. severe

PRE TEST

5

6. In pure tone audiogram the symbol X is used to mark:

- a. Air conduction in RE
- ~~b. Air conduction in LE~~
- c. Bone conduction in RE
- d. no response in air conduction in right ear

7. high frequency audiometry is used in

- a. otosclerosis
- ~~b. ototoxicity~~
- c. non organic hearing loss
- d. menier's disease

8. SISI is specifically for

- ~~X~~ a. acoustic trauma
- b. otosclerosis
- c. meniers disease
- d. facial nerve palsy

9. sternger test used in diagnosis of

- ~~X~~ a. non organic hearing loss
- ~~b. conductive hearing loss~~
- c. SNHL
- d. Mixed hearing loss

10. hearing loss at 65 db . what will be the grade of deafness

- ~~X~~ a. mild
- b. moderate
- c. moderately severe
- d. severe

ANNEXURE 3

SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
PUDUCHERRY

TOPIC: Hands on training on Audiological Evaluation Using Pure Tone Audiometry (ENT 05)

STUDENT NAME: Hemasri .c

UNIVERSITY NO: U14 MB253

7

1. Threshold for moderate hearing loss

- a. 26-40db      b. 55-70 db  
c. 41-55 db      d. >90db

2. Subjective test of hearing is:

- ~~a. pure tone audiometry~~      b. OAE  
c. BERA      d. Impedance audiometry

3. Weber Test in Conductive Deafness

- a. Sound louder in normal ear      ~~b. sound louder in diseased ear~~  
c. heard with equal intensity in both ears      d. inconclusive test

4. Tough shaped curve audiogram seen in

- ~~a. congenital SNHL~~      b. Otitis media with effusion  
c. ototoxicity      d. menieres disease

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- b. ototoxicity
- c. non organic hearing loss
- d. menier's disease

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- b. otosclerosis
- c. meniers disease
- d. facial nerve palsy

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- b. conductive hearing loss
- c. SNHL
- d. Mixed hearing loss

10. hearing loss at 65 db . what will be the grade of deafness

- a. mild
- b. moderate
- c. moderately severe
- d. severe

ANNEXURE 3

SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
PUDUCHERRY

TOPIC: Hands on training on Audiological Evaluation Using Pure Tone Audiometry (ENT 05)

STUDENT NAME: Aokul S

UNIVERSITY NO: U14 MB247

(3)

1. Threshold for moderate hearing loss

- a. 26-40db      ~~b. 56-70 db~~  
c. 41-55 db      d. >90db

2. Subjective test of hearing is:

- ~~a. pure tone audiometry~~      b. OAE  
c. BERA      D. impedance audiometry

3. Weber Test in Conductive Deafness

- ~~a. Sound louder in normal ear~~      b. sound louder in diseased ear  
c. heard with equal intensity in both ears      ~~d. inconclusive test~~

4. Tough shaped curve audiogram seen in

- ~~a. congenital SNHL~~      b. Otitis media with effusion  
c. ototoxicity      ~~d. menieres disease~~

5. positive rinne test is seen in

- ~~a. otosclerosis~~      b. csom  
c. impacted wax      d. presbycusis

## POST TEST

5

6. In pure tone audiogram the symbol X is used to mark:

- a. Air conduction in RE
- ~~b. Air conduction in LE~~
- c. Bone conduction in RE
- d. no response in air conduction in right ear

7. high frequency audiometry is used in

- a. otosclerosis
- ~~b. ototoxicity~~
- c. non organic hearing loss
- d. menier's disease

8. SISI is specifically for

- a. acoustic trauma
- b. otosclerosis
- ~~c. meniers disease~~
- d. facial nerve palsy

9. sternger test used in diagnosis of

- ~~a. non organic hearing loss~~
- b. conductive hearing loss
- c. SNHL
- d. Mixed hearing loss

10. hearing loss at 65 db. what will be the grade of deafness

- a. mild
- b. moderate
- ~~c. moderately severe~~
- d. severe

ANNEXURE 3

SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
PUDUCHERRY

TOPIC: Hands on training on Audiological Evaluation Using Pure Tone Audiometry (ENT 05)

STUDENT NAME: *Crakul . S*

UNIVERSITY NO: *U14MB247*

1. Threshold for moderate hearing loss

- a. 26-40db      ~~a~~ *b. 56-70 db*
- c. 41-55 db      d. >90db

2. Subjective test of hearing is:

- ~~a. pure tone audiometry~~      b. OAE
- c. BERA      d. impedance audiometry

3. Weber Test in Conductive Deafness

- a. Sound louder in normal ear
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- ~~a. otosclerosis~~      b. csom
- c. impacted wax      d. presbycusis

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- d. menier's disease

8. SISI is specifically for

- ~~a. acoustic trauma~~
- ~~b. otosclerosis~~
- c. meniers disease
- d. facial nerve palsy

9. sternger test used in diagnosis of

- ~~a. non organic hearing loss~~
- b. conductive hearing loss
- c. SNHL
- d. Mixed hearing loss

10. hearing loss at 65 db. what will be the grade of deafness

- a. mild
- b. moderate
- ~~c. moderately severe~~
- d. severe

ANNEXURE 3

SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES

PUDUCHERRY

TOPIC: Hands on training on Audiological Evaluation Using Pure Tone Audiometry (ENT 05)

STUDENT NAME: Hemabari.C

UNIVERSITY NO: V14MB253

1. Threshold for moderate hearing loss

- a. 26-40db
- ~~b. 56-70 db~~
- c. 41-55 db
- d. >90db

2. Subjective test of hearing is:

- ~~a. pure tone audiometry~~
- b. OAE
- c. BERA
- d. Impedance audiometry

3. Weber Test in Conductive Deafness

- a. Sound louder in normal ear
- ~~b. sound louder in diseased ear~~
- c. heard with equal intensity in both ears
- d. inconclusive test

4. Tough shaped curve audiogram seen in

- ~~a. congenital SNHL~~
- b. Otitis media with effusion
- c. ototoxicity
- d. menieres disease

5. positive rinne test is seen in

- ~~a. otosclerosis~~
- b. csom
- c. impacted wax
- d. presbycusis



## Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



### CERTIFICATE OF MERIT

This is to certify that \_\_\_\_\_ has actively participated in the Value Added Course Hands on training Audiological Evaluation using Pure tone Audiometry held during July 2017 – Dec 2017 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr. K.R. Jothikumar  
RESOURCE PERSON

Dr. Kalaiarasi. R  
COORDINATOR



## Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



### CERTIFICATE OF MERIT

This is to certify that Dr.Gokul.S(U14MB247) has actively participated in the Value Added Course Hands on training Audiological Evaluation using Pure tone Audiometry held during July 2017 – Dec 2017 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr. K.R. Jothikumar  
RESOURCE PERSON

Dr. Kalaiarasi. R  
COORDINATOR

**Course/Training Feedback Form**  
**Student Feedback Form**

Course Name: Hands on training on Audiological Evaluation Using Pure Tone Audiometry

Subject Code: **ENT05**

Name of Student: \_\_\_\_\_ Roll No.: \_\_\_\_\_

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					
2	Course contents met with your expectations					
3	Lecturer sequence was well planned					
4	Lectures were clear and easy to understand					
5	Teaching aids were effective					
6	Instructors encourage interaction and were helpful					
7	The level of the course					
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Annexure 5

**Course/Training Feedback Form**

**Student Feedback Form**

Course Name: Hands on training on Audiological Evaluation Using Pure Tone Audiometry

Subject Code: ENT05

Name of Student: GOKUL S Roll No.: U14 MB247

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					✓
2	Course contents met with your expectations					✓
3	Lecturer sequence was well planned					✓
4	Lectures were clear and easy to understand					✓
5	Teaching aids were effective					✓
6	Instructors encourage interaction and were helpful				✓	
7	The level of the course				✓	
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

NIL

Annexure 5

**Course/Training Feedback Form**

**Student Feedback Form**

Course Name: Hands on training on Audiological Evaluation Using Pure Tone Audiometry

Subject Code: ENT05

Name of Student: HEMALATHA K Roll No.: V14MB250

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear			✓		
2	Course contents met with your expectations				✓	
3	Lecturer sequence was well planned				✓	
4	Lectures were clear and easy to understand					✓
5	Teaching aids were effective				✓	
6	Instructors encourage interaction and were helpful			✓		
7	The level of the course					✓
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

LECTURES WAS GOOD AND CLEAR

ANNEXURE 6

Date : 15/12/2017

From  
Dr.K.R. Jothikumar,  
Dept of Otorhinolaryngology,  
SLIMS  
Bharath Institute of Higher Education and Research,  
Puducherry.

Through Proper Channel

To  
The Dean,  
SLIMS,  
Bharath Institute of Higher Education and Research,  
Puducherry.

**Sub: Completion of value-added course:** Hands on training on Audiological Evaluation Using Pure Tone Audiometry reg.

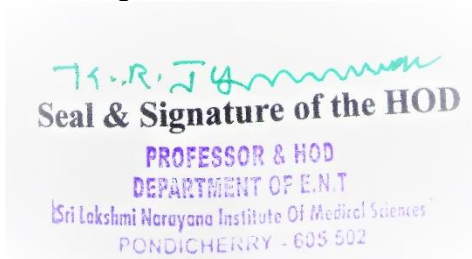
Dear Sir,

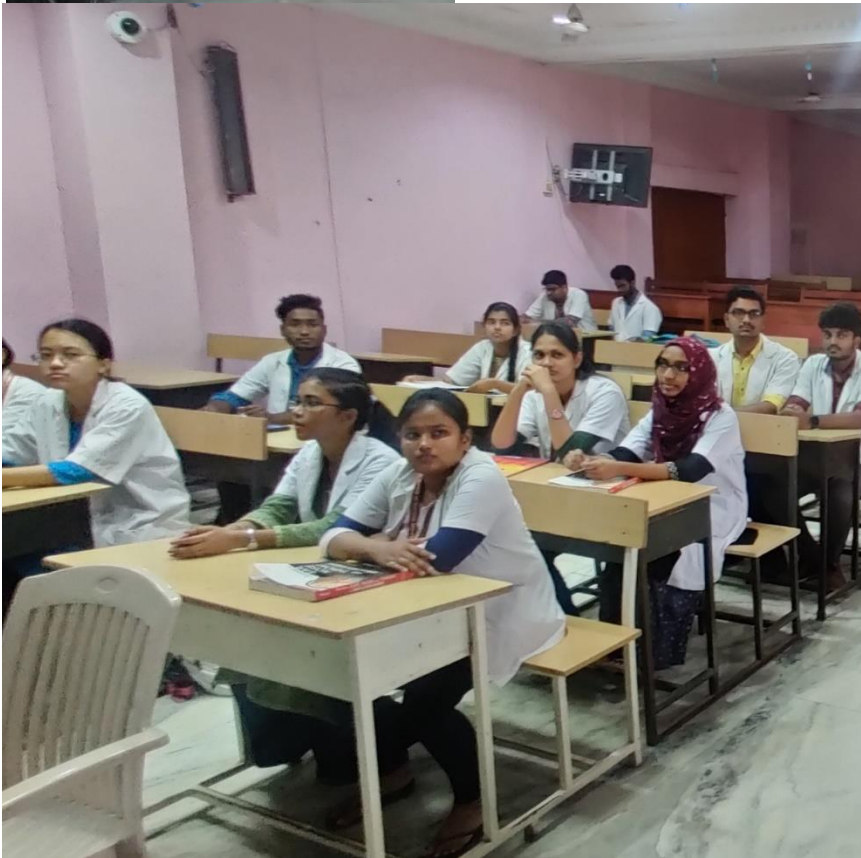
With reference to the subject mentioned above, the department has conducted the value-added course titled: Hands on training on **Hands on training on Audiological Evaluation Using Pure Tone Audiometry** on July 2017 to Dec 2017. We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards

Dr.K.R.Jothikumar

<HOD Sign and Seal>







**Sri Lakshmi Narayana Institute of Medical Sciences**

Date:08.05.2017

From

Dr.Kamatchi  
Professor and Head,  
Department of Microbiology,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

To

The Dean,  
Sri Lakshmi Narayana Institute of Medical College  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Permission to conduct value-added course: Hospital information system & Environmental health and hygiene**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: Hospital information system for July to September 2017 & Environmental health and hygiene October to November 2017. We solicit your kind permission for the same.

Kind Regards

Dr. Kamatchi

---

**FOR THE USE OF DEANS OFFICE**

Names of Committee members for evaluating the course:

The Dean: **Dr. Jayalakshmi.G**

The HOD: **Dr. Kamatchi**

The Expert: **Dr. Jayapradha.S**

The committee has discussed about the course and is approved.

Dean

(Sign & Seal)

Subject Expert

(Sign & Seal)

HOD

(Sign & Seal)

Dr. G. JAYALAKSHMI  
DSC., MBBS., DTCD., M.D.  
DEAN  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Ageram Kudapakkam, Post,  
Villanur Commune Puducherry-605 502.

DEPT OF MICROBIOLOGY  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES-PONDICHERRY 605 502





**Sri Lakshmi Narayana Institute of Medical Sciences**

**Circular**

17.06.2017

**Sub: Organising Value-added Course: Hospital information system -reg**

With reference to the above-mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research**, is organizing "Hospital information system" from July to Sep 2017. The course content form is enclosed below."

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before June 30<sup>th</sup> 2017. Applications received after the mentioned date shall not be entertained under any circumstances.

Dean

Dr. G. JAYALAKSHMI, BSC.,MBBS.,DTCD.,M.D.,  
DEAN

Sri Lakshmi Narayana Institute of Medical Sciences

Oadu, Ageram Kudapakkam, Post,  
Villanur Commune Puduchery-605 502.

Encl: Copy of Course content



## Course Proposal

**Course Title:** Hospital information system

**Course Objective:**

1. Definition for Hospital information system
2. Benefits of HIS
3. Risk of Health information system
4. Electronic health record
5. Clinical documentation improvement

**Course Outcome:** knowledge on the various aspects of Hospital information system

**Course Audience:** Medical undergraduates

**Course Coordinator:** Dr. G. Jayalakshmi

**Course Faculties with Qualification and Designation:**

1. Dr.S.Jayapradha, MD, Assistant professor
2. Mr.Naveenkumar, Msc,Assistant professor

**Course Curriculum/Topics with schedule (Min of 30 hours)**

Date	Time	Topic -	Hour	Lecture taken by
5.7.2017	4-6pm	Pre-test & Definition for Hospital information system	2hrs	Dr.S.Jayapradha
12.7.2017	4-6pm	Benefits of HIS	2hrs	Mr.Naveenkumar.C
19.7.2017	4-5pm	Risk of Health information system	1hr	Dr.Jayalakshmi.G
26.7.2017	4-6pm	Electronic health record	2hrs	Dr.S.Jayapradha
2.8.2017	4-7pm	Clinical documentation improvement	3hrs	Dr.Jayalakshmi.G
9.8.2017	4-6pm	Technical features	2hrs	Mr.Naveenkumar.C
16.8.2017	4-6pm	Software quality and usability deficiencies	2hrs	Dr.S.Jayapradha
23.8.2017	4-7pm	Hardware and workflow considerations	3hrs	Mr.Naveenkumar.C
30.8.2017	4-6pm	Computer security	2hrs	Mr.Naveenkumar.C
26.8.2015	4-7pm	Information security culture	3hrs	Dr.Jayalakshmi.G
6.9.2017	4-6pm	Systems at risk	2hrs	Dr.S.Jayapradha



13.9.2017	4-6pm	Impact of security breaches	2hrs	Dr.Jayalakshmi.G
20.9.2017	4-6pm	Security by design	2hrs	Mr.Naveenkumar.C
27.9.2017	4-6pm	Health information technology & Personal health record, Post test	2hrs	Dr.S.Jayapradha
		Total hours	30hrs	

**REFERENCE BOOKS:**

1. Hospitals - Facilities Planning & Management- G.D.Kunders
2. New Technologies in Hospital Information Systems- Dudeck, J., Lordieck, W., Bürkle



## VALUE ADDED COURSE

**1. Name of the programme & Code**

Certificate course on Hospital information system and MIC05

**2. Duration & Period**

30 hrs July 2017– September2017

**3. Information Brochure and Course Content of Value Added Courses**

*Enclosed as Annexure- I*

**4. List of students enrolled**

*Enclosed as Annexure- II*

**5. Assessment procedures:**

Questionnaire- *Enclosed as Annexure- III*

**6. Course Feed Back**

*Enclosed as Annexure- IV*

**7. No. of times offered during the same year:**

July 2017– September 2017

**8. Year of discontinuation: 2017**

**9. Summary report of each program year-wise**

Value Added Course- July 2017 - August 2017					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	MIC05	Certificate course on Hospital information system	Dr. S.Jayapradha Mr.Naveenkumar.C	2 <sup>nd</sup> yr MBBS	20July 2017– September2017

**10. Certificate model**

*Enclosed as Annexure- V*

  
RESOURCE PERSON

  
COORDINATOR



## Annexure I

### Certificate Course In Hospital Information System(HIS)

#### COURSE DETAILS

Particulars	Description
Course Title	Hospital information system
Course Code	MIC05
Objective	<ol style="list-style-type: none"><li>1. Definition for Hospital information system</li><li>2. Benefits of HIS</li><li>3. Risk of Health information system</li><li>4. Electronic health record</li><li>5. Clinical documentation improvement</li><li>6. Technical features</li><li>7. Software quality and usability deficiencies</li><li>8. Hardware and workflow considerations</li><li>9. Computer security</li><li>10. Information security culture</li><li>11. Systems at risk</li><li>12. Impact of security breaches</li><li>13. Security by design</li><li>14. Health information technology</li><li>15. Personal health record</li></ol>
Further learning opportunities	Information development
Key Competencies	On successful completion of the course the students will have skill to observe HIS
Target Student	2 <sup>nd</sup> MBBS Students
Duration	30hrs Every July 2017– September 2017
Theory Session	10hrs
Practical Session	20hrs
Assessment Procedure	Short answers

Date	Time	Topic -	Resource person
------	------	---------	-----------------

5.7.2017	4-6pm	Pre-test & Definition for Hospital information system	Dr.S.Jayapradha
12.7.2017	4-6pm	Benefits of HIS	Mr.Naveenkumar.C
19.7.2017	4-5pm	Risk of Health information system	Dr.Jayalakshmi.G
26.7.2017	4-6pm	Electronic health record	Dr.S.Jayapradha
2.8.2017	4-7pm	Clinical documentation improvement	Dr.Jayalakshmi.G
9.8.2017	4-6pm	Technical features	Mr.Naveenkumar.C
16.8.2017	4-6pm	Software quality and usability deficiencies	Dr.S.Jayapradha
23.8.2017	4-7pm	Hardware and workflow considerations	Mr.Naveenkumar.C
30.8.2017	4-6pm	Computer security	Mr.Naveenkumar.C
26.8.2015	4-7pm	Information security culture	Dr.Jayalakshmi.G
6.9.2017	4-6pm	Systems at risk	Dr.S.Jayapradha
13.9.2017	4-6pm	Impact of security breaches	Dr.Jayalakshmi.G
20.9.2017	4-6pm	Security by design	Mr.Naveenkumar.C
27.9.2017	4-6pm	Health information technology & Personal health record, Post test	Dr.S.Jayapradha

### **Definition**

A hospital information system (HIS) is an element of health informatics that focuses mainly on the administrative needs of hospitals. In many implementations, a HIS is a comprehensive, integrated information system designed to manage all the aspects of a hospital's operation, such as medical, administrative, financial, and legal issues and the corresponding processing of services. Hospital information system is also known as hospital management software (HMS) or hospital management system.

**Potential benefits of hospital information systems include:**

- Efficient and accurate administration of finance, diet of patient, engineering, and distribution of medical aid. It helps to view a broad picture of hospital growth
- Improved monitoring of drug usage, and study of effectiveness. This leads to the reduction of adverse drug interactions while promoting more appropriate pharmaceutical utilization.
- Enhances information integrity, reduces transcription errors, and reduces duplication of information entries.
- Hospital software is easy to use and eliminates error caused by handwriting. New technology computer systems give perfect performance to pull up information from server or cloud servers.

### **Benefits of HIS:**

- 1) Improved information access.
- 2) Increased healthcare professional's productivity.
- 3) Improved efficiency and accuracy of coding and billing.
- 4) Improved quality of healthcare.
- 5) Improved clinical management.

### **Risk of Health information system:**

The most critical threat is power failure of the server, and the second is power failure of home personal computers. Air-conditioning failure, system and network software failure, monitor support software failure, and medical record software failure are also treated as high-risk threats.

### **Clinical documentation improvement:**

It is the systematic study and application of knowledge about how individuals and groups act within the organizations where they work. OB draws from other disciplines to create a unique field.

For example, when we review topics such as personality and motivation, we will again review studies from the field of psychology. The topic of team processes relies heavily on the field of sociology.

When we study power and influence in organizations, we borrow heavily from political sciences.

Even medical science contributes to the field of Organizational Behaviour, particularly in the study of stress and its effects on individuals.

There is increasing agreement as to the components or topics that constitute the subject area of OB.

Although there is still considerable debate as to the relative importance of change, there appears to be general agreement that OB includes the core topics of motivation, leader behaviour, and power, interpersonal communication, group structure and processes, learning, attitude development, and perception, change processes, conflict, work design, and work stress.

### **Electronic health record:**

An electronic health record (EHR) is the systematized collection of patient and population electronically stored health information in a digital format. These records can be shared across different health care settings. Records are shared through network-connected, enterprise-wide information systems or other information networks and exchanges. EHRs may include a range of data, including demographics, medical history, medication and allergies, immunization status, laboratory test results, radiology images, vital signs, personal statistics like age and weight, and billing information.

For several decades, electronic health records (EHRs) have been touted as key to increasing of quality care. Today, providers are using data from patient records to improve quality outcomes through their care management programs. Combining multiple types of clinical data from the system's health records has helped clinicians identify and stratify chronically ill patients. EHR can improve quality care by using the data and analytics to prevent hospitalizations among high-risk patients.

### **Technical features:**

- Digital formatting enables information to be used and shared over secure networks
- Track care (e.g. prescriptions) and outcomes (e.g. blood pressure)
- Trigger warnings and reminders
- Send and receive orders, reports, and results
- Decrease billing processing time and create more accurate billing system
- Health Information Exchange.

### **Software quality and usability deficiencies:**

The Healthcare Information and Management Systems Society, a very large U.S. healthcare IT industry trade group, observed in 2009 that EHR adoption rates "have been slower than expected in the United States, especially in comparison to other industry sectors and other developed countries. A key reason, aside from initial costs and lost productivity during EMR implementation, is lack of efficiency and usability of EMRs currently available. The U.S. National Institute of Standards and Technology of the Department of Commerce studied usability in 2011 and lists a number of specific issues that have been reported by

health care workers.[43] The U.S. military's EHR, AHLTA, was reported to have significant usability issues.[44] Furthermore, studies such as the one conducted in BMC Medical Informatics and Decision Making, also showed that although the implementation of electronic medical records systems has been a great assistance to general practitioners there is still much room for revision in the overall framework and the amount of training provided. It was observed that the efforts to improve EHR usability should be placed in the context of physician-patient communication

### **Hardware and workflow considerations:**

When a health facility has documented their workflow and chosen their software solution, they must then consider the hardware and supporting device infrastructure for the end users. Staff and patients will need to engage with various devices throughout a patient's stay and charting workflow. Computers, laptops, all-in-one computers, tablets, mouse, keyboards and monitors are all hardware devices that may be utilized. Other considerations will include supporting work surfaces and equipment, wall desks or articulating arms for end users to work on. Another important factor is how all these devices will be physically secured and how they will be charged that staff can always utilize the devices for EHR charting when needed.

The success of eHealth interventions is largely dependent on the ability of the adopter to fully understand workflow and anticipate potential clinical processes prior to implementations. Failure to do so can create costly and time-consuming interruptions to service delivery

### **Computer security:**

Computer security, cybersecurity or information technology security (IT security) is the protection of computer systems and networks from the theft of or damage to their hardware, software, or electronic data, as well as from the disruption or misdirection of the services they provide.

The field is becoming more significant due to the increased reliance on computer systems, the Internet and wireless network standards such as Bluetooth and Wi-Fi, and due to the growth of "smart" devices, including smartphones, televisions, and the various devices that constitute the "Internet of things". Owing to its complexity, both in terms of politics and technology, cybersecurity is also one of the major challenges in the contemporary world.

### **Information security culture**

- Pre-Evaluation: to identify the awareness of information security within employees and to analyze the current security policy.
- Strategic Planning: to come up with a better awareness program, clear targets need to be set. Assembling a team of skilled professionals is helpful to achieve it.

- Operative Planning: a good security culture can be established based on internal communication, management-buy-in, and security awareness and a training program.
- Implementation: four stages should be used to implement the information security culture. They are:
  - Commitment of the management
  - Communication with organizational members
  - Courses for all organizational members
  - Commitment of the employees
- Post-Evaluation: to assess the success of the planning and implementation, and to identify unresolved areas of concern.

### **Systems at risk**

#### Financial systems

The computer systems of financial regulators and financial institutions like the U.S. Securities and Exchange Commission, SWIFT, investment banks, and commercial banks are prominent hacking targets for cybercriminals interested in manipulating markets and making illicit gains.[30] Web sites and apps that accept or store credit card numbers, brokerage accounts, and bank account information are also prominent hacking targets, because of the potential for immediate financial gain from transferring money, making purchases, or selling the information on the black market.[31] In-store payment systems and ATMs have also been tampered with in order to gather customer account data and PINs.

#### Utilities and industrial equipment

Computers control functions at many utilities, including coordination of telecommunications, the power grid, nuclear power plants, and valve opening and closing in water and gas networks. The Internet is a potential attack vector for such machines if connected, but the Stuxnet worm demonstrated that even equipment controlled by computers not connected to the Internet can be vulnerable. In 2014, the Computer Emergency Readiness Team, a division of the Department of Homeland Security, investigated 79 hacking incidents at energy companies. Vulnerabilities in smart meters (many of which use local radio or cellular communications) can cause problems with billing fraud.

#### **Impact of security breaches:**

Serious financial damage has been caused by security breaches, but because there is no standard model for estimating the cost of an incident, the only data available is that which is made public by the organizations involved. "Several computer security consulting firms produce estimates of total worldwide losses attributable to virus and worm attacks and to hostile digital acts in general. The 2003 loss estimates by these firms range from \$13 billion (worms and viruses only) to \$226 billion (for all forms of covert attacks). The

reliability of these estimates is often challenged; the underlying methodology is basically anecdotal." Security breaches continue to cost businesses billions of dollars but a survey revealed that 66% of security staffs do not believe senior leadership takes cyber precautions as a strategic priority.

However, reasonable estimates of the financial cost of security breaches can actually help organizations make rational investment decisions. According to the classic Gordon-Loeb Model analyzing the optimal investment level in information security, one can conclude that the amount a firm spends to protect information should generally be only a small fraction of the expected loss (i.e., the expected value of the loss resulting from a cyber/information security breach

### **Security by design**

Some of the techniques in this approach include:

- The principle of least privilege, where each part of the system has only the privileges that are needed for its function. That way even if an attacker gains access to that part, they have only limited access to the whole system.
- Automated theorem proving to prove the correctness of crucial software subsystems.
- Code reviews and unit testing, approaches to make modules more secure where formal correctness proofs are not possible.
- Defense in depth, where the design is such that more than one subsystem needs to be violated to compromise the integrity of the system and the information it holds.
- Default secure settings, and design to "fail secure" rather than "fail insecure" (see fail-safe for the equivalent in safety engineering). Ideally, a secure system should require a deliberate, conscious, knowledgeable and free decision on the part of legitimate authorities in order to make it insecure.
- Audit trails tracking system activity, so that when a security breach occurs, the mechanism and extent of the breach can be determined. Storing audit trails remotely, where they can only be appended to, can keep intruders from covering their tracks.
- Full disclosure of all vulnerabilities, to ensure that the "window of vulnerability" is kept as short as possible when bugs are discovered.

### **Health information technology**

Health technology, particularly information technology, applied to health and health care. It supports health information management across computerized systems and the secure exchange of health information between consumers, providers, payers, and quality monitors. Based on an often-cited 2008 report on a small series of studies conducted at four sites that provide ambulatory care – three U.S. medical centers and one in the Netherlands – the use of electronic health records (EHRs) was viewed as the most promising tool for improving the overall quality, safety and efficiency of the health delivery system. According to a 2006

report by the Agency for Healthcare Research and Quality, in an ideal world, broad and consistent utilization of HIT would;

- Improve health care quality or effectiveness
- Increase health care productivity or efficiency
- Prevent medical errors and increase health care accuracy and procedural correctness
- Reduce health care costs
- Increase administrative efficiencies and healthcare work processes
- Decrease paperwork and unproductive or idle work time
- Extend real-time communications of health informatics among health care professionals
- Expand access to affordable care

#### **Personal health record:**

(PHR) is a health record where health data and other information related to the care of a patient is maintained by the patient. This stands in contrast to the more widely used electronic medical record, which is operated by institutions (such as hospitals) and contains data entered by clinicians (such as billing data) to support insurance claims. The intention of a PHR is to provide a complete and accurate summary of an individual's medical history which is accessible online. The health data on a PHR might include patient-reported outcome data, lab results, and data from devices such as wireless electronic weighing scales or (collected passively) from a smartphone.

#### **A patient tracking system:**

A patient tracking system (also called patient identification system) allows a healthcare provider to log and monitor the progress of a person through the provision of care during their stay there. Such systems are part of an overall information system and may interact with the person's electronic health record, where information specific to the person is stored, the system used by radiology departments to track patients as well as the system storing medical images, the pathology laboratory information management system, as well as patient check-in and check-out systems.

Increasingly people as well as biopsies and associated equipment are tagged in various ways, for example with radio-frequency identification tags.

A given floor or ward may use a white board as its system to track the status of all the people being cared for; for example, in an obstetrics ward, each mother in labor is listed, along with her status and the time she was last checked.

Annexure- II

**Certificate course on Hospital information system and MIC05**

**List of Students Enrolled July 2017 – September- 2017**

<b>2<sup>nd</sup> Year MBBS Student</b>			
<b>Sl. No</b>	<b>Name of the Student</b>	<b>Roll No</b>	<b>Signature</b>
1	AARTHI.A	U16MB251	<i>AA</i>
2	ABILASHA.K	U16MB252	<i>Abilasha</i>
3	ABITHA RAJLIN J.S	U16MB253	<i>Abitha</i>
4	ADAPALA PRIYANKA	U16MB254	<i>Adapala</i>
5	ADHITHAYA RAJ .N	U16MB255	<i>AD</i>
6	AJAY .N	U16MB256	<i>Ajay</i>
7	AKSHYA .R	U16MB257	<i>Akshya</i>
8	ALLARI KARTHIK ABHIROOP	U16MB258	<i>Allari</i>
9	AMAL ASHOK	U16MB259	<i>Amal</i>
10	AMIRTHAVARSHNI .R	U16MB260	<i>(A)</i>
11	ANANYA SHARMA	U16MB261	<i>Ananya</i>
12	ANGALAKUDURU DEEPCHAND	U16MB262	<i>Deepchand</i>
13	ANJAN BANERJEE	U16MB263	<i>Anjan</i>
14	ANWESHA CHATTERJEE	U16MB264	<i>Anwesha</i>
15	ARCHANA .A	U16MB265	<i>Archana</i>
16	ARCHITHA.A	U16MB266	<i>Architha</i>
17	ARIVUMATHI .R	U16MB267	<i>Arivumathi</i>
18	ARJUN.S	U16MB268	<i>Arjun</i>
19	ASHVANTH KUMAR .A	U16MB269	<i>Ashvath</i>
20	ASMITHA S.V	U16MB270	<i>Asmitha</i>

*S. S. S.*  
**RESOURCE PERSON**

*Samadhi*  
**COORDINATOR**





**SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH**

Annexure - III

LIGHT MICROSCOPE & ITS APPLICATIONS

MULTIPLE CHOICE QUESTIONS

Ananya Sharma

Course Code: MIC05

I. ANSWER ALL THE QUESTIONS

1. What is Hospital information system

HIS is an element of health informatics that focuses mainly on the administrative

2. What are the benefits of HIS

- Improved Information access
- Increased healthcare professional

3. What are the risk factors of HIS

The most critical threat is power failure of the server.





**SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH**

Annexure - III

LIGHT MICROSCOPE & ITS APPLICATIONS

Ayaz N

MULTIPLE CHOICE QUESTIONS

Course Code: MIC05

I. ANSWER ALL THE QUESTIONS

1. What is Hospital information system

is an element of health Information

2. What are the benefits of HIS

- Improved quality of healthcare.
- Improved clinical management.

3. What are the risk factors of HIS

- Air conditioning failure.
- System & network software failure.



## AnnexureIV

### Student Feedback Form

Course Name: **Hospital information system**

Subject Code: **MIC05**

Name of Student: Ajay N Roll No.: U16MB256

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

SI. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear			✓		
2	Course contents met with your expectations				✓	
3	Lecturer sequence was well planned			✓		
4	Lectures were clear and easy to understand				✓	
5	Teaching aids were effective				✓	
6	Instructors encourage interaction and were helpful				✓	
7	The level of the course				✓	
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Date: 27/9/17

Ajay  
Signature/



## AnnexureIV

### Student Feedback Form

Course Name: **Hospital information system**

Subject Code: **MIC05**

Name of Student: Ananya sharma Roll No.: VIGNB261

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear			✓		
2	Course contents met with your expectations				✓	
3	Lecturer sequence was well planned				✓	
4	Lectures were clear and easy to understand				✓	
5	Teaching aids were effective			✓		
6	Instructors encourage interaction and were helpful				✓	
7	The level of the course				✓	
8	Overall rating of the course	1	2	3	4	5

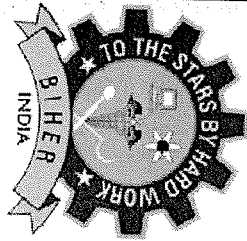
\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Date: 27/9/17

Signature Ananya





# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that Ajay N has

actively participated in the Value Added Course on Hospital information system – June  
2017 to December 2017 Organized by Sri Lakshmi Narayana Institute of Medical Sciences,  
Pondicherry - 605 502, India.

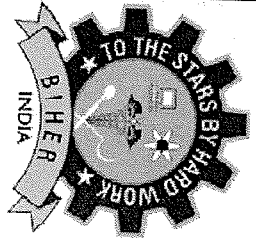
Dr. S. Jayapradha

RESOURCE PERSON

Dr. Kamatchi

COORDINATOR





# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that Aranya Sharma has

actively participated in the Value Added Course on Hospital information system – June  
2017 to December 2017 Organized by Sri Lakshmi Narayana Institute of Medical Sciences,  
Pondicherry- 605 502, India.

Dr. S. Jayapradha

RESOURCE PERSON

Dr. Kamatchi

COORDINATOR



Date : 28.09.2017

From  
Dr.S.Jayapradha  
Department of Microbiology,  
Sri Lakshmi Narayana Institute of Medical Sciences, Pudhucherry  
Bharath Institute of Higher Education and Research, Chennai.

Through Proper Channel

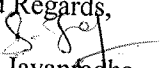
To  
The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences, Pudhucherry  
Bharath Institute of Higher Education and Research, Chennai.

**Sub: Completion of value-added course : Hospital information system**

Dear Sir,

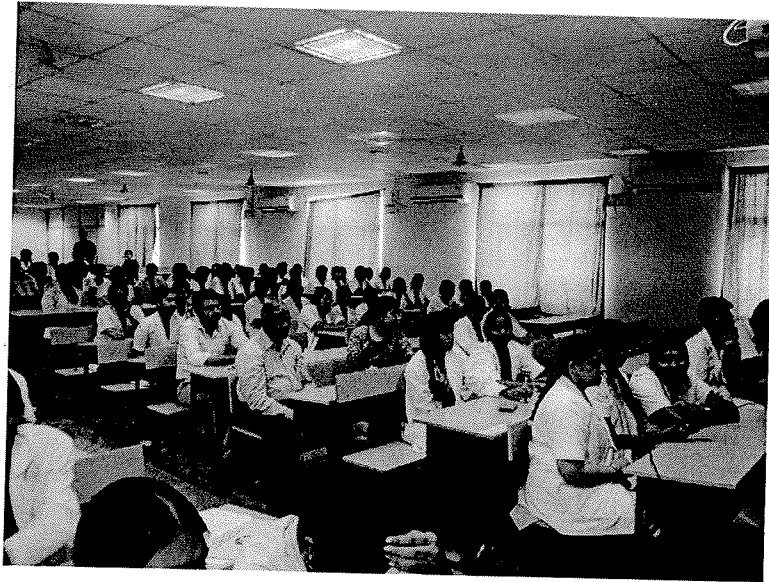
With reference to the subject mentioned above, the department has conducted the value-added course titled Hospital information system for 20 students. We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards,

  
Dr.S.Jayapradha

**Encl: Certificates & photographs**









## Sri Lakshmi Narayana Institute of Medical Sciences

Date: 04.05.2017

From  
Dr. Nithianandam  
Professor and Head,  
Department of Anaesthesia  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research  
Puducherry

To  
The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Puducherry

### Sub: Request for Permission to conduct value-added course: Research Methodology

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: RESEARCH METHODOLOGY for undergraduates from July- December 2017. We solicit your kind permission for the same.

Kind Regards

Dr. NITHIANANDAM, S

### FOR THE USE OF DEANS OFFICE

Names of Committee members for evaluating the course:

The Dean: Dr JAYALAKSHMI

The HOD: Dr.NITHIANANDAM. S

The Expert: Dr JALAKANDAN

The committee has discussed about the course and is approved.

Dean

Dr. G. JAYALAKSHMI, BSC., MBBS., DTCO  
DEAN  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Ageram Kudapakkam, Post,  
Villanur Commune Puducherry-605 502.

Subject Expert

DEPARTMENT OF ANAESTHESIOLOGY  
SRI LAKSHMI NARAYANA INSTITUTE  
OF MEDICAL SCIENCES  
OSUDU, KUDAPAKKAM, PUDUCHERRY-605 502

HOD

Head of Dept. Anaesthesiology  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry - 605 502.



OFFICE OF THE DEAN

## Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P -II ) dt. 11/07/2011 ]  
[ Affiliated to Bharath University, Chennai - TN ]

### Circular

06.06.2017

#### **Sub: Organizing Value-added Courses: Research Methodology - reg**

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research**, is organizing “ **RESEARCH METHODOLOGY**” course. The course content is enclosed below.”

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before 15/06/2017. Applications received after the mentioned date shall not be entertained under any circumstances.



**Dean**

**Dr. G. JAYALAKSHMI**, BSC., MBBS., DTCD, M  
DEAN

Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Ageram Kudapakkam, Po  
Villanur Commune Pudukkottai

Encl: Copy of Course content.

## **COURSE PROPOSAL**

**Course Title: HOSPITAL INFECTION CONTROL**

**Course Objective:**

1. To enable the students to learn about understanding what is research, what are the different types of clinical studies, to know how to frame a research question and understand various steps involved in conducting a clinical study.
2. To familiarize and update themselves with ongoing research activities in different subjects.

**Course Outcome:**

On successful completion of the course the students will have skill in framing research questions and to conduct any clinical research of their choice

**Course Audience: II year MBBS students**

**Course Coordinator:** Dr S NITHIANANDAM

**Course Faculties with Qualification and Designation:**

- 1 Dr Nithianandam-Professor and HOD
- 2 Dr. Jalakandan-Associate Professor

**Course Curriculum/Topics with schedule (Min of 30 hours)**

S.No	Date	Topic	Time	Hours	FACULTY
1	08.07.2017	Introduction to HR methods	2-4PM	2	Dr Nithianandam
2	15.07.2017	Definition and role of research	2-4PM	2	Dr. Jalakandan
3	22.07.2017	Objective of research	2-4PM	2	Dr Nithianandam
4	29.07.2017	Research question framing	2-4PM	2	Dr. Jalakandan
5	05.08.2017	Literature review methodology	2-4PM	2	Dr Nithianandam
6	12.08.2017	Proposal submission to scientific committee	2-4PM	2	Dr. Jalakandan
7	19.08.2017	Proposal submission to ethical committee	2-4PM	2	Dr Nithianandam
8	26.08.2017	Randomization / blinding	2-4PM	2	Dr. Jalakandan
9	02.09.2017	Data collection and entry	2-4PM	2	Dr Nithianandam
10	09.09.2017	Statistical analysis for calculating p value	2-4PM	2	Dr. Jalakandan
11	16.09.2017	Decoding data analysis	2-4PM	2	Dr Nithianandam
12	23.09.2017	Discussion of findings with literature support	2-4PM	2	Dr. Jalakandan
13	30.09.2017	Strength/ weakness of study implication	2-4PM	2	Dr Nithianandam
14	07.10.2017	References: vancouver style	2-4PM	2	Dr. Jalakandan
15	14.10.2017	Publications	2-4PM	2	Dr Nithianandam

**REFERENCES:**

- 1) Research methodology :An introduction, Wayne Goddard, Stuart Melville, Juta and Company Ltd, 2004
- 2) Case study: A strategic research methodology, Khairul Baharein Mohd Noor, American journal of applied sciences 5(11),1602-1604,2008.
- 3) Fundamental of research methodology and statistics ,Yogesh Kumar Singh, New Age International, 2006.

## VALUE ADDED COURSE

**1. Name of the program & Code**

RESEARCH METHODOLOGY, ANAES 05

**2. Duration & Period**

30 hrs: July 2017- December 2017

**3. Information Brochure and Course Content of Value Added Courses**

*Enclosed as Annexure- I*

**4. List of students enrolled:**

*Enclosed as Annexure- II*

**5. Assessment procedures:**

Multiple choice questions- *Enclosed as Annexure- III*

**6. Certificate of Participation:**

*Enclosed as Annexure- IV*

**7. No. of times offered during the same year:**

1 Time JULY 2017-DEC 2017

**8. Year of discontinuation: 2018**

**9. Summary report of each program year-wise**

Value Added Course- July 2017- December 2017					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	ANAES 05	RESEARCH METHODOLOGY	DR. JALAKANDAN	II MBBS	20

**10. Course Feed Back**

*Enclosed as Annexure- V*

**RESOURCE PERSON**

**DR. JALAKANDAN**

**COORDINATOR**

**Dr S NITHIANANDAM**

## ANNEXURE I

### RESEARCH METHODOLOGY

#### 1. Introduction to human research

##### Introduction

Scientific research on humans includes investigation of the human body and behavior and the effect of various medications and treatments on humans. Research takes place in a laboratory, at home, or in a medical office of hospital.

Controversy surrounds discussion of the permissible ways to do human research and the nature of the proper relationship between researchers and subjects.

##### Categorizing Human Research

A traditional distinction in the natural sciences (for example, physics and chemistry) is between pure research and applied research, which mirrors a similar distinction between pure science and applied science. Pure research is done only to advance knowledge, while applied research tries to find solutions to specific problems or apply scientific knowledge to the development of technology to use in the world.

Scientists doing human research do both, but the type of research most likely in a clinical setting is applied research. Medical researchers often test new drugs and treatments to find out if they are safe and effective.

Among such research trials, a commonly-held distinction is between therapeutic and nontherapeutic research. Therapeutic research is intended to benefit some or all of the specific research subjects (at least it is hoped it will). Nontherapeutic research is intended to increase knowledge and may

benefit individuals in the future who take the medication or treatment in question, for instance, but the research is not intended to benefit the specific research subjects. The research subjects in therapeutic research will likely be suffering from some disease that the treatment being tested might help or cure. This is probably not the case in nontherapeutic research.

### Moral Problems with Previous Research

Some research done in the past is now universally condemned as having harmed and wronged the subjects. Enemy soldiers were experimented on during the Second World War by various countries, notably Nazi Germany and Japan. The Nazi doctor Joseph Mengele carried out immoral experiments on civilians, harming and killing them in the process.

A number of things were obviously immoral about the Nazi experiments, including the facts that subjects were not free to refuse to participate and that researchers took little or no precautions against harming subjects during the research. In fact, some research seemed intent on measuring what happened when subjects were intentionally harmed. And some research seemed more the result of perverse and sadistic tendencies among Nazi researchers than for any meaningful scientific purpose.

Though not comparable to the Nazi research atrocities, the history of human research in the United States is not completely blame free. The famous "Tuskegee Syphilis Experiment" of 1932-1972 deceived and harmed African-American males in Alabama. There are numerous other examples of research on human subjects in the United States now commonly considered to have been immoral. Common problems were the anticipated harming of subjects, subjecting subjects to risks without their

informed consent, and outright deception of subjects about the nature of the research and whether or not they were receiving treatment.

As a result of the above research abuses various corrective measures were taken and standards were created, including the Nuremberg Code, the Helsinki Declaration, the Belmont Report, and the use of institutional review boards. The Nuremberg Code stresses the need to inform human subjects of the nature of the research, disclose any risk of harm, avoid unneeded risk to the subjects, and obtain voluntary consent from the subjects. The research must be justified by aiming to benefit society, and some levels of harm to subjects cannot be justified no matter how noble the aim. The Helsinki Declaration carries on the tradition of the Nuremberg code and adds that subjects and their rights must be treated with respect. The well-being of the subjects takes precedence over the goals of the research. In contrast to Nuremberg, Helsinki allows possible exceptions to the requirement of obtaining voluntary consent from the subjects. Research might be done on minors and those with mental impairments, for example, where the whole population under study cannot give consent, but proxy consent must be obtained from guardians. To safeguard the subjects, ethical review committees should be used.

The Belmont Report in the United States in the 1970's highlights three important principles to guide medical care of patients (therapy) and biomedical research on subjects: respect for persons, beneficence, and justice. Respect for persons incorporated what is now known as respect for autonomy (freedom of choice), and beneficence (doing good, benefiting the subject) included what is now known separately as non-maleficence (refraining from harming the subject). Though the same principles guide how physicians treat patients and how researchers should treat subjects,

the Belmont Report recognizes that “medical or behavioral practice” (therapy) is different than research. The former provides diagnosis, prevention, and therapy to benefit specific individuals, while research only need contribute to knowledge in general. Both contexts should be governed by the principles, including that of beneficence. But some critics believe the Belmont Report does not clarify sufficiently whether and how research must or may not benefit the specific research subject.

### Conflicts Between Therapy and Research

Stemming from the work of the Belmont Report, the ethicists Beauchamp and Childress popularized the relevance of the principles of respect for autonomy, beneficence, non-maleficence, and (distributive) justice for both clinical practice and medical research. The common view became that the behaviors of both physicians providing treatment and researchers conducting trials should be governed by these principles, even though therapy and research have different goals. So when trying to map out ethical research, thinkers tried to adapt principles that were more commonly thought of as applying to medical practice. Sometimes they had to be interpreted slightly differently for this to work.

To some extent it is understandable one might try to use the same principles. Not all research trials are done in a lab by scientists -- physicians treating patients may at the same time be carrying out clinical research trials on those patients. This is a common way to test the safety and efficacy of new medications and other medical treatments and of course is done only with the consent of the patients. Many trials done by physicians on their patients fall under the category of therapeutic research because the patients have a disease the tested treatment might help or cure.

But it has by now become apparent to some thinkers that perhaps slightly different moral principles are needed for health research than are needed for healthcare practice. Some believe there is a conflict between the two roles the provider is forced to assume in that they may demand conflicting obligations of the provider. The role of therapist demands the provider provide the best possible treatment for a patient. This is commonly held to be implied by the principle of beneficence, here “specific beneficence” because it applies to a specific patient. On the other hand, as a researcher, even in therapeutic research, the provider may be forced to give a patient less than the best possible treatment. (The duty of beneficence in the research context usually is interpreted to mean not that the researcher provide the best possible treatment for the specific subject, but only that the research in general be intended to benefit humanity.) Hence the provider as therapist will be at war with the provider as researcher.

This situation may come about in a common form of research known as a randomized controlled trial (RCT). In such a trial a new drug, for instance, is tested either against the existing standard of care or against a “dummy” pill, a placebo. (The placebo is considered the “gold standard” for such trials.) The research subject is not told which treatment they are getting – the new drug or the alternative. Now if the patient gets a placebo, and in fact it is not as good as the new drug, then the patient gets less than the best treatment. If instead the trial pits the new drug against the existing standard of care, and the patient receives either one, when the other one is better, then the patient still gets less than the best treatment. But recall that the physician, as therapist, is obligated to always give the patient the best treatment.

There seem two ways to look at this problem. One way is to claim it is not a real problem because of the doctrine of “ equipoise.” The other way is to allow that there is a problem and to locate the problem in the fact that therapy is not research, even therapeutic research, the two endeavors should not have the same set of moral principles to guide them, and as long as a physician tries to use patients for research trials there will be a conflict.

Equipoise is a state of balance between options, or a neutrality or suspension of judgment because the evidence does not favor one side or the other. Some thinkers believe that if the physician claims equipoise (“theoretical” equipoise) or the medical community claims equipoise (“clinical” equipoise) then this absolves the physician from the charge of not providing the best available treatment for their patients when those patients are research subjects in a clinical trial. In such a trial, the physician personally and/or the medical community as a whole does not know whether the new drug, for instance, is really better or worse than the standard of care or than a placebo. So it is not as if the physician is intentionally giving the patient less than the best treatment. The patient may get the new drug or what it is tested against, and no one knows which one is better.

Others claim that citing equipoise does not solve the problem in all possible situations. If the drug is tested against a placebo, the fact is that some of the patients will get the placebo, but also consider there may have been a third alternative, the existing standard of care, and those patients would have received that if they were not in the trial. The standard of care is likely better than the placebo. So if the patients get the placebo in the trial instead of getting the standard of care, then in fact the physician is not

giving those patients the best treatment possible. Furthermore, there is the possibility that the new drug is worse than the standard of care, meaning that in a trial testing the new drug against the standard of care (instead of a placebo) there is the possibility the patient does not receive the best available treatment. But when a physician takes on a patient the physician incurs an obligation to provide the best possible care, not guide the patient into an experiment that puts the patient at risk of receiving less or even of being harmed by the treatment in the hope that they will be lucky enough to get a cure.

The unsettling thought of a patient who as a research subject gets less than the standard of care is a reason the World Medical Association has called for using the standard of care instead of placebos in such clinical trials. Some thinkers believe equipoise is unrealistic to expect anyway. If the new drug is being tested on people, it must have shown some promise in earlier studies already. So how can one suspend judgment about whether it is likely to be better?

Those who reject the equipoise argument believe the problem is that the goal of therapy is not the goal of research, even therapeutic research. The physician is in conflict about the two roles. The physician's obligation is to the patient, the researcher's obligation is to gaining knowledge through the research. In therapeutic research a patient might hope to receive a newly discovered superior treatment, but that is not the goal of the research trial. There is nothing morally wrong about using placebos in research because research is not therapy. Any help the research subject gets from the treatment is incidental. (Miller and Brody.)

The Therapeutic Misconception?

Researchers talk of the “therapeutic misconception.” This occurs when despite cautions from the researcher to the subject that the goal of the research is primarily scientific knowledge and the treatment the subject receives is not intended as therapy, many patients develop the belief that the treatment is going to help them. The patient can even come to believe the primary purpose of the research is to treat them.

Physicians and researchers ponder studies showing that the therapeutic misconception is widespread. But what is perhaps ironic is that researchers and ethicists wonder why this happens when in fact physicians and other researchers themselves talk of “therapeutic research” and researchers are often physicians whose research subjects are their very own patients who are coming to them for treatment. Is it any wonder a subject with an illness participating in medical research being done by their own physician hopes and begins to believe that the treatment is going to help them?

Could researchers be expecting too much of their subjects? Why would anyone volunteer as a research subject anyway? Some people are genuinely altruistic and willing to accept considerable risk for the sake of science, and other people value the small compensation for time and trouble that some research subjects receive, but aside from that, the only motivation to participate is some version of the therapeutic misconception. If you are ill, why accept possibly significant risk except because the treatment just might be a cure for the disease you have? The therapeutic misconception helps recruit research subjects.

### New Principles of Medical Research

Some researchers and ethicists believe the four traditional principles of biomedical ethics are more suited to the physician-patient relationship than

the researcher-subject relationship. For example, Emanuel, Wendler, and Grady propose the following as principles for research:

1. The research must have scientific or social value
2. The research must be scientifically valid
3. The selection of subjects must be fair
4. The research benefits and risks must be in a favorable ratio
5. The research should be subject to independent review
6. The research subjects must provide informed consent
7. The research subjects must be treated with respect

## 2. Definition and role of research

### Analysis of Existing Data or Specimens

If you're using coded private information, data, or specimens, NIH will consider your research to involve human subjects unless it meets both of the following conditions:

- You are not collecting samples by interacting or intervening with living people.
- None of the investigators, collaborators, or co-authors have access to any information (data or biospecimens) that can re-identify subjects.

### Toolkit for Analysis of Existing Data

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### Observational Studies

In an observational study, the investigator simply records observations and analyzes data, without administration of an intervention or alteration of the care people receive. These studies may focus on risk factors, natural history, variations in disease progression or disease treatment without

delivering an intervention. They often assess specific health characteristics of the enrolled human subjects by collecting medical/dental history, exposure, or clinical data; obtaining biospecimens (e.g., for biomarker or genomic analyses); or obtaining photographic, radiographic or other images from research subjects.

## [Toolkit for Observational Studies](#)

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### **Interventional Studies**

In an interventional study, the investigator manipulates the subject or the subject's environment for the purpose of modifying one or more health-related biomedical or behavioral processes and/or endpoints. The NIH defines a [clinical trial](#) as a research study in which one or more human subjects are prospectively assigned to one or more interventions.

### 3. Objectives of research

Different types of clinical research are used depending on what the researchers are studying. Below are descriptions of some different kinds of clinical research.

**Treatment Research** generally involves an intervention such as medication, psychotherapy, new devices, or new approaches to surgery or radiation therapy.

**Prevention Research** looks for better ways to prevent disorders from developing or returning. Different kinds of prevention research may study medicines, vitamins, vaccines, minerals, or lifestyle changes.

**Diagnostic Research** refers to the practice of looking for better ways to identify a particular disorder or condition.

**Screening Research** aims to find the best ways to detect certain disorders or health conditions.

**Quality of Life Research** explores ways to improve comfort and the quality of life for individuals with a chronic illness.

**Genetic studies** aim to improve the prediction of disorders by identifying and understanding how genes and illnesses may be related. Research in this area may explore ways in which a person's genes make him or her more or less likely to develop a disorder. This may lead to development of tailor-made treatments based on a patient's genetic make-up.

**Epidemiological studies** seek to identify the patterns, causes, and control of disorders in groups of people.

An important note: some clinical research is "outpatient," meaning that participants do not stay overnight at the hospital. Some is "inpatient," meaning that participants will need to stay for at least one night in the hospital or research center. Be sure to ask the researchers what their study requires.

### **Phases of clinical trials: when clinical research is used to evaluate medications and devices**

Clinical trials are a kind of clinical research designed to evaluate and test new interventions such as psychotherapy or medications. Clinical trials are often conducted in four phases. The trials at each phase have a different purpose and help scientists answer different questions.

- **Phase I trials**  
Researchers test an experimental drug or treatment in a small group of people for the first time. The researchers evaluate the treatment's safety, determine a safe dosage range, and identify side effects.

- **Phase II trials**  
The experimental drug or treatment is given to a larger group of people to see if it is effective and to further evaluate its safety.
- **Phase III trials**  
The experimental study drug or treatment is given to large groups of people. Researchers confirm its effectiveness, monitor side effects, compare it to commonly used treatments, and collect information that will allow the experimental drug or treatment to be used safely.
- **Phase IV trials**  
Post-marketing studies, which are conducted after a treatment is approved for use by the FDA, provide additional information including the treatment or drug's risks, benefits, and best use.

### **Examples of other kinds of clinical research**

Many people believe that all clinical research involves testing of new medications or devices. This is not true, however. Some studies do not involve testing medications and a person's regular medications may not need to be changed. Healthy volunteers are also needed so that researchers can compare their results to results of people with the illness being studied. Some examples of other kinds of research include the following:

- A long-term study that involves psychological tests or brain scans
- A genetic study that involves blood tests but no changes in medication
- A study of family history that involves talking to family members to learn about people's medical needs and history.

Diagnostic Trials: This type of research seeks to find better ways to identify and diagnose diseases and other medical conditions. Work in this area is critically important, in that correct and early diagnosis of problems is a key to achieving successful treatments

2. Screening Trials: Screening trials test various methods and ways of identifying and detecting particular health conditions. New diagnostic screening approaches provide widespread public health benefits. Medical research studies are held to prove or disprove new screening techniques which could be used to diagnose current or new disorders.

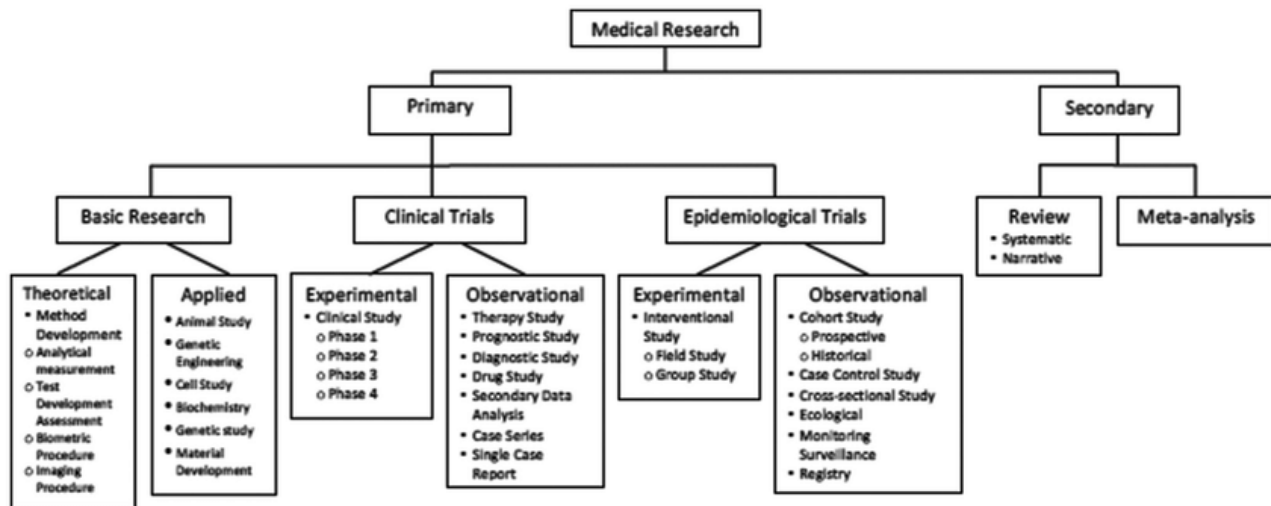
3. Prevention Trials: Prevention is always preferred to treatment, so new methods and approaches to preventing diseases and disorders are constantly being scrutinized and tested. Medical research studies may include the use of new medicines, lifestyle changes, or vaccines. These new approaches are essential in that, generally, preventing a disorder is the best outcome for a patient, and it is cost-effective.

4. Treatment Trials: When people think of medical research studies, they think of treatment trials. This type of medical research study involves testing new treatments, including new medications and vaccines, new approaches and tools for treatment of various diseases and disorders, or use of drug combinations for fighting a particular disease. This type trial is one of the most important of all trial types as new medications and vaccines are made available to the public via these trials. Many of the trials being carried out by DM Clinical Research fall in this category.

5. Behavioral Trials: Many of our modern lifestyle practices and habits lead to difficulties and disorders. Change of lifestyle practices and behavioral modifications often result in great benefits to patients. Certain activities are known to be linked to certain diseases such as smoking and lung cancer.

It's well-known that by quitting smoking, an individual reduces their chances of contracting lung diseases and cancers

6. Quality of Life Trials: This type of medical research trial tests ways to improve the comfort and well-being of people who are suffering from a variety of diseases and disorders. These trials may include methods of pain



management and recovery protocols.

4. Research question framing

5. Literature review methodology

As the phrase suggests, the Seven-Step Model of the CLR comprises seven steps: (a) Step 1: Exploring Beliefs and Topics; (b) Step 2: Initiating the Search; (c) Step 3: Storing and Organizing Information; (d) Step 4: Selecting/ Deselecting Information; (e) Step 5: Expanding the Search to Include One or More MODES (Media, Observation(s), Documents, Expert(s), Secondary Data); (f) Step 6: Analyze and Synthesize Information; and (g) Step 7: Present the CLR Report. These seven steps

are multidimensional, interactive, emergent, iterative, dynamic, holistic, and synergistic.

professional beliefs, knowledge, and experiences) to explore initial key terms associated with this topic to inform their information searches (Step 1). Further, literature reviewers should explore potential information databases, and then, once appropriate databases have been identified, they should search these databases to explore information about the topic and to identify the most appropriate key terms to help focus the search (Step 2). Literature reviewers also should explore what information to select and what information to deselect (Step 4) and expand the search by incorporating one or more of the five MODES (Step 5). While making their journeys to and through Step 5—the final step of the Exploration Phase—literature reviewers should explore how to store and to organize information.

The second phase, Interpretation, involves literature reviewers interpreting the selected information that they extracted via the previous five steps. This interpretation occurs through analysis and synthesis pathways. As the word suggests, this interpretation phase is interpretive because it is the culmination of the analysis, evaluation, and interpretation of selected information sources, which are then synthesized, leading to what Tashakkori and Teddlie (1998) refer to as meta-inferences, which represent inferences from each information source that are combined into a coherent narrative.

The third and final phase, Communication, involves literature reviewers disseminating their literature reviewer reports to the appropriate audience. This dissemination might take the form of a presentation that is delivered via Acting (e.g., performance ethnography wherein the literature review

report is performed via dramatic representations such as plays), Visually (e.g., via drawings, paintings, photographs, videos, multimedia), Orally (e.g., presenting the literature review report in class; presenting the literature review report as part of a thesis/dissertation defense; presenting the literature review report at a research conference by itself, or as part of the presentation of a primary research report), or, most importantly, in Writing (e.g., via a class assignment, thesis/dissertation chapter, research article, book chapter, blog, website, or Internet-based social bookmarking service)—with the printed and/or digital form of the literature review report being stored somewhere (e.g., library, bibliographic database, website). Typically,

the goal here is to make the research report available to one or more others, thereby contributing to the cycle of knowledge generation.

#### Using the Seven-Step Model to Inform Primary Research

As seen in Figure 3.4, the Seven-Step Model can be applied to any or all of the 12 components of a primary research report: problem statement, background, theoretical/conceptual framework, research question(s), hypotheses, participants, instruments, procedure, analyses, interpretation of the findings, directions for future research, and implications for the field. The following sections provide an overview of these applications.

#### Problem Statement

An effective (i.e., research-worthy) problem statement (also called the statement of the problem) is the description of a current and important challenge (i.e., problem) that is confronted by researchers and/or practitioners for which there are no adequate solutions available from the extant literature. Further, a research-worthy problem statement should make clear the nature and scope of the problem that has been identified.

More specifically, the problem statement is a section in a research report that contains the topic for the study, the research problem within this topic, a justification for the problem based on past research and practice, deficiencies or shortcomings of past research or practical knowledge, and the importance of addressing the problem for diverse audiences (Creswell, 2002, p. 650). Clearly, to obtain “a justification for the problem based on past research” and to identify “deficiencies or shortcomings of past research,” a Comprehensive Literature Review is needed.

### Background

It should be obvious that a literature reviewer needs to provide adequate background information to be able to write the literature review section of a primary research report. Thus, we do not need to provide a further explanation here as we hope it is implied!

### Methodology of the Literature Review 57

#### Tool: Overview of the Seven-Step Model

Figure 3.3 illustrates the flow of the Seven-Step Model. This figure also reflects the exploration, interpretation, and communication phases.

As you can see from this figure, Step 3 (Storing and Organizing Information) plays a pivotal role in the literature review process because every selected information source needs to be stored and organized, at least initially. Thus, as can be seen, arrows go from Step 2, Step 4, and Step 5 to Step 3, which indicates that information obtained during Step 2, Step 4, and Step 5 must be stored and organized. Also, arrows go from Step 3 to Step 4, Step 5 (i.e., via Step 4), and Step 6, which indicates that information obtained in previous stages should be stored and organized

before moving to Step 4, Step 5, and Step 6. In the following chapters, you will learn about each of the seven steps to conduct the CLR.

## Exploration Phase

### Step 1

Exploring Beliefs and Topics

### Step 2

Initiating the Search

### Step 3

Storing and Organizing Information

### Step 4

Selecting/ Deselecting Information

### Step 5

Expanding the Search (MODES)

## Interpretation Phase

### Step 6

Analyzing/ Synthesizing Information

## Communication Phase

### Step 7

Presenting the CLR Report

## Applying Concepts

As we outlined in Chapter 1, before the literature review begins, the literature reviewer must determine whether the goal of the literature review is as an end in itself (i.e., as a stand-alone study) or as a study to inform primary research. If the goal is as an end in itself, then the Seven-Step Model will only be used to generate the literature review report (e.g., for written communication, for oral communication). However, if the goal of the



## 6. Proposal submission to scientific committee

Format of submission of Research Project to Institutional Ethics Committee (IEC)

S.No.

1.

Title of the Research Project

2.

Name, designation & address of Principal Investigator/Supervisor

3.

Name, designation & address of CoInvestigators

4.

Name, designation & address of Coinvestigators

5.

Name of the department(s) where research/study will be carried out

6.

Details of the centers involved in multicentre study (applicable to multicentric studies only)

7.

Name & address of Funding Agency

Intramural/Extramural

8.

Details of the budget

9.

Objective(s) of the study

10.

Rationale of conducting the study

11.

## Methodology

12.

Does the project involve :

a. Clinical trial with new drug(s)/device(s) approved by DCGI.

b. Clinical trial with existing drug(s)/device(s) approved by DCGI.

c. Traditional medicine(s) (Ayurvedic/ Unani/ Homeopathic/ Tribal System).

d. Animals will be used. (if YES, refer to IECA)

e. None of the above.

(if“a” is yes, kindly provide details/evidence of experimental & clinical safety of the drug(s)/device(s) )

13.

Does the project involve :

Samples from human (if yes than what is the type of sample  
Animal Work

Celllines

Recombinant Technology

Genetic Information (if yes than explain their ethical concerns)

14.

Are there any anticipated risk(s) during the course of the study (procedural/adverse drug reaction or any other).

(If“yes”, please provide details along with management/compensation of the risk factors).

15.

Does this proposal has clearance from any other scientific committee/agency – (If “yes”, kindly furnish the details)

16.

Conflict of interest of any investigator (If “yes”, please furnish details.

17.

Consent form from the patient (if required than provide the consent form format)

Synopsis of the proposal (format is attached below)

Attach this as a separate annexure

Undertaking / declaration from the Principle Investigator

Attach this as a separate annexure

Intellectual Property Rights (IPR) declaration (format is attached below)

Attach this as a separate annexure

Date : ..... Signature of Principal Investigator/Supervisor

Title:

Principal Investigator:

INTRODUCTION : ( BRIEFLY IN A PARAGRAPH)

REVIEW OF LITERATURE: ( BRIEFLY IN A PAGE WITH PROPER REFERENCES) METHODOLOGY DESCRIBING THE POTENTIAL RISKS

AND BENEFITS: EXPECTED OUT COME AND ETHICAL ISSUES IF THERE IS ANY:

7.Proposal submission to ethical committee

<b>protocol'</b>
------------------

## Research protocol: part 1

### Project summary

Like the abstract of a research paper, the project summary, should be no more than 300 words and at the most a page long (font size 12, single spacing). Provided preferably on a separate page, it should summarize all the central elements of the protocol, for example the rationale, objectives, methods, populations, time frame, and expected outcomes. It should stand on its own, and not refer the reader to points in the project description.

### General information

- Protocol title, protocol identifying number (if any), and date.
- Name and address of the sponsor/funder.
- Name and title of the investigator(s) who is (are) responsible for conducting the research, and the address and telephone number(s) of the research site(s), including responsibilities of each.
- Name(s) and address(es) of the clinical laboratory(ies) and other medical and/or technical department(s) and/or institutions involved in the research

### Rationale & background information

The Rationale specifies the reasons for conducting the research in light of current knowledge. It should include a well documented statement of the need/problem that is the basis of the project, the cause of this problem and its possible solutions. It is the equivalent to the introduction in a research paper and it puts the proposal in context.

It should answer the question of why and what: why the research needs to be done and what will be its relevance. The magnitude, frequency, affected geographical areas, ethnic and gender considerations, etc of the problem should be followed by a brief description of the most relevant studies published on the subject.

References (of literature cited in preceding sections)

References can also be listed at the end of Part 1.

Study goals and objectives

Goals are broad statements of what the proposal hopes to accomplish. They create a setting for the proposal. Specific objectives are statements of the research question(s). Objectives should be simple (not complex), specific (not vague), and stated in advance (not after the research is done). After statement of the primary objective, secondary objectives may be mentioned.

Study design

The scientific integrity of the study and the credibility of the study data depend substantially on the study design and methodology. The design of the study should include information on the type of study, the research population or the sampling frame, and who can take part (e.g. inclusion and exclusion criteria, withdrawal criteria etc.), and the expected duration of the study

Note: The same study can be described in several ways, and as complete a description of the study as possible should be provided. For example, a

study may be described as being a basic science research, epidemiologic or social science research, it may also be described as observational or interventional; if observational, it may be either descriptive or analytic, if analytic it could either be cross-sectional or longitudinal etc. If experimental, it may be described as a controlled or a non controlled study. The link below provides more information on how to describe a research study.

[Guidelines on submitting research proposals for ethics review](#)

[Guidance for submissions of documents](#)



14 OCTOBER 2020

[A practical guide for health researchers](#)

This comprehensive guide to health research reaches out to a wide spectrum of people: students who wish to learn the basic principles of health research...

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[Read More](#)

## Methodology

The methodology section is the most important part of the protocol. It should include detailed information on the interventions to be made, procedures to be used, measurements to be taken, observations to be made, laboratory investigations to be done etc. If multiple sites are engaged in a specified protocol, methodology should be standardized and clearly defined.

Interventions should be described in detail, including a description of the drug/device/vaccine that is being tested. Interventions could also be in the realm of social sciences for example providing training or information to groups of individuals.

Procedures could be biomedical (collection of blood or sputum samples to develop a diagnostic test), or in the realm of social sciences (doing a questionnaire survey, carrying out a focus group discussion as part of formative research, observation of the participant's environment, etc.).

Standardized and/or documented procedures/techniques should be described and bibliographic references, if not provided earlier should be provided. Instruments which are to be used to collect information (questionnaires, FGD guides, observation recording form, case report forms etc.) must also be provided.

In the case of a randomized controlled trial additional information on the process of randomization and blinding, description of stopping rules for individuals, for part of the study or entire study, the procedures and conditions for breaking the codes etc. should also be described.

A graphic outline of the study design and procedures using a flow diagram must be provided. This should include the timing of assessments.

### Safety considerations

The safety of research participants is foremost. Safety aspects of the research should always be kept in mind and information provided in the protocol on how the safety of research participants will be ensured. This can include procedures for recording and reporting adverse events and their follow-up, for example. It is useful to remember that even administering a research questionnaire can have adverse effects on individuals.

### Follow-up

The research protocol must give a clear indication of what follow up will be provided to the research participants and for how long. This may include a follow up, especially for adverse events, even after data collection for the research study is completed.

### Data management and statistical analysis

The protocol should provide information on how the data will be managed, including data handling and coding for computer analysis, monitoring and verification. The statistical methods proposed to be used for the analysis of

data should be clearly outlined, including reasons for the sample size selected, power of the study, level of significance to be used, procedures for accounting for any missing or spurious data etc. For projects involving qualitative approaches, specify in sufficient detail how the data will be analysed.

#### Quality assurance

The protocol should describe the quality control and quality assurance system for the conduct of the study, including GCP, follow up by clinical monitors, DSMB, data management etc.

#### Expected outcomes of the study

The protocol should indicate how the study will contribute to advancement of knowledge, how the results will be utilized, not only in publications but also how they will likely affect health care, health systems, or health policies.

#### Dissemination of results and publication policy

The protocol should specify not only dissemination of results in the scientific media, but also to the community and/ or the participants, and consider dissemination to the policy makers where relevant. Publication policy should be clearly discussed- for example who will take the lead in publication and who will be acknowledged in publications, etc.

#### Duration of the project

The protocol should specify the time that each phase of the project is likely to take, along with a detailed month by month timeline for each activity to be undertaken.

#### Problems anticipated

This section should discuss the difficulties that the investigators anticipate in successfully completing their projects within the time frame stipulated and the funding requested. It should also offer possible solutions to deal with these difficulties.

#### Project management

This section should describe the role and responsibility of each member of the team

#### Ethics

The protocol should have a description of ethical considerations relating to the study. This should not be limited to providing information on how or from whom the ethics approval will be taken, but this section should document the issues that are likely to raise ethical concerns. It should also describe how the investigator(s) plan to obtain informed consent from the research participants (the informed consent process).

#### Informed consent forms

The approved version of the protocol must have copies of informed consent forms (ICF), both in English and the local language in which they are going to be administered. However translations may be carried out after the English language ICF(s) have been approved by the ERC. If the research

involves more than one group of individuals, for example healthcare users and healthcare providers, a separate specifically tailored informed consent form must be included for each group. This ensures that each group of participants will get the information they need to make an informed decision. For the same reason, each new intervention also requires a separate informed consent form.

## **Research protocol: part 2**

### Budget

The budget section should contain a detailed item-wise breakdown of the funds requested for, along with a justification for each item.

### Other support for the project

This section should provide information about the funding received or anticipated for this project from other funding organizations.

### Collaboration with other scientists or research institutions

### Links to other projects

### Curriculum Vitae of investigators

The CV of the Principal investigator and each co-investigators should be provided. In general each CV should not be more than one page, unless a complete CV is specifically requested for.

### Other research activities of the investigators

The Principal investigator should list all current research projects that he/she is involved in, the source of funding of those projects, the duration of those projects and the percentage of time spent on each.

Financing and insurance

Financing and insurance if not addressed in a separate agreement, and where relevant should be described.

8. Randomisation and blinding

## **Chapter 11 Randomization, blinding, and coding**

Go to:

### **1. Introduction to randomization, blinding, and coding**

As discussed in Chapter [4](#), the random allocation of participants in a trial to the different interventions being compared is of fundamental importance in the design of investigations that are conducted to produce the highest-quality evidence of any differences in the effects of the interventions. Only if the units to which the interventions are applied (for example, individuals, households, or communities) are randomized between the interventions under study and the study is of a sufficient size is it possible to be confident that differences in the outcome measures of the trial among those in the different intervention groups are due to the effects of the interventions, rather than to underlying differences between the groups. Randomization should ensure that any potential confounding factors, whether known or unknown, are similarly distributed in each of the intervention groups and

therefore cannot bias the comparisons of outcome measures between the groups.

Randomization, if done properly, eliminates the possibility of subjective influence in the assignment of individuals to the different intervention groups. Sometimes 'pseudo-randomization' methods are employed in trials for reasons of convenience such as alternate assignment of the different interventions to successive trial entrants or allocation based upon the date of birth or date of entry (with, say, one intervention being assigned to those reporting on even dates and another to those reporting on odd dates). However, proper randomization is superior to any systematic method of allocation, and these other methods should be avoided, unless there are very compelling reasons for using them. With systematic allocation, it is possible for the investigator, and sometimes the participant, to know in advance the group to which a participant will be allocated, and this may introduce conscious or unconscious bias into the allocation procedure. For example, such knowledge may affect the investigator's judgement as to whether or not an individual is eligible for entry into a particular trial. For this reason, it is essential that the randomization is done (or the randomization allocation is revealed to the investigator) only *after* it has been ascertained both that an individual is eligible for entry into a trial and also that he or she is prepared to participate in the trial, no matter which intervention is assigned.

As ([Schulz 1995](#)) pointed out, the success of randomization depends on two interrelated processes. The first entails generating a sequence by which the participants in a trial are allocated between intervention groups. To ensure unpredictability of that allocation sequence, it should be generated by a random process. The second process *allocation*

*concealment* shields those involved in a trial from knowing upcoming assignments in advance, so that investigators cannot change who gets the next assignment, potentially making the comparison groups less equivalent and thus biasing the measurement of the effects of the intervention.

In this chapter, various ways are described in which interventions may be randomly assigned among trial participants. The simplest method, if there are two intervention groups, is by using a procedure which is equivalent to tossing a coin to decide the allocation for each individual unit. This can either be done literally, or an equivalent procedure may be simulated using a table of random numbers or by using a computer to generate random numbers, as described in Section [2.1](#). In large trials, the use of such a simple randomization procedure is highly likely to ensure that there are nearly equal numbers of units allocated to the different intervention groups and the distribution of potentially confounding factors will be similar in all groups. However, if the total number of units in a study is small, such an assignment procedure may result by chance in the compositions of the different intervention groups being markedly different with respect to factors that may affect the outcome measures in the trial, or markedly unequal numbers of participants may be recruited to each intervention group. Such imbalance may arise by chance as, for example, it is possible that, if a coin is tossed ten times, it will come down heads, say, only twice. In fact, the chance that it will come down exactly heads five times and tails five times is only about 25%. For trials involving several hundreds of participants or more, any such imbalance is likely to be small and can be taken into account in the analysis of the trial. In a small trial, imbalance may make the trial more difficult to interpret, and it is advisable to design the randomization procedure to ensure balance. For this purpose, 'restricted' or

'blocked' randomization (see Section [2.2](#)) can be used to ensure balance in group sizes. Blocked randomization also helps to achieve balance on time sequence and, in multicentre trials, study site. Stratum-matched designs (see Section [2.3](#)) can be employed to produce balance in the composition of the groups, with respect to those variables on which the matching is based.

The techniques described in Sections [2](#) and [3](#) may be used whether the intervention is assigned to communities or to individuals. However, when communities are randomized, as in cluster randomized trials, the number of randomization units (communities) may be relatively small (often 20 or less), and more sophisticated methods of randomization have been devised to reduce sources of potential bias in the allocation of interventions in such trials. These methods are summarized in Section [3](#).

Whenever possible, intervention studies should be both randomized and *double-blind*, i.e. neither the participants nor the investigator should know to which group each participant has been allocated. This guards against biases that may result from knowledge of the intervention affecting the way an individual behaves, is treated, or is monitored during the trial, or assessed during, or at the end of, the trial. Blinding is discussed in Section [4](#). In Section [5](#), there is a discussion of coding systems for recording intervention allocation that may be used in trials.

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## **2. Randomization schemes for individual participants**

### **2.1. Unrestricted randomization**

Simple random allocation of individuals between the different intervention groups is carried out most conveniently by using a computer. For example, in Microsoft Excel, the instruction '= RANDBETWEEN(1,3)' will produce a

random number between 1 and 3, i.e. each of the numbers 1, 2, or 3 has an equal chance of being generated. The equivalent of tossing a coin is = `RANDBETWEEN(1,2)`. Some calculators also have a key which generates a random number on the display (usually a decimal number between 0 and 1, so that, for example, the equivalent of coin tossing would be to allocate a number less than 0.5000 as 'heads 'and a number 0.5000 or greater as 'tails').

In large trials, it is common for a centralized randomization system to be used. When an investigator has decided that a participant meets the entry criteria for a trial, and the participant has given informed consent to be randomized to one of the trial interventions, the investigator telephones, or sends a text, to a central office to give the identification details for the participant, and the office then tells, or texts, the investigator to which intervention the participant has been randomly assigned or, in the case of a double-blind trial, the code for the intervention that should be administered to the participant. Systems are now commonly used whereby this process has been automated and does not require an individual to answer the telephone in the central office or for a similar automated procedure to be followed over the Internet. The advantage of this method of intervention assignment is that there is no way in which the investigator can influence the randomization procedure, and if, for example, the investigator decides not to allocate an intervention to a participant after knowing the random assignment, there is a central record of this.

For investigators who cannot set up access to a procedure for remote randomization, a frequently used alternative procedure is for a set of opaque, sealed, and numbered envelopes to be prepared, containing the intervention allocations (or possibly even the actual interventions if these

are, for example, drugs). The envelopes are opened in numerical sequence, as each new person is entered into the trial. Entry criteria must be checked and eligibility satisfied before an envelope is opened, in order to exclude the possibility that the decision to accept a subject into the trial is influenced by the knowledge of the group to which he or she would be allocated. For large trials, the use of envelopes may be too cumbersome. Coding systems and alternative procedures appropriate for use in the case of 'double-blind' designs are discussed in Section [5](#).

Where the study product (for example, drug, vaccine) package is individually numbered and labelled (and randomization has been done before the numbering and labelling and where there is an indistinguishable placebo or control intervention), randomization may simply be achieved by registering each new recruit and assigning them the number on the product package.

In some circumstances, it may be better to design the randomization system, such that it is completely transparent to participants that a random allocation process is being used. A trial may be more acceptable if the trial population is involved in the randomization procedure. For example, in a trial in Ghana, the allocation of insecticide-impregnated bed-nets was randomized, such that, in some communities, all households received a bed-net immediately and, in other communities, the distribution of nets was deferred until a later time ([Binka et al., 1996](#)). At a public meeting involving all of the trial communities, the name of each community was written on a slip of paper. All the slips were put in a bucket, and a child was asked to draw some of the slips from the bucket to determine which communities received the bed-nets first. By using this procedure, it was apparent that the allocation was random and that no favouritism was operating. The

fairness of the procedure was demonstrated to the population by the fact that, by chance, the community in which the area chief resided was not selected for early bed-net allocation (much to the surprise of the population)! (Fred Binka, personal communication.)

Unrestricted randomization is often employed in large trials, as it is likely that any imbalance between the intervention groups with respect to risk factors for the occurrence of the outcomes of interest will tend to even out. Furthermore, it is possible to adjust for any residual imbalance during the analysis of the study without important loss of statistical power.

## **2.2. Restricted randomization**

Although an unrestricted randomization procedure should lead to approximately equal numbers of participants in each group, this is not guaranteed. For example, there is more than a 5% chance that, if 20 participants are allocated to one of two groups at random, six or fewer may be allocated to one group, and 14 or more to the other. A better balance is achieved by using a 'restricted randomization' procedure, also called 'blocked randomization' or 'randomization with balance'. This procedure ensures equal numbers in each group, after there have been a fixed number of allocations. For example, the allocation procedure might be designed in blocks of ten, such that, in every ten allocations, five are to one group and five to the other. The total number of intervention groups must be a multiple of the size of the blocks.

In order to minimize the possibility that an allocation can be deduced from previous allocations, the block size should not be too small (in particular, it should not be two!), and, if possible, it should not be known to the investigator responsible for the administration of the interventions. Indeed, as far as possible, those giving the interventions should not be aware that

blocking has been carried out, or, if the block size is a fixed number, the person giving the intervention would know in advance what the intervention allocation of the last individual or group in the block would be. Another safeguard is to use several different block sizes for allocating interventions in a trial. For example, in a trial with two arms, the block size might be varied, at random, between eight, ten, and 12.

Two different procedures for carrying out restricted randomization are described in Sections [2.2.1](#) and [2.2.2](#), one appropriate for small block sizes and the other appropriate for larger block sizes, say eight or more.

### 2.2.1. Small block sizes

If two interventions, say A and B, are to be allocated using a block size of, say four, it is possible to list all the different possible combinations of the allocations that will yield two As and two Bs. This is illustrated in Table [11.1](#). A number is allocated to each combination, and a random number is chosen to select a particular allocation.

Table 11.1 Example of allocation rule for a block size of four, with two intervention groups A

Allocation	Corresponding random number
AABB	1
BBAA	2
ABAB	3
BABA	4
ABBA	5
BAAB	6

#### Table 11.1

Example of allocation rule for a block size of four, with two intervention groups A and B.

The selection of each random number (between 1 and 6) generates four intervention allocations. Thus, if the random numbers 4, 5, and 1 are

generated, these yield a list of twelve intervention allocations (to be assigned to participants in sequence) (Table [11.2](#)).

<b>Block number</b>	<b>1</b>	<b>2</b>	<b>3</b>
Random number	4	5	1
Allocation sequence	BABA	ABBA	AABB

**[Table 11.2](#)**

Example of random allocation to two groups using a block size of four.

### 2.2.2. Larger block sizes

Listing all possible combinations of allocations within a block becomes unmanageable, as the block size increases. For example, with a block size of ten, there are 252 different possible combinations, each yielding five participants in each of two intervention groups A and B. An alternative approach is necessary therefore. Suppose the block size is to be 12 and six allocations are to be made to group A and six to group B. Random numbers between 1 and 12 are generated, until six different numbers in that range have been generated (numbers that duplicate a previous one are ignored). Algorithms are easily available on the Internet to generate such random numbers. (For example, at <http://www.random.org/integers>, it is straightforward to generate X random integers between Y and Z where the user inserts values for X, Y, and Z.) Thus, we might request six random numbers between 1 and 12 and obtain 1, 2, 4, 7, 11, and 12. Then, the first, second, fourth, seventh, eleventh, and twelfth participants within the block are allocated to one of the interventions, say A, and the other

participants to B. The complete sequence for the block of 12 is shown in Table [11.3](#).

Participant	1	2	3	4	5	6	7	8	9	10	11	12
Intervention	A	A	B	A	B	B	A	B	B	B	A	A

		<a href="#">Table 11.3</a>
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Example of random allocation to two groups using a block size of 12. A similar procedure, with a different set of random numbers, is used to allocate interventions in the next block (i.e. 13 to 24), and so on.

In general, it is better to choose block sizes which are not too large, in order to reduce the risk of a long sequence of individuals being allocated to the same intervention. A maximum block size of 12 is suggested.

### **2.3. Stratified randomization**

If different subgroups of participants, say males and females, have different background rates of disease, it may be desirable to design the allocation procedure such that the interventions are equally divided in each subgroup. This may be achieved through 'stratified' randomization. The population is stratified, for example, by sex or by age group, and the allocation of the interventions is carried out separately in each stratum.

Stratification may be based on more than one factor. For example, there may be a separate allocation of interventions in each of a number of different age–sex groups. The greater the number of strata, the more complex the organization of the randomization is; in general, the number of strata should be kept small. Separate randomization lists will have to be

maintained for each stratum. This may be achieved by using different sets of coloured envelopes, packages, or sticky labels for each stratum.

Stratified randomization should be considered if it is known that there are large differences in disease risk between different groups of individuals in a trial (or in response to treatment in the case of a therapeutic trial) and if it is possible to place individuals in strata corresponding to different levels of risk prior to entry to the trial. The objective of stratification is to try to include in each stratum those at similar risk of disease (or response to treatment) and to randomize between interventions separately within each stratum. In multicentre trials, randomization is often stratified on study site.

Go to:

### **3. Randomization schemes for community or group-based interventions**

As discussed in Chapter [4](#), trial designs have been increasingly employed in recent years, in which the unit of allocation of the intervention is a community or group, rather than an individual. These cluster randomized trials may involve the randomization of communities that can be quite large; consequently, the number of communities that can be included in a trial is often relatively small and may be of the order of 20 communities or fewer. If a method of simple unrestricted randomization is used to allocate interventions to communities, there is a reasonably high chance that there may be differences between the two groups of communities, unrelated to the interventions, that may bias the measurement of the effects of the intervention. It is common therefore to employ some method of restricted randomization in the allocation of interventions to communities (see also Chapter [4](#), Section [4.2](#)).

#### **3.1. Matched-pairs design**

A matched-pairs design is a special case of stratified randomization, in which the strata are each of size two. Communities are matched into pairs, the pairs being chosen so that the two communities in a pair are as similar as possible with respect to potential confounding variables; in the absence of any intervention, the two communities would be expected to have similar incidence rates of the disease or other outcome under study. One member of each pair is assigned at random to one intervention group and one to the other. Similar matching procedures can be employed when there are more than two intervention groups. For example, with three groups, matched triplets would be employed.

Recent research on the design of cluster randomized trials has indicated that, although matched-pairs randomization remains a valid study design, other methods of randomization, such as stratified randomization or constrained (restricted) randomization, discussed in Sections [3.2](#) and [3.3](#), may generally be more appropriate design strategies ([Hayes and Moulton, 2009](#)). The major reason for this is because, if a trial is designed as a matched-pairs study, then it must be analysed as such. In technical terms, pairing reduces the number of 'degrees of freedom' that are available in the statistical comparison of the outcome measures in the intervention and comparison communities, compared to an unmatched design. This has little consequence if the number of communities is large, but, if the number is small, as is typically the case, then matching reduces the statistical power of a trial to detect an intervention effect of a given size (unless the matching factors are very closely correlated with the outcome).

### **3.2. Stratified design**

For the reasons outlined, unrestricted randomization in a cluster randomized trial may lead to imbalance with respect to potential

confounding factors between the different comparison arms of the trial, unless the number of clusters is very large. Pair matching of communities is one way of attempting to overcome this problem to ensure better balance between the arms of the trial, but this strategy may be associated with a substantial loss of statistical power. An intermediate alternative is to adopt a *stratified*, rather than a matched-pairs, design. A stratified design involves the grouping of communities into a number of strata, based on the expected rate of disease in the absence of the intervention. For example, in a study on malaria, communities with high transmission intensity would be put into the same stratum, and those with low transmission intensity would be put into a different stratum. The communities within each stratum are then randomly allocated between the different intervention arms of the trial. In practice, it is often challenging to decide which communities should go into the same stratum. If there are baseline rates available for the disease under study from surveillance or from a previous study, then these may provide a reasonable guide as to the expected rates in the different communities in the absence of the interventions. However, the rates of some diseases may vary substantially from year to year, and what happened in the past may not be a very good guide for what will happen in the future. Quite commonly, such rates are not available, and the investigator has the alternative of conducting a pre-trial study to estimate disease rates in each community or, based on ecological and epidemiological considerations, of making some estimate of what the rates might be. The first of these options adds to the cost of the study, whereas there may be considerable uncertainties regarding the utility and accuracy of the second approach. A fuller discussion of these issues is given in [\(Hayes and Moulton 2009\)](#).

A stratified design is associated with less loss of statistical power than a matched-pairs design and will assist in making the communities in the different arms of the trial more comparable with respect to potential confounding factors. There may still remain some imbalance with respect to these factors, but it is possible to adjust for this in the analysis of the trial, provided, of course, the relevant confounding factors have been measured. Methods for the analysis of cluster randomized trials and the adjustment for confounding factors are beyond the scope of this book and will generally require the input of a specialist statistician.

([Hayes and Moulton 2009](#)) suggest that, in practical situations, it is likely that the use of three or four strata will provide most of the advantages provided by pair matching, such that communities can be very accurately paired with respect to expected disease rates during the trial. With respect to the choice of the number of strata, these authors suggest that there should be no more than two strata if there are six or fewer clusters per arm, and no more than three strata if there are 7–10 clusters per arm.

### **3.3. Constrained randomization design**

A further method of controlling for confounding is to adopt a method known as *constrained* or *restricted* randomization. Consider a trial to be conducted in 12 communities, six of which will be allocated to the intervention under test, the remaining six serving as control communities. Using a simple unrestricted randomization design, six communities would be selected at random to receive the intervention, and the other six would serve as controls. By chance, it might happen that the six intervention communities all turn out to be close to a major highway, and the six control communities are all more distant from the highway. If the disease we are studying might be related to proximity to the highway (for example, HIV infection rates

show this characteristic in some situations), then we may be rather unhappy with this particular selection of intervention communities, as there would be a priori reasons for believing there would be differences in disease rates, irrespective of the effect of the intervention we wanted to test. In these circumstances, we might reject the initial random selection of communities and select another set of random numbers to determine which our intervention communities are. While this strategy may not seem unreasonable, it is clearly dangerous to allow an investigator to override a randomization procedure if he or she does not like the result!

Constrained randomization designs aim to exclude from consideration random allocations that result in unsatisfactory imbalance between communities in the intervention and control arms. In the study already outlined, involving 12 communities, there are 924 possible different allocations of which communities comprise the six in which the intervention will be applied. Conceptually, we could imagine examining each of these possible allocations and deciding which of them we would be happy with and which would cause us concern. Suppose there were, for example, 400 for which there seemed to be a reasonable balance of confounding factors between the putative intervention and control communities. We could restrict our consideration of possible allocations to these 400, and choose one of these at random to be the one that was actually used in the trial. This is the basic principle of the constrained or restricted randomization design.

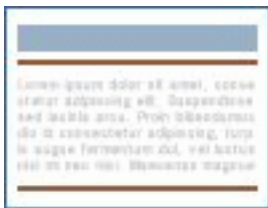
Examining all 924 possible allocations would be a considerable undertaking and would be even more difficult if the total number of communities was more than 12. It is therefore necessary to seek some more automated method of deciding which randomizations are acceptable. In practice, what

is done is to define some key variables for which we wish to achieve reasonable balance across the intervention and control arms. These key variables are then compared in each of the possible randomizations, and a rule is set up to exclude a randomization if the difference between the key variables in putative intervention and control arms is more than some specified amount. Thus, the selection of 'acceptable 'randomizations can be programmed into a computer, so that the selection is done automatically once the acceptability criteria for balance between the intervention and control communities have been defined.

The procedure described as a modification of simple unrestricted randomization can also be incorporated into a stratified design, so that there is a selection of acceptable possible randomizations within each stratum.

Both stratification and restricted randomization can be used to achieve good balance (avoid confounding), but stratification *also* aims to reduce between-cluster (within-stratum) variation, and hence to increase power and precision.

An example of the use of restricted randomization in the design of a trial of an adolescent sexual health intervention carried out in Tanzania ([Hayes et al., 2005](#)) is given in Box [11.1](#).



			<b><a href="#">Box 11.1</a></b>
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Use of restricted randomization in a community randomized trial of an adolescent sexual health intervention in Tanzania.[Go to:](#)

#### **4. Blinding**

Whenever possible, neither the participants nor the investigators should know to which intervention group each participant belongs until after the end of the trial. Such 'double-blind' designs (both the investigator and the participants are blind to the knowledge of who have received each intervention) eliminate the possibility that knowing to which intervention an individual is allocated may affect the way the individual behaves, is treated, or is monitored during the trial, or the way an individual is assessed at the end of the trial. Sometimes, a double-blind trial is not possible, and a 'single-blind' design might be used, in which the investigator knows to which group a participant belongs, but the participant does not.

'Blinded' designs are especially important when those in one of the groups under comparison are given an intervention that is expected to have no effect on the outcome of interest. To maintain blindness in these circumstances, a placebo should be used, if possible, which should look and smell as similar as possible to the intervention itself (and have a similar taste if it is being given orally). Sometimes, an identical-looking placebo cannot be obtained, and, in these circumstances, the investigator and the participants should be kept blind to which treatment is the active one. While this may be the best that can be done in some trials, it is generally undesirable. Either the participants or the investigator may form a view as to which the active treatment is (possibly erroneously), and this may affect differentially the amount of other care given to the participants or the likelihood that a participant reports apparently beneficial or harmful effects. For example, there is evidence that the colour of a tablet may affect the

perceived action of a drug and seems to influence the effectiveness of a drug in some situations ([de Craen et al., 1996](#)).

For some interventions, it may be possible to preserve blindness in the initial phase of a trial, but this may be more difficult later. For example, in placebo-controlled studies of ivermectin against onchocerciasis, it was found that some participants were able to guess that they had received an active drug, rather than a placebo, because of the effect of ivermectin on other helminth infections, such as *Ascaris*, through the passage of worms in their stools, whereas those receiving placebo rarely experienced this effect. In placebo-controlled trials of BCG vaccination, most of those who have received BCG develop a lasting scar, whereas those who have received placebo do not. The possible bias that this might induce in the assessment of whether or not a participant developed leprosy, following vaccination, was overcome in a trial in Uganda by covering the vaccination site with sticking plaster for all participants before each clinical examination ([Brown and Stone, 1966](#)).

For some intervention trials, in which the unit of randomization is the community, the use of a placebo is straightforward and is no different, in principle, from the situation for an individually randomized trial. This was the case, for example, in a cluster randomized trial to assess the impact of regular vitamin A supplementation on child mortality. Those in the control communities received supplementation with an inert liquid that was administered in such a way that it was indistinguishable from the administration of vitamin A ([Ghana VAST Study Team, 1993](#)). For some interventions, however, a suitable placebo may be impossible to find. What would be a suitable placebo for an improved water supply and sanitation programme in a village, for example?

Go to:

## 5. Coding systems

In some circumstances, it may be necessary to break the intervention code for an individual. This might arise, for example, if a severe adverse event becomes manifest and the treatment for it may be influenced by knowledge of what intervention the individual received. The coding system which is used to record which individuals received which intervention should be designed, such that, if it is necessary to break the code for one individual, the blindness of the investigator, with respect to the interventions received by other trial participants, should be preserved. For example, if one intervention is coded A and the other B, breaking the code for one individual effectively breaks the code for all participants (if the investigator knows who has received A and who has received B). The use of a single code for each intervention is generally a poor design. It is better to have a unique code for each participant and to have a separate list linking participant numbers with the intervention allocated, or to have only a very small number of participants sharing the same code number. For example, in a BCG trial in South India for tuberculosis prevention, ampoules (each containing several doses of vaccine) were packed in boxes of three. Each box held three vials containing one of two different vaccine doses or a placebo preparation. The three ampoules were randomly coded 1, 2, and 3. The vaccine received by a participant was coded in the trial records by a combination of the box number and the ampoule number ([Tuberculosis Prevention Trial Madras, 1979](#)). If it had been necessary to break the vaccine code for an individual, it would only have been broken for those participants who received vaccine from the same ampoule in the same box.

The randomization list should usually be prepared in advance of the trial, and the codes assigned by someone other than the PI. If the intervention is a drug or a vaccine, the manufacturer may agree to supervise the packaging and coding, but the allocation procedure should be overseen, and the code should be held during the trial by a disinterested party. Often, the code is held by the data safety and monitoring committee (see Chapter [7](#), Section [4](#)). It is also worth checking, for a random sample of the drugs or vaccines, that the codes are correct and errors have not been made in the packaging.

### **5.1. Individual allocations**

Suppose two interventions are to be allocated between 200 individuals. A good coding scheme would be to choose 100 random numbers between 1 and 200 and allocate these codes for intervention A, say, and allocate the other 100 for intervention B (there may also be some 'blocking' within the total group of 200, say in blocks of size ten; see Section [2.2](#)). When an intervention is allocated to the 127th patient in the trial, they would be given the drugs in envelope number 127, and this would be noted in their trial record. A master list of the interventions corresponding to each number would be kept in a secure place by a third party not directly connected with the trial. If it were necessary to break the code for an individual patient, the third party could do this without revealing any of the other codes to the investigator. Only at the end of the trial would the list be released to the investigator for the analysis of the results of the trial.

### **5.2. Group allocations**

If a trial involves many thousands of participants, it may be logistically too complicated to allocate a separate treatment code number to each participant, though this will depend upon the circumstances, and, in some

cases, having thousands of individual codes poses no problem. An alternative approach is to use a fixed, but not too small, number of codes for the different interventions. If there are  $N$  participants in the trial and  $C$  codes for the interventions, then breaking the code for one participant would break the codes for  $N/C$  in total. For example, the coding system used for a vaccine trial in Venezuela is given in Box 11.2. In this trial, 998 different codes were used (499 for one vaccine and 499 for the other) for about 30 000 participants. Breaking the code for one individual would break it for about 30 others ([Convit et al., 1992](#)).



				<b><u>Box 11.2</u></b>
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Assignment of check letter for three-digit vaccine code. A simpler system might be required if participants had to be given the same intervention on a number of occasions. A method that was used in a trial of ivermectin against onchocerciasis in Sierra Leone was to allocate 20 codes for ivermectin or placebo treatments (A, B, C, D, and so on) ([Whitworth et al., 1991](#)). The drugs were taken to the field in 20 tins, with the code letters on them (ten of which contained ivermectin, and ten contained placebo tablets), and participants were allocated to one of the 20 codes at random. If a participant was allocated, say to code E, then each time they were treated, the dose was taken from tin E. About 1000 patients were included in the trial, so that breaking the code for one individual would have also broken it for  $1000/20 = 50$  others. A similar system was used in a trial of a

pneumococcal vaccine in The Gambia, which involved many thousands of participants, and each participant was scheduled to receive three doses of the vaccine at different times ([Cutts et al., 2005](#)).

With either individual or group allocations, it is helpful if the intervention codes are on removable sticky labels that can be affixed to an individual's form, thus minimizing the likelihood of recording errors. Where possible, the coding system should be devised so that transcription errors in recording may be detected. How this was achieved in the leprosy vaccine trial in Venezuela is illustrated in Box [11.2](#). More commonly now, bar codes are used to identify interventions in trials using drugs or vaccines, and, provided that suitable computer systems are set up, this should eliminate the possibility of transcription errors.

[Go to:](#)

## References

- Binka, F. N., Kubaje, A., Adjuik, M., et al. 1996. Impact of permethrin impregnated bednets on child mortality in Kassena-Nankana district, Ghana: a randomized controlled trial. *Tropical Medicine and International Health*, **1**, 147–54. [10.1111/j.1365-3156.1996.tb00020.x](#) [[PubMed](#)] [[CrossRef](#)]
- Brown, J. A. and Stone, M. M. 1966. B.C.G. vaccination of children against leprosy: first results of a trial in Uganda. *BMJ*, **1**, 7–14. [10.1136/bmj.1.5478.7](#) [[PMC free article](#)] [[PubMed](#)] [[CrossRef](#)]
- Convit, J., Sampson, C., Zuniga, M., et al. 1992. Immunoprophylactic trial with combined *Mycobacterium leprae*/BCG vaccine against leprosy: preliminary results. *Lancet*, **339**, 446–50. [10.1016/0140-6736\(92\)91056-E](#) [[PubMed](#)] [[CrossRef](#)]

- Cutts, F. T., Zaman, S. M., Enwere, G., et al. 2005. Efficacy of nine-valent pneumococcal conjugate vaccine against pneumonia and invasive pneumococcal disease in The Gambia: randomised, double-blind, placebo-controlled trial. *Lancet*, **365**, 1139–46. [10.1016/S0140-6736\(05\)71876-6](#) [[PubMed](#)] [[CrossRef](#)]
- De Craen, A. J., Roos, P. J., Leonard De Vries, A., and Kleijnen, J. 1996. Effect of colour of drugs: systematic review of perceived effect of drugs and of their effectiveness. *BMJ*, **313**, 1624–6. [10.1136/bmj.313.7072.1624](#) [[PMC free article](#)] [[PubMed](#)] [[CrossRef](#)]
- Ghana VAST Study Team 1993. Vitamin A supplementation in northern Ghana: effects on clinic attendances, hospital admissions, and child mortality. *Lancet*, **342**, 7–12. [10.1016/0140-6736\(93\)91879-Q](#) [[PubMed](#)] [[CrossRef](#)]
- Hayes, R. J., Chagalucha, J., Ross, D. A., et al. 2005. The MEMA kwaVijana project: design of a community randomised trial of an innovative adolescent sexual health intervention in rural Tanzania. *Contemporary Clinical Trials*, **26**, 430–42. [10.1016/j.cct.2005.04.006](#) [[PubMed](#)] [[CrossRef](#)]
- Hayes, R. J. and Moulton, L. H. 2009. *Cluster randomized trials*. Boca Raton, Fla.; London: Chapman & Hall/CRC. [10.1201/9781584888178](#) [[CrossRef](#)]
- Schulz, K. F. 1995. Subverting randomization in controlled trials. *JAMA*, **274**, 1456–8. [[PubMed](#)]
- Tuberculosis Prevention Trial Madras. 1979. Trial of BCG vaccines in south India for tuberculosis prevention. *Indian Journal of Medical Research*, **70**, 349–63. [[PubMed](#)]

- Whitworth, J. A. G., Gilbert, C. E., Mabey, D. M., Maude, G. H., Morgan, D., and Taylor, D. W. 1991. Effects of repeated doses of ivermectin on ocular onchocerciasis: community-based trial in Sierra Leone. *Lancet*, **338**, 1100–3. [10.1016/0140-6736\(91\)91963-U](https://doi.org/10.1016/0140-6736(91)91963-U) [[PubMed](#)] [[CrossRef](#)]

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## 9. Data collection and entry

### Data collection, data entry, and analysis

#### Internet-based data collection

The SDMC licenses an advanced survey software package, DatStatIllume, that can manage all aspects of internet-based surveys, including e-mailing invitations to potential study participants, sending reminder emails, and reporting results. The software supports programming surveys with complex skip patterns, multiple drafts, and frequent changes of survey instruments. Survey responses and survey administration variables (e.g., date of completion, time to complete, number of items presented, number of items answered, etc.) are easily extracted and exported to other programs for analysis. Illume also incorporates robust data security safeguards, ensuring compliance with HIPAA requirements and other laws and regulations governing privacy of health and other personal information. The SDMC also serves as the DFCI institutional support group for REDCap Survey software.

#### Mail, telephone, and in-person data collection

SDMC staff offer extensive experience with all aspects of traditional data collection processes. Tailoring the route of mail delivery can have a significant impact on response rates among certain populations, and the

Core can advise you on the optimal method of survey delivery via the various mail routes available. Core staff will assemble all materials for paper surveys, assure proper identification with code assignment to appropriate pieces, and collate and mail the survey. Core staff will also track survey completions/opt-outs and perform subsequent waves of mailings to non-responders according to the research protocol. Response statistics are maintained and available to investigators throughout the process.

### Medical record review and abstraction

SDMC staff can obtain relevant demographic and clinical study data via medical record review, working closely with investigators to tailor data collection efforts to the specific needs of each study. Record review is offered as a stand-alone service (i.e., to an investigator looking to correlate biological data with clinical risk factors and outcomes) or as a complement to projects involving survey methods.

### Data entry

The SDMC offers advanced capabilities for efficient and accurate data entry with quality assurance measures that ensure a clean data set prior to analysis. For some projects, data entry is conducted through automated form scanning using ReMark OCR software.

### Data analysis

The Core provides investigators with descriptive statistical reports as well as univariate and bivariate statistical analyses. The Core maintains Wincross software that produces timely data reports, including sub-group analysis and statistical testing. The Core also works with biostatisticians to preparing and develop datasets in SAS and SPSS for advanced statistical analysis.

## Training and oversight

The SDMC is available to provide training and oversight of project staff involved in data collection, data entry, quality assurance, reporting, and other tasks related to the implementation of both interventional and observational research involving survey data collection.

10. Statistical analysis for calculating p value of significance

### **Introduction to Statistical Analysis Types**

Statistical Analysis is the science of collecting, exploring, organizing, exploring patterns and trends using one of its types i.e. Descriptive Type (for describing the data), Inferential Type (to generalize the population), Prescriptive, Predictive, Exploratory and Mechanistic Analysis to answer the questions such as, “What might happen?”, “What should be done?”, and “Why”, etc. Due to this most of the business relies on these statistical analysis results to reduce the risk and forecast trends to stay in the competition.

### **Different Types of Statistical Analysis**

Given below are the types of statistical analysis:

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- Descriptive Type of Statistical Analysis
- Inferential Type of Statistical Analysis
- Prescriptive Analysis
- Predictive Analysis
- Causal Analysis
- [Exploratory Data Analysis](#)
- Mechanistic Analysis

## 1. Descriptive Type of Statistical Analysis

Descriptive statistical analysis as the name suggests helps in describing the data. It gets the summary of data in a way that meaningful information can be interpreted from it. Using descriptive analysis, we do not get to a conclusion however we get to know what in the data is i.e. we get to know the quantitative description of the data.

For instance, consider a simple example in which you must determine how well the student performed throughout the semester by calculating the average. This average is nothing but the sum of the score in all the subjects in the semester by the total number of subjects. This single number is describing the general performance of the student across a potentially wide range of subject experiences.

Whenever we try to describe a large set of observations with a single value, we run into the risk of either distorting the original data or losing any important information. The student average won't determine the strong subject of the student. It won't tell you the specialty of the student or you won't come to know which subject was easy or strong. In spite of these limitations, Descriptive statistics can provide a powerful summary which may be helpful in comparisons across the various unit.

There are two types of statistics that are used to describe data:

- **Measures of central tendency:** In this, a single value attempts to describe the data by using its central position with the given set. They are also classified as a summary set. In order to get the central value, they use averaging(mean), median or mode.
- **The measure of spread:** In this, the data is summarized by describing how well the data is spread out. For example, if the mean score of 100 students is 55 then there will be students whose score

will be less than 55 or more than 55. Which means their score will be spread out in a way that their mean is 55. To describe the spread, we can use either of the statistical technique i.e. range, quartiles, variation, standard deviation, and absolute deviation.

## 2. Inferial Statistics

The group of data that contains the information we are interested in is known as population. Inferential Statistics is used to make a generalization of the population using the samples. Where the sample is drawn from the population itself. It is necessary that the samples properly demonstrate the population and should not be biased. The process of achieving these kinds of samples is termed as sampling. Inferential Statistics comes from the fact that the sampling naturally incurs sampling errors and is thus not expected to perfectly represent the population.

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There are two types of Inferential Statistics method used for generalizing the data:

- Estimating Parameters
- Testing of Statistical Hypothesis

The above two are the main types of statistical analysis.

### 3. Prescriptive Analysis

“What should be done?” Prescriptive Analysis work on the data by asking this question. It is the common area of business analysis to identify the best possible action for a situation. Its whole idea is to provide advice that aims to find the optimal recommendation for a decision-making process. It is related to **descriptive and predictive analysis**. The descriptive analysis describes the data i.e. what has happened, and predictive analytics predicts what might happen prescriptive analysis find the best option among the available choice.

Techniques used in the prescriptive analysis are simulation, graph analysis, business rules, algorithms, complex event processing, and machine learning.

#### **4. Predictive Analysis**

“What might happen?” Predictive analysis is used to make a prediction of future events. It is based upon the current and historical facts. It uses statistical algorithm and **machine learning techniques** to determine the likelihood of future results, trends based upon historical and new data and behavior. Business is implementing predictive analytics to increase the competitive advantage and reduce the risk related to an unpredictable future. The main users of predictive analysis are marketing, financial service, online service providers and insurance companies. Techniques used in Predictive analysis are data mining, modeling, A.I., etc.

#### **5. Causal Analysis**

“Why?” Causal Analysis helps in determining why things are the way they are. Since the current business world is full of events that might lead to failure, Causal Analysis seeks to identify the reason for it. It tries to get the root cause, i.e. the basic reason why something can happen. This is a common technique used in the IT industry for the quality assurance of the software. And industries that address major disasters.

#### **6. Exploratory Data Analysis**

It is an Exponential to the inferential statistics and is mostly used by the data scientists. It is an analytical approach that focuses on identifying patterns in the data and figure out the unknown relationships. The purpose of Exploratory Data Analysis is to get check the missing data, find unknown relationships and check hypotheses and assumptions. It shouldn't be used alone as it only provides a birds-eye view of the data and gets some insight

into it. It is the first step in data analysis that should be performed before the other formal statistical techniques.

## 7. Mechanistic Analysis

Mechanistic Analysis plays an important role in big industries. Though it is not among the common type of **statistical analysis methods** still it's worth discussing. It is used for understanding the exact changes in the given variable that leads to the other variables. It works on the assumption that the given system gets affected by the interaction of its internal component. It does not consider external influence. It is useful in a system containing clear definitions like biological science.

## Conclusion

In this article, we understood the different types of statistical analysis methods. There is a vast career in this field. Businesses from hotels, clothing designs, music stores, vendors, marketing and even politics rely heavily on the data to stay ahead. Other fields include Medical, Psychologist, etc. Since data on its own can be helpful Statistical Analysis helps in gaining the insight.

11. Decoding data analysis

Coding Qualitative Data: How to Code Qualitative Research (Updated 2020)

[AI & NLP Feedback Analysis](#)

Authored by [Alyona Medelyan, PhD](#) – Natural Language Processing & Machine Learning

How many hours have you spent sitting in front of Excel spreadsheets trying to find new insights from customer feedback?

You know that asking open-ended survey questions gives you more actionable insights than asking your customers for just a numerical Net Promoter Score (NPS). But when you ask open-ended, free-text questions, you end up with hundreds (or even thousands) of free-text responses.

How can you turn all of that text into quantifiable, applicable information about your customers' needs and expectations? By coding qualitative data.

Keep reading to learn:

- What coding qualitative data means (and why it's important)
- Different methods of coding qualitative data
- How to manually code qualitative data to find significant themes in your data

What is coding in qualitative research?

Coding is the process of labeling and organizing your qualitative data to identify different themes and the relationships between them.

When coding customer feedback, you assign labels to words or phrases that represent important (and recurring) themes in each response. These labels can be words, phrases, or numbers; we recommend using words or short phrases, since they're easier to remember, skim, and organize.

Coding qualitative research to find common themes and concepts is part of thematic analysis, which is part of qualitative data analysis. **Thematic analysis** extracts themes from text by analyzing the word and sentence structure.

What is qualitative data analysis?

**Qualitative data analysis** is the process of examining and interpreting qualitative data to understand what it represents.

Qualitative data is defined as any non-numerical and unstructured data; when looking at customer feedback, qualitative data usually refers to any verbatim or text-based feedback such as reviews, open-ended responses in surveys, complaints, chat messages, customer interviews, case notes or social media posts

For example, NPS metric can be strictly quantitative, but when you ask customers why they gave you a rating a score, you will need qualitative data analysis methods in place to understand the comments that customers leave alongside numerical responses.

Types of qualitative data analysis

1. Content analysis: This is the most common example of qualitative data analysis. It refers to the categorization, tagging and thematic analysis of qualitative data. This can include combining the results of the analysis with behavioural data for deeper insights.
2. Narrative analysis: Some qualitative data, such as interviews or field notes may contain a story. For example, the process of choosing a product, using it, evaluating its quality and decision to buy or not buy this product next time. Narrative analysis helps understand the underlying events and their effect on the overall outcome.
3. Discourse analysis: This refers to analysis of what people say in social and cultural context. It's particularly useful when your focus is on building or strengthening a brand.
4. Framework analysis: When performing qualitative data analysis, it is useful to have a framework. A code frame (a hierarchical set of

themes used in coding qualitative data) is an example of such framework.

5. Grounded theory: This method of analysis starts by formulating a theory around a single data case. Therefore the theory is “grounded ’ in actual data. Then additional cases can be examined to see if they are relevant and can add to the original theory.

#### Qualitative data analysis software

Advances in natural language processing & machine learning have made it possible to automate the analysis of qualitative data, in particular content and framework analysis

While manual human analysis is still popular due to its perceived high accuracy, automating the analysis is quickly becoming the preferred choice. Unlike manual analysis, which is prone to bias and doesn't scale to the amount of qualitative data that is generated today, automating analysis is not only more consistent and therefore can be more accurate, but can also save a ton of time, and therefore money.

The most commonly used software for automated qualitative data analysis is text analytics software such as Thematic.

I love twitch in general, but the new layout is annoying, mostly because I like to watch the vods after the actual stream and the most recent update makes that a lot more difficult. It used to be that you were able to see the vods of the most recent streams of people you follow on one page. Now, as far as I know, I have to scroll through each one of their channels and look to see if each one streamed recently. Also I'm pretty sure it's more limited regarding the oldest stream vod you can watch. For those reasons, the last update was a bit of a downgrade in my opinion.

Platform: android

● app updates: recent update

● favorite streamers: follow list

● great app: love twitch

● hard to use: frustrating

● layout and UI

Qualitative data analysis example: Thematic categorizes qualitative data into themes

Why is it important to code qualitative data?

Coding qualitative data makes it easier to interpret customer feedback. Assigning codes to words and phrases in each response helps capture what the response is about which, in turn, helps you better analyze and summarize the results of the entire survey.

Researchers use coding and other qualitative data analysis processes to help them make data-driven decisions based on customer feedback. When you use coding to analyze your customer feedback, you can quantify the

common themes in customer language. This makes it easier to accurately interpret and analyze customer satisfaction.

Automated vs. Manual coding of qualitative data

Methods of coding qualitative data fall into two categories: automated coding and manual coding.

You can automate the coding of your qualitative data with thematic analysis software. Thematic analysis and qualitative data analysis software use machine learning, artificial intelligence (AI), and natural language processing (NLP) to code your qualitative data and break text up into themes.

Thematic analysis software is autonomous, which means...

- You don't need to set up themes or categories in advance.
- You don't need to train the algorithm — it learns on its own.
- You can easily capture the “unknown unknowns” to identify themes you may not have spotted on your own.

...all of which will save you time (and lots of unnecessary headaches) when analyzing your customer feedback.

Recently, thematic analysis software has been categorised as Unified Data Analytics.

What is thematic coding?

Thematic coding, also called thematic analysis, is a type of qualitative data analysis that finds themes in text by analyzing the meaning of words and sentence structure.

When you use thematic coding to analyze customer feedback for example, you can learn which themes are most frequent in feedback. This helps you understand what drives customer satisfaction in an accurate, actionable way.

To learn more about how thematic analysis software helps you automate the data coding process, [check out this article](#).

## How to manually code qualitative data

For the rest of this post, we'll focus on manual coding. Different researchers have different processes, but manual coding usually looks something like this:

1. Choose whether you'll use deductive or inductive coding.
2. Read through your data to get a sense of what it looks like. Assign your first set of codes.
3. Go through your data line-by-line to code as much as possible. Your codes should become more detailed at this step.
4. Categorize your codes and figure out how they fit into your coding frame.
5. Identify which themes come up the most — and act on them.

Let's break it down a little further...

### Deductive coding vs. inductive coding

Before you start qualitative data coding, you need to decide which codes you'll use.

#### What is Deductive Coding?

**Deductive coding** means you start with a predefined set of codes, then assign those codes to the new qualitative data. These codes might come from previous research, or you might already know what themes you're interested in analyzing. Deductive coding is also called concept-driven coding.

For example, let's say you're conducting a survey on customer experience. You want to understand the problems that arise from long call wait times, so you choose to make "wait time" one of your codes before you start looking at the data.

The deductive approach can save time and help guarantee that your areas of interest are coded. But you also need to be careful of bias; when you start with predefined codes, you have a bias as to what the answers will be. Make sure you don't miss other important themes by focusing too hard on proving your own hypothesis.

What is Inductive Coding?

**Inductive coding**, also called open coding, starts from scratch and creates codes based on the qualitative data itself. You don't have a set codebook; all codes arise directly from the survey responses.

Here's how inductive coding works:

1. Break your qualitative dataset into smaller samples.
2. Read a sample of the data.
3. Create codes that will cover the sample.
4. Reread the sample and apply the codes.
5. Read a new sample of data, applying the codes you created for the first sample.
6. Note where codes don't match or where you need additional codes.
7. Create new codes based on the second sample.
8. Go back and recode all responses again.
9. Repeat from step 5 until you've coded all of your data.

If you add a new code, split an existing code into two, or change the description of a code, make sure to review how this change will affect the

coding of all responses. Otherwise, the same responses at different points in the survey could end up with different codes.

Sounds like a lot of work, right? Inductive coding is an iterative process, which means it takes longer and is more thorough than deductive coding. But it also gives you a more complete, unbiased look at the themes throughout your data.

Categorize your codes with coding frames

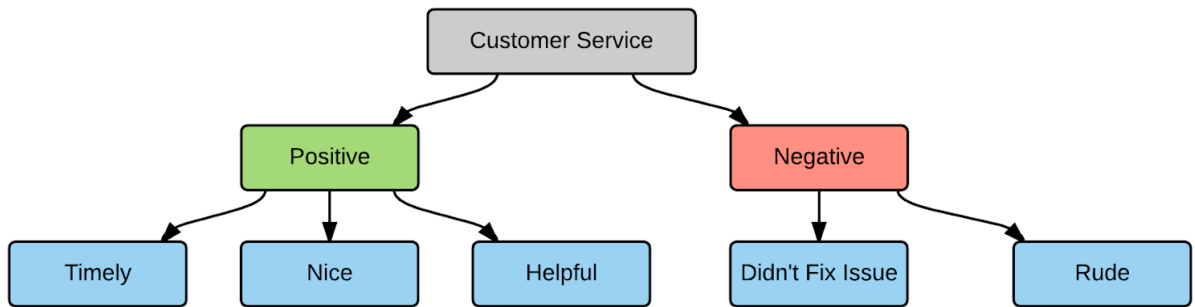
Once you create your codes, you need to put them into a coding frame. A coding frame represents the organizational structure of the themes in your research. There are two types of coding frames: flat and hierarchical.

Flat Coding Frame

A **flat coding frame** assigns the same level of specificity and importance to each code. While this might feel like an easier and faster method for manual coding, it can be difficult to organize and navigate the themes and concepts as you create more and more codes. It also makes it hard to figure out which themes are most important, which can slow down decision making.

Hierarchical Coding Frame

**Hierarchical frames** help you organize codes based on how they relate to one another. For example, you can organize the codes based on your customers' feelings on a certain topic:



## Hierarchical Coding Frame example

In this example:

1. The top-level code describes the topic (customer service)
2. The mid-level code specifies whether the sentiment is positive or negative
3. The third level details the attribute or specific theme associated with the topic

Hierarchical framing supports a larger code frame and lets you organize codes based on organizational structure. It also allows for different levels of granularity in your coding.

Whether your code frames are hierarchical or flat, your code frames should be flexible. Manually analyzing survey data takes a lot of time and effort; make sure you can use your results in different contexts.

For example, if your survey asks customers about customer service, you might only use codes that capture answers about customer service. Then you realize that the same survey responses have a lot of comments about your company's products. To learn more about what people say about your products, you may have to code all of the responses from scratch! A flexible coding frame covers different topics and insights, which lets you reuse the results later on.

## Tips for coding qualitative data

Now that you know the basics of coding your qualitative data, here are some tips on making the most of your qualitative research.

### Use a codebook to keep track of your codes

As you code more and more data, it can be hard to remember all of your codes off the top of your head. Tracking your codes in a codebook helps keep you organized throughout the data analysis process. Your codebook can be as simple as an Excel spreadsheet or word processor document. As you code new data, add new codes to your codebook and reorganize categories and themes as needed.

Make sure to track:

- The label used for each code
- A description of the concept or theme the code refers to
- Who originally coded it
- The date that it was originally coded or updated
- Any notes on how the code relates to other codes in your analysis

### Create high-quality codes

Your codes should do these 4 things:

1. **Cover as many survey responses as possible.** The code should be generic enough to apply to multiple comments, but specific enough to be useful in your analysis. For example, “Product” is a broad code that will cover a variety of responses — but it’s also pretty vague. What about the product? On the other hand, “Product stops working after using it for 3 hours” is very specific and probably won’t apply to many responses. “Poor product quality” or “short product lifespan” might be a happy medium.

2. **Avoid commonalities.** Having similar codes is okay as long as they serve different purposes. “Customer service” and “Product” are different enough from one another, while “Customer service” and “Customer support” may have subtle differences but should likely be combined into one code.
3. **Capture the positive and the negative.** Try to create codes that contrast with each other to track both the positive and negative elements of a topic separately. For example, “Useful product features” and “Unnecessary product features” would be two different codes to capture two different themes.
4. **Reduce data — to a point.** Let’s look at the two extremes: There are as many codes as there are responses, or each code applies to every single response. In both cases, the coding exercise is pointless; you don’t learn anything new about your data or your customers. To make your analysis as useful as possible, try to find a balance between having too many and too few codes.

Group responses based on themes, not wording

Make sure to group responses with the same themes under the same code, even if they don’t use the same exact wording. For example, a code such as “cleanliness” could cover responses including words and phrases like:

- Clean
- Tidy
- Dirty
- Dusty
- Looked like a dump
- Could eat off the floor

Having only a few codes and hierarchical framing makes it easier to group different words and phrases under one code. If you have too many codes, especially in a flat frame, your results can become ambiguous and themes can overlap. Manual coding also requires the coder to remember or be able to find all of the relevant codes; the more codes you have, the harder it is to find the ones you need, no matter how organized your codebook is.

Make accuracy a priority

Manually coding qualitative data means that the coder's cognitive biases can influence the coding process. For each study, make sure you have coding guidelines and training in place to keep coding reliable, consistent, and accurate.

One thing to watch out for is definitional drift, which occurs when the data at the beginning of the data set is coded differently than the material coded later. Check for definitional drift across the entire dataset and keep notes with descriptions of how the codes vary across the results.

If you have multiple coders working on one team, have them check one another's coding to help eliminate cognitive biases.

Conclusion: 6 main takeaways for coding qualitative data

Here are 6 final takeaways for manually coding your qualitative data:

1. Coding is the process of labeling and organizing your qualitative data to identify themes. After you code your qualitative data, you can analyze it just like numerical data.
2. Inductive coding (without a predefined code frame) is more difficult, but less prone to bias, than deductive coding.
3. Code frames can be flat (easier and faster to use) or hierarchical (more powerful and organized).

4. Your code frames need to be flexible enough that you can make the most of your results and use them in different contexts.
5. When creating codes, make sure they cover several responses, contrast one another, and strike a balance between too much and too little information.
6. Consistent coding = accuracy. Establish coding procedures and guidelines and keep an eye out for definitional drift in your qualitative data analysis.

## 12. Discussion of the findings with literature support

### Reporting and discussing your findings

This page deals with the central part of the thesis, where you present the data that forms the basis of your investigation, shaped by the way you have thought about it. In other words, you tell your readers the story that has emerged from your findings. The form of your chapters should be consistent with this story and its components.

#### **Contents:**

- [Find the story in your data](#)
- [Present your findings](#)
- [Discuss your findings](#)
- [Using cautious language](#)

#### Find the story in your data

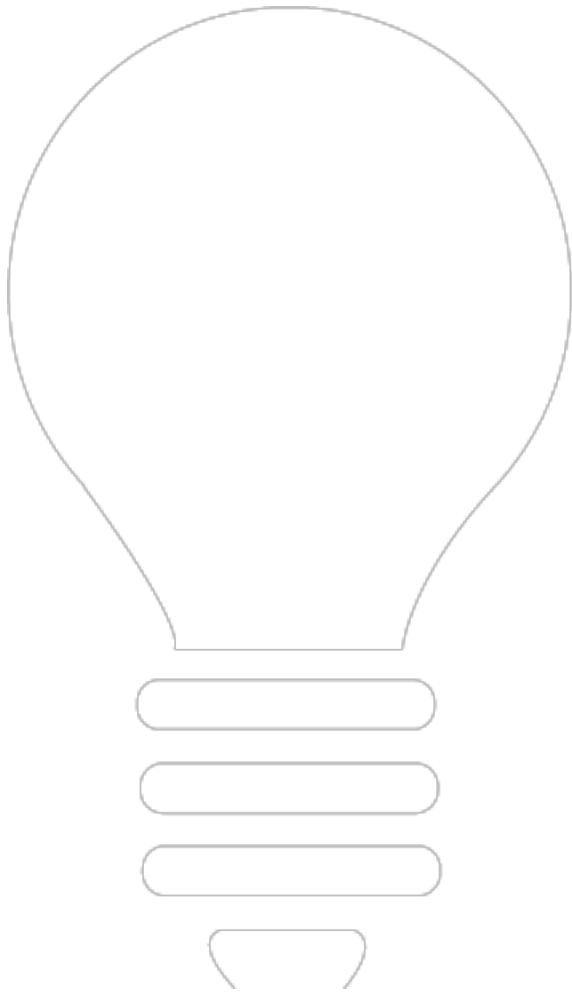
For many kinds of research, the main work of interpretation cannot be done until most of the data has been collected and analysed. For others, the data

already exists (in the form of archival documents or literary texts, for example), and the work of interpreting it begins much earlier in the research process.

Whatever kind of research you are doing, there comes a moment when your head is full of ideas that have emerged from your analysis. Ideally, you will have written them down as they came to you. Now you have to convert that mass of material and ideas into a written text that will make sense to a reader, and do justice to your findings.

### Finding your focus

How will you decide which aspects of your findings are the most interesting and important? It is useful to remind yourself what the task of writing up research is all about:



## Tip

...the major task of writing [about our research] involves working out how to make contextually grounded theoretical points that are viewed as a contribution by the relevant professional community of readers.

(Golden-Biddle & Locke, 1997, p. 20)

That is, in your thesis you need to make points that are:

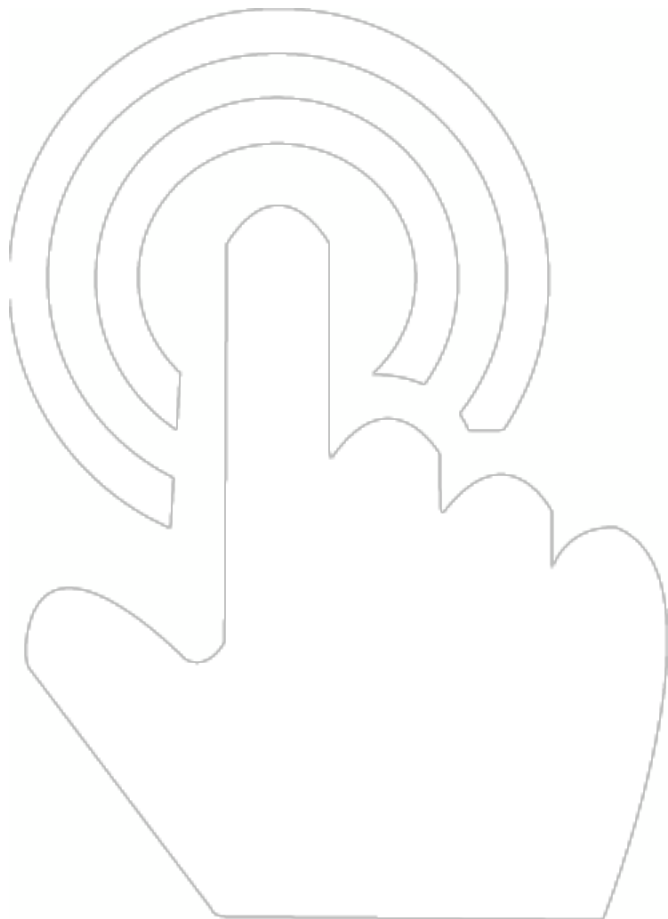
- contextually grounded (based on your data)
- theoretical (related to relevant theory)

- viewed as a contribution by the relevant professional community of readers (they add something to the current body of research or theory)

These points must fit into a framework that makes a coherent story of your findings.

### What have you learnt from your data?

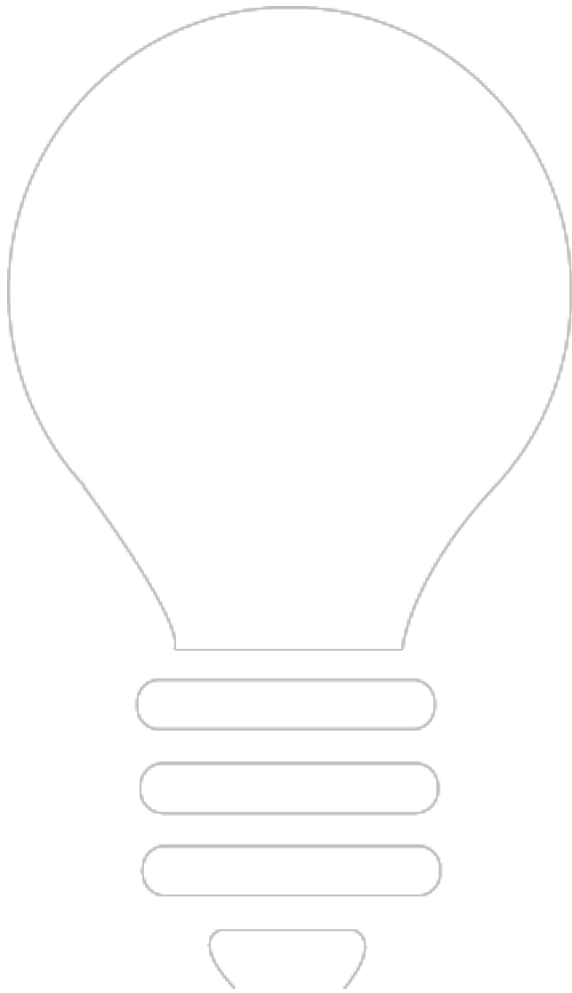
The first step is to clarify for yourself what you know now, as a result of your research. David Evans and Paul Gruba (2002, p.112) remind us that our minds continue to work on problems when we aren't thinking about them consciously. So it is worth finding out what conclusions your brain has reached while you were collecting and analysing your data. Evans and Gruba suggest you try these techniques:



## Activity

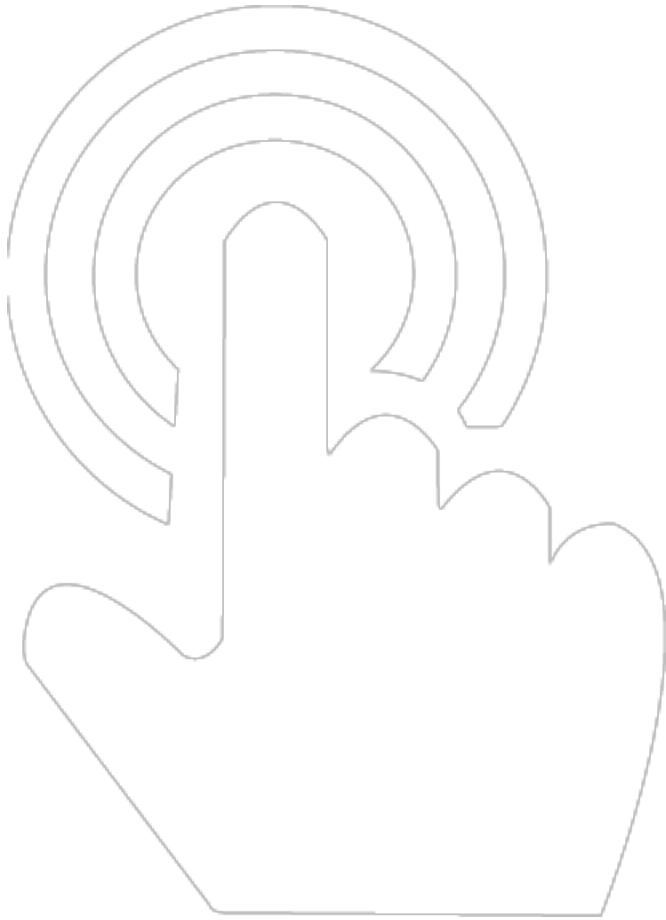
1. Write down all the things you know now that you didn't know when you started the research. Use a single sentence for each item. (At this point, don't worry about whether they relate to your aims or research questions.)
2. Sort the sentences into groups. Give each group a heading. Now check the headings against your research question(s). Do all the headings relate to the research question(s)? Do the questions need refining?
3. Use these groups and headings to make a plan of the points you want to make in your discussion.

Making lists works well for some people, but not for others. Another technique you can use to unlock your unconscious thought processes is **freewriting**.



## **Freewriting definition**

Freewriting on a topic means taking a fresh piece of paper or opening a new word-processor document and writing anything that comes into your head on that topic for a limited time. It must be in whole sentences and you must not stop. If you have nothing to write, write 'I have nothing to write'. This is writing to think. It probably won't produce text you can use in your thesis, but it might help to clarify your ideas and show you ways to structure your argument.



## Activity

1. Write about your data for 5 minutes. You don't have to show what you write to anyone.
2. Stop.
3. Now read over what you've written. Have you learnt anything? Is there anything there you want to develop further? You could try highlighting key words, or identifying any points that need further investigation.

[Three kinds of story: macrostructures for a thesis](#)

The way you present the analysis and interpretation of your data sits within a wider thesis framework, which can itself be thought of as a story (adapted from Silverman, 2005, p. 242-43):

- **the hypothesis story** (this is the standard framework for theses in the empirical sciences)
  - state your hypotheses
  - test them
  - discuss the implications
- **the analytic story** (a common framework for theses in the social sciences)
  - What are the key concepts you have used in this study?
  - How do your 'findings' shed light on these concepts and, through them, on the substantive topics you studied?
  - What, therefore, has become of your original research problem and the literature regarding it?
- **the mystery story**
  - starts from empirical examples
  - develops the questions by discussing them
  - gradually leads the reader to interpretations of the material and to more general implications of the results.

### The big picture

The challenge for every thesis writer is to hold the detail of the data in focus without losing sight of the big picture of the research. This is why reporting data analysis is not enough; you need to:

- establish the connections between the patterns that emerge from your analysis and your research questions
- relate those connections to the existing research and theory

in order to make clear your contribution to knowledge in the field.

### Present your findings

This page and the next, on reporting and discussing your findings, deal with the core of the thesis. In a traditional doctoral thesis, this will consist of a number of chapters where you present the data that forms the basis of your investigation, shaped by the way you have thought about it. In a thesis including publication, it will be the central section of an article.

For some fields of study, the presentation and discussion of findings follows established conventions; for others, the researcher's argument determines the structure. Therefore it is important for you to investigate the conventions of your own discipline, by looking at journal articles and [theses](#).

Every thesis writer has to present and discuss the results of their inquiry. In these pages we consider these two activities separately, while recognising that in many kinds of thesis they will be integrated. This section is concerned with presenting the analysis of the results of data analysis.

There is a great deal of disciplinary variation in the presentation of findings. For example, a thesis in oral history and one in marketing may both use interview data that has been collected and analysed in similar ways, but the way the results of this analysis are presented will be very different because the questions they are trying to answer are different. The presentation of results from experimental studies will be different again. In all cases, though, the presentation should have a logical organisation that reflects:

- the aims or research question(s) of the project, including any hypotheses that have been tested

- the research methods and theoretical framework that have been outlined earlier in the thesis.

You are not simply describing the data. You need to make connections, and make apparent your reasons for saying that data should be interpreted in one way rather than another.

## Structure

Each chapter needs an introduction outlining its organisation.

## Examples

Chemical Engineering PhD thesis:

In this Chapter, all the experimental results from the phenomenological experiments outlined in Section 5.2 are presented and examined in detail. The effects of the major operating variables on the performance of the pilot filters are explained, and various implications for design are discussed. The new data may be found in Appendix C.

Literature PhD thesis:

The principal goal of the vernacular adaptor of a Latin saint's life was to edify and instruct his audience. In this chapter I shall try to show to what extent our texts conform to vernacular conventions of a well-told story of a saint, and in what ways they had to modify their originals to do so, attempting also to identify some of the individual characteristics of the three poems.

After that, the organisation will vary according to the kind of research being reported. Below are some important principles for reporting experimental, quantitative (survey) and qualitative studies.

## Experimental studies

The results of experiments are almost always presented separately from discussion.

- Present results in tables and figures
- Use text to introduce tables and figures and guide the reader through key results
- Point out differences and relationships, and provide information about them
- Include negative results (then try to explain them in the Discussion section/chapter)

## **Quantitative studies**

There are generally accepted guidelines for presenting the results of statistical analyses of data about populations or groups of people, plants or animals. It is important that the results be presented in an informative way.

- Demographic data that describe the sample are usually presented first.
- Remind the reader of the research question being addressed, or the hypothesis being tested.
- State which differences are significant.
- Highlight the important trends and differences/comparisons.
- Indicate whether the hypothesis is supported or not.

You can read more about reporting quantitative results in the next section, [Reporting conventions](#).

## **Qualitative studies**

The presentation and discussion of qualitative data are often combined.

Qualitative data is difficult to present neatly in tables and figures. It is usually expressed in words, and this results in a large quantity of written material, through which you must guide your reader.

Structure is therefore very important.

Try to make your sections and subsections reflect the themes that have emerged from your analysis of the data, and to make sure your reader knows how these themes evolved. Headings and subheadings, as well as directions to the reader, are forms of signposting you can use to make these chapters easy to navigate.

You can read more about reporting qualitative results in the next section, [Reporting conventions](#).

### What to include

For all types of research, decisions about what data to include are important.

- Include what you need to support the points you need to make. Be guided by your research questions(s) and the nature of your data.
- Make your selection criteria explicit.
- More detail can be provided in an appendix. Evans and Gruba (2002) offer some good advice: 'Include enough data in an appendix to show how you collected it, what form it took, and how you treated it in the

process of condensing it for presentation in the results chapter.' (p. 105)

## Reporting conventions

Reporting conventions differ according to whether the data involved is [quantitative](#) or [qualitative](#).

### Quantitative data

The purpose of the results section of the thesis is to report the findings of your research. You usually present the data you obtained in appropriate figures (diagrams, graphs, tables and photographs) and you then comment on this data.

Comments on figures and tables (data commentary) usually have the following elements:

- **allocation element**
- **a summary** of the information presented in the figure
- **a highlighting statement** to point out what is significant in all the data presented (eg trends, patterns, results that stand out).

### Data commentary element example

*Instructions: Click on the highlighted data elements in the example below.*

**Table 5** shows the most common modes of computer infection in Australian businesses. As can be seen in the table, home disks are the most frequent source of infection.



### **Activity: Data commentary element example**

*Instructions: Click on the text below to identify the location element, summary and highlighting statement.*

The influents to filter A and B were analysed fully on a number of occasions, and the averaged results are presented in Table 6.1. It can be seen from the table that the wastewaters from plants A and B and of similar composition.

Sometimes a reduced location element is used which gives only the table or figure number in brackets after the highlighting statement.

### Examples:

- The ranges of metal atom concentrations for the two precipitate types were found to overlap (Table 6)
- Quantitative analysis revealed some variation in the composition of the rods in the various exservice samples (Figure 7 and Table 5).

**Commentary** on results may include:

- explanations
- comparisons between results
- comments on whether the results are expected or unexpected
- comments about unsatisfactory data.

### Dealing with "Problems"

The difference between expected and obtained results	<b>may be due to</b>	the incorrect calibration of the instruments.
This discrepancy	<b>can be attributed to</b>	the small sample size.
The anomaly in the observations	<b>can probably be accounted for</b>	by a defect in the camera.

The lack of statistical significance	<b>is probably a consequence of</b>	weaknesses in the experimental design.
The difficulty in dating this archeological site	<b>would seem to stem from</b>	the limited amount of organic material available.

(Adapted from Swales & Feak, 2004, p. 138).

If you are discussing your findings in a separate chapter or section, limit your comments here to the specific results you have presented.

### **Past or present tense?**

<b>Location element</b>	present tense	<i>...the averaged results are presented in Table 6.1. Table 5 shows...</i>
<b>Summary of procedure</b>	past tense	<i>The influents to filter A and B were analysed fully on a number of occasions,...</i>
<b>Results of analysis</b>	past tense	<i>The ranges of metal atom concentrations ... were found to overlap.</i>

<b>Comments</b>	presen t tense	<i>This discrepancy can be attributed to the small sample size.</i>
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### **Qualitative data**

The reporting of qualitative data is much less bound by convention than that of quantitative data. The data itself usually consists of words, from written documents or interview transcripts (but may include images), which have been analysed in some way, often into themes. In reporting the data, it is generally important to convey both the themes and some of the flavour of the actual words.

The data needs to be connected back through the layers of detail to the overarching research question it relates to. This can be done through the introductions to carefully-structured sections and subsections. Individual data extracts can be connected back into this structure through a process of 'tell-show-tell'.

Click on the highlighted text below to read the comments.

### **Example from a Doctor of Education thesis:**

#### **6.4.3 Themes from the Interview Data**

In analysing the interview data, two themes emerged which will be discussed in this section. These themes were: the complexity and

challenges of working with families and the professional satisfaction and challenges of program planning for children in preschool or childcare.

For each of these graduates, their work with children was clearly the area of their professional lives that was bringing the most satisfaction, although there were some challenges identified. In the interviews, the data reveal that they were all seeking ways to improve their pedagogy and achieving success in different ways...

Angela suggested that in her second year of teaching she had changed in that she was programming in a "more child oriented" way. She discussed this change:

One of the things I've changed is this idea of herding children through the Kinder day: they go from indoor play to snack time to the mat and so on. How I do it now is that I have a lot of different things happening at once. I'll have a small group on the mat and there might be some children sitting down and having a snack and there's still some children in home corner playing.

These comments seem to provide evidence that Angela is growing professionally for two reasons. First, the ability to identify changes in her program suggests to me that she has deeper pedagogical knowledge gained through critical reflection on her practice, and second, there is congruence between her expressed beliefs and the practice she describes.

Discuss your findings

In the discussion of your findings you have an opportunity to develop the story you found in the data, making connections between the results of

your analysis and existing theory and research. While the amount of discussion required in a thesis may vary according to discipline, all disciplines expect some interpretation of the findings that makes these connections.

### Research question

In your discussion you must draw together your research question and your own research results. If the discussion is in a self-contained chapter or section you will need to briefly summarise the major findings that come from the research and relate them to what you originally proposed to find out.

If your research is testing a hypothesis, you need to answer these questions:

- Do your research findings support your initial hypothesis? Why and how?
- Do your findings only support the hypothesis in part? Why and how?
- Do your findings disprove your hypothesis? Why and how?
- What else do your findings tell you, over and above what you initially set out to investigate?

### Relation to other research

Since one of the requirements of a doctorate is to make a contribution to knowledge, it is essential to show how your results fit in with other work that has been done in your field.

- Point out the agreements and disagreements between your data and that of others.

- In presenting your own interpretation of the results, consider the strengths and weaknesses of alternative interpretations from the literature.

### Implications

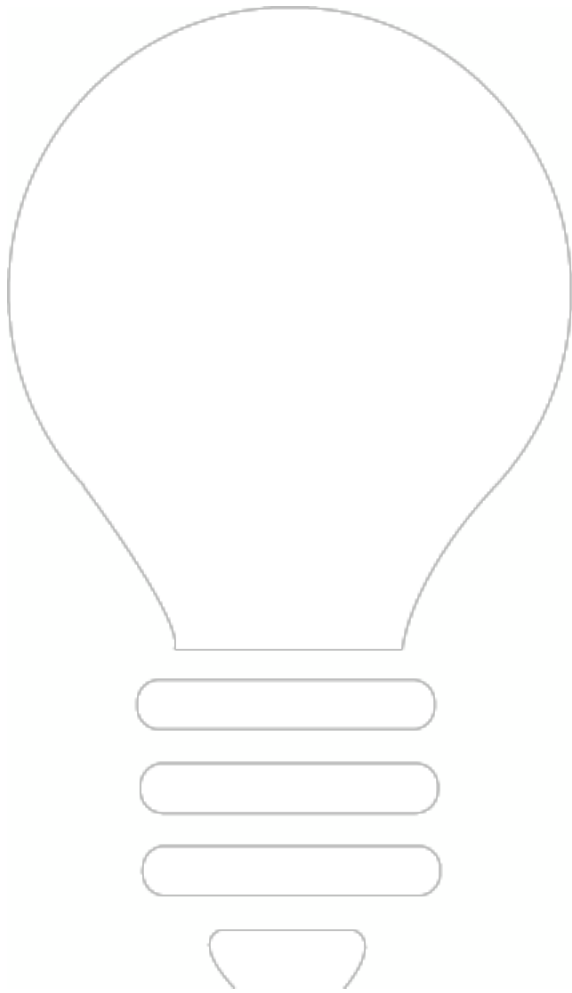
Another aspect of making clear the contribution of your research is to draw out the implications of your findings. Depending on the nature of your research, these will probably be related to:

- current theory
- technical applications
- professional practice

### Writing your discussion

The skill in writing a successful discussion is in moving backwards and forwards between others' research and your own research, making it clear:

- which has been done by other people
- which has been done by you
- **and** how they complement each other.



### **Tip**

Remember that you are dealing with three different issues and the three must be clearly differentiated for the reader.

Some techniques to differentiate your own research from previous research in your writing (these are suggestions, not rules, and your best guide is to see how other writers in your discipline do this):

<p>Use the first person to describe your findings.</p>	<p><i>My data shows...</i></p>
<p>Consistently use 'this' to refer to your own research and refer to previous research by name, place or time.</p>	<p><i>This study...</i>  <i>The findings of this research...</i>  <i>Smith and Geva found that...</i>  <i>A previous study in Belgrade...</i></p>
<p>Make reference to similarities or differences in approach or findings.</p>	<p><i>Similar research carried out in the 1980s showed that...</i></p>
<p>Use the <b>present perfect</b> tense to highlight the recent relevance of your research in comparison with earlier research, referring to it in the <b>simple past</b>.</p>	<p><i>This study <b>has shown</b> a prevalence rate of 2.5 which is greater than that <b>found</b> by Smith and Geva in their Belgrade study...</i></p>

### Using cautious language

Discussing results and drawing conclusions involves making claims about interpretation, significance and applicability. This is done within a research tradition where existing knowledge is always being modified in the light of

new results. As a researcher, you are expected to distinguish carefully between:

- knowledge you are sure of because you have reliable evidence for it
- other knowledge you are less sure of
- other knowledge you think is only within the realms of possibility

Therefore, very strong claims, like the one below, are rare in academic writing

Reducing fat intake lowers the risk of heart disease.

A claim like this, which implies that the statement is true in every case, cannot be supported with evidence. Claims should therefore be specific and precise, and the level of certainty must match the level of evidence.

There are many methods used in academic writing to qualify a claim:

1. Indicate the degree of probability (note how the claim progressively weakens):

Reducing fat intake **lowers** the risk of heart disease.

Reducing fat intake **could/might lower** the risk of heart disease.

Reducing fat intake **may lower** the risk of heart disease.

2. Distance yourself a) from the claim:

Reducing fat intake **appears** to lower the risk of heart disease.

**It seems that** reducing fat intake lowers the risk of heart disease.

**Some researchers suggest that** reducing fat intake lowers the risk of heart disease.

or b) from the data, by showing its limitations:

**Some studies indicate that** reducing fat intake lowers the risk of heart disease.

**For this age group** , reducing fat intake lowers the risk of heart disease.

**In most of the cases studied** , reducing fat intake lowered the risk of heart disease.

3. Use a qualifying verb:

Reducing fat intake **tends** to lower the risk of heart disease.

Reducing fat intake **contributes** to lowering the risk of heart disease.

4. In practice, a combination of these methods is often used:

The majority of studies indicate that for this age group, reducing fat intake contributes to lowering the risk of heart disease.

## References

Evans, D., & Gruba, P. (2002). *How to Write a Better Thesis* (2nd ed.). Melbourne University Press.

Golden-Biddle, K., & Locke, K. (1997). *Composing Qualitative Research*. Sage Publications.

Silverman, D. (2005). *Doing Qualitative Research: A Practical Handbook* (2nd ed.). Sage Publications.

Swales, J. M., & Feak, C. B. (2004). *Academic Writing for Graduate Students* (2nd ed.). University of Michigan Press

<p>It is <b>certain</b> that</p> <p>It is <b>very probable/ highly likely</b> that</p> <p>It is <b>likely</b> that</p> <p>It is <b>likely</b> that</p> <p>It is <b>possible</b> that</p> <p>It is <b>unlikely</b> that</p>	<p>→</p>	<p>reducing fat intake lowers the risk of heart disease.</p>
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### 13. Strength and weakness of study implications

#### Quantitative Research

There are many researches taking place, which results into the evolution of something new and unique. **Traditional Marketing Research** have two options to conduct their research: Quantitative and Qualitative method. Quantitative research is dependent on the creation of Hypothesis followed by accurate analysis of the statistics in order to understand and explain the research findings. It focuses more on the quantity of things and their statistical patterns. Using the number it comes to an analysis so as to come to a conclusion. Quantitative research method has proven to be beneficial in the following ways

- It provides an allowance on the formulation of statistically sound
- Quantitative data provides a macro view with all the required details and comparatively larger samples.
- Larger sample sizes enable the conclusion to be generalized.
- Evaluation of the multiple data sets can be done at once and that too at a faster pace and accurately.

- This method is called to be appropriate when there is a need of systematic and standardised comparisons.
- The manual implementations of ideas can be automated completely which can save time.

#### ↔Weaknesses of Quantitative Data

- Quantitative Method reveals what and to what extent but often fails to answer more on why and how.
- This type of research requires the model performance to be monitored on constant basis in order to ensure its compliance with the original hypotheses.
- The impression of homogeneity in a sample may turn out to be fake in this method.
- This method involves limited number of Quants supply and also involves complex disciplines which are hard to master.

#### ◆ Qualitative Research

It is more focused on exploring the issues, understanding the actual problem and enabling oneself to answer all the questions. Qualitative Research Method is more dependent on deriving the value of variables in their natural setting. The data via this method is collection by asking open ended questions and serving with the direct quotations. Qualitative can be beneficial in the following ways

- All the problems and the topics covered under this research are in detail.
- This method majorly focuses on small groups which ultimately do not require more expenses when compared to quantitative research.

- On the emergence of new developed information and findings, the revision, direction and framework of the data can be done easily quickly.
- The data is collected from a small group which bounds it to be universal for a large population.
- The data with this method is collected based on genuine efforts and gives a clear vision on what can be expected.

#### ↔Weaknesses of Qualitative Research

- As the data is collected for a small group, due to which assumptions cannot be made beyond the small group of people.
- It becomes difficult to demonstrate, maintain and assess the rigidity of the data.
- Collection of statistical data is not easy and cannot be done solely by using this method.
- As the data is in big quantity, analysis and interpretation of the data takes much time.
- The responses of the subjects might be affected as the researchers are bound to be present during the process of data gathering.

Looking for professional research writing assistance online? A [research paper writing service](#) SmartWritingService will not let you down with your qualitative and quantitative research

#### 14. Reference Vancouver style

This section contains introductory guides to some common reference styles.

Writers themselves seldom choose which reference style to use; students need to comply with the guidelines issued by their departments and those who write for publication will have to follow the publisher's guidelines.

The AWELU guides to specific reference styles cover some of the main reference systems. For more detailed and discipline-specific information, writers will need to consult the style manual of the specific reference style. It should also be noted that departments and publishers often adapt reference styles and that guidelines therefore can differ in some respects.

- [APA](#)
- [Documentary note style](#)
- [Harvard](#)
- [IEEE](#)
- [MLA](#)
- [Vancouver](#)

#### Reference list: General notes

**Please check with your faculty for any specific referencing or formatting requirements**

- References are listed in numerical order, and in the same order in which they are cited in text. The reference list appears at the end of the paper.
- Begin your reference list on a new page and title it 'References'.
- The reference list should include all and only those references you have cited in the text. (However, do not include unpublished items such as correspondence.)
- Use Arabic numerals (1, 2, 3, 4, 5, 6, 7, 8, 9).
- Abbreviate journal titles in the style used in the [NLM Catalog](#).
- Check the reference details against the actual source - you are indicating that you have read a source when you cite it.
- Be consistent with your referencing style across the document.

## Example of a reference list

### References

1. O'Campo P, Dunn JR, editors. Rethinking social epidemiology: towards a science of change. Dordrecht: Springer; 2012. 348 p.
2. Schiraldi GR. Post-traumatic stress disorder sourcebook: a guide to healing, recovery, and growth [Internet]. New York: McGraw-Hill; 2000 [cited 2019 Nov 6]. 446 p. Available from: <http://books.mcgraw-hill.com/getbook.php?isbn=0071393722&template=#toc> DOI: 10.1036/0737302658
3. Halpen-Felsher BL, Morrell HE. Preventing and reducing tobacco use. In: Berlan ED, Bravender T, editors. Adolescent medicine today: a guide to caring for the adolescent patient [Internet]. Singapore: World Scientific Publishing Co.; 2012 [cited 2019 Nov 3]. Chapter 18. Available from: [https://doi.org/10.1142/9789814324496\\_0018](https://doi.org/10.1142/9789814324496_0018)
4. Stockhausen L, Turale S. An explorative study of Australian nursing scholars and contemporary scholarship. J NursScholarsh [Internet]. 2011 Mar [cited 2019 Feb 19];43(1):89-96. Available from: <http://search.proquest.com/docview/858241255?accountid=12528>
5. Kanneganti P, Harris JD, Brophy RH, Carey JL, Lattermann C, Flanigan DC. The effect of smoking on ligament and cartilage surgery in the knee: a systematic review. Am J Sports Med [Internet]. 2012 Dec [cited 2019 Feb 19];40(12):2872-8. Available from: <http://ajs.sagepub.com/content/40/12/2872> DOI: 10.1177/0363546512458223
6. Subbarao M. Tough cases in carotid stenting [DVD]. Woodbury (CT): Cine-Med, Inc.; 2003. 1 DVD: sound, colour, 4 3/4 in.

7. Stem cells in the brain [television broadcast]. Catalyst. Sydney: ABC; 2009 Jun 25.

## Referencing Appendices

### **Referencing your own appendices in your own text:**

- Your appendix does not need to be referenced. It is enough to signpost it the body of your work, for example: (See Appendix A).
- If you created your own appendix, and you've cited references, then number the references within the appendix consecutively in sequence with your written text and include them in your reference list.

### **Referencing appendices not written by you:**

- If the appendix was not written by you then place the numbered citation, in sequence with the rest of the text, at the end of the appendix and include the full reference in your reference list.

**VALUE ADDED COURSE**  
**RESEARCH METHODOLOGY**

**Annexure II**

STUDENT ENROLLMENT LIST (JULY-DEC 2017)

S.No.	University no	Name of the student	Year / CRR I	Signature
1.	U16MB331	MONISHA . S	II nd	<i>Monisha</i>
2.	U16MB332	MONISHA .M	II nd	<i>Monisha</i>
3.	U16MB333	MONISHDEVI .N	II nd	<i>Monishadevi</i>
4.	U16MB334	MOUNIKA .A	II nd	<i>Mounika</i>
5.	U16MB335	MOUNIKA.B	II nd	<i>Mounika</i>
6.	U16MB336	MUHAMMAD SHEBIN	II nd	<i>Muhammad Shebin</i>
7.	U16MB337	MUSKAAN SHAMIM	II nd	<i>Muskam</i>
8.	U16MB338	MUSULURI SHYAM SINDHU	II nd	<i>Musuluri Shyam Sindhu</i>
9.	U16MB339	NAMITA YADAV	II nd	<i>Namitha</i>
10.	U16MB340	NAMRATA GHORAI	II nd	<i>Namrathghorai</i>
11.	U16MB341	NANDU ARAVIND	II nd	<i>Nandu Aravind</i>
12.	U16MB343	NEELU.S.P	II nd	<i>Neelu</i>
13.	U16MB342	NEITOUNUO MARY PIENYII	II nd	<i>Marypienyii</i>
14.	U16MB344	NIKITA VERMA	II nd	<i>Nitha Verma</i>
15.	U16MB345	NISHA AGRAWAL	II nd	<i>Nishagrawal</i>
16.	U16MB346	NOUNETSHUNUO KELIO	II nd	<i>Nounetshunuo Kelio</i>
17.	U16MB347	PALAYULLA VALAPPIL VARUN	II nd	<i>Palayulla Varun</i>
18.	U16MB348	PARTHASARATHY .S	II nd	<i>Parthasarathy</i>
19.	U16MB349	PATIL NAMRATA YASHANAND	II nd	<i>Patil namrata yashanand</i>
20.	U16MB350	PAVETHRA .A	II nd	<i>Pavethra</i>

**RESOURCE PERSON**

**DR. JALAKANDAN**

**COORDINATOR**

**Dr S NITHIANANDAM**

DEPARTMENT OF ANESTHESIOLOGY  
SRI LAKSHMI NARAYANA INSTITUTE  
MEDICAL SCIENCES  
OSUDU, KUDAPURAM, PUDUCHERRY-605 502

Dr. S. Nithianandam  
Sri Lakshmi Narayana Institute  
Department of Medical Sciences  
Osudu, Kudapuram, Puducherry

### Annexure III

#### MCQ : RESEARCH METHODOLOGY

- 1) Which of the following must be considered while measuring occurrence of a disease?
  - a) The number of people affected by the disease
  - b) The population size from which the cases of disease arise
  - c) The length of the time the population is followed
  - d) All of the above
  
- 2) Is most useful for evaluating the impact of prevention program
  - a) Point prevalence
  - b) Period prevalence
  - c) Case fatality
  - d) Incidence
  
- 3) A measure that reflects severity of an acute infectious disease
  - a) Case fatality ratio
  - b) Incidence rate
  - c) Prevalence
  - d) Mortality rate
  
- 4) Before initiating a study involving primary data collection, the Principal Investigator must ensure that various approvals are obtained. Which of the following approval is absolutely mandatory?
  - a) Scientific committee approval
  - b) Ethics committee approval
  - c) Technical committee approval
  - d) Regulatory authority approval

- 5) Which of the following disciplines contribute to health research?
- a) Bio-medical research
  - b) Biostatistics
  - c) Social science research
  - d) All of the above
- 6) Which of the following best describes a study done in a laboratory setting using animals?
- a) Translational research
  - b) Bench-based research
  - c) Theoretical research
  - d) Preventive research
- 7) Which of the following review is NOT essential before initiating a clinical trial?
- a) Scientific review
  - b) Peer review
  - c) Regulatory review
  - d) Ethics review]
- 8) Which of the following is NOT a type of study design?
- a) Qualitative study
  - b) Observational study
  - c) Retrospective study
  - d) Translational study
- 9) A researcher wants to study the relationship between COVID-19 infection in pregnancy and birth weight. Currently, there is no evidence on this topic. Which of the following options is the scope of this health research?
- a) Verifying and confirming known information
  - b) Getting additional or new information
  - c) Evaluating ongoing programs
  - d) All of the above

10) Which of the following is NOT a critical consideration in planning a health research?

- a) Adequate justification
- b) Clear and focused research question
- c) Standard case definitions
- d) Financial gain

11) Identify the CORRECT statement about implementation of a research

- a) Research findings must be approved by the funder
- b) Research finding must be error free
- c) Adequate sample size is a prerequisite
- d) Pilot study can be done during data analysis stage

Moskan Bhanmer

Annexure III



MCQ : RESEARCH METHODOLOGY

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  - c) Standard case definitions
  - d) Financial gain
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  - b) Research finding must be error free
  - c) Adequate sample size is a prerequisite
  - d)  Pilot study can be done during data analysis stage
-

8/10

Annexure III

Paithucuaathy. S.

**MCQ : RESEARCH METHODOLOGY**

- 1) Which of the following must be considered while measuring occurrence of a disease?
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  - d) Pilot study can be done during data analysis stage
-

Annexure V

Student Feedback Form

Course Name: **RESEARCH METHODOLOGY**

Subject Code: **ANAES 05**

Name of Student: \_\_\_\_\_ Roll No.: \_\_\_\_\_  
\_\_\_\_\_

We are constantly looking to improve our classes and deliver the best training to you.

Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					
2	Course contents met with your expectations					
3	Lecturer sequence was well planned					
4	Lectures were clear and easy to understand					
5	Teaching aids were effective					
6	Instructors encourage interaction and were helpful					
7	The level of the course					
8	Overall rating of the course	1	2	3	4	5

**\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory**

Suggestions if any:

Annexure V

Student Feedback Form

Course Name: **RESEARCH METHODOLOGY**

Subject Code: **ANAES 05**

Name of Student:                     NAMITHA YADHAV                     Roll No.:                     016MB339                    

We are constantly looking to improve our classes and deliver the best training to you.

Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					/
2	Course contents met with your expectations				/	
3	Lecturer sequence was well planned			/		
4	Lectures were clear and easy to understand			/		
5	Teaching aids were effective				/	
6	Instructors encourage interaction and were helpful			/		
7	The level of the course				/	
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

*Need more Teaching*

Annexure V

Student Feedback Form

Course Name: **RESEARCH METHODOLOGY**

Subject Code: **ANAES 05**

Name of Student: MONISHA - H Roll No.: 016MB332

We are constantly looking to improve our classes and deliver the best training to you.

Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					
2	Course contents met with your expectations					
3	Lecturer sequence was well planned					
4	Lectures were clear and easy to understand					
5	Teaching aids were effective					
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7	The level of the course					
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2 – Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

*Good Arrangement  
are Required*

Date: 04.12.2017

From  
Dr. Nithianandam  
Professor and Head,  
Department of Anaesthesia  
Sri Lakshmi Narayana Institute of Medical Sciences  
Puducherry

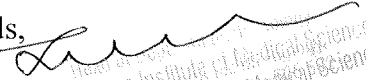
To  
The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Puducherry

**Sub: Completion of value-added course: RESEARCH METHODOLOGY**

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: Research Methodology in July- Dec 2017 for 20 students. We solicit your kind action to send certificates for all the participants, whose name list is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

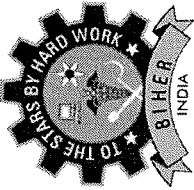
Kind Regards,

  
Dr. Nithianandam

Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry - 605 502.

**Encl: Certificates**

**Photographs**



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

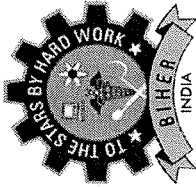
This is to certify that      MOUNIKA .A      has actively participated in the Value

Added Course on Research Methodology held during July - December 2017 Organized by Sri

Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr. LALAKANDAN  
DEPARTMENT OF ANATOMY  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
PONDICHERY - 605 502  
COORDINATOR

Dr. NITHIANANDAM S  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
PONDICHERY - 605 502  
COORDINATOR



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research

(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that    NANDU ARAVIND    has actively participated in

the Value Added Course on Research Methodology held during July - December 2017

Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502,

India.

  
Dr. J. LALAKANDAN

RESOURCE PERSON

Dr. NITHIANANDAM S

COORDINATOR

Head of Dept. of Microbiology  
Sri Lakshmi Narayana Institute of Medical Sciences  
Gandhi Kupappaikem - Pondicherry - 605 502



# SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES



Date: 02/06/2017

From  
Dr. Aravind. C  
Professor and Head,  
Department of General Medicine  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research  
Chennai


To  
The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research  
Chennai

## Sub: Permission to conduct value-added course: GERIATRIC HEALTH

Respected Madam,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: GERIATRIC HEALTH on 07/07/2017. We solicit your kind permission for the same.

Kind Regards

  
Dr. C. ARAVIND, MD.,  
Reg.No:68432  
Professor & HOD, General Medicine  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502

## FOR THE USE OF DEANS OFFICE

Names of Committee members for evaluating the course:

The Dean: Dr. Jayalakshmi

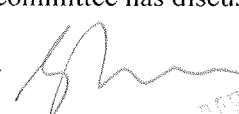
The HOD: Dr. Aravind. C

The Expert: Dr. Chellapandian


The committee has discussed about the course and is approved.

Dean

Subject Expert

  
Dr. G. JAYALAKSHMI, BSC., MBBS., DTCD., M.D.,  
DEAN

Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Ageram Kudapakkam, Post,  
Villanur Commune Puducherry 605 502

  
DHOD ARAVIND, MD.,  
Reg.No:68432  
Professor & HOD, General Medicine  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502





OFFICE OF THE DEAN

## Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P -II ) dt. 11/07/2011 ]  
[ Affiliated to Bharath University, Chennai - TN ]

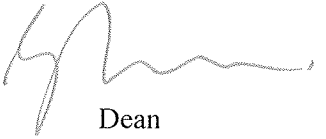
### Circular

08/06/2017

#### **Sub: Organising Value-added Course: GERIATRIC HEALTH reg**

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research**, is organising a Value added course, titled, "GERIATRIC HEALTH" between July 2017 and September 2017. The course content is enclosed below.

The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before 29/06/2017. Applications received after the mentioned date shall not be entertained under any circumstances.



Dean

**D: G. JAYALAKSHMI, BSC.,MBBS.,DTCD.,M.D.,**  
DEAN

Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Ageram Kudapakkam, Post,  
Villanur Commune Puducherry-605 502.

Encl: Copy of Course content



## COURSE PROPOSAL

**Course Title:** GERIATRIC HEALTH

**Course Objective:** To create an awareness among students of the 2<sup>nd</sup> year M.B.B.S about GERIATRIC HEALTH; the life, disease and care of the elderly

**Course Outcome:** The students acquired essential knowledge about geriatric health – how the elderly population is more vulnerable to sickness and the measures to take care of them

**Course Audience:** A batch of 20 students belonging to the 2<sup>nd</sup> year of M.B.B.S

**Course Coordinator:** Dr. C. Aravind

### **Course Faculties with Qualification and Designation:**

1. Dr. Chellapandian  
Professor  
Department of General Medicine
2. Dr. Janardhan  
Associate Professor  
Department of General Medicine
3. Dr. Muthukumarasamy. B  
Professor  
Department of General Medicine

### Course Curriculum/Topics with schedule

SINo	Date	Topic	Time	Hours	Name of the faculty
1.	07/07/2017	Geriatrics	5 pm to 7 pm	2 hours	Dr. Muthukumarasamy. B
2.	10/07/2017	The care of the elderly	4: 30 pm to 6: 30 pm	2 hours	Dr. Chellapandian
3.	14/07/2017	Physical ailments faced by the elderly	5 pm to 7 pm	2 hours	Dr. Muthukumarasamy. B
4.	17/07/2017	Global statistics	5 pm to 7 pm	2 hours	Dr. Muthukumarasamy. B
5.	21/07/2017	Psychological issues facing the elderly	5 pm to 7 pm	2 hours	Dr. Janardhan
6.	24/07/2017	Frailty	4: 30 pm to 6: 30 pm	2 hours	Dr. Chellapandian
7.	28/07/2017	Indian society and its aged population	5 pm to 7 pm	2 hours	Dr. Janardhan

8.	04/08/2017	Geriatric health care	5 pm to 7 pm	2 hours	Dr. Chellapandian
9.	14/08/2017	How to offer the elderly care and comfort	4 pm to 6 pm	2 hours	Dr. Janardhan
10.	18/08/2017	The Govt of India initiatives for Geriatric health care	4 pm to 6 pm	2 hours	Dr. Chellapandian
11.	21/08/2017	Geriatric health clinics	4 pm to 6 pm	2 hours	Dr. Muthukumarasamy. B
12.	24/08/2017	Nutrition for the elderly	4 pm to 6 pm	2 hours	Dr. Janardhan
13.	28/08/2017	The issue of frequent falls	4 pm to 6 pm	2 hours	Dr. C. Aravind
14.	01/09/2017	Dementia among the aged	4 pm to 6 pm	2 hours	Dr. Muthukumarasamy. B
15.	08/09/2017	The socio- cultural approach towards the elderly	4 pm to 6 pm	2 hours	Dr. Muthukumarasamy. B
			Total Hours	30	

**REFERENCE BOOKS:**

- 1. HARRISON'S PRINCIPLES OF INTERNAL MEDICINE; 18<sup>th</sup> EDITION**
- 2. GERIATRIC HEALTH CARE – A textbook of Geriatric Health and Gerontology**

## VALUE ADDED COURSE

1. Name of the programme and code

Geriatric health – the life, diseases and care of the elderly; IM06

2. Duration & period

30 hrs; between July 2017 – September 2017

3. Information Brochure and course content of value-added courses

Enclosed as Annexure – I

4. List of students enrolled

Enclosed as Annexure – II

5. Assessment procedures:

Short notes – Enclosed as Annexure – III

6. Certificate model

Enclosed as Annexure – IV

7. No. of times offered during the same year

1; July 2017 – September 2017

8. Year of discontinuation

2018

9. Summary report of each program year wise:

VALUE ADDED COURSE: July 2017 – September 2017					
Sl. No.	Course code	Course name	Resource persons	Target Students	Strength and year
1	IM06	Geriatric health – the life, diseases and care of the elderly	Dr. Chellapandian Dr. Muthukumarasamy. B Dr. Janardhan	2 <sup>nd</sup> year MBBS	20 (July 2017 – September 2017)

10. Course feedback

Enclosed as Annexure - V

**RESOURCE PERSONS – Dr. Chellapandian**

**COORDINATOR – Dr. Aravind**

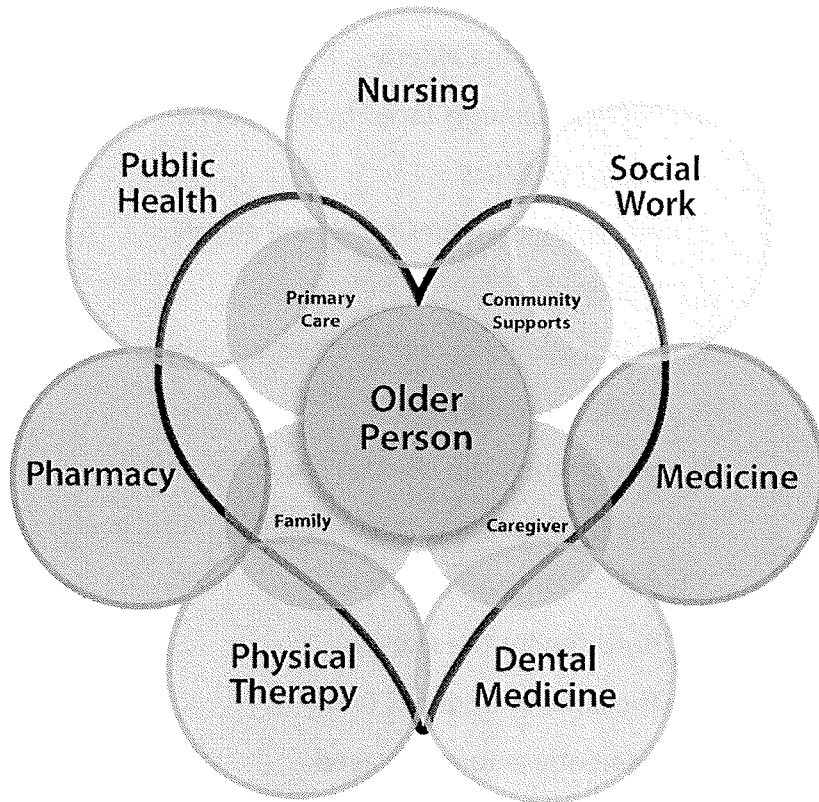
Dr. Aravind, MD.,  
Reg.No:68432  
Professor & HOD, General Medicine  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudhi, Kudapakkam, Puducherry-605 502.



ANNEXURE – I

PARTICIPANT HANDBOOK

GERIATRIC HEALTH - the life, diseases and care of the elderly



### COURSE DETAILS

PARTICULARS	DESCRIPTION
Course title	GERIATRIC HEALTH
Course code	IM06
Objective	<ol style="list-style-type: none"> <li>1. Geriatrics</li> <li>2. The care of the elderly</li> <li>3. Physical ailments faced by the elderly</li> <li>4. Global statistics</li> <li>5. Psychological issues facing the elderly</li> <li>6. Frailty</li> <li>7. Indian society and its aged population</li> <li>8. Geriatric health care</li> <li>9. How to offer the elderly care and comfort</li> <li>10. The Govt of India initiatives for Geriatric health care</li> <li>11. Geriatric health clinics</li> <li>12. Nutrition for the elderly</li> <li>13. The issue of frequent falls</li> <li>14. Dementia among the aged</li> <li>15. The socio- cultural approach towards the elderly</li> </ol>
Key competencies	On successful completion of the course, the students will have a better knowledge about geriatric health care.
Target students	Second year MBBS
Duration	30 hours; between July 2017 and September 2017
Assessment procedure	Short notes

## GERIATRIC HEALTH

### Gerontology

The scientific study of the biological, psychological, and sociological phenomena associated with old age and aging.

Geriatrics or geriatric medicine is a speciality that is based on improving health care for elderly people. It supports healthy improvement in older adults by preventing and treating disease and disability that often comes with ageing.

Aim of providing geriatric care is the following:

- A. Maintenance of healthy function
- B. Detecting severe disease at an early stage
- C. Prevention of deterioration of an existing health problem

### GERIATRIC CARE

#### THE COMPONENTS OF GERIATRIC CARE:

- Consider patients preferences and their needs.
- Be kind, patient, and sympathetic towards them. Communicate with each other on a friendly level while showing respect to their feelings.
- Support their decision-making skill and encourage them for independence in making choices for themselves.
- Help adults to achieve emotional stability. On overcoming emotional blockage and expressing themselves to their loved ones.
- Stimulate mental acuity and sensory input and physical activity to uplift their mood, self-esteem, and confidence.
- Make the elders feel homely at their home. Help them stay lively and happily involved with the family members.
- Offer diversion/ occupational therapy.
- Maintain privacy. Make them feel safe and secure to openly talk about their physical and emotional needs.
- Handle them gently.

- Offer utmost comfort with the facilities you provide such as a comfortable bed, clean bed sheet, dry bed that's smooth and unwrinkled. Keep their surroundings neat, clean and fresh.
- Teach and encourage them to maintain body hygiene thus regulate body temperature.
- Assist them for taking care of their vision, auditory and dental aid.
- Prevent them from any risk of injuries, falls and accidents. Provide a much safer surrounding.
- Ensure a healthy, and nutritional meal.
- Facilitate elimination. Support them in maintaining external genitalia hygiene.
- Support them in participating in active range of motion exercise for maintaining body alignment and posture. Ensure 100% mobility.
- Help them achieve a healthy sleeping pattern.
- Caution elders from any type of drug use.
- Get them a routine physical checkup to avoid any problem.
- Closely observe any psychophysical changes in their body and behaviour.

### CARING FOR THE AGED:

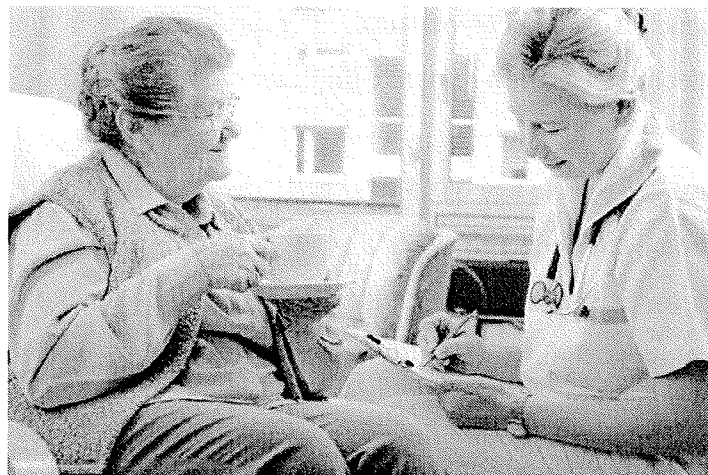
With increasing age, the number of people living well past 80 grows in turn growing the need for those with an aging expertise. Gerontology nurses are nurses who specialize in gerontology and work in many different settings including private practices, personal homes, and nursing homes. These nurses specialise in geriatric care and geriatric medicine both to provide the older adults with specialized care and geriatric nursing and a high quality of life.

Functionally and cognitively fit elderly are physically and mentally fit to be independent and may be fit enough to even work and earn. Main concern for these elderly is the need for more health promotional activities. These include geriatric medicine, nutrition, physical activity, social contact, psychological support, and activities for the brain.

For elderly with mild functional limitations or mild cognitive impairment, assistance for living is needed. They usually fall in the age group of 70–80 years. Geriatric care in many forms like support with Meals on Wheels, special transport, need for assistance for hospital visits or support for physical rehabilitation is required for these people.

Since their healthcare needs are enormous, they need special geriatric clinics where they are comprehensively assessed and rehabilitated. Other helpful aids to their betterment are physiotherapy, psychological support, and constant medical help. In case of decline in functional or cognitive status, they may need hospitalization and full- time geriatric nursing.

Elderly with severe functional limitations or cognitive limitations are absolute candidates for receiving home geriatric care or hospice care. Home members need to be trained in caregiving and also it is almost essential to hire training home care providers for geriatric nursing. A need for home health care programs for these elderly with doctors, geriatric medicine specialists, nurses, physiotherapists, laboratory services, and pharmacy services at home for these elderly.



### **RISK FACTORS FOR FALLS**

- Lower limb weakness
- History of falls
- Gait/balance problem
- Visual impairment
- Arthritis of lower limb joints

- Postural hypotension
- Polypharmacy, i.e. four or more drugs
- Cognitive impairment
- Incontinence
- Age over 65

#### Common causes of postural hypotension

- Drugs
- Dehydration
- Anaemia
- Sepsis
- Alcohol
- Prolonged bed rest following illness
- Carotid sinus disease
- Autonomic failure
- Adrenal insufficiency

Drugs linked to falls via other mechanisms, e.g. sedation/ confusion/ unsteadiness Benzodiazepines Antipsychotics, e.g. haloperidol Opiates Codeine-based analgesics Anticonvulsants Antidepressants, particularly tricyclics and selective serotonin reuptake inhibitors (SSRIs)

- One in three adults over the age of 65 falls annually and falls are therefore a significant public health concern.
- Falls in older people are the leading cause of hip fracture – a condition associated with high morbidity, mortality and cost to the NHS.
- Up to 30% of falls can be prevented with targeted multidisciplinary risk factor assessment and intervention.
- Falls prevention should include assessment and treatment of osteoporosis as a means to prevent fracture.
- Any older patient presenting with a fall and an unsteady ‘get up and go’ test warrants a full multidisciplinary assessment.

## **ORAL HEALTH DENTAL PROBLEMS:**

1. Dry Mouth: As we age, many people experience dry mouth as a side effect of medications or reduced saliva production.
2. Ill-Fitting Dentures: If you wear dentures, over time they may become ill-fitting. When dentures are not properly fitted, one may experience pain with eating or chewing.
3. Dysphagia: This condition is where it becomes more difficult to move food or liquid from your mouth to your stomach. Dysphagia can occur at any age, but is most common in older adults. People who experience dysphagia will most likely need a texture modified diet.

Say “no” to eating alone:

- Make a lunch date with a friend or your favorite niece.
- Join a class or a volunteer group where you can meet like minded people and make new friends.
- Adult day care services will provide activities and a healthy meal.

## **GERIATRIC CARE IN INDIA:**

India has 112 million elderly people with multiple physical, social psychological, and economic problems with unmet needs in all domains of health. If we look at the physical and psychological domain, we have the following figures from the previous studies conducted in India.

- 3.7 million suffer dementia
- 40 million suffer from poor vision
- 1.6 million annual stroke cases
- 1 in 3 suffer from arthritis
- 1 in 3 has hypertension
- 1 in 5 has diabetes
- 1 in 5 has auditory problems
- 1 in 4 suffer from depression
- 1 in 10 falls and sustains a fracture

1 in 3 bowel disorder

Cancer is 10 times more common.

In addition, we have data to show that Indian elderly face several social issues such as loneliness, elder abuse, neglect, lack of income security, and poor access to health care. We also have lack of policies on advanced directive, palliative care, and end-of-life care for the elderly. There is lack of data on the spiritual health of older people.

**Ministry of health and Family Welfare has provided the following benefits:**

- A. Separate queues for older persons in government hospitals
- B. Geriatric clinic in several government hospitals
- C. A total of 104 districts of 24 states/union territories and eight Regional Geriatric Centres have been covered under the program
- D. So far, 930 CHCs, 4438 Primary Health Care Centers, and 28,767 subcenters have been covered under the program.

**NATIONAL HEALTH CARE PROGRAM FOR THE OLDER PEOPLE IN INDIA**

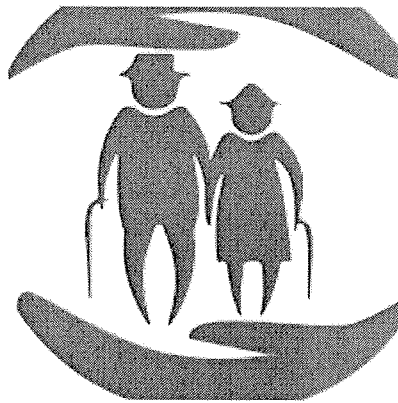
The national policy on older persons was announced in January 1999 to reaffirm wellness of older people National Policy on Senior Citizens which is ready from March 30, 2011, is under implementation stage. The ministry implemented the National Programme for the Health Care of the Elderly (NPHCE) from the year 2010 to 2011. NPHCE forms a part of the Noncommunicable Division in the Ministry with the following objectives.

**OBJECTIVES**

1. To provide preventive, curative, and rehabilitative services to the elderly at various levels of health-care delivery system of the country
2. To strengthen referral system
3. To develop specialized workforce

**MAJOR COMPONENTS**

- a. To establish geriatric departments in all the existing eight Regional Geriatric Centers
  - b. To strengthen health-care facilities for elderly at various levels of 100 identified districts in 21 states of the country
  - c. Regional institutions to provide technical support to geriatric units at district hospitals whereas district hospitals will coordinate and supervise activities at Community Health Centers (CHC), Primary Health Centre, and subcenters.
4. promote research in the field of diseases of the old age.



### **DEMENTIA AMONG THE AGED**

Dementia is a condition that is common in the elderly and frequently contributed to by multiple pathologies and comorbidities, including delirium, depression and polypharmacy. The diagnosis of dementia relies greatly on clinical assessment that includes collaborative history and exclusion of contributing conditions. However, emerging technologies, including the development of biomarkers and novel neuroimaging techniques may supplement clinical assessment in the near future. Although pharmacological therapies have been largely unsuccessful in treating dementia, targeting potential risk factors aiming to decrease incidence of dementia is an important public health initiative.



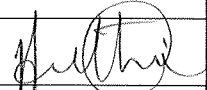
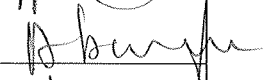
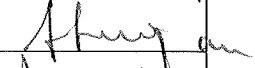
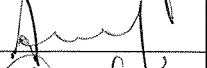
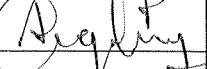
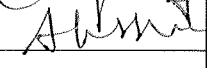
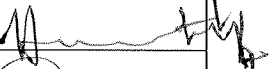
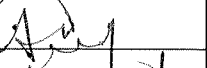
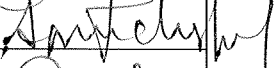
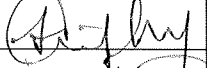
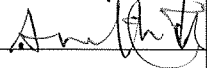
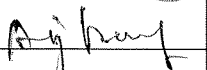
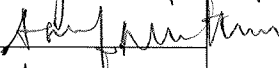
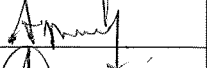

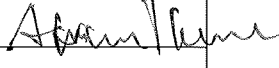

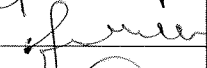


ANNEXURE – II

**Bharath Institute of Higher Education and Research**

Sri Lakshmi Narayana Institute of Medical Sciences

Participant list with signatures

Value-added course: Geriatric health (dated 07/07/2017)

Sl.No	Reg.No	Name of the candidate	Signature
1.	U15MB250	AARTHI .H	
2.	U15MB251	ABARNA. M	
3.	U15MB252	ABINAYA.J	
4.	U15MB253	ADARSH .S	
5.	U15MB254	AGILAN .A	
6.	U15MB255	AKSHAYA .S	
7.	U15MB256	AKSSHAYA .M.R	
8.	U15MB257	AMARNATH. S	
9.	U15MB258	AMUDHESAR .K.M	
10.	U15MB259	ANANDH.S	
11.	U15MB260	ARCHITH VIGNESH .B	
12.	U15MB261	ARJUNBALAJI .A	
13.	U15MB262	ARUL NIVETHINI V.A	
14.	U15MB263	ARUL PRINCE. E	
15.	U15MB265	ARUN PRASAD. K	
16.	U15MB266	ARUNA .S	
17.	U15MB264	ARUNKUMAR .S	
18.	U15MB267	ASAN THASTHAGIR. M	
19.	U15MB268	ASWIN. B	
20.	U15MB260	ARCHITH VIGNESH .B	



ANNEXURE – III



**SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL  
SCIENCES**

GERIATRIC HEALTH

SHORT NOTES

Course Code: IM06

WRITE SHORT NOTES ON THE FOLLOWING:

1. The main psychosocial and physical health issues faced by the elderly
2. Dementia and its social, economic and cultural implications.
3. The actions taken by the Govt of India to tackle the geriatric health care crisis
4. Geriatric health care clinics





GERIATRIC HEALTH

Student Name:

SHORT NOTES

AMARNATHI S

Course Code: IM06

WRITE SHORT NOTES ON THE FOLLOWING:

1. The main psychosocial and physical health issues faced by the elderly
2. Dementia and its social, economic and cultural implications.
3. The actions taken by the Govt of India to tackle the geriatric health care crisis
4. Geriatric health care clinics

7  
10

Dr. Aravind  
Dr. Aravind

1. Psychosocial health issue is depression, loneliness, rejection by children.
2. Physical health is diabetes, hypertension, Bronchitis, Arthritis, Generalized weakness.
2. Dementia: A group of thinking & social symptoms that interferes with daily functioning. Social & memory, cognitive function & behaviours. depression.
3. National Programme for the Health Care for elderly (NPHCE).

4. Geriatric health care services

✓ BLSH, NER, Urban Prisons health geriatric

" Care Centre

✓ KBIIS Geriatric + Diabetic Centre

✓ Chennai Geriatric Centre.



GERIATRIC HEALTH

SHORT NOTES

Student Name: ANANDH. S

Course Code: IM06

WRITE SHORT NOTES ON THE FOLLOWING:

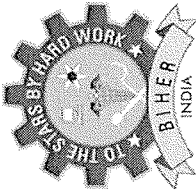
1. The main psychosocial and physical health issues faced by the elderly
2. Dementia and its social, economic and cultural implications.
3. The actions taken by the Govt of India to tackle the geriatric health care crisis
4. Geriatric health care clinics

8

10  
Anandh

- 1) Main psychosocial issue faced by elderly - Depression, Anxiety, substance abuse & violence. Physical health issue faced by elderly are chronic diseases such as stroke, diabetes, cancer.
- 2) Social implication of Dementia - Reduced work hours, loss of employment, loss of relationships, time with family & friends, & social activities.
- 3) Economic implication - Medical & social care cost incurred - social stigma towards disease, loss of relations.
- 4) Govt of India to tackle geriatric health care crisis stated National programme for health care of Elderly (NPHCE) and other national policies for senior citizens.
- 5) Geriatric health care clinics are in hospitals that provide care and support for the older people with wide range of health care facilities.





# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research

(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that AARTHI .H has actively participated in the Value Added Course on Geriatric health organized between July 2017 – September 2017 by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

*Dr. Cheilapandian*

Dr. Cheilapandian

RESOURCE PERSON

*Dr. C. Aravind*

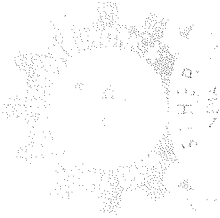
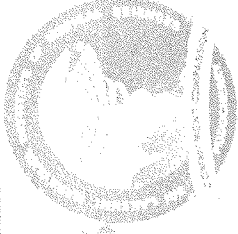
Dr. C. Aravind

COORDINATOR

Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kuvempur  
605 502.



Sri Lakshmi Narayana Institute of Medical Sciences



This is to certify that AMARNATH. S has actively participated in the

Value Added Course on "Geriatric health" organized between July 2017 and September 2017 by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

*Signature*  
DR. CHELLAPANJIAN  
SRI LAKSHMI NARAYANA  
INSTITUTE OF MEDICAL SCIENCES  
PONDICHERRY  
COORDINATOR  
605 502

*Signature*  
Dr. C. Aravind  
Professor, M.D., General Medicine  
SRI LAKSHMI NARAYANA  
INSTITUTE OF MEDICAL SCIENCES  
PONDICHERRY  
COORDINATOR  
605 502



**ANNEXURE - V**  
**Student Feedback Form**

Course Name: **GERIATRIC HEALTH**

Subject Code: **IM06**

Name of Student: Agilan A ID No.: U15MB254

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear				✓	
2	Course contents met with your expectations					✓
3	Lecturer sequence was well planned				✓	
4	Lectures were clear and easy to understand					✓
5	Teaching aids were effective				✓	
6	Instructors encourage interaction and were helpful				✓	
7	The level of the course					✓
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Date: 08/09/2017

 Signature



## COURSE COMPLETION LETTER

Date: 11/09/2017

From  
Dr. Aravind. C  
Professor and Head  
Department of General Medicine  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research  
Chennai

Through Proper Channel


To  
The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research  
Chennai

### **Sub: Completion of value-added course: Geriatric Health**

Respected Madam,

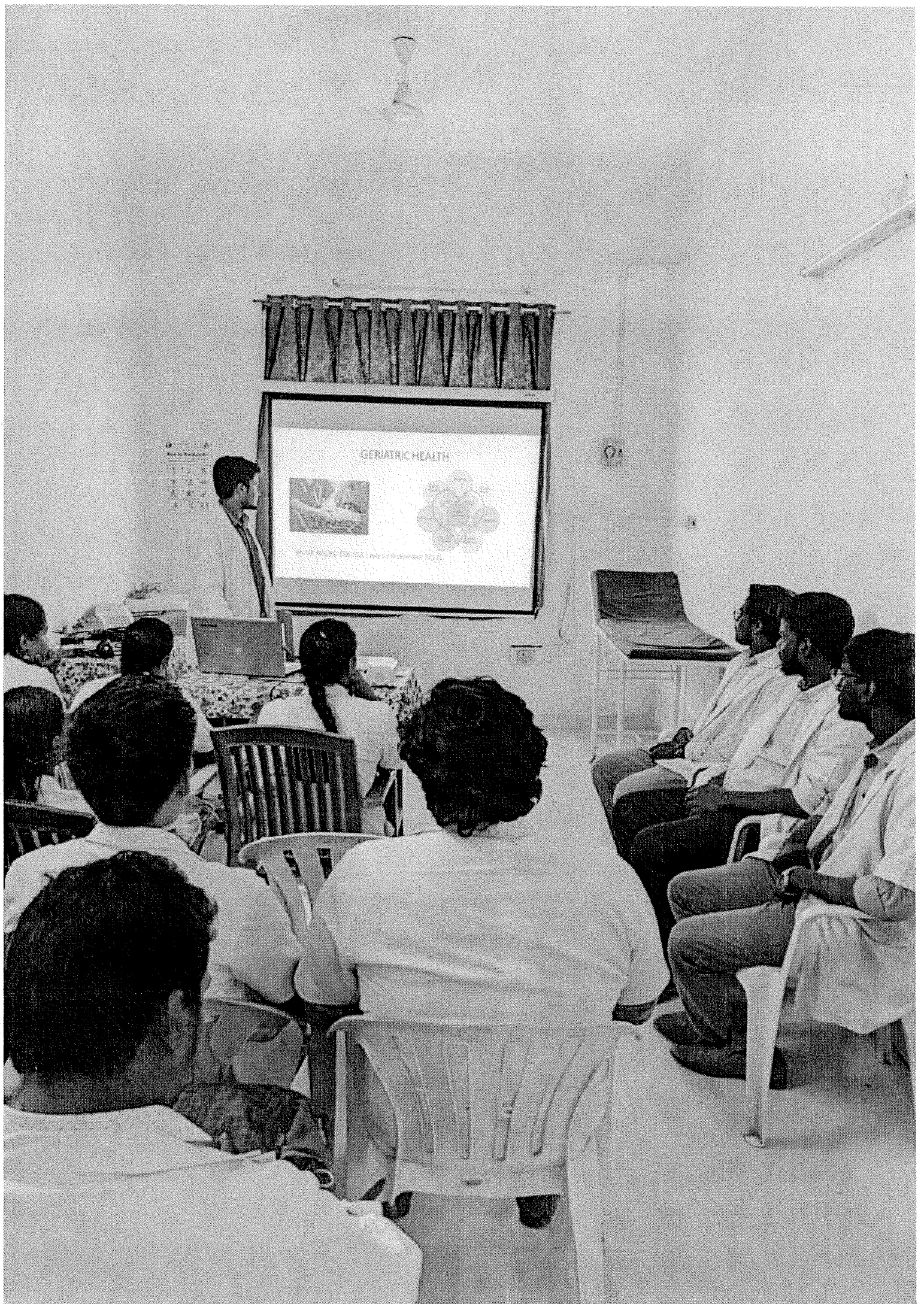
With reference to the subject mentioned above, the department has conducted the value-added course titled: "**Geriatric Health**" on 08/09/2017. We solicit your kind action to send certificates for the participants. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards

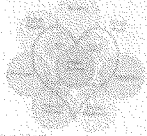
  
Dr. ARAVIND, MD.,  
Dr. Aravind C  
Professor & HOD, General Medicine  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502.

**Encl: Photographs**





GERIATRIC HEALTH



WORLD AGING REPORT (2015) (www.un.org/esa/population)





**Sri Lakshmi Narayana Institute of Medical Sciences**

From  
Dr K Balagurunathan,  
Professor and Head,  
General Surgery,  
Sri Lakshmi Narayana Institute Of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

Date 3/6/2017

To  
The Dean,  
Sri Lakshmi Narayana Institute Of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Permission to conduct value-added course: MANAGEMENT OF THORACIC TRAUMA**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: **MANAGEMENT OF THORACIC TRAUMA ,30 Hours course on JULY 2017- DEC 2017**. We solicit your kind permission for the same.

Kind Regards

**PROFESSOR & HOD**  
DEPARTMENT OF GENERAL SURGERY  
Sri Lakshmi Narayana Institute of Medical Sciences  
PONDICHERRY - 605 002

DR K BALAGURUNATHAN

HOD, GENERAL SURGERY

---

**FOR THE USE OF DEANS OFFICE**

Names of Committee members for evaluating the course:

The Dean: DR G. JAYALAKSHMI

The HOD: DR K BALAGURUNATHAN

The Expert: DR ASAYAS BOSCO CHANDRA KUMAR

The committee has discussed about the course and is approved.



**Dr. G. JAYALAKSHMI, BSC., MBBS., DTCO., M.D.,**  
**DEAN**  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agarani, Kodapakkam Post,  
Vattanur Commune, Puducherry-605502.

Dean

(Sign & Seal)



Professor General Surgery  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kodapakkam, Puducherry-605 502.

Subject Expert

(Sign & Seal)



**PROFESSOR & HOD**  
**DEPARTMENT OF GENERAL SURGERY**  
Sri Lakshmi Narayana Institute of Medical Sciences  
PONDICHERRY - 605 502

HOD

(Sign & Seal)



OFFICE OF THE DEAN

# Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P -II ) dt. 11/07/2011 ]  
[ Affiliated to Bharath University, Chennai - TN ]

## Circular

07.06.2017

**Sub: Organising Value-added Course: MANAGEMENT OF THORACIC TRAUMA**

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research** is organizing a value added course "MANAGEMENT OF THORACIC TRAUMA".

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before 1<sup>ST</sup> JULY 2017. Applications received after the mentioned date shall not be entertained under any circumstances.

Dr. G. JAYALAKSHMI, BSC., MBBS., DTCO., M.D.,  
DEAN

Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agaram, Kudapakkam Post,  
Villanur Commune, Puducherry - 605502.

**Dean**

## Course Proposal

Course Title: **MANAGEMENT OF THORACIC TRAUMA**

Course Objective:

1. Introduction
2. Primary Survey
3. Breathing Manifestations
4. Tension Pneumothorax
5. Open Pneumothorax
6. Flial Chest
7. Haemthorax
8. Cardiac Tamponade
9. Secondary Suvery
10. Tracheobrnchial Tree Injury
11. Traumatic Aotic Disruption
12. Traumatic Diaphragmatic Disruption
13. Subcutaneous Emphysema
14. Mediastinal Traversing Ijuries

Course Outcome:

Course Audience: **MBBS UNDERGRADUATES**

Course Coordinator: **DR ASAYAS BOSCO CHANDRA KUMAR**

Course Faculties with Qualification and Designation:

1. **Dr Balagurunathan , Prof and HOD General Surgery**
2. **Dr Asayas Bosco Chandra Kumar, Prof General Surgery**
3. **Dr. Senthil Velan , Prof General Surgery**

Course Curriculum/Topics with schedule (Min of 30 hours)

SlNo	Date	Topic	Time	Hours	Faculty
1.	20/7/2017	1. Introduction	4-6PM	2	<b>Dr K Balagurunatha</b>
2.	23/7/2017	2. Primary Survey	4-7PM	3	<b>Dr Asayas</b>

					<b>Bosco</b>
3.	25/7/2017	<b>3. Breathing Manifestations</b>	4-6PM	3	<b>Dr K Balagurunatha</b>
4.	27/7/2017	<b>4. Tension Pneumothorax</b>	4-6PM	2	<b>Dr Asayas Bosco</b>
5.	29/7/2017	<b>5. Open Pneumothorax</b>	4-7PM	3	<b>Dr K Balagurunatha</b>
6.	2/8/2017	<b>6. Flial Chest</b>	4-7PM	3	<b>Dr Asayas Bosco</b>
7.	5/8/2017	<b>7. Haemthorax</b>	4-7PM	3	<b>Dr. Senthil Velan</b>
8.	6/8/2017	<b>8. Cardiac Tamponade</b>	4-6PM	2	<b>Dr K Balagurunatha</b>
9.	9/8/2017	<b>9. Secondary Suvery</b>	4-6PM	2	<b>Dr. Senthil Velan</b>
10.	12/8/2017	<b>10. Tracheobrnchial Tree Injury</b>	4-7PM	3	<b>Dr Asayas Bosco</b>
11.	14/8/2017	<b>11. Traumatic Aotic Disruption</b>	4-6PM	2	<b>Dr. Senthil Velan</b>
12.	17/8/2017	<b>12. Traumatic Diaphragmatic Disruption</b>	4-6PM	2	<b>Dr K Balagurunatha</b>
			<b>TOTAL HOURS</b>	30	

**REFERENCE BOOKS: (Minimum 2)**

1. Schwartz's Principles of Surgery, 11th Edition
2. Bailey And Love's Short Practice of Surgery 27th Ed

## VALUE ADDED COURSE

**1. Name of the programme & Code**

MANAGEMENT OF THORACIC TRAUMA GS07

**2. Duration & Period**

30 hrs & JULY 2017 – DEC 2017

**3. Information Brochure and Course Content of Value Added Courses**

*Enclosed as Annexure- I*

**4. List of students enrolled**

*Enclosed as Annexure- II*

**5. Assessment procedures:**

Multiple choice questions- *Enclosed as Annexure- III*

**6. Certificate model**

*Enclosed as Annexure- IV*

**7. No. of times offered during the same year:**

1 TIME, JULY 2017 – DEC 2017

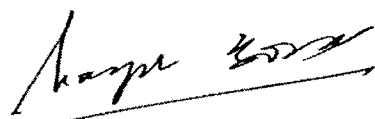
**8. Year of discontinuation: 2017**

**9. Summary report of each program year-wise**

Value Added Course- JULY 2017 – DEC 2017					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	GS07	MANAGEMENT OF THORACIC INJURIES	Dr. ASAYAS BOSCO CHANDRA KUMAR	4 TH MBBS	20 ( JULY 2017 – DEC 2017)

**10. Course Feed Back**

*Enclosed as Annexure- V*



Professor General Surgery  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502.

**DR ASAYAS BOSCO CHANDRAKUMAR**  
**(PROF GENERAL SURGERY)**



**PROFESSOR & HOD**  
**DEPARTMENT OF GENERAL SURGERY**  
**Sri Lakshmi Narayana Institute of Medical Sciences**  
**PONDICHERRY - 605 502**  
**CO-ORDINATOR**

**DR K BALAGURUNATHAN**  
**( HOD GENERAL SURGERY)**

**MANAGEMENT OF THORACIC TRAUMA**

**PARTICIPANTS HAND BOOK**

## COURSE DETAILS

Particulars	Description
Course Title	MANAGEMENT OF THORACIC TRAUMA
Course Code	GS07
Objective	<ol style="list-style-type: none"> <li>1. Introduction</li> <li>2. Primary Survey</li> <li>3. Breathing Manifestations</li> <li>4. Tension Pneumothorax</li> <li>5. Open Pneumothorax</li> <li>6. Flial Chest</li> <li>7. Haemthorax</li> <li>8. Cardiac Tamponade</li> <li>9. Secondary Suvery</li> <li>10. Tracheobrnchial Tree Injury</li> <li>11. Traumatic Aotic Disruption</li> <li>12. Traumatic Diaphragmatic Disruption</li> <li>13. Subcutaneous Emphysema</li> <li>14. Mediastinal Traversing Ijuries</li> </ol>
Further learning opportunities	ATLS guidelines
Key Competencies	On successful completion of the course the students will have knowledge in managing thoracic trauma emergencies
Target Student	4 TH MBBS Students
Duration	30hrs JULY 2017 – DEC 2017
Theory Session	10hrs
Practical Session	20hrs

Assessment Procedure	Multiple choice questions
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## **INTRODUCTION**

Thoracic trauma is one of the causes of a great number of deaths. Deaths due to thoracic trauma might occur before the patients reach the hospital or in the emergency room. Majority of these deaths are preventable by correct diagnosis at the right time and appropriate management. Only <10% of blunt injuries and 15-30% of penetrating injuries require thoracotomy and the rest of the cases can be managed with simple procedures.

### **Pathophysiology:**

Thoracic injuries result in hypoxia, hypercarbia and acidosis. Hypovolemia, perfusion mismatch due to contusion, hematoma etc and changes in intrathoracic pressures like in tension or open pneumothorax lead to tissue hypoxia. Hypercarbia may result from changes in intrathoracic pressures and metabolic acidosis is the result of hypoperfusion to the tissues.

### **Initial assessment and management:**

Initial assessment and management consist of primary survey, resuscitation of vital functions, secondary survey and definitive care. Care has to be given to the identification of hypoxia at an early stage so that early intervention can be done. Life threatening injuries due to chest injuries are treated with airway control and the placement of chest tube.

### **Primary survey:**

The conditions which are to be identified during primary survey include:

-Airway obstruction

- Tension pneumothorax
- Open pneumothorax
- Flail chest
- Massive hemothorax
- Cardiac tamponade

**Airway with cervical spine protection:**

- Listen to the air movements at nose, mouth and lung fields.
- Inspect the oropharynx for any obstruction
- Look for the intercostals and sup raclavicular muscle retractions.
- Look for laryngeal injury as they can result in acute airway obstruction and may lead to death.
- Carefully observe for injuries to the upper chest, posterior dislocation or frac ture dislocation of sternoclavicular joints.
- Signs and symptoms of airway obstruction include strido r, change in voice quality and evident trauma to th base of the neck with palpable defect.

**Management include**

- Establishment and management of a patent airway, possibly by endotracheal intubation.
- Clearing the airway of any objects.
- Closed reduction of the injury through extension of the shoulders and manual reduction of the fracture. Special attention has to be paid to the alignment of the cervical spine and it should immbolized till injury is ruled out.

## **Breathing and ventilation:**

Expose the chest and neck to assess breathing.

Inspect and palpate for tracheal deviation.

Assess respiratory rate and look for shallow respirations.

Be vigilant for cyanosis which is a late sign of hypoxia in trauma.

The following conditions which affect breathing and ventilation are to be assessed at this stage.

### **a. Tension pneumothorax:**

A tension pneumothorax develops when there is a 'oneway valve' airleak from the chest wall or the lung.

Air enters the thoracic cavity, results in complete collapse of the lung, mediastinum is displaced to the other side which results in a decreased venous return and compression of the opposite lung.

Most common cause of tension pneumothorax are

- Mechanical ventilation of a patient with visceral pleural injury,
- When a parenchymal injury fails to seal in simple pneumothorax,
- Occlusive dressing of a traumatic chest wall defect or
- When there is a markedly displaced thoracic spine fracture.

Signs and symptoms of tension pneumothorax include chest pain, air hunger, respiratory distress, tachycardia, hypotension, tracheal deviation, unilateral absence of breath sounds, neck vein distension and cyanosis. Differentiation from cardiac

tamponade is done by the identification of hyper resonant percussion notes and absent breath sounds on the affected side.

**Management** : Immediate decompression via needle thoracocentesis (done by the insertion of a large caliber needle into second intercostal space in midclavicular line)

Definitive treatment → insertion of a chest tube into the fifth intercostal space just anterior to the midaxillary line.

### **Open pneumothorax (sucking chest wound):**

These are large defects in the chest wall which are open.

If the opening is two third the size of trachea, air may pass from the wound with each respiratory effort which leads to impaired ventilation and hypoxia and hypercarbia.

**Management** includes:

Primary closure of the defect with occlusive dressing which is covered on three sides . Covering on three sides results in a flutter valve effect which aid in the movement of air during expiration.

Placement of a chest tube remote to the wound.

Surgical closure of the wound is often required.

### **Flail chest:**

A flail chest occurs when a segment of the chest wall does not have bony continuity. It results in cases of multiple rib fractures.

If there is injury to underlying chest wall or restricted chest wall movement due to pain, hypoxia may result.

There is paradoxical chest movement and most of the times flail chest may not be apparent due to splinting of the chest wall.

**Diagnosis** ; a chest X ray which may indicate several rib fractures and ABG analysis suggesting hypoxia.

**Management** includes:

Adequate ventilation

Adequate oxygenation with humidified oxygen

Fluid resuscitation

Analgesia to improve ventilation

Definitive management with re-expansion of lung.

### **Massive hemothorax:**

Occurs when there is an accumulation of large amount of blood (>1500ml or 1/3rd or more of patient's blood volume) in the chest cavity. Presentation may be as hypotension or shock. Most common cause of hemothorax is penetrating chest injury. The patient may present with shock, absent breath sounds and dullness to percussion.

**Management** includes: Restoration of blood volume and decompression of chest cavity. Crystalloids and blood products are to be used.

Insertion of a chest tube (38 French).

Auto transfusion of the blood may be done.

Early thoracotomy may be warranted in cases of massive hemothorax. Thoracotomy may also be required if there is a continuous blood loss of 200ml/hour for 2 to 4 hours.

### **Cardiac tamponade:**

Most commonly seen in penetrating injuries but may also occur in blunt injuries. Hemopericardium may result in decreased venous return and cardiac output. Removal of a small amount of blood via pericardiocentesis may result in immediate improvement of the patient's condition.

Clinically, diagnosis is done by identification of Beck's triad (elevation of venous pressure, decreased arterial pressure and muffled heart tones). Pulsus paradoxus and Kussmaul's sign may or may not be present. Pulseless electric activity (PEA) in the absence of tension pneumothorax and hypovolemia suggests cardiac tamponade. Diagnostic measures include Focused assessment sonography in trauma (FAST) and echocardiogram.

**Management** includes:

Subxiphoid pericardiocentesis

Definitive management is thoracotomy and pericardiotomy with evacuation of blood and repair of the injured heart and associated structures.

Subxiphoid pericardial window or emergency thoracotomy and pericardiotomy may be performed in the ER.

Resuscitative thoracotomy may be done in patients who reach the ER pulseless, but have myocardial electrical activity.

Removal of blood, repair of the injuries and open cardiac massage may be done. Cross clamping of the descending aorta slows blood loss and ensures adequate supply to brain and heart.

### **Secondary Survey:**

The conditions to be identified during secondary survey are

Simple pneumothorax.

Hemothorax.

Pulmonary contusion.

Tracheobronchial disruption.

Blunt cardiac injury.

Traumatic aortic disruption.

Traumatic diaphragmatic injury.

Meditational traversing wounds.

**Simple pneumothorax:** It results from air entering the potential space between the visceral and parietal pleura. It may be caused by penetrating or blunt trauma, lung laceration, and thoracic spine fractures. Signs and symptoms include decreased breath sounds and hyper resonance on percussion.

**Management** includes: Chest tube insertion. Special attention has to be paid that general anesthesia or positive pressure ventilation should never be administered in a patient who sustains traumatic pneumothorax who is at risk for unexpected intraoperative pneumothorax until a chest tube is inserted.

**Hemothorax:** A hemothorax is caused by lung laceration or laceration of an intercostal vessel or internal mammary artery resulting from either penetrating or blunt chest injury. Thoracic spine fractures also may result in hemothorax.

**Management** include: Chest tube insertion. Operative intervention should be considered if significant blood loss is present (>1500ml or 200ml/hour for 2 to 4 hours).

**Pulmonary contusion:** This is the most common lethal chest injury. Careful observation of the patients with suspected pulmonary contusion should be done as the respiratory failure in these cases may develop only slowly.

**Management:** If there is significant hypoxia ( $\text{PaO}_2 \leq 65 \text{ mmHg}$  or  $\text{SaO}_2 \leq 90\%$  on room air), intubation and ventilation should be done during the first hour after injury. Monitoring with pulse oximetry, ABG, ECG should be done.

**Tracheobronchial tree injury:** Injury to the trachea or main bronchus and might be commonly overlooked during the primary survey. Most of the injuries occur within an inch of the carina and there is a high mortality rate before and after reaching the ER associated with these injuries. Signs and symptoms include hemoptysis, subcutaneous emphysema or tension pneumothorax with a mediastinal shift. If there is persistent air leak after chest tube insertion in pneumothorax, there should be suspicion of tracheobronchial tree injury. Confirmation of clinical diagnosis done with bronchoscopy. Bronchial intubation of the opposite bronchus may be necessary to ensure oxygenation. Immediate surgical intervention might be necessary in cases where intubation is difficult due to paratracheal hematoma, associated oropharyngeal injuries or tracheobronchial injury itself.

**Blunt cardiac injury:** Blunt cardiac injury often results in myocardial contusion, cardiac rupture or valvular disruption. Patients with cardiac chamber rupture present with cardiac tamponade and should be diagnosed during primary survey. If there is atrial rupture, cardiac tamponade will develop only slowly. Patients often complain of chest discomfort and may have hypotension and diagnosis is confirmed by ECG. Patients with myocardial contusion need continuous monitoring for the first 24 hours, because of increased risk of sudden dysrhythmias.

**Traumatic aortic disruption:** This is the most common cause of sudden death after a traumatic injury due to fall or road traffic injuries. Early management can result in survival of the patients if early identification of the injury is done. In patients who reach the ER, there is evidence of a contained mediastinal hematoma which is life saving. Usually there are no typical signs and symptoms. There should be suspicion of aortic rupture in patients with a history of decelerating force. History should be correlated with radiological findings. Arteriography and CECT of chest are also helpful. The radiologic signs which may be present in vascular injury to the chest includes: - Widened mediastinum - Obliteration of aortic knob - Deviation of trachea to the right - Obliteration of space between pulmonary artery and aorta - Depression of left main stem bronchus 51

- Deviation of esophagus to right - Presence of pleural or apical cap - Left hemothorax - Fractures of first or second rib or scapula Management include: primary repair of aorta or resection of the injured area and grafting.

**Traumatic diaphragmatic injury:** This injury is most commonly diagnosed on the left side, as the liver protects it on the right side of the diaphragm. In blunt trauma, large tears lead to herniation and in penetrating trauma there are small perforations which lead to herniations, which might even take years to manifest. There are chances of missing these injuries as they are often misinterpreted as elevated diaphragm, acute gastric dilatation, loculated pneumothorax or subpulmonary hematoma. Suspicion is confirmed by the presence of gastric tube on chest X ray and also presence of peritoneal lavage fluid in chest drainage tube. VATS, laparoscopy and MRI might be helpful in diagnosis. Management is surgical repair of the injury.

**Mediastinal traversing wounds:** These injuries are caused by penetrating objects which traverse the mediastinum and injures the heart, great vessels, tracheobronchial tree or esophagus. Diagnosis is made by the identification of an entrance wound in one hemithorax and the exit wound in the other. There are chances that a missile is lodged in the other hemithorax. Management includes: - Bilateral chest tube insertion -Monitoring of blood loss -Indications for thoracotomy are same as those of massive hemothorax.

**OTHER MANIFESTATIONS OF CHEST INJURIES:** Subcutaneous emphysema. Crushing injury to the chest (traumatic asphyxia). Rib, sternum and scapular #. Blunt esophageal rupture.

**Subcutaneous emphysema:** Often results from airway and lung injury. Most of the time, do not require treatment. Crushing injury to the chest: These injuries may lead to compromise in ventilator function and result in hypoxia and hypercarbia. This may sometimes produce traumatic asphyxia which is sudden extreme increase in venous pressure in superior venacava along with hypoxia. Associated injuries should be treated. Rib, sternum and scapular #. Most common sign indicating a fracture is pain on movement resulting in splinting of the thorax and thereby impairing ventilation, oxygenation and cough. Eventually this may result in atelectasis and pneumonia.

Fracture of the scapula, first or second ribs or sternum suggests increased level of injury and careful attention has to be given for assessment of head, neck, spinal cord, lungs and great vessels.

Fracture of lower ribs should increase suspicion for hepatosplenic injury.

Immediate reduction of sternoclavicular fracture is indicated as dislocation might cause superior venacaval obstruction.

Operative interventions in sternal or scapular fractures are sometimes required as they may cause blunt cardiac injury.

Adequate analgesia is imperative to ensure adequate ventilation and intercostal block, epidural analgesia and systemic analgesics may be used. Blunt esophageal rupture:

Most esophageal ruptures are caused by penetrating trauma, blunt esophageal trauma is rare.

Blunt esophageal trauma can be caused by forceful expulsion of the gastric contents into the esophagus due to a powerful blow to the upper abdomen. A linear tear might be formed on the lower part of the esophagus which results in leakage of the contents into the mediastinum.

Esophageal rupture might also result from the insertion of NG tube, endoscope or dilators also.

Diagnosis is done by contrast studies and esophagoscopy.











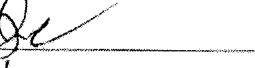
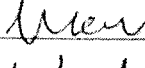
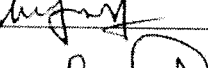

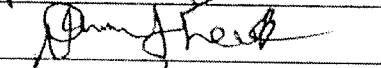
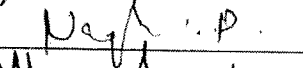
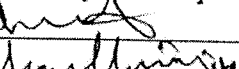
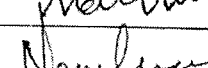
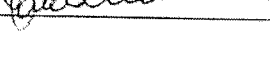

Management includes wide drainage of pleural space and definitive surgical repair of the injury via thoracotomy.

Thoracic injury is common in multiply injured patient and can be associated with life threatening problems. • The conditions may be temporarily relieved by simple measures such as intubation, ventilation, tube thoracostomy, fluid resuscitation & needle pericardiocentesis. The ability to recognize these injuries & the skill to perform the necessary procedures can be life saving. For

VALUE ADDED COURSE

MANAGEMENT OF THORACIC TRAUMA GS07

List of Students Enrolled JULY 2017- DEC 2017

MBBS Student			
Sl. No	Name of the Student	Roll No	Signature
1	KISHORE K	U15MB310	
2	KRISHNA KUMAR M	U15MB311	
3	LAKSHMI N	U15MB312	
4	LEJO SALVIN G	U15MB313	
5	LINDA EVANS M	U15MB314	
6	MADHAVA SHRIRAMAN N	U15MB315	
7	MAHALAKSHMI M N	U15MB316	
8	MAHESHWARI C	U15MB317	
9	MAIKEERTHI A	U15MB318	
10	MALAINESAN E	U15MB319	
11	MANIKANDAN T	U15MB320	
12	MANIKANDAN S	U15MB321	
13	MANO YESHWANTDEV M	U15MB322	
14	MOHAN R	U15MB323	
15	MOHD MUHSIN SAKEEN UR RAHMAN	U15MB324	
16	NAFEELA SHAHEEN M	U15MB325	
17	NAGALAKSHMI P	U15MB326	
18	NAGARJUN D	U15MB327	
19	NANDINI R	U15MB328	
20	NARENDIRAN N	U15MB329	



KISHORE · K  
UISMB 310

**SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH**

Annexure - IV

MANAGEMENT OF THORACIC TRAUMA

MULTIPLE CHOICE QUESTIONS

Course Code: GS07

I. ANSWER ALL THE QUESTIONS

1 pneumothorax develops when there is a 'one-way valve' airleak from the chest wall or the lung is known as :

- a. tension pneumothorax
- b. open pneumothorax
- c. both a and b
- d. none

2. when a segment of the chest wall does not have bony continuity, due to multiple rib fractures, it is known as

- a. flail chest
- b. stove in chest
- c. Both A & B are Correct
- d. None of the above

3. Beck's triad

- a. elevation of venous pressure
- b. decreased arterial pressure
- c. muffled heart tones
- d. all the above

4 Beck's triad seen in

- a. cardiac tamponade
- b. tension pneumothorax
- c. Both A & B are Correct



**SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH**

d. None of the above

5. management of tension pneumothorax

a. thoracocentesis

b. Icd insertion

c. Both A & B are Correct

d. None of the above

6. management of cardiac tamponade

a. thoracocentesis

b. pericariocentesis

c. Both A & B are Correct

d. None of the above

7. subcutaneous emphysema can occur in

a. rib fracure

b. sternu fracture

c. scapular fracture

d. All the above are correct

ASSESSOR NAME : M. SENTHILVELAN. M

SIGNATURE :

DATE

18/8/2017  
Dr. M. SENTHILVELAN, MS.,  
Reg No: 53175  
Professor General Surgery  
Sri Lakshmi Narayana Institute of Higher Education and Research  
Osaka, Karnataka



MAHALAKSHMI MN  
UISMB316

**SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH**

Annexure - IV

MANAGEMENT OF THORACIC TRAUMA

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**SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH**

d. None of the above

5. management of tension pneumothorax

a. thoracocentesis

b. icd insertion

c. Both A & B are Correct

d. None of the above

6. management of cardiac tamponade

a. thoracocentesis

b. pericariocentesis

c. Both A & B are Correct

d. None of the above

7. subcutaneous emphysema can occur in

a. rib fracture

b. sternu fracture


c. scapular fracture

d. All the above are correct

ASSESSOR NAME :

SIGNATURE :

DATE

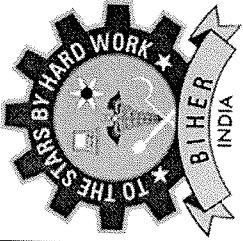
  
Dr. M. SENTHILVELAN, MS.,

Reg. No: 53175

Professor General Surgery

Sri Lakshmi Narayana Institute of Medical Science

Osudu, Kudapakkam, Puducherry-605 502.



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research

(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that KRISHNA KUMARI M has actively participated in the Value Added Course on **MANAGEMENT OF THORACIC TRAUMA** held during July 2017 – Dec 2017 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

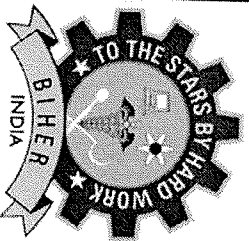
Professor General Surgery  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudi, Kudapakkam, Puducherry-605 502.

Dr. Asayas Bosco  
Chandre Kumar

RESOURCE PERSON

PROFESSOR & HOD  
DEPARTMENT OF GENERAL SURGERY  
Sri Lakshmi Narayana Institute of Medical Sciences  
PONDICHERRY - 605 502

Dr. K BALAGURUNATHAN  
COORDINATOR



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that MANIKANDAN S has actively participated in the Value Added Course on **MANAGEMENT OF THORACIC TRAUMA** held during July 2017 – Dec 2017 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry-605 502, India.

Professor General Surgery  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Pondicherry-605 502

**PROFESSOR & HOD**  
**DEPARTMENT OF GENERAL SURGERY**  
Sri Lakshmi Narayana Institute of Medical Sciences  
PONDICHERRY - 605 502  
**DR. K BALAGURUNATHAN**  
**COORDINATOR**

**Dr. Asayas Bosco**  
**Chandra Kumar**

**RESOURCE PERSON**

# Student Feedback Form

Course Name: MANAGEMENT OF THORACIC TRAUMA

Subject Code: GS07

Name of Student: C. MAHESWARI Roll No.: U15MB317

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear				/	
2	Course contents met with your expectations					/
3	Lecturer sequence was well planned					/
4	Lectures were clear and easy to understand					/
5	Teaching aids were effective				/	
6	Instructors encourage interaction and were helpful					/
7	The level of the course					/
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Date: 17/8/2017

  
Signature: C. Maheswari

## Student Feedback Form

Course Name: MANAGEMENT OF THORACIC TRAUMA

Subject Code: GS07

Name of Student: NAGALAKSHMI . P Roll No.: 118MB326

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear				/	
2	Course contents met with your expectations					/
3	Lecturer sequence was well planned					/
4	Lectures were clear and easy to understand					/
5	Teaching aids were effective					/
6	Instructors encourage interaction and were helpful					/
7	The level of the course				/	
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Date:

17/8/2017

Nagalakshmi . P  
Signature

Date 11/12/2017

From  
Dr K Balagurunathan,  
Professor and Head,  
General Surgery,  
Sri Lakshmi Narayana Institute Of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

Through Proper Channel

To  
The Dean,  
Sri Lakshmi Narayana Institute Of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Completion of value-added course: MANAGEMENT OF THORACIC TRAUMA**

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: **MANAGEMENT OF THORACIC TRAUMA** for 20 students on JULY 2017- DEC 2017. We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards



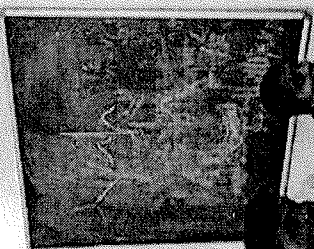
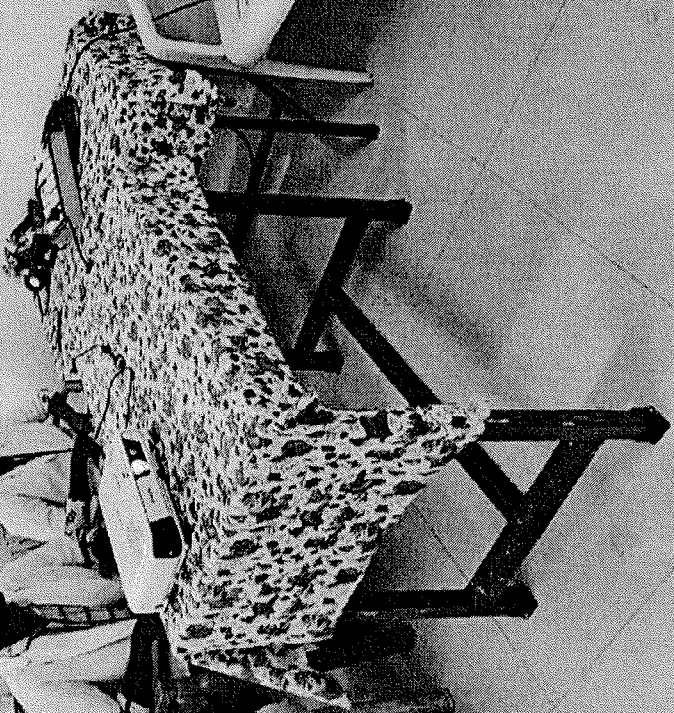
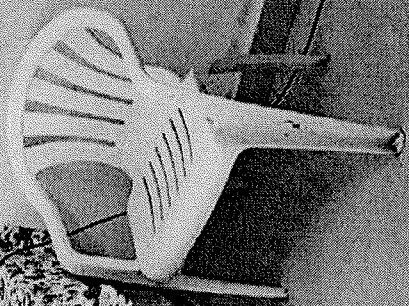
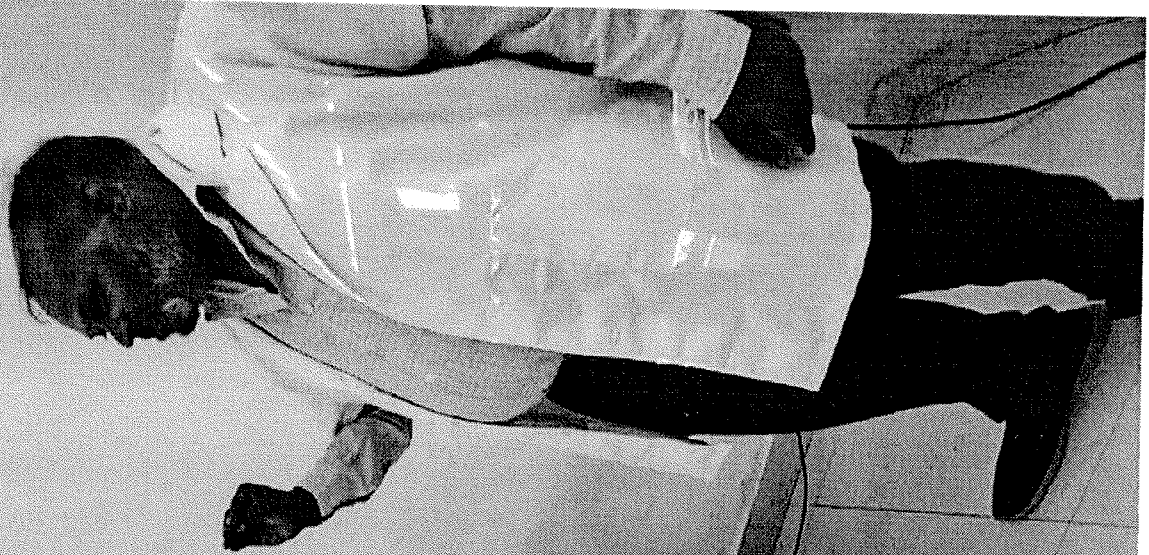
**PROFESSOR & HOD**  
**DEPARTMENT OF GENERAL SURGERY**  
Sri Lakshmi Narayana Institute of Medical Sciences  
PONDICHERRY - 605 002

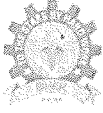
Dr. BALAGURUNATHAN

HOD General Surgery

**Encl: Certificates**

**Photographs**





**Sri Lakshmi Narayana Institute of Medical Sciences**

**Annexure 1**

Date 02/06/2017

From  
Prof.D.Baba, MS  
Professor and Head,  
Ophthalmology,  
Sri Lakshmi Narayana Institute Of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

To  
The Dean,  
Sri Lakshmi Narayana Institute Of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Permission to conduct value-added course: GLAUCOMA**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: GLAUCOMA on **JULY-2017 – OCT -2017**. We solicit your kind permission for the same.

Kind Regards

PROF.D.BABA, MS  
HOD, OPHTHALMOLOGY

---

**FOR THE USE OF DEANS OFFICE**

Names of Committee members for evaluating the course:

The Dean:

The HOD:

The Expert:

The committee has discussed about the course and is approved.

DEAN  
Prof.K.BALAGURUNATHAN,MS  
(General surgeon)  
SRI LAKSHMI NARAYANA  
INSTITUTE OF MEDICAL SCIENCES  
OSUDU PONDICHERRY

Subject Expert

HOD  
PROFESSOR & HOD  
DEPARTMENT OF OPHTHALMOLOGY,  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
PUDUCHERRY-605 002.



OFFICE OF THE DEAN

**Sri Lakshmi Narayana Institute of Medical Sciences**  
OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P -II ) dt. 11/07/2011 ]  
[ Affiliated to Bharath University, Chennai - TN ]

**Ref. No. SLIMS/Dean Off/VAC / OPH08**

**Date: 03.06.2017**

**From**

The Dean  
Sri Lakshmi Narayana Institute of Medical sciences,  
Pondicherry – 605502

**To**

The Registrar,  
Bharath Institute of Higher Education and Research,  
Chennai - 600073.

Respected Sir

**Sub:** Request for permission and approval of Syllabus for certificate course (Value Added course) for the academic year 2017-2018 - Reg  
**Ref:** Requesting letter received from Departments

\*\*\*\*\*

With reference to the above, herewith forwarding the proposed list of Value-added courses for necessary permission and approval of syllabus to conduct the same.

1. FUNDUS EXAMINATION
2. GLAUCOMA

This is for your kind information and needful action.

Thanking you

Yours faithfully

[DEAN]

DEAN  
Prof.K.BALAGURUNATHAN,M.S  
(General surgeon)  
SRI LAKSHMI NARAYANA  
INSTITUTE OF MEDICAL SCIENCES  
OSUDU PONDICHERRY

**Encl's:**

1. Requesting letter received from department
2. Syllabus of the course
3. Details of faculty handling course

**Sri Lakshmi Narayana Institute of Medical Sciences,  
Puducherry**

**VALUE ADDED COURSE –**

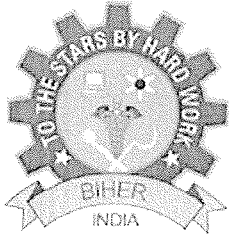
1. FUNDUS EXAMINATION
2. GLAUCOMA

**COURSE CO-ORDINATOR DETAILS**

**Faculty Name:** Prof.D.Baba, MS

**Email ID:** ophthalmologyprof@gmail.com

**Mobile number:** 8585485988



# Bharath

INSTITUTE OF HIGHER EDUCATION AND RESEARCH  
(Declared as Deemed - to - be - University under section 3 of UGC Act 1956)

Ref. No. BHIER/ VAC / OPH08

Date: 05.06.2017

**From**

The Registrar,  
Bharath Institute of Higher Education and Research,  
Chennai - 600073.

**To**

The Dean  
Sri Lakshmi Narayana Institute of Medical sciences,  
Pondicherry – 605502

Sir / Madam,

**Sub:** Approval of Syllabus to conduct certificate course (Value Added course) for the academic year 2017-2018 – Reg.

**Ref:** Ref. No. SLIMS/Dean Off/VAC /OPH08 Dated: 02.06.2017

\*\*\*\*\*

With reference to the above, it is to inform that the proposal submitted to conduct Value Added Course has been accepted and approved by BIHER, council meeting. List of the VAC are mentioned below for the academic year 2017– 2018. The abstract of the VAC course completion detail should be submitted to the Registrar office.

1. FUNDUS EXAMINATION
2. GLAUCOMA

Thanking you

Yours faithfully

  
REGISTRAR



OFFICE OF THE DEAN

## Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P -II ) dt. 11/07/2011 ]  
[ Affiliated to Bharath University, Chennai - TN ]

### Circular

06.06.2017

**Sub: Organising Value-added Course: GLAUCOMA**

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research** is organizing "GLAUCOMA". The course content and registration form is enclosed below."

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before 10<sup>TH</sup> JUNE 2017. Applications received after the mentioned date shall not be entertained under any circumstances.

**Dean**

**DEAN**

Prof.K.BALAGURUNATHAN,M.S  
(General surgeon)  
SRI LAKSHMI NARAYANA  
INSTITUTE OF MEDICAL SCIENCES  
OSUDU PONDICHERRY

Encl: Copy of Course content

## VALUE ADDED COURSE

**1. Name of the programme & Code**

Glaucoma

**2. Duration & Period**

30 hrs & July -2017 – Oct -2017

**3. Information Brochure and Course Content of Value Added Courses**

*Enclosed as Annexure- I*

**4. List of students enrolled**

*Enclosed as Annexure- II*

**5. Assessment procedures:**

Multiple choice questions- *Enclosed as Annexure- III*

**6. Certificate model**

*Enclosed as Annexure- IV*

**7. No. of times offered during the same year:**

July -2017 – Oct -2017 (1)

**8. Year of discontinuation: 2017**


**9. Summary report of each program year-wise**

Value Added Course- July -2017 – Oct -2017					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	OPH08	Glaucoma	Prof.K.Rathnakumar, M.S, D.O,	30	2017

**10. Course Feed Back**

*Enclosed as Annexure- V*

  
Prof.K.Rathnakumar, M.S, D.O,  
RESOURCE PERSON

  
Prof. D. Baba, M.S,  
COORDINATOR  
PROFESSOR & HOD  
DEPARTMENT OF OPHTHALMOLOGY,  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
PUDUCHERRY-605 502.

## Annexure 2 – Course Proposal

Course Title: GLAUCOMA

Course Objective:

1. Definition of glaucoma
2. Etiology of glaucoma
3. Classification of glaucoma
4. Primary glaucoma
5. Secondary glaucoma
6. Open angle glaucoma
7. Angle closure glaucoma
8. Management of glaucoma

**Course Outcome:** On successful completion of the course the students will be able to detect glaucomatous changes in the optic nerve head, understand visual field changes and gonioscopy findings.

**Course Audience:** MBBS UNDERGRADUATES

**Course Coordinator:** PROF.D.BABA, MS,

**Course Faculties with Qualification and Designation:**

1. Prof.D.Baba, MS, - HOD Ophthalmology
2. Prof.K.Rathnakumar, MS,DO, - Professor Ophthalmology

**Course Curriculum/Topics with schedule (Min of 30 hours)**

SINo	Date	Topic	Time	Hours
1.	10/7/2017	Definition of glaucoma	4-6PM	2
2.	15/7/2017	Etiology of glaucoma	4-7PM	3
3.	22/7/2017	Etiology of glaucoma	4-6PM	3
4.	25/7/2017	Classification of glaucoma	4-6PM	2
5.	29/7/2017	Classification of glaucoma	4-7PM	3
6.	10/8/2017	Primary glaucoma	4-7PM	3
7.	13/8/2017	Primary glaucoma	4-7PM	3
8.	15/8/2017	Secondary glaucoma	4-6PM	2
9.	17/8/2017	Secondary glaucoma	4-6PM	2
10.	20/8/2017	Open angle glaucoma	4-7PM	3
11.	21/8/2017	Angle closure glaucoma	4-6PM	2
12.	25/8/2015	Management of glaucoma	4-6PM	2
			TOTAL HOURS	30

**REFERENCE BOOKS: (Minimum 2)**

1. JACK J KANSKI clinical ophthalmology a systemic approach-6<sup>th</sup> edition.
2. PARSON'S Diseases of the eye – 19<sup>th</sup> edition

# GLAUCOMA

Glaucoma is a group of disorders characterized by a progressive optic neuropathy resulting in a characteristic appearance of the optic disc and a specific pattern of irreversible visual field defects that are associated frequently but not invariably with raised intraocular pressure (IOP).

## Classification

classified as

### *(A) Congenital and developmental glaucomas*

1. Primary congenital glaucoma (without associated anomalies).
2. Developmental glaucoma (with associated anomalies).

### *(B) Primary adult glaucomas*

1. Primary open angle glaucomas (POAG)
2. Primary angle closure glaucoma (PACG)
3. Primary mixed mechanism glaucoma

### *(C) Secondary glaucomas*

## PATHOGENESIS OF GLAUCOMATOUS OCULAR DAMAGE

All glaucomas are characterized by a progressive optic neuropathy.

It has now been recognized that progressive optic neuropathy results from the death of retinal ganglion cells (RGCs) in a typical pattern which results in characteristic optic disc appearance and specific visual field defects.

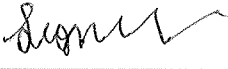
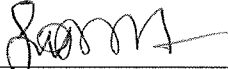
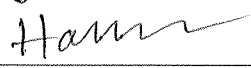

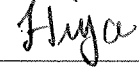

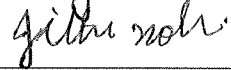
### Pathogenesis of retinal ganglion cell death

Retinal ganglion cell (RGC) death is initiated when some pathologic event blocks the transport of growth factors (neurotrophins) from the brain to the RGCs.

The blockage of these neurotrophins initiate a damaging cascade, and the cell is unable to maintain its normal function.

The RGCs losing their ability to maintain normal function undergo apoptosis and also trigger apoptosis of adjacent cells.

Apoptosis is a genetically controlled cell suicide programme whereby irreversibly damaged cells die, and are subsequently engulfed by neighbouring cells, without eliciting any inflammatory response.

52	U17MB302	GUDDATI KOTA SATYA SAI NAGA S RAMESH	
53	U17MB303	GURUNATHAN S	
54	U17MB304	HARSH BHARTI	
55	U17MB305	HENRITTA.I	
56	U17MB306	HIYA SAIKIA	
57	U17MB307	HRITHICK MANICKAM R	HRITHICK
58	U17MB308	JAYASHREE SAIKIA	
59	U17MB309	JITHU MOHAN	
60	U17MB310	KAILA PRASANTH KUMAR	

  
Prof.K.Rathnakumar MS,DO

RESOURCE PERSON

  
Prof.D.Baba, MS-HOD  
PROFESSOR & HOD  
DEPARTMENT OF OPHTHALMOLOGY,  
COORDINATOR  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
PUDUCHERRY-605 502.

VALUE ADDED COURSE

## Glaucoma

## 4. List of Students Enrolled JUL- 2017 – OCT -2017

S:NO	Reg. No.	NAME OF THE STUDENT	Signature
31	U17MB281	BHAVYA GUPTA	Bhavya
32	U17MB282	BRAHMA PRAKASH MISHRA	Brahma
33	U17MB283	CHINMAY DODANI	Chinmay
34	U17MB284	CHRISTO VINCENT.V	Christo
35	U17MB285	CIBIYASHREE.G	C.I. BIPYA
36	U17MB286	DEBIA JERMIN	Debia
37	U17MB287	DEEPIKAA R.D	Deepika
38	U17MB288	DHANUSS BHUVAN SRIDARAN	Dhanu
39	U17MB289	DHIREN.S	Dhiren
40	U17MB290	DHWANI SOLANKI	Dhwani
41	U17MB291	DISHAL K P	Dishal
42	U17MB292	DIVYA PRIYA K	Divya
43	U17MB293	DIVYANSHI SINGH	Divyanshi
44	U17MB294	ELAKIYA BALA	Elakya
45	U17MB295	FEMI SREE.R.A.	Femi
46	U17MB296	GANJI KARTHIK	Ganji
47	U17MB297	GAUTHAMAN.M	Gautham
48	U17MB298	GOKULAVAANI G K	Gokul
49	U17MB299	GOWTHAM BJ	Gowtham
50	U17MB300	GRANDHI KARISHMA	GRANDHI
51	U17MB301	GREESHMA SHAJI .K	GREESHMA

## *Etiological factors*

### *A. Primary insults*

#### **1. Raised intraocular pressure (Mechanical theory).**

Raised intraocular pressure causes mechanical stretch on the lamina cribrosa leading to axonal deformation and ischaemia by altering capillary blood flow. As a result of this, neurotrophins (growth factors) are not able to reach the retinal ganglion cell bodies in sufficient amount needed for their survival.

**2. Pressure independent factors (Vascular insufficiency theory).** Factors affecting vascular perfusion of optic nerve head in the absence of raised IOP have been implicated in the glaucomatous optic neuropathy in patients with normal tension glaucoma (NTG).

These factors include:

- i. *Failure of autoregulatory mechanism of blood flow.*
- ii. *Vasospasm*
- iii. *Systemic hypotension*
- iv. *Other factors* such as acute blood loss and abnormal coagulability profile

#### **B. Secondary insults (Excitotoxicity theory)**

Neuronal degeneration is believed to be driven by toxic factors such as glutamate (excitatory toxin).

## **PRIMARY OPEN ANGLE GLAUCOMA**

Primary open angle glaucoma (POAG) also known as chronic simple glaucoma of adult onset and is typically characterised by slowly progressive raised intraocular pressure (>21 mmHg recorded on at least a few occasions) associated with characteristic optic disc cupping and specific visual field defects.

## **CLINICAL FEATURES**

### **Symptoms**

1. The disease is insidious and usually asymptomatic, until it has caused a significant loss of visual field
2. Patients may experience mild headache and eyeache.
3. Occasionally, an observant patient may notice a defect in the visual field.
4. *frequent changes in presbyopic glasses.*
5. Patients develop *delayed dark adaptation*

## Signs

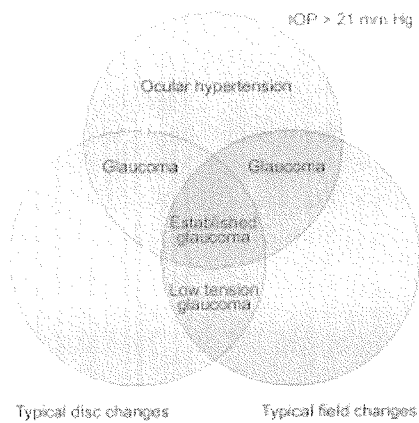
### I. *Anterior segment normal*

### II. *Intraocular pressure changes.*

IOP is permanently raised above 21 mm of Hg and ranges between 30 and 45 mm of Hg.

## INVESTIGATIONS

1. *Tonometry.* Applanation tonometry should be preferred over Schiötz tonometry
2. *Diurnal variation test* is especially useful in detection of early cases .
3. *Gonioscopy.* It reveals a wide open angle of anterior chamber.
4. *Documentation of optic disc changes*
5. *Slit-lamp examination* of anterior segment to rule out causes of secondary open angle glaucoma.
6. *Perimetry* to detect the visual field defects.
7. *Nerve fibre layer analyzer (NFLA)* is a recently introduced device which helps in detecting the



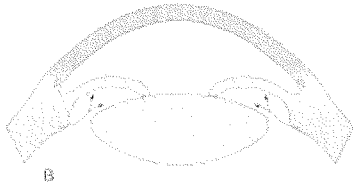
## *Therapeutic choices*

- \_ Medical therapy :antiglaucoma medications
- \_ Argon or diode laser trabeculoplasty
- \_ Filteration surgery.

## PRIMARY ANGLE-CLOSURE GLAUCOMA

It is a type of primary glaucoma (wherein there is no obvious systemic or ocular cause) in which rise in intraocular pressure occurs due to blockage of the

aqueous humour outflow by closure of a narrower angle of the anterior chamber.



#### **Acute primary angle-closure glaucoma**

An attack of acute primary angle closure glaucoma occurs due to a sudden total angle closure leading to severe rise in IOP.

#### **Clinical features**

##### **Symptoms**

*\_Pain.* Typically acute attack is characterised by sudden onset of very severe pain in the eye which radiates along the branches of 5th nerve.

*\_Nausea, vomiting and prostrations* are frequently associated with pain.

*\_Rapidly progressive impairment of vision,* redness, photophobia and lacrimation develop in all cases.

*\_Past history.* About 5 percent patients give history of typical previous intermittent attacks of subacute angle-closure glaucoma.

##### **Signs**

*\_Lids* may be oedematous,

*\_Conjunctiva* is chemosed, and congested, (both conjunctival and ciliary vessels are congested),

*\_Cornea* becomes oedematous and insensitive,

*\_Anterior chamber* is very shallow. Aqueous flare or cells may be seen in anterior chamber ,  
*\_Angle of anterior chamber* is completely closed as seen on gonioscopy (shaffer grade 0),  
*\_Iris* may be discoloured,  
*\_Pupil* is semidilated, vertically oval and fixed. It is non-reactive to both light and accommodation,

*\_IOP* is markedly elevated, usually between 40 and 70 mm of Hg,  
*\_Optic disc* is oedematous and hyperaemic,  
*\_Fellow eye* shows shallow anterior chamber and a narrow angle (latent angle closure glaucoma).

### ***Clinical course of acute primary angle-closure glaucoma.***

#### ***differential diagnosis***

1. *From other causes of acute red eye.* Acute congestive glaucoma sometimes needs differentiation from other causes of inflamed red eye like acute conjunctivitis and acute iridocyclitis

2. *From secondary acute congestive glaucomas* such as phacomorphic glaucoma, acute neovascular glaucoma and glaucomatocyclitic crisis.

#### ***Management***

It is essentially surgical. However, medical therapy is instituted as an emergency and temporary measure before the eye is ready for operation.

#### ***(A) Medical therapy***

1. *Systemic hyperosmotic agent* intravenous mannitol (1 gm/kg body weight) should be given initially to lower IOP.
2. *Acetazolamide* (a carbonic anhydrase inhibitor) 500 mg intravenous injection followed by 250 mg tablet should be given 3 times a day.
3. Analgesics and anti-emetics as required.
4. *Pilocarpine eyedrops* should be started after the IOP is bit lowered by hyperosmotic agents. At higher pressure iris sphincter is ischaemic and unresponsive to pilocarpine. Initially 2 percent pilocarpine should be administered every 30 minutes for 1-2 hours and then 6 hourly.
5. *Beta blocker eyedrops* like 0.5 percent timolol maleate or 0.5 percent betaxolol should also be administered twice a day to reduce the IOP.
6. *Corticosteroid eyedrops* like dexamethasone or betamethasone should be administered 3-4 times a day to reduce the inflammation.

#### ***(B) Surgical treatment***

1. *Peripheral iridotomy.* It is indicated when peripheral anterior synechiae are formed in less than 50 percent of the angle of anterior chamber

and as prophylaxis in the other eye. Peripheral iridotomy re-establishes communication between posterior and anterior chamber, so it bypasses the pupillary block and thus helps in control of PACG.

*Laser iridotomy*, a non-invasive procedure, is a good alternative to surgical iridectomy.

2. *Filtration surgery*. It should be performed in cases where IOP is not controlled with the best medical therapy following an attack of acute congestive glaucoma and also when peripheral anterior synechiae are formed in more than 50 percent of the angle of the anterior chamber.

*Mechanism*: Filtration surgery provides an alternative to the angle for drainage of aqueous from anterior chamber into subconjunctival space.

**(C) Prophylactic treatment in the normal fellow eye**  
Prophylactic laser iridotomy (preferably) or surgical peripheral iridectomy should be performed on the fellow asymptomatic eye.



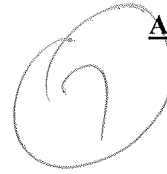
SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH

Bhavya Gupta  
U17MB281

Annexure - IV

GLAUCOMA

MULTIPLE CHOICE QUESTIONS



Course Code: OPH08

I. ANSWER ALL THE QUESTIONS

1. Circumcorneal ciliary congestion is seen in

- a. Conjunctivitis
- b. Corneal ulcer
- c. Phlyctenular conjunctivitis
- d. Simple glaucoma

2. Open-angle glaucoma is associated with all except:

- a. Diabetes mellitus
- b. Choroiditis
- c. Myopia
- d. Hyperparathyroidism

3. Open angle glaucoma is seen in all except:

- a. Hypertension
- b. Diabetes mellitus
- c. Thyrotoxicosis
- d. Central vein thrombosis

4. In early glaucomatous cupping, disc is

- a. Round
- b. Oval vertically
- c. Oval horizontally
- d. Pinpoint



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5. Arcuate field defect is seen in
- a. Simple congestive glaucoma
  - b. Open angle glaucoma
  - c. Congenital type
  - d. Immature cataract
6. In chronic simple glaucoma the most common field defect is
- a. Arcuate field defect
  - b. Baring of blind spot
  - c. Bjerrum scotoma
  - d. Seidel's sign
7. The most important drug in the treatment of chronic simple glaucoma is
- a. Eserine
  - b. Pilocarpine
  - c. Diamox
  - d. Nephatzane
  - e. Vasodilators
8. Treatment of open angel glaucoma is
- a. Iridectomy
  - b. Atropine
  - c. Steroids
  - d. Pilocarpine



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9. Cyclodialysis is particularly glaucoma is
- a. Open-angle glaucoma with synechia
  - b. Open-angle glaucoma in aphakia eyes
  - c. Open-angle glaucoma in phakic eyes
  - d. Open-angle glaucoma with relatively narrow angle
  - e. Angle-closure glaucoma
10. Rapid change in presbyopic correction is a classical feature of
- a. Neovascular glaucoma
  - b. Open angle glaucoma
  - c. Angle closure glaucoma
  - d. Glaucoma capsulare




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CERTIFICATE OF MERIT

This is to certify that BHAVYA GUPTA (U17MB281) has actively participated  
in the Value Added Course on GLAUCOMA held during JULY 2017 TO OCT 2017  
Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502,  
India.

  
Prof. K. Rathnakumar, MS, DO,  
RESOURCE PERSON

  
Prof. D. Baba, MS,  
COORDINATOR



Sri Lakshmi Narayana Institute of Medical Sciences


Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under Section 3 of the UGC Act 1956)



CERTIFICATE OF MERIT

This is to certify that BRAHMA PRAKASH MISHRA (U17MB282) has actively participated in the Value Added Course on GLAUCOMA held during JULY 2017 TO OCT 2017 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

  
Prof. K. Rathnakumar, MS, DO,  
RESOURCE PERSON

  
Prof. D. Baba, MS,  
COORDINATOR

## Student Feedback Form

Course Name: **GLAUCOMA**

Subject Code: **OPH08**

Name of Student: \_\_\_\_\_ Roll No.: \_\_\_\_\_

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					✓
2	Course contents met with your expectations					✓
3	Lecturer sequence was well planned					✓
4	Lectures were clear and easy to understand					✓
5	Teaching aids were effective					✓
6	Instructors encourage interaction and were helpful					✓
7	The level of the course					✓
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

*Bhavya Gupta*  
Signature

Date:

Annexure 5

Date : 30/10/2017

From  
Prof.D.Baba, MS,  
Professor and Head,  
Ophthalmology,  
Sri Lakshmi Narayana Institute Of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

Through Proper Channel

To  
The Dean,  
Sri Lakshmi Narayana Institute Of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Completion of value-added course: GLAUCOMA**

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: **GLAUCOMA** for 30students in JULY-OCT 2017. We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards



Prof.D.Baba, MS

HOD ,Ophthalmology

**Encl: Certificates**

**Photographs**



**Sri Lakshmi Narayana Institute of Medical Sciences**

**Annexure 1**

Date 20/03/2016

From  
Prof.D.Baba, MS  
Professor and Head,  
Ophthalmology,  
Sri Lakshmi Narayana Institute Of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

To  
The Dean,  
Sri Lakshmi Narayana Institute Of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Permission to conduct value-added course: DRY EYE**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: DRY EYE on **APR 2016 TO JUNE 2016**. We solicit your kind permission for the same.

Kind Regards

PROF.D.BABA, MS  
HOD, OPHTHALMOLOGY

---

**FOR THE USE OF DEANS OFFICE**

Names of Committee members for evaluating the course:

The Dean:

The HOD:

The Expert:

The committee has discussed about the course and is approved.

Subject Expert

HOD

**DEAN**  
Prof.K.BALAGURUNATHAN, M.S  
(General surgeon)  
SRI LAKSHMI NARAYANA  
INSTITUTE OF MEDICAL SCIENCES  
OSUDU PONDICHERRY



## Sri Lakshmi Narayana Institute of Medical Sciences

Date:05.06.2017

From

Dr. Raghavendran  
Professor and Head,  
Department of Paediatrics,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

To

The Dean,  
Sri Lakshmi Narayana Institute of Medical College  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Permission to conduct value-added course: All About Adolescents (Adolescent Paediatrics) Module for Undergraduate students.**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: All About Adolescents (Adolescent Paediatrics) Module for Undergraduate students for IV year Undergraduate students from July 2017- Oct 2017. Requesting your kind permission for the same.

Kind Regards

Dr. Raghavendran

---

### FOR THE USE OF DEANS OFFICE

Names of Committee members for evaluating the course:

The Dean: **Dr. Jayalakshmi**

The HOD: **Dr. Raghavendran**

The Expert: **Dr. Satyamanasa Gayatri Vinay**

The committee has discussed about the course and is approved.

Dean  
**Dr. G. JAYALAKSHMI, BSC., MBBS., DTC.D., M. DEAN**  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agaram, Kudapakkam Post,  
Villanur Commune, Puducherry - 605502.

Assistant Professor  
Subject Expert  
**DEPARTMENT OF PAEDIATRICS**  
**SRI LAKSHMI NARAYANA INSTITUTE OF**  
**MEDICAL SCIENCES**

HOD  
(Sign & Seal)

**PAEDIATRICS HEAD**  
**DEPT. OF PAEDIATRICS**  
**SRI LAKSHMI NARAYANA INSTITUTE OF**  
**MEDICAL SCIENCES**  
**OSUDU, PUDUCHERRY**



OFFICE OF THE DEAN

# Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P -II ) dt. 11/07/2011 ]  
[ Affiliated to Bharath University, Chennai - TN ]

## Circular

15.06.2017

**Sub: Organising Value-added Course: All About Adolescents(Adolescent Paediatrics) Module for Undergraduate students reg.,**

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research** is organizing **All About Adolescents (Adolescent Paediatrics) Module** for Undergraduate students from July 2017 – Oct 2017 ( 3 months)

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before 30 June 2017. Applications received after the mentioned date shall not be entertained under any circumstances.

Dean

**Dr. G. JAYALAKSHMI, BSC., MBBS., DTC.D., M.D.,**  
**DEAN**  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agaram, Kudapakkam Post,  
Villianur Commune, Puducherry - 605502.

## Course Proposal

**Course Title: All About Adolescents (Adolescent Paediatric Module) for Undergraduates**

**Course Objective: Understand adolescent physiology and their problems**

**Course Outcome: On successful completion of the course, the students will have skill in understanding the needs and in managing Adolescent Health issues and protection of adolescents.**

**Course Audience: Final Year MBBS students of 2016**

**Course Coordinator: Dr Raghavendran**

**Course Faculties with Qualification and Designation:**

**1. Dr. Raghavendran – MD Paediatrics – Head of Department**

**2. Dr. Satya Manasa Gayatri Vinay – DNB Paediatrics – Assistant professor**

**Course Curriculum/Topics with schedule (Min of 30 hours)**

SlNo	Date	Topic	Resource Person	Time	Hours
1.	20/07/2017	Definition of Adolescent population, Physical Development (Puberty) changes in Adolescents.	Dr. Raghavendran	4.00-6.00pm	2 hours
2	21/07/2017	Physical Growth and Nutritional Requirements in Adolescents	Dr. Satya Manasa Gayatri Vinay	4.00-6.00pm	2 hours
3	22/07/2017	Cognitive and Psychosocial changes in Development	Dr. Satya Manasa Gayatri Vinay	4.00-6.00pm	2 hours
4	23/07/2017	Nutritional Problems in Adolescents	Dr. Raghavendran	4.00-6.00pm	2 hours
5	24/07/2017	Eating Disorders in Adolescents	Dr. Satya Manasa Gayatri Vinay	4.00-6.00pm	2 hours
6	25/07/2017	Mental Health Problems and Sleep Disorders	Dr. Satya Manasa Gayatri Vinay	4.00-6.00pm	2 hours
7	26/07/2017	Infections in Adolescents	Dr. Raghavendran	4.00-5.00pm	1 hours
8	27/07/2017	Female related problems, Vulnerable groups and their problems	Dr. Satya Manasa Gayatri Vinay	4.00-6.00pm	2 hours
9	28/07/2017	Substance Abuse in Adolescents	Dr. Satya Manasa Gayatri Vinay	4.00-6.00pm	2 hours
10	29/07/2017	Environment and Social Challenges faced by adolescents.	Dr. Raghavendran	4.00-6.00pm	2 hours

11	30/07/2017	Role of health Care provider – Approach to an adolescent child, adolescent friendly health clinic.	Dr. Satya Manasa Gayatri Vinay	4.00-6.00pm	2 hours
12	31/07/2017	Management Sexual Abuse and POSCO act, OSCs	Dr. Raghavendran	4.00-6.00pm	2 hours
13	01/08/2017	Management of Eating Disorders and Substance Abuse	Dr. Satya Manasa Gayatri Vinay	4.00-6.00pm	2 hours
14	02/08/2017	Adolescent Immunization	Dr. Satya Manasa Gayatri Vinay	4.00-6.00pm	2 hours
15	03/08/2017	Government Interventions in Adolescent health care. Family/ school and community level protection of adolescent health.	Dr. Raghavendran	4.00-5.00pm	1 hours
				Total Hours	30

**REFERENCE BOOKS: (Minimum 2)**

**1. Nelson Textbook Of Paediatrics, 20 E**

**2. OP Ghai Essential Paediatrics, 8<sup>th</sup> Edition.**

## VALUE ADDED COURSE

### 1. Name of the programme & Code

All About Adolescents (Module on Adolescent Paediatrics), PECO5

### 2. Duration & Period

30 hrs, July 2017– October 2017

### 3. Information Brochure and Course Content of Value Added Courses

*Enclosed as Annexure- I*

### 4. List of students enrolled

*Enclosed as Annexure- II*

### 5. Assessment procedures:

Multiple choice questions- *Enclosed as Annexure- III*

### 6. Certificate model

*Enclosed as Annexure- IV*

### 7. No. of times offered during the same year:

One, July 2017– October 2017

### 8. Year of discontinuation: 2018

### 9. Summary report of each program year-wise

Value Added Course- July 2017- Oct 2017					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	PECO5	All About Adolescents( Module on Adolescent Paediatrics)	Dr. Satyamanasa Gayatri Vinay	Final year MBBS	20 (July 2017- Oct 2017)

### 10. Course Feed Back

*Enclosed as Annexure- V*



Dr. Satyamanasa Gayatri Vinay

**ASSISTANT PROFESSOR  
DEPARTMENT OF PAEDIATRICS  
SRI LAKSHMI NARAYANA INSTITUTE OF  
MEDICAL SCIENCES**



Dr. Raghavendran

**PAEDIATRICS HEAD  
DEPT OF PAEDIATRICS  
SRI LAKSHMI NARAYANA INSTITUTE OF  
MEDICAL SCIENCES  
OSUDU, PUDUCHERRY**



**ALL ABOUT ADOLESCENTS**  
**(Module on Adolescent Paediatrics)**

**PARTICIPANT HAND BOOK**

<b>Particulars</b>	<b>Description</b>
Course Title	All about Adolescents (Module on Adolescent Pediatrics)
Course Code	PECO5
Objective	<ol style="list-style-type: none"> <li>1. Definition of Adolescent population,</li> <li>Physical Development (Puberty) changes in Adolescents.</li> <li>2. Physical Growth and Nutritional Requirements in Adolescents</li> <li>3. Cognitive and Psychosocial changes in Development</li> <li>4. Nutritional Problems in Adolescents</li> <li>5. Eating Disorders in Adolescents</li> <li>6. Mental Health Problems and Sleep Disorders</li> <li>7. Infections in Adolescents</li> <li>9. Female related problems, Vulnerable groups and their problems.</li> <li>10. Substance Abuse in Adolescents</li> <li>11. Environment and Social Challenges faced by adolescents.</li> <li>12. Role of health Care provider – Approach to an adolescent child, adolescent friendly health clinic.</li> <li>13. Management Sexual Abuse and POSCO act, OSCs</li> <li>14. Management of Eating Disorders and Substance Abuse</li> <li>15. Adolescent Immunization</li> <li>16. Government Interventions in Adolescent health care. Family/ school and community level protection of adolescent health.</li> </ol>
Further learning opportunities	Detailed management of Individual Adolescent conditions

Key Competencies	On successful completion of the course the students will have skill in understanding adolescent problems and a holistic approach in their health care management.
Target Student	FINAL YEAR MBBS Students
Duration	30hrs July 2017– Oct 2017
Theory Session	30hrs
Practical Session	-
Assessment Procedure	Multiple choice questions

# **ALL ABOUT ADOLESCENTS (Adolescent Paediatrics Module)**

## **INTRODUCTION:**

Adolescence marks the transition from childhood into adulthood. It is characterized by physical cognitive, psychosocial, and emotional development. According to World Health Organization, adolescence is a phase which involves – Progression from appearance of secondary sexual characteristics to sexual and reproductive maturity (puberty) – Development of adult mental processing and identity – Transition from total social-economic dependence to relative independence.

Though it is a continuous process, for convenience sake, adolescence is generally divided into three phases: early (10-13 yr), mid (14-16 yr) and late (17- 19 yr) puberty.

## **PHYSICAL DEVELOPMENT**

### **PUBERTY TRIGGERS**

- Controversial
- Genetic and environmental influence (nutrition, stress, exercise, climate)

Possibilities: – Central Nervous System maturation – Critical body weight – Body fat to total body weight – Adrenal maturation.

### **ONSET AND SEQUENCE OF PUBERTY**

Major changes in genital system (primary and secondary sex characteristics).

Gain 25% of final height (distal growth may precede that of proximal parts by three to four months)

- Doubling of lean and non-lean body mass (gain 50% of the ideal body weight)
- Doubling of the weight of the major organs; central nervous system maturation (without increase in size)
- Maturation of facial bones

- Marked decrease in lymphoid tissue

### **HORMONAL CHANGES IN PUBERTY**

Increase in: • Gonadotropins (FSH & LH) • Sex hormones • Adrenal Gland sex steroids • Growth Hormone and Insulin-like Growth factors • Thyroid hormone production remains

**NORMAL PUBERTY** • Begins at 10yrs (range 8-13yr) in Girls First sign is breast bud development 12 yrs (range 9-15yr) in Boys First sign is testicular enlargement • Duration 3-3.5 Yrs.

### **SEQUENTIAL CHANGES OF PUBERTY**

**Adolescent Male** - Early testicular growth • Pubarche • Testicular and penile growth Nocturnal emissions • Height velocity peaks • Marked voice changes • Facial hair growth • Final pubertal changes

**Adolescent Female** - Breast bud (thelarche) • Pubic hair development (pubarche) • Peak height velocity • Menarche • Final pubertal changes

### **TANNER STAGING OF SMR:**

Tanner staging is important as it:

- Delineates current stage of puberty
- Assesses progression
- Predicts development changes e.g. - Peak Height Velocity: SMR 2 & 3 (Females) vs SMR 3 & 4 (Males) - Menarche: SMR 3 & 4 - Gynecomastia (Males): SMR 2 & 3.

### **TANNERS/SMR STAGING FOR FEMALES**

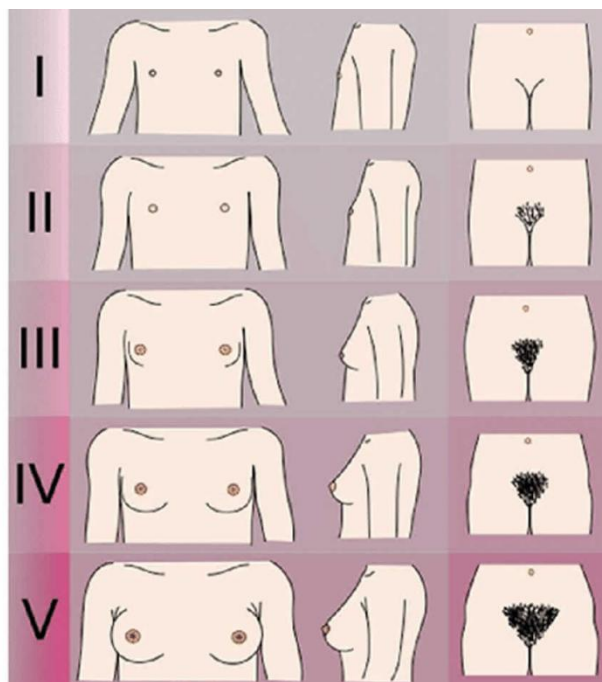
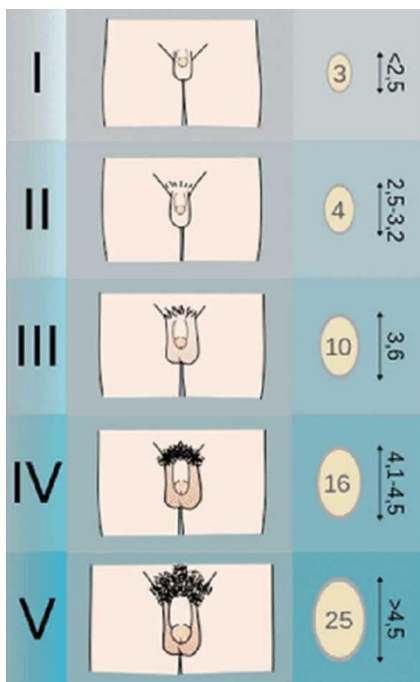
STAGE	BREAST	PUBIC HAIR	RANGE
I	None	None	Birth-15 yrs
II	Breast Bud (thelarche): Areolar hyperplasia with	Long downy pubic hair near the labia; may occur with breast budding or	6-15yrs

	small amount of breast tissue	several weeks to months later (pubarche)	
III	Further enlargement of breast tissue and areola	Increase in amount of pubic hair with more pigmentation	8-15yrs
IV	Double Contour form: Areola and nipple form secondary mound on top of breast tissue	Adult type but not distribution	9-18yrs
V	Larger breast with single contour form	Adult distribution	10-18yrs

### TANNERS/SMR STAGE FOR BOYS

STAGE	TESTIS	PENIS	PUBIC HAIR	RANGE
I	No change (4ml)	Prepubertal 2.5 cm or less	None	Birth-15 yrs
II	Enlargement of testes, ↑ stippling and pigmentation of scrotal sac	Minimal or no enlargement	Long, downy hair often occurring several months after testicular growth; variable pattern noted with pubarche	10-15yrs

III	Further enlargement (6 – 8 ml)	Significant penile enlargement especially in length	Increase in amount, now curling	10-16.5yrs
IV	Further enlargement (10 – 12 ml)	Further enlargement especially in diameter	Adult type but not distribution	Variable, 12-17yrs
V	Adult size (min: 12 ml, avg 18.6 ± 4 ml)	Adult size	Adult Distribution	13-18yrs



- **PHYSICAL GROWTH AND NUTRITIONAL REQUIREMENTS OF ADOLESCENTS**

- During puberty, boys gain about 20-30 cm and girls about 16-28 cm. Peak growth velocity in girls occurs before attainment of menarche (stage 3) in girls whereas boys have their peak growth velocity during later stages of puberty (stages 4-5). The

growth spurt affects the distal skeleton first, hence enlargement of limb and extremities is followed by increase in trunk size.

- During pubertal development there is increase in muscle mass and bone diameter, particularly in boys, and total bone mass in both the sexes. Lean body mass increases during the early stages in both the sexes; fat mass increases in girls at later stages of puberty.
- Rapid calcium accretion occurs during puberty. Almost 50% of adult bone mass is achieved during the adolescent period. Estrogen and androgen enhance calcium accretion by bone but favor early fusion of epiphyses. Increase in body structure is paralleled by increase in blood volume and muscle mass. With commencement of menstruation, nutritional requirements of iron are higher.
- The recommended dietary allowance (RDA) for calcium is 800 mg/ day and an intake of 500 mL milk is recommended in order to achieve this with a cereal-based Indian diet. With minimal sun exposure, the RDA for vitamin D is 600 IU/day. Since dietary vitamin D is mainly available from fatty fish, intake as a pharmacological
- supplement may be necessary. Increase in body structure is paralleled by increase in blood volume and muscle mass; both of these tissues have high iron content. With
- commencement of menstruation, nutritional requirements of iron are further increased. With predominantly cereal based diet and poor bioavailability, an adolescent needs to have a daily intake of 25-30 mg iron in order to meet the daily requirements of 1.3 mg.

The Recommended Dietary Allowance (RDA) for Indian Adolescents is given in the tables below:

Age Group	Gender	Energy Kcal	Protein grams	Fat grams	Calcium mg	Phos mg	Iron mg	Zinc mg	Mg mg
10 -12 years	Boys	2190	39.9	35	800	800	21	9	120
	Girls	2010	40.4	35	800	800	27	9	160
13-15 years	Boys	2750	54.3	45	800	800	32	11	165
	Girls	2330	51.9	40	800	800	27	11	210
16-18 years	Boys	3020	61.5	50	800	800	28	12	195
	Girls	2440	55.5	35	800	800	26	12	235

Adapted from Nutritional requirements and RDA for Indians:  
Report of expert group of ICMR [13,14].

## RECOMMENDED DIETARY ALLOWANCES FOR VITAMINS

Age group	Gender	Vitamin A mcg	Thiamine mg	Riboflavin mg	Niacin mg	B6 mg	Vitamin C mg	Folate mcg	Vitamin B12 mcg
10-12 years	Boys	600	1.1	1.3	15	1.6	40	140	0.2 -1
	Girls		1.0	1.2	13	1.6			
13-15 years	Boys		1.4	1.6	16	2.0	40	150	0.2-1
	Girls		1.2	1.4	14	2.0			
16-18 years	Boys		1.5	1.8	17	2.0	40	200	0.2-1
	Girls		1.0	1.2	14	2.0			

### **BALANCED DIET FOR ADOLESCENTS**

An adolescent boy is expected to take at least one unit of calories (2400kcal) on par with the requirement of an adult sedentary male. Adolescent girl requires 2100 kcal, which is more than that of an adult female. Carbohydrates should make up 50–65% of energy intake; protein 10–30%; and fat 25–35%. Dietary fat should be from sources of polyunsaturated and

monounsaturated fatty acids, such as fish, nuts, and vegetable oils. Transfats, found in hydrogenated oils used primarily in bakery products, should be avoided altogether as these increase serum levels of low-density lipoprotein. Dietary intake of total cholesterol, found in animal products, should be limited to 300 mg/day. The importance of green yellow, orange, red (GYOR) vegetables and fruits in the diet of adolescents is important for adequacy of micronutrients and fibre. **Rainbow revolution** refers to cultivation and consumption of these coloured food items.

## **COGNITIVE, PSYCHOSOCIAL AND EMOTIONAL DEVELOPMENT DURING ADOLESCENCE:**

### **COGNITIVE DEVELOPMENT**

Cognitive development is the progression of thinking from the way a child does to the way an adult does. There are 3 main areas of cognitive development that occur during adolescence.

**First**, adolescents develop more advanced reasoning skills, including the ability to explore a full range of possibilities inherent in a situation, think hypothetically (contrary-fact situations), and use a logical thought process.

**Second**, adolescents develop the ability to think abstractly. Adolescents move from being concrete thinkers, who think of things that they have direct contact with or knowledge about, to abstract thinkers, who can imagine things not seen or experienced. This allows adolescents to have the capacity to love, think about spirituality, and participate in more advanced mathematics. Youth who remain at the level of a concrete thinker focus largely on physically present or real objects in problem solving and, as a result, may present with difficulty or frustration with schoolwork as they transition throughout high school. Clinicians can help parents recognize this problem to help adolescents adjust to the educational pace.

Adolescents may also experience a personal fable as a result of being able to think more abstractly. The personal fable is built on the fact that if the imaginary audience (peers) is watching and thinking about the adolescent, then the adolescent must be special or different. For decades, this adolescent egocentrism was thought to contribute to the personal fable of invincibility (eg, other adolescents will get pregnant or get sexually transmitted infections) and risk-taking behavior.

**Third**, the formal operational thinking characteristic of adolescence enables adolescents to think about thinking or meta-cognition. This characteristic allows youth to develop the

capacity to think about what they are feeling and how others perceive them. This thought process, combined with rapid emotional and physical changes that occur during puberty, causes most youth to think that everyone is thinking not just about what they are thinking about but about the youth themselves (imaginary audience)

## **SOCIAL DEVELOPMENT**

### **Adolescent Psychosocial Development**

The psychosocial development that occurs during this period can be characterized as developmental tasks that emphasize development of autonomy, the establishment of identity, and future orientation.

The first area of adolescent development—**establishment of autonomy**—occurs when the adolescent strives to become emotionally and economically independent from parents. This struggle begins during early adolescence (ages 12-14 years), which is characterized by forming same-sex peer groups, with decreasing interest in family activities and parental advice. During this time, adolescents are concerned with how they appear to others. The peer group, which is typically same-sex, is often idealized and has a strong influence on the adolescent's development. As a result, adolescents may use clothing, hairstyles, language, and other accessories to fit in with their peers. Similarly, adolescents who do not identify with any peers may have significant psychological difficulties during this period.

Pediatric health care professionals should be aware that most adolescents seek independence in a gradual fashion, and a sudden shift from parents can be a warning sign that the adolescent needs help in transitioning

The second task of adolescence is for youth to develop a sense of **identity**. Identity relates to one's sense of self. It can be divided into 2 areas: self-concept and self-esteem. Self-concept refers to an adolescent's perception of self— one's talents, goals, and life experiences. It can also relate to identity as part of ethnic, religious, and sexual identity groups. Self-esteem relates to how one evaluates selfworth.

Erikson described that an adolescent's inability to settle on an identity or career path can result in identity crisis. Although this stage likely lasts for a short period, because of the current extension of adolescence and young adulthood, with more youth obtaining advanced degrees or vocational training, it may take more time for youth to establish their identity. Adolescents with a chronic illness may have a harder time developing a positive identity or

self-image because of the impact of the illness on body image and the limited ability to achieve independence.

Pediatric health care professionals can support adolescent identity development by encouraging parents to allow adolescents to have the space and time to independently make health care decisions and to participate in and explore a range of activities that can promote this development. Inadequate development of self-identity can result in poor self-esteem in the adolescent. Poor self-image and esteem have been associated with poor adjustment (depression or suicide), school underachievement, substance use, and other risk-taking behavior.

The ability for **future orientation** is the third area of adolescent psychosocial development. This stage usually occurs during late adolescence (ages 18-21 years). Youth have gained the cognitive maturity that is necessary to develop realistic goals pertaining to future vocation or career, have developed a sense of self-identity, and are most likely refining their moral, religious, and sexual values. It is during this time that youth also expect to be treated as an adult. As autonomy increases, youth are given more responsibility. They are also provided with more access to alcohol and drugs.

## **EMOTIONAL AND SOCIAL DEVELOPMENT**

Adolescence is also characterized by the development of emotional and social competence. Emotional competence relates to the ability to manage emotions, whereas social competence focuses on one's ability to relate effectively with others. During this process, adolescents become more aware of being able to identify and label their own feelings and the feelings of others.

The rate of emotional and cognitive development does not parallel the rate of physical maturation. Unlike in the adult brain, where both the limbic area of the brain (emotion center) and the prefrontal cortex (judgment and reasoning center) are enhanced when viewing images that expressed fear, in the adolescent brain, after seeing the same images, the limbic area is enhanced, with almost no activity in the prefrontal cortex.

Such emotional-cognitive asynchrony can result in adolescents misinterpreting other's feelings and emotions, whereas emotional-physical asynchrony can result in adolescents being treated as older than their emotional stage of development. Early rapid pubertal development in girls and boys may significantly affect body image and social performance.

Early maturing boys are often perceived as older and more responsible. In general, they perform better on team sports than boys who mature late and, as a result, may be more popular and seen as class leaders. However, timing and duration of puberty appear to matter. Early maturation may predispose girls to social disadvantage. Early maturation has been identified as a risk factor for conduct problems, depression, early substance use, poor body image, pregnancy, and early sexual initiation.

Management or self-regulation of emotions is an important process in any adolescent care.

Health care professionals can help adolescents recognize triggers and symptoms of out-of-control emotions and use reasoning skills to step back, examine emotions, and consider long-term consequences of behaviour.

## **ATTITUDE TOWARDS HEALTH**

Adolescents are often considered to be at the peak of their health; yet, adolescence coincides with the onset of many health disorders. High-risk behavior is common in mid adolescent age group. The National Family Health Survey 3 (NFHS3) reported the median age of sexual debut in boys and girls to be 23 yr and 18 yr, respectively, but a significant proportion are sexually active much before that. Knowledge about contraception is improving among adolescents and most of them are aware of at least some method of contraception. Though awareness about HIV is increasing among Indian youth, most of them do not have comprehensive knowledge about it.

## **HEALTH PROBLEMS FACED BY ADOLESCENTS**

- **NUTRITIONAL DISORDERS**
- Nutritional requirement of boys and girls are similar during childhood but differs after the onset of puberty. This difference in requirement is due to the difference in the growth rate between boys and girls.
- Girls mature earlier than boys, hence the protein requirement of girls of 11- 14 years is higher than boys of the same age group. At the same time protein requirement of a late adolescent girl is much lower than a boy of the same age group, as she has already attained her adult height.

- Other factors like varying body composition contribute to this difference in nutritional requirements. Boys develop more muscle mass, heavier skeleton, red cell mass than girls, whereas girls have more fat. Adequate calorie intake during adolescence is needed for the appropriate growth as around 4% of energy intake is utilized for growth. The calorie requirement of an adolescent depends on physical activity in addition to linear growth and muscle growth.
- Energy requirements are higher for adolescent boys compared to girls. The protein requirement of adolescents is almost equal to the recommended intake for adults. Even though most of the studies show that protein intake is adequate, protein deficiency can occur due to suboptimal quality of dietary proteins due to the rate limiting amino acids and poor utilization due to recurrent infections. If the energy intake is suboptimal, proteins may be used up for energy instead of tissue building leading to short stature and suboptimal development.  
Data from the NFHS3 shows that 56% of Indian adolescent girls are anemic and the prevalence remains unchanged the last decade.

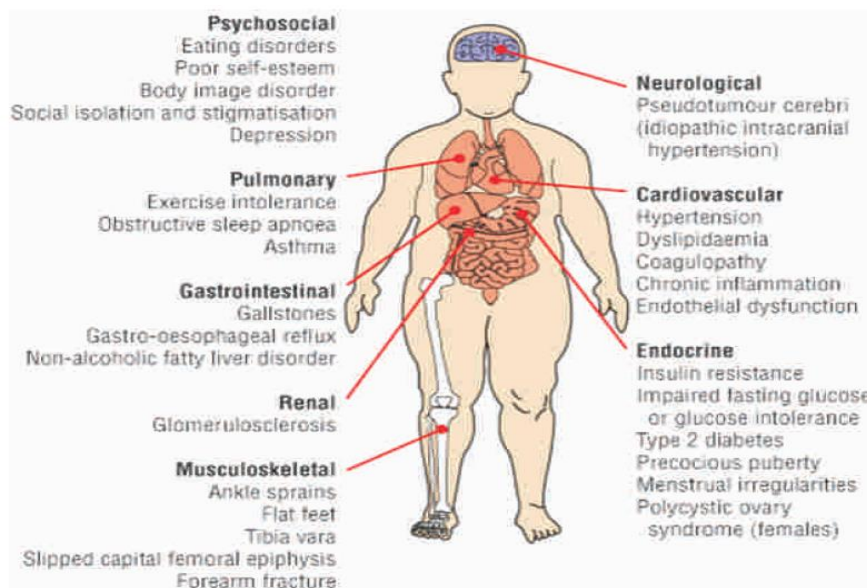
**Underweight and stunting:** The global prevalence of thinness (BMI <-2 SD) is 8.4% among girls and 12.4% among boys. NFHS-3 survey showed that 47% of girls and 58% of boys in the 15-19-year age group are thin. Undernutrition often delays the onset of puberty and sexual maturation, and results in stunting, poor bone mass accrual and reduced work capacity.

**Overweight and obesity:** The other end of the spectrum of malnutrition, i.e. obesity and overweight are increasing among Indian adolescents. Raj et al did a two year follow up of 24,000 children in the 5–16 age group years in Ernakulum district of Kerala and found that the proportion of overweight children increased from 4.94% in 2003 to 6.57% in 2005 amongst both boys and girls. The proportion of overweight was significantly higher in urban region and the rising trend was limited to private schools.

The prevalence of obesity and overweight is higher in boys than girls. Obesity has strong association with asthma, sleep disorders, reflux disease, Blount disease, slipped femoral epiphysis, gallstones, fatty liver and numerous metabolic derangements like type 2 diabetes, dyslipidemia, hypertension and polycystic ovary disease. Essential hypertension is rising among Indian youth. There is a close relationship between

obesity, hypertension and type 2 diabetes mellitus. Sedentary lifestyle, increased consumption of calorie dense food and decreased outdoor activity contribute to these disorders.

Complications of Obesity are depicted in the figure below:



Availability of food in adequate quantity and quality depends on the socioeconomic status, eating practices, cultural factors and food allocation. Factors other than unavailability of food also play a role in the undernutrition in adolescents. Lack of adequate knowledge, lack of time, food fads, peer influences, emotional stress, advertisements, fast food culture and altered perception of body image can all affect the eating habits of adolescent. Often breakfast is missed due to lack of time.

Adolescents are the major consumers of the fast food in both urban and rural parts of India. Fast foods have high amounts of calories, fat, sugar and sodium and result in restriction of micronutrients, needed during this stage. Anti-nutrients in the form of food additives, colorants and preservatives are found in processed and 'ready to eat' dietary products. Consumption of soft drinks before meals affects appetite. These contain empty calories without any other nutrients.

- The requirements of calcium, phosphorous and magnesium are highest during adolescence, as these are needed for bone mineralisation and increase in the muscle mass. 45% of skeletal mass is added during adolescence. Lack of adequate dietary calcium during adolescence can lead to low bone mineral density and osteoporosis during adulthood. Zinc is a growth nutrient and is essential for linear growth, sexual maturation and immunity. Iron requirement is high for adolescent girls to compensate for the menstrual blood loss and for boys to build up muscle mass, red cell mass and blood volume.
- Infections and parasitic infestations can lead to iron loss from the body. Non-heme iron contributes to a major source of iron in Indian diet. The absorption of non-heme iron depends on meal composition and dietary factors. Addition of fruits rich in ascorbic acid like guava and orange have been found to double the iron absorption, but intake of tea, coffee and phytates reduce absorption
- There is lack of sun-exposure due to our modest tradition of clothing coupled with dark skin pigment. Insufficient intake of dairy products results in poor intake of calcium. The resulting low bone mineral density is more pronounced in underprivileged girls as they have low protein intake in addition to calcium and vitamin D deficiency.

Vitamin A deficiency is also an important issue in economically deprived adolescents. Anorexia nervosa and bulimia are being increasingly reported among urban Indian youth.

## **EATING DISORDERS**

Eating disorders are one of the most common chronic medical conditions among adolescents and young adults and often have their onset in this period of life. These are generally associated with a preoccupation or dissatisfaction with body shape or appearance which severely affect emotions and behaviors. Over the last two decades, the rates of children and adolescents with eating disorders have increased significantly in India. If left untreated, eating related problems can lead to severe complications and in rare cases, death.

Some of the main eating disorders are described below:

### **DISORDERED EATING**

Some teens may start skipping meals, eliminating certain food such a carbohydrates or fat, or trying restrictive diets because it allows them to lose weight. Unfortunately, these behaviors could lead to an eating disorder and nutritional deficiencies. Adolescents should be asked about their daily meal intake and encouraged to have more regular and balanced meals to prevent significant nutritional and health related complications. They should also be screened for iron deficiency. If the disordered eating persists or worsens, referral to a therapist or counsellor should be considered.

## **EATING DISORDERS**

Eating disorders are found across all socioeconomic levels, cultures and countries. Stressful events, such as conflicts in relationship or sexual assault can be factors in triggering an eating disorder in an at-risk youth. The various risk factors for eating disorders are as follows:

- A family history of anorexia, bulimia and/or binge eating disorder (particularly in a first degree relative like a mother or sibling)
- Poor communication and conflict resolution at home with authoritative parenting style. Children and teens learn quickly that controlling their eating habits is a way to exert control
- Low self-esteem and self-confidence
- Personality traits such as perfectionism or an extreme desire to succeed or impulsiveness
- Family values about having a specific body size, appearance and food. (teens may try to model their mother or father in | their appearance and activity level)

- Participation in sports that focus on body shape and size such as ballet dancing, gymnastics, track events or wrestling
- Being obese or overweight, especially those who may have been told to lose weight
- Early puberty
- Having a chronic illness like insulin dependent diabetes mellitus
- Abusive relations that cause emotional distress and feelings of loss of control such as physical or sexual abuse
- Specific cultural attitudes and norms about appearance

### **Anorexia Nervosa**

Teens with anorexia will typically have an obsessive fear of gaining weight and a disordered perception of their weight along with a low body weight. The prevalence of DSM-5 anorexia nervosa is approximately 1% among female adolescents. It is more commonly diagnosed among adolescent females but can also occur among males. The new DSM 5 criteria for eating disorders include the following:

- Restriction of intake relative to needs, leading to a weight that is less than minimally normal or expected (e.g. falling off a previously followed growth curve)
- Intense fear of gaining weight or persistent behavior that interferes with weight gain, even though at a low weight
- Disturbance in the way in which one's body weight or shape is experienced or lack of recognition of the seriousness of the current low body weight.

### **Signs and Symptoms-**

Anorexia can present with weight loss, low resting heart rate, dizziness, and amenorrhea. In addition to reviewing vitals, growth curve, weight and BMI, it is important to elicit a thorough history and conducting review of symptoms and physical examination. Teens with anorexia may lack awareness of their symptoms, so inputs from parents and other family members are useful. There are several screening questionnaires that can be used in a clinical setting, including Eating Disorders Examination (EAT-25).

### *Evaluation*

Signs may include lanugo (fine hair), low basal temperature, severe bradycardia, hypotension and orthostatic hypotension. Patients may complain of feeling cold, having abdominal bloating or constipation. Prepubertal patients may experience delayed puberty, weight loss and poor height gain. Patients may also have deficits in concentration, ability to focus, and memory. In severe cases, they may have an abnormal bone mineral density and be at risk for stress fractures. In a case of anorexia nervosa, an initial work up should potentially include a hemoglobin, a chemistry panel for blood urea nitrogen, creatine, magnesium, phosphorous and thyroid hormones including T3, T4 and TSH. A low T3 is a marker of overall nutritional status and can be a good indication that metabolism has slowed down which can in turn affect their focus, body temperature and ability to burn calories. As caloric intake improves, the T3 increases. Serum FSH, LH and estrogen and prolactin levels should also be checked.

If the heart rate is less than 50 beats per minute, a baseline electrocardiogram should also be obtained.

### **Bulimia**

Teens who suffer with bulimia may fear weight gain and feel severely unhappy with their body size and shape. The condition is marked by cycles of extreme overeating, known as bingeing, followed by purging or other behaviours. It is also associated with feelings of loss of control on eating. The following are DSM 5 criteria for bulimia

- Minimum of 2 binge-eating episodes/week for 3 months/recurrent binge eating
- Regular use of vomiting, laxatives, diuretics, dieting, or exercise to prevent weight gain
- Disturbance of perception of body shape
- Binge eating followed by behaviors that attempt to compensate for the overeating such as vomiting, excessive exercise or extreme use of laxatives or diuretics.

Bulimia is associated with poor self-esteem, feeling of isolation, mood changes and guilt. Parents often report food disappearance or empty wrappers. Other flag signs include frequent trips to the bathroom after meals, the sounds or smells of vomiting or sighting packages of laxatives or diuretics. Adolescents with bulimia may skip meals, avoid eating in front of others or eat very small portions. They may wear baggy clothes to hide the body or complain about being 'fat'. In addition, they may also have scarred knuckles from repeated vomiting. It is important to obtain routine labs including electrolytes. Patients who vomit may present

with metabolic alkalosis, hypochloremia, and/or hypokalemia. Laxative abuse may lead to hypokalemia and metabolic acidosis. Persistent vomiting can also lead to Mallory-Weiss esophageal tears that may present with either hematemesis or melena.

### **Binge Eating Disorder**

Binge eating is three times more common than anorexia or bulimia. Teens who struggle with this disorder may also experience intense feelings of guilt, distress, and embarrassment.

Binge eating disorder is characterized by regular episodes of extreme overeating and feelings of loss of control on eating.

Episodes are associated with > 3 of the following:

- Eating more rapidly than normal
- Eating until feeling uncomfortably full
- Eating large amounts of food when not feeling hungry
- Eating alone because of feeling embarrassed by amount
- Feeling disgusted, depressed or very guilty after bingeing

Unlike bulimia, episodes of binge eating are not followed by purging, fasting, or excessive exercise. Because of this, many people may be obese and at an increased risk of developing other conditions, such as cardiovascular disease.

### **MENTAL HEALTH PROBLEMS**

Adjustment disorder, anxiety disorders, depression, suicide, delinquent behavior, poor body image and low self-esteem are the psychological problems faced by adolescents. Suicide rates are increasing in adolescents, with higher number of completed suicide in boys and attempted suicides in girls. Adolescents are at higher risk of committing suicide because of their cognitive immaturity and increased impulsivity.

#### **Anxiety Disorders**

*Generalized Anxiety Disorder (GAD)*: Excessive anxiety and worry (apprehensive expectation) about a number of events or activities. The intensity, duration, or

frequency of the anxiety and worry is out of proportion to the actual likelihood or effect of the anticipated event. The individual finds it difficult to control the worry and to keep worrisome thoughts from interfering with attention to tasks at hand. Somatic symptoms frequently are associated.

*Social Anxiety Disorder*: Marked and persistent fear of one or more social or performance situations, provoking symptoms of anxiety and causing extreme distress or avoidance of the situation.

*Panic Disorder*: Recurrent unexpected panic attacks.

*Panic Attack*: An abrupt surge of intense fear or intense discomfort that reaches a peak within minutes and during which time four or more of 13 physical and cognitive symptoms occur (palpitations, pounding heart, or accelerated heart rate; sweating; trembling or shaking; sensations of shortness of breath or smothering; feelings of choking; chest pain or discomfort; nausea or abdominal distress; feeling dizzy, unsteady, light-headed, or faint; chills or heat sensations; paresthesias [numbness or tingling sensations]; derealization [feelings of unreality] or depersonalization [being detached from oneself]; fear of losing control or “going crazy”; fear of dying).

*Obsessive–Compulsive Disorder (OCD)*: Although the specific content of obsessions and compulsions varies among individuals, certain symptom dimensions are common in OCD, including those of cleaning (contamination obsessions and cleaning compulsions); symmetry (symmetry obsessions and repeating, ordering, and counting compulsions); forbidden or taboo thoughts (eg, aggressive, sexual, and religious obsessions and related compulsions); and harm (eg, fears of harm to oneself or others and related checking compulsions).

*Posttraumatic Stress Disorder (PTSD)*: The development of characteristic symptoms (including fear-based re-experiencing, emotional and behavioral symptoms, anhedonic or dysphoric mood states, negative cognitions, arousal and reactive-externalizing symptoms, dissociative symptoms, or combinations of these symptom patterns) after exposure to actual or threatened death, serious injury, or sexual violence.

## **Mood Disorders**

*Adjustment Disorder With Depressed Mood:* The development of emotional or behavioral symptoms in response to an identifiable stressor(s) that occur within 3 months of the onset of the stressor(s) in which low mood, tearfulness, or feelings of hopelessness are predominant.

*Major Depressive Disorder (MDD):* A period of at least 2 weeks during which there is either depressed mood or the loss of interest or pleasure in nearly all activities. In children and adolescents, the mood may be irritable rather than sad.

*Bipolar Disorder:* A distinct period of abnormally and persistently elevated, expansive, or irritable mood and abnormally and persistently increased activity or energy, lasting at least 4 consecutive days and present most of the day, nearly every day, or that requires hospitalization.

*Premenstrual Dysphoric Disorder:* The cyclic recurrence of severe, sometimes disabling, changes in affect—such as mood lability, irritability, dysphoria, and anxiety—that occur in the luteal phase of a woman's menstrual cycle and subside around, or shortly after, the onset of menses. These symptoms may be accompanied by the common physical and behavioral symptoms of premenstrual syndrome.

## **Attention Deficit Hyperactivity Disorder**

Symptoms of inattention and hyperactivity or impulsivity present for at least 6 months to a degree that is maladaptive and inconsistent with developmental level.

## **Disruptive Behavior Disorders**

*Conduct Disorder:* Repetitive and persistent pattern of behavior that violates the basic rights of others or the age-appropriate societal norms, including aggression to people and animals, destruction of property, deceitfulness or theft, or serious violation of rules (such as running away, truancy, curfew violations.)

*Oppositional–Defiant Disorder:* Pattern of negativistic, hostile, and defiant behavior that includes four or more of the following—often losing temper, often arguing with

adults, often refusing to follow rules, often annoying others, often blaming others, often angry or resentful, often spiteful or vindictive.

### **Poor Body Image:**

Body image refers to how an individual sees themselves. A positive body image builds up self-esteem. Poor body image, can start early in life. It is influenced by parents, media, peer group and pubertal changes and can lead to eating disorder related issues. In general, the number of teens with poor body or distorted body image concerns is increasing globally and in India. Teens often do not disclose their concerns about body image to their friends or other adults in their life. Therefore, it is important that pediatricians recognize signs and take steps to address it early on.

Signs of poor body image in teens include obsessive self-scrutiny in mirrors, regular comments about their body, comparison of their appearance to others, and envy of a friend or celebrity's appearance. Ways to improve adolescent body image include encouraging teens to focus on their personal strengths and to spend time with friends who feel good about their bodies (and are not always criticizing themselves or others). In more severe cases, referral to a counsellor or therapist should be considered, who can help build positive body image and self-esteem.

### - **SLEEP DISTURBANCES**

During the period of rapid growth, adolescents have increased sleep requirements. Many urban adolescents do not get enough sleep due to various reasons like increasing academic activity, parents working in shifts or watching television late into the night. Poor sleep habits and inadequate sleep are likely to reflect in school performance and cause daytime drowsiness, aggressive behaviour, conduct disorders, anxiety, restless leg syndrome and depression. Sleep deprived teens often have periods of subconscious bouts of sleep or 'microsleeps' during the daytime, making them prone to injuries and accidents

### - **INFECTIONS**

With increased outdoor activity, teens are exposed to TB, HIV, sexually transmitted infections, skin infections and parasitic infections. Early sexual activity is not uncommon in India. Various biological (immature and incompletely estrogenized mucosa) and psychosocial factors (lack of preparedness, lack of familiarity with barrier contraceptives) make an adolescent susceptible to these infections.

**Genital infections and sexually transmitted infections:** Vaginal discharge is common in adolescent girls and may signify physiological leucorrhoea of puberty or endogenous or sexually transmitted infections. Gonorrhoea can cause vulvovaginitis, urethritis or proctitis. Chlamydia can cause intermenstrual or postcoital bleeds. Both may be asymptomatic in the majority and can cause vaginal discharge. Candidal infections become common with starting of menstruation and often have a cyclic nature. Pelvic inflammatory disease (PID) is a spectrum of inflammatory disorder of female genital tract. PID occurs commonly in sexually active young females and can present with abdominal pain with vaginal discharge. The illness is difficult to treat with oral antibiotics and needs hospitalization and intravenous antibiotics.

### **FEMALE SPECIFIC HEALTH PROBLEMS**

- It is common to have anovulatory and irregular menstrual cycles during first two years after menarche. The polycystic ovary syndrome, with a combination of menstrual irregularities and ovarian cysts with androgen excess like acne or hirsutism, occurs in around 9% of Indian adolescent girls. The condition has association with other metabolic derangements like obesity, insulin resistance and type 2 diabetes.

**Menstrual hygiene:** There are many social taboos about menstruation in Indian families. Many adolescent girls are found to miss school during their menstruation because of lack of access to safe sanitary products or lack of privacy. Poor Menstrual hygiene may contribute to reproductive infections. With the introduction of government and private run Menstrual Hygiene Schemes, 57% young women now use hygienic methods during menses. [NHFS4]

## **VULNERABLE GROUPS AND THEIR PROBLEMS:**

- Poverty- Poor access to health care and education, early initiation into employment
- Illiterate & School Drop Outs- Prone to high risk behavior and juvenile delinquency
- Working- Unhealthy working conditions, prone to exploitation, poor access to education & health care
- Street Adolescent- High risk behavior
- Rural Adolescent- Poor access to health care
- Institutionalised- Prone to abuse & exploitation

*Abuse and violence (physical and sexual):* Physical and sexual violence is common in India, with 20-30% young females suffering from domestic violence and 5-9% young females reporting sexual violence (NFHS4). Accidents are the major cause of mortality in this age group. Road traffic accidents, burns and poisoning are leading causes of traumatic mortality and disability in Indian youth. Motor vehicle and industrial accidents are common in boys whereas burns are more common in girls.

*Migration:* Many adolescents migrate from rural to urban settings, for labor or educational opportunities. Trafficking of youth is a serious problem in India and happens for industrial or domestic labor, forced marriages and prostitution. In states like Bihar, 70% of new HIV infections are related to outward male migration.

*Adolescent Pregnancy:* Unmarried adolescents are likely to resort to unsafe methods of abortions, which increase risk of septicemia and mortality. As compared to adult pregnancy, they are also at a higher risk for pre-eclampsia, preterm labor and postpartum hemorrhage. Prolonged and obstructed labor are common in adolescent pregnancies and they are 2-4 times more likely to die during childbirth as compared to adult females. Neonatal, infant and child mortality rates are higher in children

delivered to adolescent mothers. Fortunately, the prevalence of adolescent pregnancy [8%] is lower in the results of NFHS 4, due to schooling and knowledge about contraception.

*Lack of sex education:* The majority of Indian youth do not get formal sex education in an effective way. Peers, books and magazines are their main sources of information about sex. Parents and teachers often fail to discuss issues like masturbation, safe sex, dating, abortion, HIV and sexually transmitted diseases.

## - **SUBSTANCE ABUSE IN ADOLESCENTS**

Substance use among children and adolescents is a public health concern in several parts of the world. Onset of substance abuse during the formative years interferes with academic, social and life skills development, and warrants both primary and secondary prevention. This is an issue in urban as well as rural India. Most of the tobacco and alcohol use starts during adolescence. The Global Youth Tobacco Survey 2009 showed that 14% of school youth reported using tobacco currently. Alcohol (21%), cannabis (3%) and opium (0.4%) are the most prevalent substance abuse other than tobacco in Indian youth. The incidence of drug abuse among children and adolescents is higher than the general population. In developed countries drug abuse among youth is generally associated with particular youth subcultures and lifestyles, causing an acceptance of drugs and their use by members of the subcultures. In Asia, the figures for drug abuse are not exactly known but after cannabis, Amphetamine-type Stimulants (ATS) are the most commonly used amongst children and youth.

Substance use refers to the use of any psychoactive substance or drug, including licit and illicit drugs, other than when medically indicated. According to the World Health Organization, substance abuse is persistent or sporadic drug use inconsistent with or unrelated to acceptable medical practice. Today, there is no part of the world that is free from the curse of drug trafficking and drug addiction. All over the world, millions of people with drug addiction are leading miserable lives between life and death. India

too is caught in this vicious circle of drug abuse and the numbers of drug addicts are increasing day by day.

Addicts are more prone to accidents, injuries, violence, trading sex-for-drugs, HIV, hepatitis C, sexually transmitted diseases and tuberculosis.

According to a study conducted by the National Commission for Protection of Child Rights, the common drugs of abuse among children and adolescents are tobacco and alcohol, followed by inhalants and cannabis. The mean age of onset was lowest for tobacco (12.3 years), followed by onset of inhalants (12.4 years), cannabis (13.4 years), alcohol (13.6 years), proceeding then to the use of harder substances opium, pharmaceutical opioids, heroin (14.3–14.9 years) & then substances through injecting route (15.1 year).

A brief note on the various groups of drugs follows:

1. Nicotine : Adolescents and children are the prime targets of the tobacco industry. According to WHO report adolescents in India start smoking early. The India Global Youth Tobacco Survey (GYTS) conducted on adolescents aged thirteen to fifteen years revealed that 14.6% of students used some form of tobacco and 4.4% smoked cigarettes. Though the level of cigarette use has been dropping significantly as perceptions of risk increase, nicotine use continues to be a topic of concern for teens and adolescents. A factor is the rising trend of e-cigarette use among younger teens. These are electronic nicotine delivery systems that are battery operated, which heat and then vaporize nicotine dissolved in propylene glycol, glycerine or other solvents. They come in tobacco, mint, cherry or chocolate flavours and are highly appealing to adolescents. Adverse effects include dry cough, throat irritation and lipoid pneumonia. Potentially toxic substances like diethylene glycol and carcinogens like nitrosamines have been detected in vapour.
2. Alcohol: Alcohol is commonly abused by teens. The social acceptance of drinking among people can lead many teens to view alcohol as relatively harmless. Research suggests teens are more likely to binge drink because their impulse control centre has not fully developed.

3. Marijuana(Cannabis): Marijuana refers to the dried leaves, flowers, stems and seeds from the Cannabis sativa or Cannabis indica plant. The plant contains the mind-altering chemical tetrahydrocannabinol and other similar compounds [3]. An analysis of cannabis markets shows that low prices coincide with high levels of abuse, and vice versa.
4. Opioids: Opium is a dark brown, resinous material obtained from poppy (papaver somniferum) capsule. Morphine is the principal alkaloid in opium. A wide range of painkillers are being abused by teens and adults. These include: morphine, fentanyl, codeine, tramadol. Teens abuse the tablet forms of these drugs by taking them orally or in some cases by crushing and snorting or injecting them.
5. Tranquilizers: Tranquilizers include depressants or sedatives like benzodiazepines, barbiturates and sleep medications. These substances are helpful in treating anxiety disorders, seizures and sleep problems when taken as prescribed in pill form but have a high potential for abuse and dependence.
6. Amphetamines: Amphetamines are medications prescribed primarily for attention-deficit/hyperactivity disorder (ADHD) that is comprised of two substances: amphetamine and dextroamphetamine. It is a white odourless, bitter tasting powder that is particularly popular among adolescents and young adults because of its potency and ease of absorption. When taken as prescribed, amphetamines and other stimulant medications can be safe and effective. When taken in ways other than prescribed, they can be dangerous and addictive. Abusers are generally teenagers seeking thrill or kick which is obtained on rapid intravenous injection.
7. Cocaine: Cocaine, an alkaloid extracted from leaves of Erythroxylum Coca, is supplied as the hydrochloride salt in crystalline form. Smoking the cocaine alkaloid involves inhaling the cocaine vapours in pipes or cigarettes mixed with tobacco or marijuana. To sustain the high, cocaine users repeatedly use cocaine in short period of time known as “binges”.

8. Inhalants: Inhalants are abused by sniffing, snorting or huffing fumes: directly from a bottle, from a soaked cloth, from a balloon or sprayed from an aerosol container. A number of liquid or gas items are abused for their intoxicating effects, with most of these substances being legal and available in many homes and businesses. The inhalants are one of the first substances that teens living on the streets experiment due to their availability, easy access, and ability to create a desirable “high” that is similar to alcohol intoxication.
  
9. Dextromethorphan: Many over-the-counter medicines for coughs and colds contain the active ingredient dextromethorphan (DXM). When used as directed, the substance treats cold symptoms, but at higher doses, it can produce an intoxicating and dissociative effect. DXM-containing cough medicine is an inexpensive, legal, and easy-to-obtain high drug, although certain states have begun to regulate its sale to minors. Teens can easily get it from their home or in pharmacies.
  
10. Hallucinogens: Several naturally occurring and synthetic substances are used by adolescents for their hallucinogenic properties. This group of substances contains psychoactive drugs that distort reality by triggering hallucinations, delusional thinking, and/ or skewed experiences of time and space. While hallucinogens may not be as easily available as other substances like alcohol and marijuana, their appeal lies in two main factors: their sought after ability to distort the environment of the user looking for novel recreational experiences and their lower perceived risk compared to other substances like cocaine or heroin.

Factors contributing to Substance Abuse:

The developing adolescent brain has a preponderance of the hypothalamic limbic system and a very strongly developed dopamine pathway and a less developed prefrontal cortical control. This leads to impulsive high risk taking behaviour and susceptibility to negative peer pressure in adolescents. Adolescents due to above reasons are very vulnerable to substance abuse which begins with experimentation with peers.

There are many risk factors that make some adolescents more vulnerable than others. Adolescent with various psychiatric disorders have a high risk of turning to substance abuse. Feelings of sadness and pain experienced during depression may lead adolescents to seek relief in the form of substance use. Other factors are: 1) familial-childhood maltreatment (neglect and any type of abuse physical, mental, emotional, sexual). 2) Familial substance abuse, 3) dysfunctional parent-child relationships. Social risk factors include a) association with deviant peers, b) popularity, c) bullying, d) gang affiliation e) Unsafe and drug promoting environment in school and community. Individual risk factors include problems like ADHD and depression.

There are some flag signs that should alert parents to observe their teen more carefully and try to communicate and get to the root of the problems – these may be termed as **Universal flag signs**.

TABLE 1 UNIVERSAL FLAG SIGNS	
Domain	Flag signs : these can alert parents that something is going wrong in their adolescent and needs professional assessment
Sleep disturbances	excess sleep, reduced sleep, trouble falling asleep, getting up at midnight and not able to go back to sleep again, insomnia, nightmares
Appetite changes	eating too much, loss of appetite, binge eating, emotional eating, signs of eating disorders
Weight changes	weight gain, weight loss
Academic performance	losing interest in school work, falling back on home work, worsening academic performance, fights in schools, bullying or victim of bullying, reduced memory and attention span
Change in behaviour	withdrawal, signs of depression, not communicating, irritability, anger, fighting, emotional out bursts, mood swings, excess anxiety
Change in peer group	loss of friends, a new circle of friends, new friends with undesirable behaviours, unknown persons phone calls
Frequent physical symptoms	Various aches and pains – abdominal ,headache, chest pain
Regression	Thumb sucking , bed wetting , childish temper tantrums
Missing school	Frequently wanting to miss schools
Mobile phone behaviour	Need for extreme privacy, extreme anger, if phone taken away
Bathroom	Being closeted in the bathroom for prolonged hours

A single flag sign should not lead to panic but should alert parents. If there are many flag signs in adolescent, parents must – take professional help to assess what is wrong. Parents and teachers need to be educated and made aware of specific flag signs for various teenage issues like depression, risk of suicide, alcohol or tobacco consumption, substance abuse, emotional disturbance etc.

### **ENVIRONMENT AND SOCIAL CHALLENGES:**

*Pollution:* The incidence of asthma is increasing. There is ongoing research into the role of electromagnetic exposure from communication devices in disorders like childhood leukemia, brain tumors and immune dysregulation.

*Media:* With reduction in poverty and increased availability of electronic media, adolescents are exposed to information from all across the world. This exposure is often unsupervised because of working parents and increasing use of personal electronic gadgets. Due to inability to separate fact from fantasy, adolescents succumb to the glamorous portrayal of tobacco or alcohol consumption, unrealistic expectations, physical aggression, destructive behavior and unprotected sex. In urban areas, spending much of their spare time indoors on social networking sites, teenagers are actually deprived of sunlight and physical activity and are socially isolated.

*Peer pressure:* Peer formation is a part of adolescent social development. Pressure for conforming to norms drives many of their actions and decisions, including risk taking behavior and initiation of substance abuse.

*Poverty:* Adolescents belonging to poorer families are likely to have inadequate diets. Studies have shown that children belonging to poorer families had higher chances of having depression, antisocial behavior and engaging in drugs or sexual activity at earlier ages.

*Illiteracy:* Though the situation is improving over the years, still 33% of Indian youth are not able to complete their primary education. Female gender belonging to rural and poor background are risk factors for illiteracy.

*Academic and emotional stress:* Examinations cause significant physiological and psychological stress. Apart from rapid changes in their body structures, various other factors like peer acceptance, discrimination, academic burden, parental expectations, changing social environments cause stress among youth. Switching from vernacular to English medium schools, long hours of school and tuitions are additional stress factors that are unaddressed. While most adolescents have adequate coping skills, some may have serious adjustment problems resulting in various psychological and somatic effects.

*Early marriage.* Though the legal age for marriage in India is 18 yr for girls, many states still have the practice of childhood and early marriage. Almost 30% of Indian

girls between the ages of 15 and 19 yr are married; the proportions are higher in rural areas.

*Discrimination.* Young people are often treated as second class citizens, under the control of adults and often not involved in any decision making. Adolescent girls are often asked to limit their outdoor or extracurricular activities and are involved in any decision making. Adolescent girls are often confined to their houses and expected to do the household work. Gender based discrimination is seen in education and even food distribution.

### **ROLE OF HEALTH CARE PROVIDER IN ADOLESCENT HEALTH**

The health care provider plays an integral role in adolescent health care. The following factors are to be considered :

*Establishing rapport:* Being empathetic and nonjudgmental is the key to effective communication. Direct questioning of the adolescent is as important as questioning the parents. Beginning the conversation with icebreakers, set of open-ended non-sensitive questions and then moving to sensitive/targeted questions is always helpful.

*Consent:* For a child who is less than 12 years, consent for examination or medical/surgical procedure is obtained from the parent or guardian. While an adolescent aged 12-18 years can give consent for examination, consent for medical/surgical procedure can be given only after 18 years. This also includes consent for medical termination of pregnancy, blood and organ donation.

*Confidentiality:* One may need to interview a young patient separately, as he/she may not want to discuss sensitive topics in the presence of parents. While examining the genitalia, the doctor can ask patient's preference for presence of their parent inside the examination room. A boy may prefer his parents standing outside the exam room, whereas a girl may find it comforting, if her mother accompanies her during the examination.

*Nutritional Intervention:* Improving the nutritional status of adolescent girls helps in two ways. It breaks the cycle of malnutrition and low birth weight babies, and prevents long-term complications of the latter in future generations.

*Providing Illicit Information:* The adolescent health visit is an excellent opportunity to talk to the parents and their adolescent about the pubertal changes. It is likely that they have not received any formal sex education in school and need to be provided correct educational resources for the same.

*Referral to social services:* National Commission for Protection of Child Rights Act 2005 considers a person below 18 years as a 'child'. It is mandatory for a health care provider to report all cases of child abuse (even suspected) to the Chairperson of the Commission; the complaint can be lodged online or in writing. Doctors are protected in case of erroneous reporting but punishable, if they fail to report. Adolescents with special needs or victims of any kind of abuse need social and psychological support.

Checklist for Adolescent Health Visit is as below:

History from parents and adolescent	<ul style="list-style-type: none"> <li>History of presenting problems</li> <li>Parental concerns on growth, development</li> <li>Academic success; school absenteeism</li> <li>Diet history including calcium, protein and iron intake; junk food</li> <li>Menstrual history; sleep problems</li> </ul>
History on separate questioning of adolescent	<ul style="list-style-type: none"> <li>Emotional problems; relationship with family and peers</li> <li>Outlook towards physical and sexual changes</li> <li>Involvement in relationship or sexual activity</li> <li>Awareness about safe sex and contraception</li> <li>Specific problems related to sex organs</li> <li>Tobacco or other substance use</li> <li>Counsel and clear doubts on sensitive topics</li> </ul>
History on separate questioning of parents	<ul style="list-style-type: none"> <li>Relationship with family</li> <li>Level of communication on sensitive matters</li> </ul>
Physical examination	<ul style="list-style-type: none"> <li>Anthropometry</li> <li>Blood pressure, markers of obesity, acanthosis</li> <li>Sexual maturity rating</li> <li>Signs of malnutrition, anemia and vitamin deficiencies</li> <li>Signs of skin and genital infections</li> <li>Level of general hygiene</li> <li>Signs of trauma; abuse</li> <li>Signs of drug abuse or tobacco use</li> </ul>
Counseling	<ul style="list-style-type: none"> <li>Nutritional intervention</li> <li>Hygienic practices</li> <li>Building rapport between parents and adolescent</li> <li>Providing information and sources on sex education</li> </ul>
Investigations	<ul style="list-style-type: none"> <li>Hemoglobin level</li> <li>Blood sugar, lipid profile</li> <li>Genital swabs</li> <li>Ultrasound of ovaries</li> </ul>
Referrals	<ul style="list-style-type: none"> <li>Counselor</li> <li>Dietitian</li> <li>Psychiatrist</li> <li>Gynecologist</li> <li>Voluntary and confidential HIV testing</li> <li>Social services, child protection agencies, support groups</li> </ul>

**Adolescent friendly health services:** Adolescents have diverse problems and special needs. The services include provision of reproductive health services, nutritional counseling, sex education and life skill education. Confidentiality, easy accessibility, friendly attitude and quick comprehensive health care delivery have made a positive impact on adolescent clients. 'Adolescent reproductive and sexual health' has been identified as a key strategy under RCH II programme. Adolescent friendly clinics are functional at many centers in the country.

**Package of Interventions for Healthy Adolescents are as follows:**

*Healthy Lifestyle*

- Healthy food
- Exercise and Yoga
- No to tobacco, alcohol, drugs
- Safe conduct on road

*Vaccines:*

- Papilloma virus, rubella

The healthy Adolescent service that are Provided are as Follows:

*Healthy Lifestyle*

- Healthy food
- Exercise and Yoga
- No to tobacco, alcohol, drugs
- Safe conduct on road

*Vaccines*

- Papilloma virus, rubella

*Anemia:*

- Prevention, detection and management of anemia /especially for adolescent girls

*Sexual health*

- Sexuality education
- Menstrual hygiene
- Marriage after 18 years, childbirth after 20 ~ears
- Counselling and services for comprehensive sexual and reproductive health, including contraception

#### *Mental health*

- Supportive family; counseling and peer/family support in anxiety, depression
- Prevention and management of hazardous and harmful substance use
- Prevention of suicide and management of self-harm/ suicide risk

#### *Violence prevention*

- Prevention and management of unintentional injury
- Prevention of and response to sexual and other forms of gender-based violence

#### *Communicable and Non-communicable Diseases:*

- Prevention, detection and treatment of communicable and non-communicable diseases

#### *Preparing for adulthood*

- Parenting skills, responsible husband, wife and father

#### ***SEXUAL VIOLENCE AND ITS MANAGEMENT:***

Child sexual abuse (CSA) includes all types of sexual victimization of children – penetrative or non-penetrative sexual intercourse, pornography, sexual harassment, commercial sexual exploitation, sex tourism and online exploitation.

In India, the Protection of Children from Sexual Offences (POCSO) Act, 2012 (that regards any sexual activity with a child below 18 years a crime), describes various forms of sexual offences. CSA has been mostly reported from economically affluent countries, it may be more common in developing countries. A recent epidemiological study mentions that the prevalence rates of CSA in Europe, America and Asia were 9.2%, 10.1% and 23.9%, respectively. CSA is influenced by socio-cultural practices

and frequently goes unreported, as a culture of secrecy, fear of indignity and social embarrassment prevents disclosure of such offences. Moreover, minor forms of CSA are mostly ignored.

Sexual violence takes place in all settings: at home, schools, child care institutions, places of work and in the community. Information on the prevalence and forms of CSA is very scarce and difficult to obtain.

Every case of sexual assault is a medical emergency for which free treatment is mandatory at government or private medical facilities, and no document or precondition is necessary for providing emergency medical care. A victim of CSA may approach a health facility directly for treatment, with a police requisition after police complaint, or with a court directive.

The hospital is bound to provide treatment and conduct a medical examination with consent of the child/parent/guardian, depending upon the age of the child. The victim may or may not want to lodge a complaint, but requires medical examination and treatment. In such cases, the doctor is bound to inform the police as per law.

However, neither court nor the police can force the survivor to undergo medical examination without an informed consent of the child/parent/guardian.

If the victim does not want to pursue a police case, a medico-legal case (MLC) must be made and an informed refusal documented. If the victim has reported with a police requisition or wishes to lodge a complaint later, the information about MLC number and police station must be recorded.

Medical Evaluation and management of sexual abuse child includes the following measures:

- i. Forensic examination and collection of blood or body fluid samples by trained staff.
- ii. Care of the injuries.
- iii. Prophylaxis against pregnancy: Two doses of levonorgestrel 12 hours apart, first dose being given within 72 hours of intercourse.
- iv. Prophylaxis against sexually transmitted infections includes a single oral dose of Azithromycin 1 g along with Cefixime 400 mg and Metronidazole or Tinidazole 2 g, protects against syphilis, gonorrhoea, *Chlamydia* and *Trichomonas*. Hepatitis B vaccination is recommended, if the person is not previously immunized.

v. Prophylaxis against HIV requires referral to the nearest integrated counseling and testing center.

vi. Psychological support includes counselling and referral to a psychiatrist. Informing concerned authorities or social services is important as patient may need shelter and legal help. A teen may not be willing to disclose this assault to his parents.

Childline (1098) is a support service provided by Government of India focussed on child care and protection.

### ***Protection of Children from Sexual Offenses [POCSO] Act 2012:***

The POCSO Act protects individuals below 18 years from sexual offense of harassment of any form, be it physical or pornographic. It also explicitly states that an event of abuse must be informed to legal authorities; failing which, the knowing person [including the health care provider] is liable to legal actions including imprisonment.

### ***One Stop Centers (OSC):***

The Ministry of Women & Child Development, Govt. of India is establishing One Stop Centers (OSC) to provide support and assistance to victims of gender violence [11]. Thus, comprehensive services, including medical, police, psychosocial counseling, legal aid, shelter, referral and facilities for video-conferencing are provided ‘under one roof.’ For those below 18 years, these are undertaken in coordination with authorities under the Juvenile Justice Act, 2011 and the POCSO Act, 2012. The scheme is centrally sponsored with 100% financial assistance.

### ***Contraception:***

A pediatrician should advocate for abstinence and delayed initiation of sex to adolescent patients. In case the adolescent is already sexually active, condom seems a better choice compared to other methods. Adolescents with disabilities or mental retardation are wrongly assumed to be at low risk for STIs and pregnancy. Parents of such children need to be counselled regarding these issues.

## **MANAGEMENT OF EATING DISORDERS:**

### **1. Treatment of Anorexia Nervosa**

Treatment is based on the degree of severity of symptoms and signs. Improvement may vary greatly depending on the level of resources available, patient adherence and family involvement.

### *Outpatient care*

Outpatient care can be helpful in mild to moderate cases and allow patients to continue to attend school or work. Treatment typically requires a multidisciplinary team, including physician, nutritionist and therapist or psychologist, trained in eating disorders. The pediatrician plays an important role in educating the patient, setting weight goals, monitoring weight gain, checking for medical complications, and ensuring that patients and their families receive the optimal level of care. It is important to discuss increasing caloric intake incrementally to improve menstrual function, heart rate, dizziness and to check for evidence of refeeding syndrome and supplement calcium intake. Treatment includes cognitive behavioral therapy (CBT), which focuses on changing negative patterns of behavior and family based therapy (FBT). FBT also referred to as the Maudsley approach has been shown to be very effective. It involves initially giving the family complete control over the patient's food choices to allow weight gain, then gradually giving control back to the adolescent and addressing other behavioral issues.

### *Inpatient care*

Indications for inpatient treatment include a heart rate  $<50$  beats per minute while awake or less than  $<45$  beats per minute while asleep, systolic pressure  $<90$  mm Hg, prolonged QTc or other arrhythmias, sustained orthostatic changes in blood pressure and pulse, syncope, electrolyte abnormalities, intractable vomiting, suicide risk, weight  $<75\%$  of expected body weight, or ongoing weight loss despite intensive management. Prognosis is associated with length of illness, age and type of treatment. There is mixed data on the use of medications such as antidepressants.

About 33% of those who seek treatment recover within 5 years. However, patients are 5 times more likely to die prematurely and at much higher risk for suicide than non-eating disorder patients which underscores the need for early screening and treatment.

## **Treatment of Bulimia:**

### *Outpatient treatment*

Treatment is multidisciplinary. Patients may benefit from a day treatment program to break the binge-purge cycle followed by intensive outpatient counseling with a therapist and regular follow up with a pediatrician. CBT is generally considered the most effective intervention for bulimia nervosa although FBT is also useful. The use of selective serotonin reuptake inhibitors (SSRIs) has been shown to be effective.

#### *Inpatient treatment*

Indications for inpatient are similar as those mentioned in the section on anorexia nervosa. Inpatient medical stabilization focuses on initiating nutritional rehabilitation, replenishing electrolytes, preventing further medical or psychiatric complications and providing resources for subsequent care. If left untreated, bulimia can result in long-term health problems such as abnormal heart rhythms, bleeding from the esophagus due to excessive reflux of stomach acid and dental problems.

Recovery rates in patients with bulimia are similar to anorexia although mortality is much less common. There is a poor prognosis when bulimia coexists with sexual abuse, depression, or substance abuse.

#### Treatment of Binge Eating Disorder:

Screening involves asking about eating habits and body image and getting baseline labs including a lipid panel, glucose and electrolytes. Medical complications are similar to those with obesity including hypertension, type2 diabetes, and sleep apnea. Treatment includes CBT and weight loss. There is also evidence to support the use of imipramine, topiramate or selective serotonin reuptake inhibitors in treatment.

### **MANAGEMENT OF SUBSTANCE ABUSE DISORDERS (SUD) IN ADOLESCENTS:**

Managing an adolescent with drug abuse is challenging for a clinician. It requires high level of professional expertise and clinical skills. Pediatricians have a role in screening, giving anticipatory guidance, in parental counseling, management and rehabilitation of adolescents with substance use disorders (SUD).

While making a plan of treatment, following factors need to be considered: ·Cultural and family background of the adolescent ·Gender and relationship within family, school,

community and with peer ·Level of psychological maturity, strengths and weaknesses ·Other medical and physical issues.

## KEY ISSUES IN MANAGEMENT

The cardinal points of management of adolescents with Substance abuse disorder are:

- Early detection and intervention ensures better outcome
- Management demands a holistic approach of helping the whole person and not just the symptom.
- Co morbidities like anxiety, depression and conduct problems should be adequately assessed and managed.
- Domestic violence and child abuse makes adolescent vulnerable to drug use and should be screened for
- Adolescents with SUD are prone to other high risk behaviors like unprotected sex, body piercing, tattooing, sharing needles, all being the leading causes of blood borne infections like HIV, Hepatitis B and C. Education, prevention, screening and treatment of these becomes a major part of treatment.
- It is necessary for the treating agency to be aware about the legal interventions ·Family influences the adolescent's compliance and completion of the treatment
- Adverse social circumstances can trigger drug use and relapse
- Compliance and long term follow up are the determinants of a positive outcome.

A strong support by family, school counselors, mentors and community members along with an empathetic attitude of the treating physician ensure success in management of substance abuse disorders.

### **Non Pharmacological Approaches**

Non pharmacological approaches are usually practiced by psychologists, psychiatrists, counselors and support groups. The basic principle is to kindle a motivational insight, learn constructive ways to handle craving, strengthen assertive skills to resist peer pressure, improve interpersonal and intrapersonal communications. A few of these approaches are enumerated below:

· **Adolescent Community Reinforcement Approach (A-CRA)** emphasizes on establishing and maintaining abstinence by healthy family and social relationships. Educational and extracurricular activities are conducted to reinforce drug free behavior.

· **Cognitive-Behavioral Therapy (CBT)** focuses on recognizing the unhealthy associations between thoughts, feelings, behaviors, identifying the maladaptive thoughts and enabling a healthy response pattern by developing emotionally mature and selfcontrolled thinking, feeling and acting pattern.

· **Contingency Management (CM)** in which the client is helped by substituting reinforcement gained from the drug use by healthy options

· **Motivational Enhancement Therapy (MET)** is motivational interviewing that resolves the ambivalent attitude of the participant. It helps the client develop a wish and willingness for abstinence.

· **Twelve-Step Facilitation Therapy** is adopted by self-help groups like Alcoholics Anonymous (AA) or Narcotics Anonymous (NA). This therapy details the consequences of the disease, its uncontrollable aspect and the unmanageable effects on life. It convinces adolescents to give up drugs with the support of recovering addicts.

### **Family-Based Approaches**

The family based approach aims at resolving family conflicts and dysfunctional behavior patterns. It also aims at improving behavior and connections at work and school. These are Brief Strategic Family Therapy, Family Behavior Therapy, Functional Family Therapy and Multidimensional Family Therapy.

### **Medications**

FDA has not approved most medications for adolescents that are used in treating adults with SUD They are however sometimes used 'off-label'. The basis of action of these drugs can be to either by rendering certain drugs harmless to user by chemically binding with the illicit drug, by preventing transmission to the central nervous system or by the antigen -antibody mechanism. Buprenorphine and methadone are used as replacement medicines. Disulfiram and naltrexone are used as antagonists. However, for adolescents, the mainstay of treatment is non pharmacological therapies, until approved newer and safer drugs become available.

### **The Role Of the Pediatrician**

Pediatricians have a role to play in primary prevention of SUD in office practice, in diagnosis, management and rehabilitation and taking a lead in community programs to prevent and treat drug abuse. Pediatricians should partner with parents and guide them regarding prevention and management of SUD by nurturing strong connections with their teens

### **ADOLESCENT IMMUNIZATION:**

#### ADOLESCENT IMMUNIZATION SCHEDULES

Vaccines for adolescents can be classified as below:

1. Exclusive adolescent vaccines
2. Catch-up vaccines
3. Vaccines for adolescents in special situations
4. Vaccines for the adolescent traveler.

**Exclusive adolescent vaccines** - Tdap and HPV vaccines are the “exclusive” adolescents' vaccines.

**Catch-up vaccines**- MMR, Hepatitis B, Hepatitis A, Varicella, Typhoid-TCV

**Vaccines for adolescents in special situations**- Influenza, Pneumococcal, Japanese encephalitis (JE) vaccines, Rabies.

**Vaccines for the adolescent traveller**- Meningococcal, Yellow fever, JE vaccines, Rabies.

India presently has coverage for Booster doses of TT at 10 and 16 years: Papilloma virus vaccine is recommend for peripubertal girls (before initiation of sexual activity) for prevention of infection with human papillomavirus and cervical cancer. Parents need to be counselled thoroughly as the principle behind giving the vaccine might alarm them.

Vaccines given during adolescence:

1. Tetanus and diphtheria toxoid and acellular pertussis (Tdap) vaccine [TT at 10 and 15 years as per Universal Immunization Program] – 10-12yrs and once in five years thereafter.
2. Papillomavirus - 2 doses, If given between 9 and 14 years

3 doses, If given beyond age 15 years

### **Barriers To Adolescent Vaccinations:**

Immunization is a key preventive cornerstone of pediatric and adolescent care. Poor immunization coverage in adolescents is not a phenomenon peculiar to India or other developing countries, but is universal and seen even in high-income countries. Missed opportunities, low public awareness about the need for immunization coverage in this age group, misperceptions about vaccine safety, and lack of knowledge about the importance of immunizations, were major issues resulting in poor acceptance. Due to fewer contacts with physicians, adolescents are difficult to approach for vaccination and other preventive services. Among the various factors responsible for vaccine hesitancy are low perceived threat due to the disease, fear of adverse effects, belief that scientific data about the vaccine is insufficient and the vaccine had not been on the market “long enough.” Internet and media sources that give misinformation about vaccines, especially vaccine safety is another important barrier against immunization.

What is the way forward ? Adolescent immunizations uptake can be enhanced by interventions at two levels: (1) health care systems; and (2) patients and families

### ***Transition to adult care:***

With better medical care, a large number of chronically ill or disabled children are surviving into adulthood. As the problems of these children are diverse, they need multidisciplinary care even in their adulthood. Transition to adult care is not mere transfer of the case to a different physician. It is a gradual and planned process; keeping in mind the abilities of the child to participate in self-care, taking responsibilities and decision making. The age at transfer is not fixed; a window of age 14-18 years is used in some countries for a gradual transfer.

### **GOVERNMENT INTERVENTIONS IN ADOLESCENT HEALTH CARE:**

Kishori Shakti Yojana and SABLA Yojana aim to provide health, nutrition, education and vocational skills to adolescent girls. National Youth Policy believes in youth empowerment through education. Recognizing the contribution of adolescent care to maternal and child health, National Health Mission now follows Reproductive, Maternal, Neonatal, Child

and Adolescent Health (RMNC+A) approach. Under this program, weekly iron and folic acid supplementation (WIFS) program I provides 100 mg of iron and 500 µg folic acid with biennial deworming to all adolescents attending government schools.

Rashtriya Kihore Shwastiya Karyakram (RKSK) program was launched by Ministry of Health and Family Welfare in the year 2014. This program envisions, “all adolescents in India are able to realize their full potential by making informed and responsible decisions related to their health and well-being and by accessing the services and support they need to do so.”

The program strategized to meet the need of adolescent health in holistic manner addressing six thrust areas Reproductive and Sexual health (SRH) (improve knowledge, attitudes and behavior in relation to SRH, reduce teenage pregnancies, prevent RTI/ STI, HIV/AIDS), Nutrition (under or over nutrition) , Mental health (acknowledging depression among adolescents, removing taboo associated and timely addressing the issue, preventing suicides), substance abuse , injuries, aggression and violence and Non-communicable diseases. The highlights of this program are, medical advice and counseling to adolescents through Adolescent Friendly Health Clinic (in Rajasthan state it is known as UJALA Clinic) by doctor and designated counselors, peer counseling through trained peer counselors, quarterly adolescent health day at anganwadi centers, weekly iron folic acid supplementation, bi-annual de-worming and upkeep of menstrual hygiene.

## **SCHOOL AND COLLEGE BASED INTERVENTION PROGRAMS**

School programs are a good way to deal with substance abuse in children and young people. In countries like USA much is lost when a favourite sports or movie star promotes drugscannabis, alcohol, etc. Fortunately, in India advertisements promoting alcohol and tobacco in media and print media is banned but surrogate marketing with the alcohol brand marketing mineral water or soda continues.

## **PARENTING PROGRAMS**

It is important for parents to be attentive to signals and always make the adolescent feel that they have their unconditional love and will support and guide them through their turbulent times. When parents notice general and specific flag signs, they should try to talk it over with the adolescents. Sometimes only listening to them is all that is needed to bring them back on


track. Parents need not react to everything. They should ask the teens if help is needed and do the needful. Overreacting and interference will make teens go away from parents making them afraid of confiding in them.

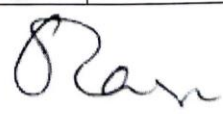
VALUE ADDED COURSE

All About Adolescents (Module on Adolescent Paediatrics) PECO5

List of Students Enrolled July 2017 – Oct 2017

Final Year MBBS Student			Signature
Sl. No	Name of the Student	Roll No	
1	AASHIK MUKESH. M. S	U14MB201	Aashik mukesh. Ms.
2	ABEETHA.M	U14MB202	abeetha
3	ABHINAV. S	U14MB203	abhinava
4	ABINAYA. M	U14MB204	abinaya. M.
5	ABISHEK. R	U14MB205	abishek
6	ABIRAMI. S	U14MB206	abirami
7	AGALYA. S	U14MB207	Agalya. S.
8	AJAY PANDIAN. V	U14MB208	Pandian
9	AJEETH. R	U14MB209	Ajeeth. R.
10	AJITH KUMAR. M.K.	U14MB210	Ajithkumar. MK.
11	AKSHAI. S	U14MB211	Akshai
12	ALLEN DANIEL XAVIER. J	U14MB212	allen
13	ALTHAF AHMED	U14MB213	althaf
14	AMARA LOKESH	U14MB214	Amalokesh.
15	AMRESH. K	U14MB215	amresh
16	ANANT SURYA. R	U14MB216	Anant Surya
17	ANDREW MARIE XAVIER. V	U14MB217	Andrew Marie Xavier
18	APSARA. P	U14MB218	Apsara
19	ARPUDHA. A	U14MB219	ARPUDHA. A.
20	ARUL PRABHA MADHIVADHANI. M	U14MB220	Arul Prabha.

  
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Agalya .S  
U14MB207

Annexure - III

ALL ABOUT ADOLESCENTS (MODULE ON ADOLESCENT PAEDIATRICS)

MULTIPLE CHOICE QUESTIONS

Course Code: PEC05

I. ANSWER ALL THE QUESTIONS

1. Mid Adolescence defines the age group between

A. 7-9yrs

B. 10-12yrs

C. 12-14yrs

D. 14-16yrs

2. In males, the first visible sign of puberty is testicular enlargement, beginning as early as

A. 8.5 yr

B. 9.5 yr

C. 10.5 yr

D. 11.5 yr

3. The first visible sign of puberty in females is the appearance of breast buds (thelarche) between

A. 5 and 9 yr

B. 6 and 10 yr

C. 7 and 11 yr

D. 8 and 12 yr

8/10  
[Signature]



**SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH**

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- A. 5 and 9 yr
- B. 6 and 10 yr
- C. 7 and 11 yr
- D. 8 and 12 yr

8/10  
*[Signature]*



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that ABINAYA. M (U14MB204) has actively participated in the Value Added Course on *All About Adolescents (Module on Adolescent Paediatrics)* held during July 2017 – Oct 2017 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr. Satya Manasa Gayatri Vinay  
RESOURCE PERSON

Dr. Raghavendran  
COORDINATOR



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
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## CERTIFICATE OF MERIT

This is to certify that \_\_\_ABEETHA.M (U14MB202)\_\_\_ has actively participated in the Value Added Course on *All About Adolescents (Module on Adolescent Paediatrics)* held during July 2017 – Oct 2017 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr. Satya Manasa Gayatri Vinay  
RESOURCE PERSON

Dr. Raghavendran  
COORDINATOR

## Student Feedback Form

Course Name: All ABOUT ADOLESCENTS ( MODULE ON ADOLESCENT PAEDIATRICS)

Subject Code: PEC05

Name of Student: Balaji.k Roll No.: U14MB228

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					✓
2	Course contents met with your expectations				✓	
3	Lecturer sequence was well planned				✓	
4	Lectures were clear and easy to understand					✓
5	Teaching aids were effective					✓
6	Instructors encourage interaction and were helpful					✓
7	The level of the course				✓	
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Balaji.k  
Signature

## Student Feedback Form

Course Name: All ABOUT ADOLESCENTS ( MODULE ON ADOLESCENT PAEDIATRICS)

Subject Code: PEC05

Name of Student: Balaji . k. Roll No.: U1FMB228

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					✓
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6	Instructors encourage interaction and were helpful					✓
7	The level of the course				✓	
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Balaji . k.  
Signature



SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH

Vif MB 232  
Enil.V.

Annexure - IV

ALL ABOUT ADOLESCENTS (MODULE ON ADOLESCENT PAEDIATRICS)

MULTIPLE CHOICE QUESTIONS

Course Code: PEC05

I. ANSWER ALL THE QUESTIONS

1. Mid Adolescence defines the age group between

A. 7-9yrs

B. 10-12yrs ✓

C. 12-14yrs

D. 14-16yrs

2. In males, the first visible sign of puberty is testicular enlargement, beginning as early as

A. 8.5 yr

B. 9.5 yr ✓

C. 10.5 yr

D. 11.5 yr

3. The first visible sign of puberty in females is the appearance of breast buds (thelarche) between

A. 5 and 9 yr

B. 6 and 10 yr

C. 7 and 11 yr

D. 8 and 12 yr ✓



SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH

U14MB202  
Abetha.M.

Annexure - IV

ALL ABOUT ADOLESCENTS (MODULE ON ADOLESCENT PAEDIATRICS)

MULTIPLE CHOICE QUESTIONS

Course Code: PEC05

ANSWER ALL THE QUESTIONS

1. Mid Adolescence defines the age group between

- A. 7-9yrs
- B. 10-12yrs
- C. 12-14yrs
- D. 14-16yrs

2. In males, the first visible sign of puberty is testicular enlargement, beginning as early as

- A. 8.5 yr
- B. 9.5 yr
- C. 10.5 yr
- D. 11.5 yr

3. The first visible sign of puberty in females is the appearance of breast buds (thelarche) between

- A. 5 and 9 yr
- B. 6 and 10 yr
- C. 7 and 11 yr
- D. 8 and 12 yr

Date: 01.11.2017

From

Dr. Raghavendran  
Professor and Head,  
Department of Paediatrics,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

Through Proper Channel

To

The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Completion of value-added course: All About Adolescents (Adolescent Pediatrics Module)  
for Undergraduates**

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: All About Adolescents (Adolescent Pediatrics Module) for Undergraduates Final Year MBBS from July 2017 to Oct 2017 for 10 Final Year MBBS students . We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards,

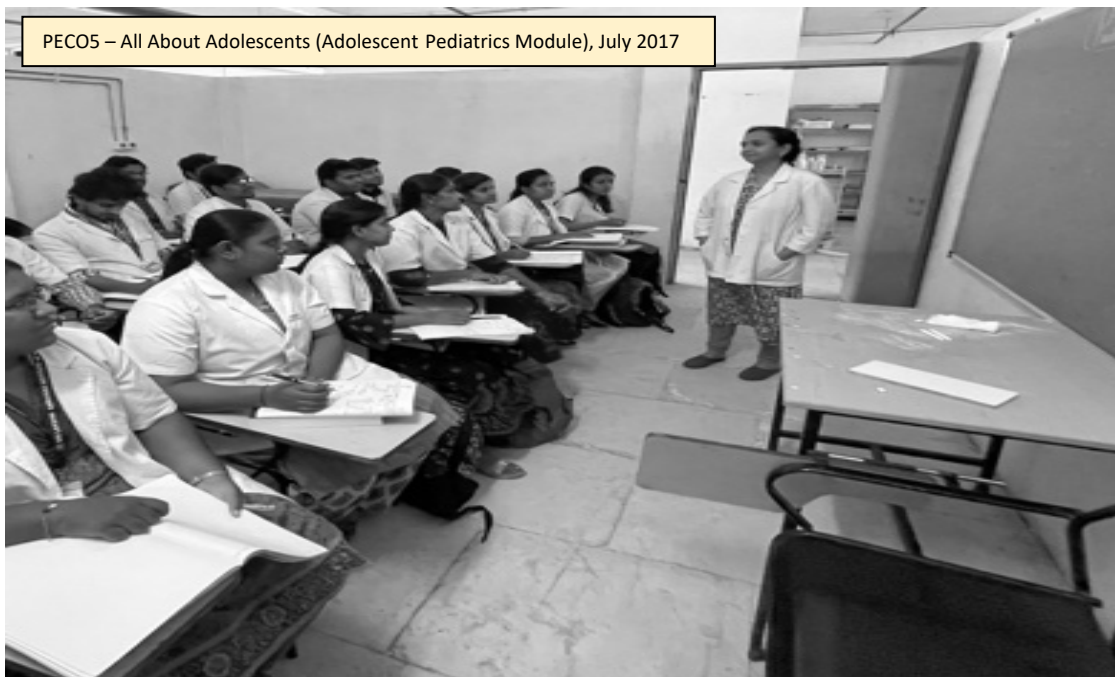


Dr. Raghavendran

**PAEDIATRICS HEAD  
DEPT OF PAEDIATRICS  
SRI LAKSHMI NARAYANA INSTITUTE OF  
MEDICAL SCIENCES  
OSUDU, PUDUCHERRY**

**Encl: Photographs**

PECOS – All About Adolescents (Adolescent Pediatrics Module), July 2017





## Sri Lakshmi Narayana Institute of Medical Sciences

Date:05.09.2017

From

Dr. Raghavendran  
Professor and Head,  
Department of Paediatrics,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

To

The Dean,  
Sri Lakshmi Narayana Institute of Medical College  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Permission to conduct value-added course: Breastfeeding Module for Undergraduate students.**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: Breastfeeding Module for Undergraduate students for Final year Undergraduate students from Nov 2017- March 2018. Requesting your kind permission for the same.

Kind Regards

Dr. Raghavendran

---

### FOR THE USE OF DEANS OFFICE

Names of Committee members for evaluating the course:

The Dean: **Dr. Jayalakshmi**

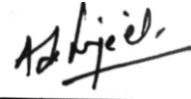
The HOD: **Dr. Raghavendran**

The Expert: **Dr. Abhijeet**

The committee has discussed about the course and is approved.



Dean



Subject Expert

(Sign & Seal)



HOD

**Dr. G. JAYALAKSHMI, BSC., MBBS., DTCD., M.D.,**  
**DEAN**  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agaram, Kudapakkam Post,  
Villanur Commune, Puducherry - 605502.

**ASSISTANT PROFESSOR**  
**DEPARTMENT OF PAEDIATRICS**  
**SRI LAKSHMI NARAYANA INSTITUTE OF**  
**MEDICAL SCIENCES**

**PAEDIATRICS HEAD**  
**DEPT. OF PAEDIATRICS**  
**SRI LAKSHMI NARAYANA INSTITUTE OF**  
**MEDICAL SCIENCES**  
**OSUDU, PUDUCHERRY**



OFFICE OF THE DEAN

# Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P -II ) dt. 11/07/2011 ]  
[ Affiliated to Bharath University, Chennai - TN ]

## Circular

10.10.2017

**Sub: Organising Value-added Course: Breastfeeding Module for Undergraduate students reg.,**

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research** is organizing **Breastfeeding Module** for Undergraduate students.

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before 30 Oct 2017. Applications received after the mentioned date shall not be entertained under any circumstances.

**Dean**

**Dr. G. JAYALAKSHMI, BSC., MBBS., DTC.D., M.D.,**  
**DEAN**  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agaram, Kudapakkam Post,  
Villianur Commune, Puducherry - 605502.

Encl: Copy of Course content

## Annexure 2 – Course Proposal

**Course Title: Breastfeeding counseling**

**Course Objective: Breastfeeding counseling**

**Course Outcome: To provide a comprehensive Understanding on the Importance of breastfeeding and the role of the Medical Practitioner**

**Course Audience: Final year MBBS Students**

**Course Coordinator: Dr. Abijeeth**

**Course Faculties with Qualification and Designation:**

1. **Dr Raghavendran - MD Pediatrics - HOD**
2. **Dr. Abijeeth – DNB Paediatrics – Assistant professor**

**Course Curriculum/Topics with schedule (Min of 30 hours)**

S.NO	DATE	TOPIC	COORDINATOR	TIME	HOURS
1	20/7/2017	Importance of breastfeeding	<b>Dr. Abijeeth</b>	2pm-4.30pm	2.5 hours
2	21/7/2017	Exclusive breastfeeding	<b>Dr. Abijeeth</b>	2pm-5pm	3 hours
3	24/7/2017	Advantage of breastfeeding	<b>Dr. Abijeeth</b>	2pm-4.30pm	2.5 hrs hours
4	25/7/2017	Nutrient in animal and human milk	<b>Dr. Abijeeth</b>	2pm-5pm	3 hrs
5	26/7/2017	Composition of human milk	<b>Dr. Abijeeth</b>	2pm-5pm	3hrs
6	27/7/2017	Colostrum	<b>Dr. Abijeeth</b>	2pm-5pm	3 hrs
7	28/7/2017	Variation in composition of breast milk	<b>Dr. Abijeeth</b>	2pm-5pm	3 hrs
8	29/7/2017	Baby friendly hospital initiative	<b>Dr. Abijeeth</b>	2pm-5pm	3 hrs
9	1/8/2017	Psychological effects of breastfeeding	<b>Dr. Abijeeth</b>	2pm-5pm	2.5hrs
10	2/8/2017	Steps of successful breast feeding	<b>Dr. Abijeeth</b>	2pm-4.30pm	2.5hrs

11	3/8/2017	Antenatal preparation	<b>Dr. Abijeeth</b>	2pm-5pm	3 hrs
				Total Hours	30

**REFERENCE BOOKS:**

- 1. Nelson textbook of paediatrics**
- 2. Nutrition Textbook –Elizabeth**

## VALUE ADDED COURSE

### 1. Name of the programme & Code

Breastfeeding Counselling , PECO6

### 2. Duration & Period

30 hrs & Nov 2017- March 2018

### 3. Information Brochure and Course Content of Value Added Courses

*Enclosed as Annexure- I*

### 4. List of students enrolled

*Enclosed as Annexure- II*

### 5. Assessment procedures:

Multiple choice questions- *Enclosed as Annexure- III*

### 6. Certificate model

*Enclosed as Annexure- IV*

### 7. No. of times offered during the same year:

One

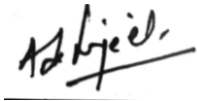
### 8. Year of discontinuation: 2018

### 9. Summary report of each program year-wise

Value Added Course- November 2017 – March 2018					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	PECO6	Breast feeding counselling (Module on breastfeeding )	Dr Ahijeet Srivastava	IVth MBBS	10, Nov 2017 to March 2018

### 10. Course Feed Back

*Enclosed as Annexure- V*



**Dr. Abhijeet Shrivastava**

**RESOURCE PERSON**

**ASSISTANT PROFESSOR  
DEPARTMENT OF PAEDIATRICS  
SRI LAKSHMI NARAYANA INSTITUTE OF  
MEDICAL SCIENCES**



**Dr Raghavendran**

**COORDINATOR**

**PAEDIATRICS HEAD  
DEPT. OF PAEDIATRICS  
SRI LAKSHMI NARAYANA INSTITUTE OF  
MEDICAL SCIENCES  
OSUDU, PUDUCHERRY**

ANNEXURE-1

**BREASTFEEDING COUNSELLING**

**A TRAINING COURSE**



**TRAINER'S GUIDE**

## COURSE DETAILS

<b>PARTICULARS</b>	<b>DESCRIPTION</b>
<b>COURSE TITLE</b>	<b>BREASTFEEDING COUNSELLING –a training course</b>
<b>COURSE CODE</b>	<b>PECO6</b>
<b>OBJECTIVE</b>	<b>1.Importance of breastfeeding</b>  <b>2. exclusive breastfeeding</b>  <b>3. Advantage of breastfeeding</b>  <b>4. Nutrients in animal and human milk</b>  <b>5. composition of human milk</b>  <b>6.Coloustrum</b>

	<p><b>7.Variation in composition of breast milk</b></p> <p><b>8. Baby friendly hospital initiative</b></p> <p><b>9. Psychological effects of breast feeding</b></p> <p><b>10 . 10 steps of successful breastfeeding</b></p> <p><b>11. antenatal preparation</b></p>
<p><b>FURTHER LEARNING OPPURTUNITY</b></p>	<p><b>Breast milk banking and storage of breast milk</b></p>
<p><b>KEY COMPETENCIES</b></p>	<p><b>On successful completion of course , students will have skill to counsel mother on breastfeeding and techniques to demonstrate different position in breastfeeding</b></p>

<b>TARGET STUDENTS</b>	<b>Final year MBBS</b>
<b>DURATION</b>	<b>30hrs</b>  <b>Novemeber 2017-March2018</b>
<b>PRACTICAL SESSION</b>	<b>30hrs</b>
<b>ASSESSMENT PROCEDURE</b>	<b>Multiple choice questions</b>

# PART ONE

## Sessions 1-9

### WORLD HEALTH ORGANIZATION CDD PROGRAMME

#### UNICEF

## CONTENTS

### Introduction

The course and the materials	
Teaching the course	
Session 1 Why breastfeeding is important	(Class, 60 minutes)
Session 2 Local breastfeeding situation	(Class, 30 minutes)
Session 3 How breastfeeding works	(Class, 60 minutes)
Session 4 Assessing a breastfeed	(Class, 60 minutes)
Session 5 Observing a breastfeed	(Class, 60 minutes)
Session 6 Listening and learning	(Groups, 60 minutes)
Session 7 Listening and learning exercises	(Groups, 60 minutes)
Session 8 Health care practices	Class and small groups, 90 minutes)
Session 9 Clinical Practice 1	(Class and small groups, 120 minutes)

## INTRODUCTION

[Back to](#)

[CONTENTS](#)

## **Why this course is needed**

Breastfeeding is fundamental to the health and development of children, and important for the health of their mothers.

The Programme for the Control of Diarrhoeal Diseases has long recognized the need for the promotion of exclusive breastfeeding in the first 4-6 months of life, and sustained breastfeeding together with adequate complementary foods up to 2 years of age or beyond, to reduce diarrhoeal morbidity and mortality.

Workers concerned with nutrition, and with maternal and child health, also recognize the importance of improved infant feeding practices. In 1991, UNICEF and WHO jointly launched the Baby Friendly Hospital Initiative, which aims to improve maternity services so that they protect, promote, and support breastfeeding, by putting into practice the "10 steps to successful breastfeeding". Many maternity facilities throughout the world are now striving to achieve "Baby Friendly" status.

The International Code of Marketing of Breastmilk Substitutes has been in place for more than a decade, and much effort to protect breastfeeding from commercial influences has followed. One requirement for being "Baby Friendly" is that a facility shall not accept or distribute free samples of infant formula.

However, even mothers who initiate breastfeeding satisfactorily, often start complementary feeds or stop breastfeeding within a few weeks of delivery. All health workers who care for women and children after the perinatal period have a key role to play in sustaining breastfeeding. Many health workers cannot fulfil this role effectively because they have not been trained to do so. Little time is assigned to breastfeeding counselling and support skills in the preservice curricula of either doctors, nurses or midwives.

Hence there is an urgent need to train all health workers who care for mothers and young children, in all countries, in the skills needed to both support and protect breastfeeding. The purpose of "Breastfeeding counselling: A training course" is to help to fill this gap. The materials are designed to make it possible for trainers with limited experience of teaching the subject to conduct up-to-date and effective courses.

The concept of 'counselling' is new, and the word can be difficult to translate. Some languages use the same word as 'advising'. However, counselling means more than simple advising. Often, when you advise people, you tell them what you think they should do. When you counsel a mother, you help her to decide what is best for her, and you help her to develop confidence. You listen to her, and to try to understand how she feels. This course aims to give health workers listening and confidence building skills, so that they can help mothers more effectively.

## **THE COURSE AND THE MATERIALS**

[Back to CONTENTS](#) **Structure of the course**

The course takes a total of 40 hours, which can be conducted consecutively in a working week, or which can be spread out in other ways. The course is divided into 33 Sessions of between 30 and 120 minutes each, using a variety of teaching methods, including lectures, demonstrations, clinical practice, and work in smaller groups with discussion, reading, role-play, and exercises. The shorter sessions are arranged around four 2-hour clinical practice sessions. Participants progressively develop their support and counselling skills in the classroom, and then practise them with mothers and babies in wards or clinics. **Different kinds of session**

### *Lectures and demonstrations*

Seven sessions are lecture presentations, with slides or overhead transparencies, and four are demonstrations. Each of these should be conducted by one of the trainers, for the whole class together. The Course Director will assign the lectures and demonstrations to different trainers.

### *Group work*

The main part of each clinical practice session, the sessions for practising history taking and counselling skills, and parts of three other sessions are conducted in small groups of 4-5 participants with one trainer. Each trainer is assigned to a group of 4-5 participants. The trainer has special responsibility for the participants in her group, and should follow their progress, and help them with difficulties.

Fourteen sessions are conducted in groups of 8-10 participants, each with two trainers. To make up the large groups, two of the smaller

groups are combined. These sessions consist of a mixture of discussion, reading, demonstration, role-play, and exercises.

### *Clinical practice*

There are four 2-hour clinical practice sessions. The whole class meets together for the first 20 minutes to prepare, and if possible for the last 20 minutes to discuss the session. For the clinical practice itself, participants work in their groups of 4-5 each with one trainer.

### *Class discussion*

The session on the local breastfeeding situation is led by one trainer with the whole class together.

## **Forming groups**

As soon as possible after the introductory session, the Course Director with the help of one or two of the trainers decides how the groups will be composed.

If language and gender may be a problem, each group should have at least one person who can speak the local language, and at least one woman. It may be appropriate to balance professional groupings. Sometimes it is a good idea to make a participant who knows the others in the class responsible for arranging the groups according to these considerations. The names of the trainer and participants in each group are written on a flipchart or board, and posted up where participants can check which group they belong to.

## **Order of sessions**

The sessions are in a suggested sequence, but the order almost always needs to be adapted, for example, if mothers and babies are not available for clinical practice at the suggested times.

Most sessions can be moved, but it is necessary for some aspects of the sequence to be maintained. The main requirement is that you conduct the sessions which prepare participants for a particular clinical practice before that practice, (as indicated by the similar titles of class and clinical practice sessions). It is also important that Sessions 1-7 are completed before Clinical Practice 1, and that Session 10 'Positioning a baby at the breast' is held between Clinical Practice 1 and Clinical Practice 2.

Parts of some sessions are optional. The Course Director will decide whether or not to include these parts. Sessions 31, 32, and 33 are Additional Sessions. They are not part of the skills development sequence, so they can be arranged more flexibly, or fitted in at other times such as during the evening. These are key topics however, and it is strongly recommended that they are included in the course at some point.

## **The Trainer's Guide**

The Trainer's Guide contains what you, the trainer, need in order to lead participants through the course. The guide contains the information that you need, detailed instructions on how to teach each session, the exercises that participants will do, together with answers, and the summary sheets, forms, checklists and stories used during the practical sessions of the course. This is your most essential tool as a trainer on the course. Write your name on it as soon as you get it, and use it at all times. Add notes to it as you work. These notes will help you in future courses.

## **Accompanying course materials**

### *Overhead transparencies and 35mm slides*

Overheads and slides are provided for the lectures and for some other sessions, (see the list below). The figures for the overhead transparencies are also available in the form of a flipchart, which you can use to show to participants if facilities for projection are not available.

### *Participants' Manual*

A copy is provided for each participant. This contains:

- Summaries of key information from the lectures and other sessions
- Copies of the forms and checklists from the practical sessions
- The exercises which participants will do during the course, but without answers
- A glossary of the terms used in the materials
- A Clinical Practice Progress Form, which enables trainers to follow the progress of individual participants

The manual can be used for reference after the course, so it is not essential for participants to take detailed notes.

### *Answer Sheets*

These are provided separately, and they give answers to all the exercises. Give them to participants after they have worked through the exercises.

### *Forms and checklists*

Loose copies of the forms and checklists needed for clinical practice and counselling exercises are provided. These are:

- B-R-E-A-S-T-Feed Observation Form
- Breastfeeding History Form
- Listening and Learning Skills
- Confidence and Support Skills
- Counselling Skills Checklist
- Clinical Practice Discussion Checklist (for trainers only)
- Assessing and Changing Practices Form (for the final exercise)

The forms are printed on A4 sheets.

'Listening and Learning Skills', 'Confidence and Support Skills', and 'Counselling Skills Checklist' are all on one A4 card, to cut up as necessary.

### *Story cards*

Copies of the Histories and Counselling Stories are provided for the History Practice and Counselling Practice exercises.

### *Videotapes*

These are recommended as part of the course:

- *Helping a Mother to Breastfeed* (Royal College of Midwives, UK). - *Feeding Low Birth Weight Babies* (UNICEF).

Other videos from UNICEF which may also be available, and which can be shown if time permits, for example, on a residential course, are:

*Breastfeeding: A Global  
Priority Breastfeeding  
Rediscovered Mother  
Kangaroo.*

## **Reference materials**

These are given to participants as part of the course materials:

*Helping mothers to breastfeed* (Revised Edition, African Medical and Research Foundation, 1992, or an adapted version.)

*Protecting Infant Health: A Health Workers Guide to the International Code of Marketing of Breastmilk Substitutes* (Updated 1993, IBFAN Penang).

Annex to the Global Criteria for Baby Friendly Hospitals: Acceptable Medical Reasons for Supplementation

Annex on Breastfeeding and Maternal Medication: Recommendations for drugs in the Essential Drugs List.

*Protecting, Promoting and Supporting Breastfeeding: The Special Role of Maternity Services*. A joint WHO/UNICEF Statement, 1989.

It is recommended that the following are also available during the course:

- *Infant Feeding: The Physiological Basis*, Bulletin of the World Health Organization, supplement to volume 67, 1989.
- Copies of the WHO newsletter *Facts about infant feeding*.

### **List of Overheads and Slides**

(Total: 50 overhead transparencies; 50 35mm slides)

Session 1: 'Why breastfeeding is important'	Overheads 1/1 to 1/16
Session 3: 'How breastfeeding works'	Overheads 3/1 to 3/12
Session 5: 'Observing a breastfeed'	Slides 5/1 to 5/15
Session 8: 'Health care practices'	Slides 8/1 to 8/15
Session 11: 'Building confidence and giving support'	Overheads 11/1 to 11/6
Session 14: 'Breast conditions'	Slides 14/1 to 14/18
Session 26: 'Low-birth-weight and sick babies'	Overheads 26/1 to 26/6
Session 27: 'Increasing breastmilk and relactation'	Slides 27/1 and 27/2
Session 28: 'Sustaining breastfeeding'	Overheads 28/1 and 28/2
Session 31: 'Women's nutrition, health and fertility'	Overheads 31/1 to 31/8

## **Training aids**

For each course, it is necessary to have four life size baby dolls and four model breasts, so that there is one for each small working group. If dolls and breasts are not available, try to make them.

Here are instructions for one way to make them simply and out of readily available materials.

### **HOW TO MAKE A MODEL DOLL**

Find any large fruit or vegetable, a towel or other strong thick cloth, and some rubber bands or string.

Put the fruit or vegetable in the middle of the cloth, and tie the cloth around it to form the baby's 'neck' and 'head'.

Bunch the free part of the cloth together to form the baby's legs and arms, and tie them into shape.

If the cloth is rather thin, you may like to stuff some other cloth inside to give the doll more of a 'body'.

### **HOW TO MAKE A MODEL BREAST**

Use a pair of near skin-coloured socks, or stockings, or an old sweater or tee shirt. Make the cloth into a round bag shape, and stuff it with other cloth or foam rubber to make it breast shaped. Stitch a 'purse string' around a circle in the middle of the breast to make a nipple. Stuff the nipple with foam or cotton. Colour the areola with a felt pen. You can also push the nipple in, to make an 'inverted' nipple.

If you wish to show the inside structure of the breast, with the lactiferous sinuses, make the breast with two layers, for example with 2 socks. Sew the nipple in the outer layer, and draw the lactiferous sinuses and ducts on the inside layer, beneath the nipple. You can remove

the outer layer with the nipple to reveal the inside structure.

## TEACHING THE COURSE

[Back to CONTENTS](#) **Motivating and managing participants**

### *Encourage interaction*

During the first day or two, interact at least once with every participant, and encourage them to interact with you. This will help them to overcome their shyness, and they will be more likely to interact with you for the remainder of the course.

Make an effort to learn participants' names early in the course, and use their names whenever it is appropriate. Use names when you ask participants to speak, or to answer questions, or when you refer to their comments, or thank them.

Be readily available at all times. Remain in the room, and look approachable. For example, do not read magazines or talk constantly with other trainers. Talk to participants rather than trainers during tea breaks, and be available after a session has finished.

Get to know the participants who will be in your group, and encourage them to come and talk to you at any time, to ask questions, or to discuss any difficulties, or even to tell you that they are interested and enjoying themselves.

### *Reinforce participants' efforts*

Take care not to seem threatening. These techniques may help:

- be careful not to use facial expressions or comments that could make participants feel ridiculed;
- sit or bend down to be on the same level as a participant whom you are talking to;
- do not be in a hurry, whether you are asking or answering questions;
- show interest in what participants say. For example, say: "That is a good question/suggestion."

Praise, or thank participants who make an effort. For example when they:

- try hard;
- ask for an explanation of a confusing point;
- do a good job on an exercise;

- participate in group discussion;
- help other participants (without distracting them by talking about something irrelevant).

You may notice that many of the counselling skills taught during the course are also important for communicating with participants. In particular you will find it helpful to use appropriate nonverbal communication, to ask open questions, and to help them to feel confident in their work with mothers and babies.

### *Be aware of language difficulties*

Try to identify participants who have difficulty understanding or speaking the language in which the course is conducted. Speak slowly and clearly so that you can be more easily understood. Encourage participants in their efforts to communicate.

If necessary, speak with a participant in her own language (or ask someone else to do so for you) to clarify a difficult point.

Discuss with the Course Director any language problems which seriously hinder the ability of a participant to understand the material. It may be possible to arrange help for the participant, or for her to do some of the exercises in a different way.

## **Using your Trainer's Guide**

### *Before you lead a session:*

- Look at your guide and read the 'Objectives' and the 'Session outline', to find out what kind of session it will be, and what your responsibilities are.
- Read the 'Preparation' box at the beginning of the text, so that you know what you have to do in advance to prepare for the session, and what training aids (and other kind of help) you need.
- Read through the text for the session, so that you are clear what you will have to do. The text includes detailed point by point instruction about how to conduct the session.

*When you lead a session: **keep your guide with you and use it all the time.***

You do not need to try to memorize what you have to do. It is extremely difficult to do so. Use the guide as your session notes, and follow it carefully.

If using the whole guide is unacceptable, for example because it might make some participants think that you do not know the material, decide what to do.

For example, you might ask the Course Director to explain at the beginning of the course that this is the correct method for this kind of teaching, in the same way that participants need to use their manual. Alternatively, for the sessions that you lead, copy the necessary pages of the guide, to use as your notes during the session. This will not be so bulky or conspicuous as carrying the whole guide.

Remember that even the authors of the materials find it necessary to follow the guide when they teach the course. If they do not, they find it difficult to keep to the planned sequence of teaching, and they miss out important steps.

## **Preparing to give a presentation**

### *Study the material*

Before you give one of the lecture presentations, read the notes through carefully, and study the overheads or slides that go with it.

You do not have to give the lecture exactly as it is written. You should not read it out, unless you feel that there is no other way you can do it. However, it is important that you are thoroughly familiar with the contents of the lecture, and with the order of ideas in the presentation. This is necessary even if you are an experienced trainer, and knowledgeable about breastfeeding.

Go through the text, mark it and add your own notes to remind you about points to emphasize, or points of special local importance. Try to think of your own stories, and ways to present the information naturally in your own way.

Read the **Further information** sections. They give extra information about topics that are covered only briefly in the main text. You should not present them with the main presentation, but they may help to answer questions that arise in the course of discussion.

### *Prepare your slides or overheads*

Make sure that you have all the slides or overheads for the session, and arrange them in the correct order.

Shortly before the session, make sure that the audience will be able to see the images - that the room is dark enough, that the screen is well placed, and that the chairs are arranged appropriately.

You do not have to accept the arrangements from the previous session - it can be an advantage to move an audience around, and present material in a new way. It may help to keep their attention.

## **Giving a lecture**

*Talk in a natural and lively way*

- Present the information as in a conversation, instead of reading it.
- Speak clearly and try to vary the pitch and pace of your voice. - Move around the room, and use natural hand gestures.

*Explain the overheads and slides carefully*

Remember that overheads and slides do not do the teaching for you. They are *aids* to help you to teach and to help participants to learn. Do not expect participants to learn from them without your help.

Explain to the audience exactly what each picture shows, and tell them clearly the main points that they should learn from it. As you explain, point out on the overhead or slide where it shows what you are talking about, and draw the participants' attention to the appearances. Do not assume that they automatically see what you want them to look at.

With slides, point to the screen. With overhead transparencies, either point to the screen, or point out the place on the projector.

Remember to face the audience as you explain - do not keep looking at the screen yourself. Do not turn your back on the audience for more than a short time. Keep looking at them, and maintain eye contact, so that they feel that you are talking to them personally.

Be careful not to block participants' view of the screen. Either stand to the side, or sit down, and check that they can see clearly. Look out for participants bending to see the screen or demonstration because you are in the way. Stop and adjust your position before you continue.

When you are familiar with the material, and you have taught it a few times, you will be able to explain in your own way. You will be able to

make it appropriate for the participants, and answer their questions in the way which is most helpful for them.

It is helpful sometimes when presenting slides or overheads to ask participants to come to the screen to point things out to the others. This technique is recommended for Session 5, 'Observing a breastfeed'.

### *Involve the audience*

You will have to give much of the information in lecture form. This is necessary to cover enough material in the limited time available.

However, it is also helpful during lectures and other sessions to ask questions, to check that participants understand, and to keep them thinking. This more interactive technique helps to keep participants interested and involved, and is usually a more effective way of learning. Ask open questions, (which you will have learned about in sessions on counselling skills) so that participants have to give an answer that is more than a "yes" or "no".

A number of questions are indicated in the text. They ask participants to make observations on a slide or transparency, and to think what it means. The questions are carefully chosen, so that participants should be able to decide the answer either by looking at the picture, or from their own experience, or from what has been covered previously in the course, without requiring new information that they may not have.

Sometimes you may want to give participants a hint to help them to answer. Sometimes asking the question again, in another way, can help. However, do not help them or give them the answer too quickly. It is important to wait, and to give them a genuine chance to think of the answer themselves. On the other hand, do not get involved in discussions which are distracting, and which waste a lot of time. Encourage participants to make a few suggestions; discuss their suggestions; and then continue with the session. You do not have to wait until they have given all the answers listed in the text. Notes are included with many of the questions to guide you.

Acknowledge all participants' responses, to encourage them to try again. Comment briefly on their answer, or say "Thank you", or "Yes". If participants give an incorrect answer, do not say "No that is wrong!" or some may hesitate to make other suggestions. Accept all answers, and say something non-committal, such as "That is an interesting idea" or "I

haven't heard that one before". Ask them to say more to clarify the idea, or say "What does anyone else think?" or ask for other suggestions. Make participants feel that it is good to make a suggestion, even if it is not the 'correct' answer.

When someone answers correctly, 'hold onto' their answer; expand it if necessary, and make sure that everyone else has understood.

Do not let several participants talk at once. If this occurs, stop the talkers, and give them an order to speak in. For example, say "Let's hear Mary's comment first, then Anastasia's, then Siti's". People will usually not interrupt if they know that they will have a turn to talk.

Do not let the same one or two people answer all the questions. If a talkative participant tries to answer several questions, ask her to wait for a minute, and turn or walk away from her. Try to encourage quieter participants to talk. Ask someone by name who has not spoken before to answer, or walk towards someone to focus attention on her, and make her feel that she is being asked to talk.

Thank participants whose answers are short and to the point.

## **Preparing to give a demonstration**

### *Study the instructions*

You should already have seen the demonstration in the preparatory course. Some time before you give the demonstration, read through the instructions carefully, so that you are familiar with them. This is necessary even if you have already seen someone else give the demonstration. Even if you have given the demonstration before yourself, it is a good idea to re-read the instructions, so that you do not forget any important steps.

### *Collect the equipment*

Make sure that you have the dolls or other equipment that you need. Prepare those things that you can make yourself (for example, a model breast).

### *Prepare your assistant*

You may need someone to help you to give the demonstration, for example, someone to pretend to be a mother. It is usually a good idea to ask a participant to help you. This can be a good learning experience for

her. It increases her involvement, and helps her to learn about teaching methods.

Ask for help a day or two before a demonstration, so that helpers have time to prepare themselves.

Discuss what you want them to do, and help them to practise.

### *Practise the demonstration*

Practise giving the demonstration, by yourself, with your assistant, or with another trainer, so that you know how long it takes, what can go wrong, and if there is anything else that you need, such as an extra table or chairs. This will make the demonstration much more convincing, and it is a good idea even if you have done it before.

### **Giving the demonstration**

- Make sure that all the equipment is ready and together, and prepare the place where you will give the demonstration. Arrange tables and chairs as you will need them.
- Make sure that you can use a board to write things up, or an overhead projector if you need to show a transparency as part of the demonstration, without having to rearrange everything.
- Demonstrate slowly, step-by-step, and make sure that the audience are able to see what you do. If necessary, ask them to move closer to you so that they can all see and hear clearly; or move closer to them, going to each part of the audience in turn.
- As you give the demonstration, take every opportunity to let participants handle and examine the equipment that you use, and themselves practise what you demonstrate. They will learn more if they try things out, than if they just see you doing them.

### **At the end of a lecture or demonstration**

Leave time for participants to ask questions, and do your best to answer them.

Ask participants to find the summary notes for the session in their manuals. Tell them the pages for the session. Ask them to read the notes later on the same day.

Tell them about any recommended reading from the reference material (see sections listed at the end of relevant sessions).

## **Working in groups**

Working in groups makes it possible for the teaching to be more interactive and participatory, and it gives everybody more time to ask questions. Quieter participants have more chance to contribute.

Work in groups of 8-10 with two trainers consists mostly of discussions, reading, short demonstrations, role-play, and exercises. The two trainers are likely to have different strengths, and can support and learn from each other. They should plan together how to conduct the session.

Work in groups of 4-5 with one trainer is mainly for the practice of skills, such as positioning a baby at the breast, history taking, and counselling. The smaller groups give everybody a chance to practise the skills.

### **Read the specific instructions for the group sessions that you will lead, and plan how you will conduct them.** *Conduct discussions*

Some discussions consist of simple questions which you ask the group, encouraging participants to suggest answers, and to give their ideas, in a way similar to that described for asking questions in lectures. It may help to write the main question, and the main points of answers on a flipchart.

Do not let a few more talkative participants dominate the discussion. If necessary, ask individuals in the group by name to suggest answers in turn. Encourage quieter members to say what they think, before you allow the talkative ones to speak.

To keep participants discussing the questions, from time to time summarise what has been said and restate the question in another way. When participants give an incomplete answer, ask them to try to clarify and complete what they are trying to say. Add any necessary explanation, and make sure that it is clear to all participants.

Give participants time to ask their own questions. Answer the questions willingly. Encourage participants to ask at the time that they have a question, and not to hold it for a later time. However, if they ask too many questions, and it interferes with the session, you may have to ask them to wait.

*Develop lists and schema*

In some sessions, you and the participants together have to develop lists or schema for a topic, on boards or flipcharts.

Plan these lists and schema carefully. Make sure that you have enough flipcharts or sheets posted up. Plan the layout of the lists on each page, to make sure that you can fit the whole list onto one sheet.

### *Reading*

In some sessions, you ask participants to read a section of text to themselves. You then discuss the topic with them, to make sure that they understand what they have read. Later they practise using the information in an exercise.

If it is difficult for participants to absorb information when they read it to themselves, you can as an alternative ask them to read it aloud. Each participant takes it in turns to read one sentence or section of the text. You can discuss the ideas and ask questions after each point.

### *Give short demonstrations*

The group sessions include a number of short demonstrations of counselling techniques, and other skills. They do not need equipment other than dolls and model breasts, which should be available for every group.

Practise conducting these demonstrations. Make sure that you have a doll and a model breast available, if necessary. If you need a participant to help you, help her to prepare, and make sure that you give her a copy of what she has to say in advance.

### *Role-play*

Choose the players in advance, explain carefully what you want them to do, and give them written instructions to help them to remember what to do.

If you feel that participants are not ready to do role-plays themselves, do the role-play yourself with another trainer. This helps participants to understand what role-play is about, and they can see that making mistakes does not matter, so they may feel more confident to try themselves next time.

### *Exercises*

Some exercises are done by the whole group together. These take the form of a discussion.

A number of exercises are *individual written exercises*. This is an important way for individual participants to learn, and to find out for themselves what they are and are not clear about. It helps you to discover who easily understands what has been taught, and who needs more help. The participants who are most in need of help may not ask for it, and you may not discover who they are until they do these exercises. It also helps you to discover which topics are easy and which are difficult for the group.

For written exercises, participants stay in the groups of 8-10, but work by themselves. The two trainers circulate, and give individual feedback and personal attention to the participants as they do the exercises. Pay particular attention to the members of your own small group, but it is good if both trainers talk to all participants.

An alternative, if participants have difficulty writing the answers, is to discuss the answers to the questions in pairs, or in small groups of participants with one trainer. However, it is preferable if possible for each participant to try to answer the questions for herself.

### **Facilitating individual written exercises**

#### *Explain how to do the exercise*

Tell participants which exercise to do, and on which page in their manuals they can find the exercise. Make sure that they have all found it.

Explain that they should read the questions, and write the answers in their manuals. They should use pencil, so that they can easily erase and correct their answer. Make sure that they have pencils and erasers to work with.

Ask them to read the instructions **How to do the exercise** and the **Example**. If you feel that it would be helpful, you can read the example aloud with the participants, and give them a chance to ask questions if they have not fully understood.

Explain that they should work at their own pace, and answer as many of the questions as they can. However, it is not essential to finish all the questions. You may wish to recommend a minimum number that they

should try to complete. Let participants who work faster continue with all the questions, including the optional questions, if they can. Explain that the trainers will give individual feedback, and will help them as needed.

Try to arrange for participants to sit separately, so that they do not hear or see other peoples' answers.

When you are satisfied that participants know what to do, let them work by themselves for 5-10 minutes.

Then start circulating, looking over their shoulders to see how they are getting on. Talk to each participant individually, and as confidentially as possible. Try not to let other participants overhear what you are saying. Compare their answers with the suggested answers in your guide. Compliment them if they have answered satisfactorily. If an answer is incorrect, do not make them feel ridiculed. Ask them if they have any other ideas, and give them a chance to try to correct the answer. If they cannot do so, help them to decide the correct answer, and explain their mistake. Try not to give them the answer too easily.

With participants who find the exercises easy, you should be able to give them feedback quite quickly. Spend extra time with participants who are having difficulty, to make sure that they understand the essential points that the exercise illustrates.

If a question causes difficulty for several participants, discuss it afterwards with the group together.

At the end of the session, give participants the Answer Sheet for the exercise. Suggest that they complete the questions that they have not finished in their own time, and correct their own answers. They should ask a trainer later if they do not understand any of the answers.

### **Conducting small group sessions**

The sessions in which participants practise their history-taking and counselling skills are conducted in small groups with 4-5 participants and one trainer.

Each trainer has a set of story cards, **History 1-5** for Session 18 and **Counselling Story 1-10** for Session 25. For each session, select the most appropriate stories, and give one to each participant before the

session so that they have time to study it. They should not show it to their colleagues.

During the session, participants work in pairs within the group to practise taking a history, or using the counselling skills. One of the pair plays the mother, following the story on her card. The other plays the counsellor, and uses the Breastfeeding History Form or the Counselling Skills Checklist. This is called 'pair practice'.

You follow from the Trainer's Guide, which contains both the story and short comments to help you to guide the participants and make sure that they learn what is intended. Guide the group to discuss the practice, and help the counsellor to improve her skills. Detailed instructions are given in the notes for the session.

### **Clinical practice**

Each trainer takes her group of 4-5 participants to a ward or clinic to practise with mothers and babies the skills that they have learnt in the previous sessions.

Use the **CLINICAL PRACTICE DISCUSSION CHECKLIST** to help you to discuss each mother and baby with the participants.

Follow the progress of each of the participants in your small group with the **CLINICAL PRACTICE PROGRESS FORM**. Each participant has a form, and she fills it in for each mother and baby that she sees. Check the form with the participant after Clinical Practice 2 and Clinical Practice 3, to see if she has seen mothers in a variety of different situations. If there are some important situations that she has not seen, try to help her to see them in Clinical Practice 4. Alternatively, arrange for her to practise counselling a mother in that situation in a role-play.

Detailed instructions are given with the notes for each clinical practice. The main instructions are with Clinical Practice 1.

## WHAT THE SIGNS USED IN THE GUIDE INDICATE

an instruction to you, the trainer.

what you, the trainer, say to the participants.

that you ask participants for their help.

-> that you should write on a board or flipchart.

a general instruction, for example how to do a task or a series of major points.

### Session 1

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## WHY BREASTFEEDING IS IMPORTANT

### *Objectives*

At the end of this session, participants should be able to:

- state the advantages of breastfeeding, and the dangers of artificial feeding;
- describe the main differences between breastmilk and artificial milks;
- define the terms used to describe infant feeding;
- describe presently recommended infant feeding practices.

### *Session outline*

(60 minutes)

Participants are all together for a lecture presentation by one trainer.

- |      |                                |              |
|------|--------------------------------|--------------|
| I.   | Introduce the topic            | (3 minutes)  |
| II.  | Present Overheads 1/1 to 1/10  | (25 minutes) |
| III. | Answer participants' questions | (7 minutes)  |

IV. Present Overheads 1/11 to 1/16 (15 minutes)

V. Answer participants' questions (10 minutes)

### ***Preparation***

Refer to pages 9-11 in the Introduction, for guidance on giving a presentation with overhead transparencies.

Make sure that Overheads 1/1 to 1/16 are in the correct order.

Study the overheads and the text that goes with them so that you are able to present them.

Read the **Further information** sections so that you are familiar with the ideas that they contain.

As you follow the text, remember:

indicates an instruction to you, the trainer indicates what you say to participants

Do not present the **Further information** sections. Use them to help you to answer questions.

## **I. Introduce the topic**

(3 minutes)

Make these points:

Before you learn how to help mothers, you need to understand why breastfeeding is important, and what its benefits are.

You need to know the differences between breastmilk and artificial milks, and the dangers of artificial feeding.

You will find a summary of the key points that we will discuss on pages 5-9 in your manuals.

## II. Present Overheads 1/1 to 1/10

(25 minutes)

As you show each overhead transparency, point on the projector or on the screen to the place which shows what you are explaining.

### ***Overhead 1/1 The advantages of breastfeeding***

This diagram summarizes the main advantages of breastfeeding.

It is useful to think of the advantages of both *breastmilk* (listed on the left) and *breastfeeding* (listed on the right).

The advantages of *breastfeeding* are more than just the advantages of feeding a baby on breastmilk. Breastfeeding protects a mother's health in several ways, and can benefit the whole family, emotionally and economically.

The advantages of a baby having *breastmilk* are that:

- It contains exactly the *nutrients* that a baby needs;
- It is easily digested and efficiently used by the baby's body; - It protects a baby against infection.

All other milks are different, and not as good for a human baby.

The other advantages of *breastfeeding* are that:

- It costs less than artificial feeding;
- It helps a mother and baby to *bond* - that is, to develop a close, loving relationship;
- It helps a baby's development;
- It can help to delay a new pregnancy; - It protects a mother's health: It helps the uterus to return to its previous size. This helps to reduce bleeding, and may help to prevent anaemia; Breastfeeding also reduces the risk of ovarian cancer, and possibly breast cancer, in the mother.

In the next few overheads, we will look at some of these advantages in more detail.

### ***Overhead 1/2 Nutrients in human and animal milks***

First, look at the nutrients in breastmilk, to see why they are perfect for a baby.

This chart compares the nutrients in breastmilk with the nutrients in cow's and goat's milk.

All the milks contain fat, which provides much of the energy that a young human or a young animal needs; they contain protein, for growth; and they contain the special milk sugar *lactose*, which also provides energy.

*Ask: What is the difference between the amount of protein in human milk and the amount in animal milks?*

The animal milks contain more protein than human milk.

Protein is an important nutrient, and you might think that more protein must be better. However, animals grow faster than humans, so they need milk with a higher concentration of protein. It is difficult for a baby's immature kidneys to excrete the extra waste from the protein in animal milks.

Formula milks are also different from breastmilk, although the quantities have been adjusted. Formula milks are made from a variety of products, including animal milks, soybean, and vegetable oils. They are far from perfect for babies.

### **Further information**

The sugar lactose is the main carbohydrate in milk. None of the milks contain the carbohydrate *starch*. Starch is a very important nutrient for older children and adults - it is the main nutrient in staple foods, and in many complementary foods. But young babies cannot digest starch easily, so it is not appropriate to give them starchy foods in the first few months of life.

Breastmilk contains more lactose than other milks.

### ***Overhead 1/3 Quality of the proteins in different milks***

The protein in different milks varies in *quality*, as well as in quantity.

This chart shows that much of the protein in cow's milk is *casein*, which forms thick, indigestible curds in a baby's stomach. There is less casein in human milk, and it forms softer curds which are easier to digest.

The soluble or *whey* proteins are also different. In human milk, much of the whey protein consists of *anti-infective* proteins, which help to protect a baby against infection. Animal milks do not contain the kinds of anti-infective protein which protect babies.

Artificially fed babies may develop *intolerance* to protein from animal milk. They may develop diarrhoea, abdominal pain, rashes and other symptoms when they have feeds which contain the different kinds of protein. Diarrhoea may become persistent, which can contribute to malnutrition.

Babies who are fed animal milks or formula are also more likely than breastfed babies to develop *allergies* which may cause eczema, and possibly asthma.

A baby may develop intolerance or allergy after only a few artificial feeds given in the first few days of life.

### **Further information**

- All the whey proteins in the various milks are different. Human milk contains *alpha*-lactalbumin and cow's milk contains *beta*-lactoglobulin.
- In addition, the proteins in animal milks and formula contain a different balance of amino acids from breastmilk, which may not be ideal for a baby. Animal milk and formula may lack the amino acid *cystine*, and formula may lack *taurine* which newborns need especially for brain growth. Taurine is now sometimes added to formula milks.
- The anti-infective proteins in human milk include lactoferrin (which binds iron, and prevents the growth of bacteria which need iron) and lysozyme (which kills bacteria) as well as antibodies (immunoglobulin, mostly IgA).
- Other important anti-infective factors include the *bifidus factor* (which promotes the growth of *Lactobacillus bifidus*. *L. bacillus* inhibits the growth of harmful bacteria, and gives breastfed babies' stools their yoghurt smell). Breastmilk also contains anti-viral and anti-parasitical factors.

### ***Overhead 1/4 Differences in the fats of different milks.***

There are important differences in the quality of fat in different milks.

Human milk contains *essential fatty acids* that are not present in cow's milk or formula. These essential fatty acids are needed for a baby's growing brain and eyes, and for healthy blood vessels.

Human milk also contains an enzyme *lipase* which helps to digest fat. This enzyme is not present in animal milks or formula.

So the fat in breastmilk is more completely digested and more efficiently used by a baby's body than the fat in cow's milk or formula.

The faeces of an artificially fed baby are different from those of a breastfed baby. This is partly because an artificially fed baby's faeces contain more unused food.

### **Further information**

Low-birth-weight babies fed on artificial feeds which lack these essential fatty acids have been shown to have less satisfactory mental development and eyesight.

#### *Lipase in human milk*

At birth a baby's gut has not developed all the enzymes which are needed to digest milk fat. The lipase in breastmilk helps to complete the digestion of the fat in the gut.

The lipase in breastmilk is called *bile salt stimulated lipase* because it starts working in the intestine in the presence of bile salts. The lipase is not active in the breast, or in the stomach before the milk mixes with bile.

### ***Overhead 1/5 Vitamins in different milks***

This chart compares the amounts of vitamins in human and cow's milk. It shows that human milk contains more of some important vitamins than cow's milk.

Cow's milk contains plenty of the B vitamins. But it does not contain as much vitamin A and vitamin C as human milk.

Health workers often recommend giving babies fruit juice from a very early age, to provide vitamin C. This may be necessary for artificially fed babies, but it is not necessary for breastfed babies.

Breastmilk contains plenty of vitamin A, if the mother has enough in her food. Breastmilk can supply much of the vitamin A that a child needs even in the second year of life.

Ask: *What can you do if you are worried about a woman's diet, and you think that there may not be enough vitamins in her breastmilk?*

Give extra vitamins to the mother.

### **Further information**

#### *Vitamin A supplements for mothers*

Do not give a mother high dose capsules of vitamin A (over 10,000 units daily) more than 4-6 weeks after she has given birth. After 6 weeks, there is a slight possibility that she could be pregnant. If high doses of vitamin A are given in early pregnancy, they can damage the foetus.

#### *B vitamins in different milks*

For some B vitamins, the amount in human milk is the same or more than in cow's milk, but for most of them the amount in cow's milk is 2-3 times higher than in breastmilk. These high levels are more than a baby needs. Goat's milk lacks the B vitamin folic acid, and this can cause anaemia.

#### ***Overhead 1/6 Iron in milk***

Iron is important to prevent anaemia. Different milks contain similar very small amounts of iron (50-70 g/100 ml, i.e. 0.5-0.7 mg/l). But there is an important difference.

Ask: *What does this chart show you about the absorption of iron from different milks?*

Only about 10% of the iron in cow's milk is absorbed, but about 50% of the iron from breastmilk is absorbed.

Babies fed cow's milk may not get enough iron, and they often become anaemic. Exclusively breastfed babies do get enough iron, and they are protected against iron deficient anaemia until at least 6 months of age, and often longer.

### **Further information**

Some brands of formula have iron added. However, this added iron is not well absorbed, so a large amount has to be added to ensure that a baby gets enough iron to protect against anaemia. Added iron may make it easier for some kinds of bacteria to grow, which may increase

the chances of some kinds of infection, for example, meningitis and septicaemia.

### ***Overhead 1/7 Protection against infection***

Breastmilk is not just a food for babies. It is a living fluid, which protects a baby against infections.

For the first year or so of life, a baby's immune system is not fully developed, and cannot fight infections as well as an older child's or adult's. So a baby needs to be protected by his mother.

Breastmilk contains white blood cells, and a number of anti-infective factors, which help to protect a baby against infection. Breastmilk also contains antibodies against infections which the mother has had in the past.

This picture shows the special way in which breastmilk is able to protect a baby against new infections which his mother may have, or which are in the family's environment now.

When a mother becomes infected (1), white cells in her body become active, and make antibodies against the infection to protect her (2). Some of these white cells go to her breasts and make antibodies (3) which are secreted in her breastmilk to protect her baby (4).

So a baby should not be separated from his mother when she has an infection, because her breastmilk protects him against the infection.

Artificial feeds are dead. They contain no living white cells or antibodies, and few other antiinfective factors, so they provide much less protection against infection.

### **Further information**

The main immunoglobulin in breastmilk is IgA - often called 'secretory' immunoglobulin A. It is secreted within the breast into the milk, in response to the mother's infections. This is different from other immunoglobulins (such IgG) which are carried in the blood.

### ***Overhead 1/8 Variations in the composition of breastmilk***

The composition of breastmilk is not always the same. It varies according to the age of the baby, and from the beginning to the end of a

feed. It also varies between feeds, and may be different at different times of the day. This chart shows some of the main variations.

*Colostrum* is the special breastmilk that women produce in the first few days after delivery. It is thick and yellowish or clear in colour.

After a few days, colostrum changes into *mature milk*. There is a larger amount of milk, and the breasts feel full, hard and heavy. Some people call this the milk 'coming in'.

*Foremilk* is the bluish milk that is produced early in a feed. *Hindmilk* is the whiter milk that is produced later in a feed.

*Ask: What differences does this chart show between these different kinds of breastmilk?*

Colostrum contains more protein than later milk. Hindmilk contains more fat than foremilk.

The extra fat in hindmilk makes it look whiter than foremilk. This fat provides much of the energy of a breastfeed. This is why it is important not to take a baby off a breast too quickly. He should be allowed to continue until he has had all that he wants, so that he gets plenty of fat-rich hindmilk.

Foremilk is produced in larger amounts, and it provides plenty of protein, lactose, and other nutrients. Because a baby gets large amounts of foremilk, he gets all the water that he needs from it. Babies do not need other drinks of water before they are 4-6 months old, even in a hot climate. If they satisfy their thirst on water supplements, they may take less breastmilk.

Mothers sometimes worry that their milk is 'too thin'. Milk is never 'too thin'. It is important for a baby to have both foremilk and hindmilk to get a complete 'meal', and all the water that he needs.

### **Further information**

There is no sudden change from 'fore' to 'hind' milk. The fat content increases gradually from the beginning to the end of a feed.

### ***Overhead 1/9 Colostrum***

This chart shows the special properties of colostrum, and why it is important.

- It contains more antibodies and other anti-infective proteins than mature milk. This is part of the reason why colostrum contains more protein than mature milk.
- It contains more white blood cells than mature milk.

These anti-infective proteins and white cells provide the first immunization against the diseases that a baby meets after delivery. Colostrum helps to prevent the bacterial infections that are a danger to newborn babies. The antibodies probably also help to prevent a baby from developing allergies.

- Colostrum has a mild purgative effect, which helps to clear the baby's gut of *meconium* (the first rather dark stools). This clears bilirubin from the gut, and helps to prevent jaundice.
- Colostrum contains *growth factors*, which help a baby's immature intestine to develop after birth. This helps to prevent the baby from developing allergies and intolerance to other foods.
- Colostrum is richer than mature milk in some vitamins - especially vitamin A. Vitamin A helps to reduce the severity of any infections the baby might have.

So it is very important for babies to have colostrum for their first few feeds. Colostrum is ready in the breasts when a baby is born. It is all that most babies need before the mature milk comes in.

Babies should not be given any drinks or foods before they start breastfeeding. Artificial feeds given before a baby has colostrum are especially dangerous.

### **Further information**

Colostrum and breastmilk contain many hormones and growth factors. The function of all of them is not certain. However, *epidermal growth factor*, which is present in both, has been shown to stimulate growth and maturation of the intestinal villi. Undigested cow's milk proteins can pass through the immature infant gut into the blood, and may cause intolerance and allergy to milk protein. Epidermal growth factor helps to prevent the absorption of large molecules by stimulating rapid development of the gut. This 'seals' the baby's intestine, so that it is

more difficult for proteins to be absorbed without being digested. Antibodies probably help to prevent allergies by coating the intestinal mucosa, and preventing the absorption of larger molecules.

### ***Overhead 1/10 Psychological benefits of breastfeeding***

Breastfeeding has important psychological benefits for both mothers and babies.

Breastfeeding helps a mother and baby to form a close, loving relationship, which makes mothers feel deeply satisfied emotionally. Close contact from immediately after delivery helps this relationship to develop. This process is called *bonding*.

*Babies* cry less, and they may develop faster, if they stay close to their mothers and breastfeed from immediately after delivery.

*Mothers* who breastfeed respond to their babies in a more affectionate way. They complain less about the baby's need for attention and feeding at night. They are less likely to abandon or abuse their babies.

Some studies suggest that breastfeeding may help a child to develop intellectually. Low-birthweight babies fed breastmilk in the first weeks of life perform better on intelligence tests in later childhood than children who are artificially fed.

### **III. Answer participants' questions (7 minutes)**

Ask participants if they have any questions on the information in Overheads 1/1 to 1/10. Try to answer them.

If they have questions about topics that will be covered in later sessions, give a brief answer, and explain that you will discuss the topic more fully later.

### **IV. Present Overheads 1/11 to 1/16 (15 minutes)**

Make this introductory point:

The next few overheads will explain the present recommendations for infant feeding, and the reasons for them. They will also introduce the terms that are used to describe infant feeding practices.

## ***Overhead 1/11 Protection against diarrhoea***

This chart shows how breastfeeding protects a baby against diarrhoea.

The chart shows the main findings of a study from the Philippines. It compares how often babies fed in different ways get diarrhoea.

The bar on the left is for babies who were fed only on breastmilk. This is called *exclusive* breastfeeding. The bar is very small, because very few exclusively breastfed babies get diarrhoea.

The bar on the right is for artificially fed babies, who received no breastmilk. This column is 17 times taller, because these babies were 17 times more likely to get diarrhoea than babies fed only on breastmilk.

Some of the babies were given breastfeeds and artificial feeds, here called 'nutritious supplements'. This is *partial* breastfeeding. These babies were more likely to have diarrhoea than exclusively breastfed babies, but less likely than babies who received no breastmilk.

Some babies were breastfed, and also given non-nutritious liquids such as tea. They were *predominantly* breastfed. These babies were more likely to have diarrhoea than exclusively breastfed babies, but less likely than partially breastfed or artificially fed babies.

Artificially fed babies get diarrhoea more often partly because artificial feeds lack anti-infective factors, and partly because artificial feeds are often contaminated with harmful bacteria. Breastmilk is not contaminated.

### **Further information**

This study was of babies of 0-2 months only. The risks of infection are greatest for young infants. However, other studies have shown that breastfeeding protects against death from diarrhoea in babies up to one year of age, and up to two years of age in children who are malnourished. Breastfeeding can protect against some forms of diarrhoea, for example cholera and shigellosis, up to the age of 2-3 years.

The dangers of artificial feeding are greatest when environmental hygiene is poor. However, studies in industrialized countries have shown that artificially fed babies suffer more infections than breastfed babies even when environmental hygiene is good.

Participants may ask when they see Overhead 1/12, why cow's milk appears to be less dangerous than formula. This has not been fully explained, but it may be because cow's milk does not have to be mixed with water, so it is less often contaminated.

### ***Overhead 1/12 Protection against respiratory infection***

Breastfeeding also protects babies against respiratory infections.

This chart shows some of the findings from a study in Brazil, of babies aged 8 days to 12 months. It compares how many babies fed in different ways died from pneumonia. In this study, artificially fed babies were 3-4 times more likely to die from pneumonia than were exclusively breastfed babies. Partially breastfed babies came somewhere in between.

Other studies have shown that breastfeeding also protects babies against other infections, for example ear infections and meningitis. ***Overhead***

### ***1/13 Breastmilk in the second year***

For the first 4-6 months of life, exclusive breastfeeding can provide all the nutrients and water that a baby needs.

From the age of 6 months, breastmilk is no longer sufficient by itself. From 6 months, all babies should receive other foods, known as *complementary foods*, in addition to breastmilk. A few babies need complementary foods at 4 or 5 months. Complementary foods can be given by cup or cup and spoon, and feeding bottles are not necessary.

However, breastmilk continues to be an important source of energy and high quality nutrients through the second year of life, and beyond.

This chart shows how much of a child's daily energy and nutrient needs can be supplied by breastmilk during the second year of life.

*Ask: How much of the protein and energy that a child needs in the second year can breastmilk provide?*

It can provide about one-third of what a child needs.

*Ask: How much of the vitamin A that a child needs can breastmilk provide?*

Breastmilk can provide about 45% of the vitamin A that a child needs. Breastfeeding can help to prevent xerophthalmia (vitamin A deficiency).

*Ask: How much of the vitamin C that a child needs can breastmilk provide?*

It can provide almost all of it, provided the mother herself is not deficient.

So breastmilk can help to make sure that a child gets enough energy and high quality nutrients through at least the second year of life. These nutrients may not be easily available from the family diet. Continuing to breastfeed during the second year can help to prevent malnutrition, especially among children who are most at risk.

### **Further information**

#### *Vitamin A from breastmilk in the second year*

There are different estimates of how much of a child's vitamin A requirements can be provided

by breastfeeding in the second year, ranging from 38% to 75%. The amount depends on the mother's vitamin A status, and the volume of breastmilk consumed. However, what we do know is that breastfeeding in the second year provides useful protection to the child against vitamin A deficiency.

### ***Overhead 1/14 Dangers of artificial feeding***

This diagram summarizes the dangers of artificial feeding.

- Artificial feeding may interfere with bonding. The mother and baby may not develop such a close, loving relationship.
- An artificially fed baby is more likely to become ill with diarrhoeal, respiratory, ear, and other infections.
- Diarrhoea may become persistent.
- He may get too little milk and may become malnourished, because he gets too few feeds, or because they are too dilute. He is more likely to suffer from vitamin A deficiency.
- An artificially fed baby is more likely to die from infections and malnutrition than a breastfed baby.
- He is more likely to develop allergic conditions such as eczema and possibly asthma.
- He may become intolerant of animal milk, so that the milk causes diarrhoea, rashes and other symptoms.

- The risk of some chronic diseases in the child, such as diabetes, is increased.
- A baby may get too much artificial milk, and become obese.
- He may not develop so well mentally, and may score lower on intelligence tests.
- A mother who does not breastfeed is more likely to become fertile again and can become pregnant more quickly.
- She is more likely to become anaemic after childbirth. She is more likely later on to develop cancer of the ovary and possibly of the breast.

So artificial feeding is harmful for children and their mothers. Breastfeeding is fundamental to child health and survival, and important for the health of women.

### ***Overhead 1/15 Terms for infant feeding***

Ask participants to turn to page 10 of their manuals, and to find the list **TERMS FOR INFANT FEEDING**.

Ask participants in turn to read out from the list the definition of each term after you mention it.

This overhead illustrates the main terms to describe different ways of feeding infants.

**Baby 1** is *exclusively breastfed*. (A participant reads the definition).

**Baby 2** is *predominantly breastfed*. He is breastfeeding, but there is also a small cup on the table with some water in it. (A participant reads the definition).

Both Baby 1 and Baby 2 are *fully breastfed*. (A participant reads the definition).

**Baby 3** is *bottle fed*. (A participant reads the definition.)

**Baby 3** is also *artificially fed*. (A participant reads the definition.)

The terms "bottle fed" and "artificially fed" are both necessary, because a baby may be fed breastmilk from a bottle, or artificial feeds without a bottle, for example from a cup.

**Baby 4** is breastfeeding, but his mother also has a bottle of an artificial feed for him. He is *partially breastfed*. (A participant reads the definition).

**Baby 5** is more than 4-6 months old, and his mother is giving him some food in a bowl in addition to breastfeeding him. This is *timely complementary feeding*. (A participant reads the definition).

---

## TERMS FOR INFANT FEEDING

### *Exclusive breastfeeding:*

Exclusive breastfeeding means giving a baby no other food or drink, including no water, in addition to breastfeeding (except medicines and vitamin or mineral drops; expressed breastmilk is also permitted).

### *Predominant breastfeeding:*

Predominant breastfeeding means breastfeeding a baby, but also giving small amounts of water or water-based drinks - such as tea.

### *Full breastfeeding:*

Full breastfeeding means breastfeeding either exclusively or predominantly.

### *Bottle feeding:*

Bottle feeding means feeding a baby from a bottle, whatever is in the bottle, including expressed breastmilk.

### *Artificial feeding:*

Artificial feeding means feeding a baby on artificial feeds, and not breastfeeding at all.

### *Partial breastfeeding:*

Partial breastfeeding means giving a baby some breastfeeds, and some artificial feeds, either milk or cereal, or other food.

### *Timely complementary feeding:*

Timely complementary feeding means giving a baby other food in addition to breastfeeding, when it is appropriate, from about 6 months of age.

## ***Overhead 1/16 Recommendations***

This overhead summarizes the present recommendations for feeding infants and young children.

- Babies should start to breastfeed within -1 hour of birth. They should not have any food or drink before they start to breastfeed.
- Babies should be exclusively breastfed for *at least* the first four months of life.
- Between 4 and 6 months, give complementary foods only if the infant is not growing adequately, or if he appears hungry despite adequate breastfeeding. Most babies do not need complementary foods before 6 months of age.
- All children older than 6 months should receive complementary foods. - Children should continue to breastfeed up to 2 years of age or beyond.

Explain that participants can find a box with these **RECOMMENDATIONS** on page 9 of their manuals.

### **RECOMMENDATIONS**

Start breastfeeding within -1 hour of birth

Breastfeed exclusively for at least 4 and if possible 6 months of age Give complementary between 4-6 months only if child is hungry or not growing

Give complementary foods to all children from about 6 months of age

Continue breastfeeding up to 2 years of age or beyond

## **V. Answer participants' questions**

(10 minutes)

Ask participants if they have any questions about the material that you have presented, and try to answer them.

If they ask questions about topics that will be covered in later sessions, give a brief answer, and explain that you will discuss the topic more fully later.

Recommended reading:

*Helping Mothers to Breastfeed* Chapter 3: 'The composition of breastmilk and the disadvantages of artificial feeding'.

**Session 2**

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## LOCAL BREASTFEEDING SITUATION

### *Objectives*

At the end of this session, participants should be able to:

- describe the common patterns of infant feeding in the country, and common practices;
- describe what has been or is being done to promote breastfeeding.

### *Session outline*

(30 minutes)

Participants are all together for lecture presentation (I) or class discussion (II) led by one trainer.

I. Present local infant feeding data

Optional alternative if no local data available:

II. Discuss participants' experience

## ***Preparation***

### *Before course:*

Decide which alternative (I or II) you will use for this session.

Try to obtain information about infant feeding in the country; for example, the results of any surveys or studies which have been done, or any information available from health service returns. Consult with local experts or researchers, and ministry of health officials. Try to find data on exclusive breastfeeding, the use of water, teas, cereals, animal milk, formula, feeding bottles, and any other feeding methods, in both rural and urban areas.

You do not need large amounts of detailed information, but it is helpful to form a general picture of the situation. If you cannot find enough local data, plan to use the Optional alternative II for this session.

Find out also what is being done or what has been done to promote breastfeeding.

### *Before the session:*

Prepare your presentation.

Prepare overheads or a flipchart: *either* with the data that you will present;  
*or* with the questions and choice of answers that you want participants to discuss.

## **I. Present local infant feeding data**

(30 minutes)

Present data which answers as many of the following key questions as possible.

If possible present data from different situations, for example, from rural and urban areas.

*What percentage of mothers start breastfeeding?*

*What percentage of babies breastfeed exclusively for 4-6 months?*

*What percentage of babies have other drinks or food at 1, 2 and 3 months?*

*What percentage of babies continue to breastfeed for more than 6, 12 and 24 months?*

Point out that these questions relate to the **RECOMMENDATIONS** presented in Overhead 1/16.

Present data on the relationship between feeding practices and illnesses such as diarrhoea.

These might indicate whether particular practices cause health problems.

Present data related to health care practices at the time of delivery (see also Session 8, 'Health care practices'.)

*What percentage of babies start to breastfeed within 1 hour of delivery?*

*What percentage of babies are given other food or drink before they start to breastfeed?*

Present data on reasons that mothers give for introducing other feeds, or for giving up breastfeeding early.

Present this information briefly. Make a list to post on the wall. Remember to discuss it again when the particular situations and difficulties are discussed in later sessions.

## **II. Discuss participants' experience** (alternative: 30 minutes)

Ask participants to find page 11 in their manuals, where they will find a list of questions.

Explain what to do:

In your manuals, next to each question there are three alternative answers: 'few', 'half', 'most'.

Choose the answer to each question that fits best with your experience, by putting a circle round it.

(Allow 5 minutes to answer.)

Develop a list of 'good' and 'poor' practices.

Write these questions on an overhead or a flipchart:

How many babies start to breastfeed?

How many breastfeed within 1 hour of delivery?

How many have other foods or drinks before they start to breastfeed?

How many breastfeed exclusively for 4-6 months?

How many have other foods or drinks before:

1 month?

2 months?

3 months?

How many children continue to breastfeed

6 months?

for more than: 12 months?

24 months?

---

Discuss with the class for each practice which answer most of them circled, and whether the practice generally follows the recommendations from Overhead 1/16.

Decide with the class if the practice should be marked overall as 'good' or 'poor'. Mark 'good' or 'poor' on your list on the overhead or flipchart.

If you used a flipchart, post it on the wall.

Develop a list of common reasons why mothers:

- give a baby other drinks or foods before 4-6 months;
- stop breastfeeding early.

Write on a flipchart the heading:

**'REASONS FOR GIVING COMPLEMENTS OR STOPPING BREASTFEEDING EARLY'**

Ask participants to suggest common reasons from their experience.

Write their suggestions on the list.

(Try not to have more than 10 reasons)

Post the list on the wall.

Refer back to the list later, and remind participants what they included in it, when you discuss 'Breast conditions' (Session 14), 'Refusal to breastfeed' (Session 16), 'Not enough milk' (Session 21), 'Crying' (Session 22), and 'Low-birth-weight and sick babies' (Session 26), and the Additional Sessions 'Women's nutrition, health and fertility' (Session 31), and 'Women and work' (Session 32).

## HOW BREASTFEEDING WORKS

### ***Objectives***

At the end of this session, participants will be able to:

- name the main parts of the breast, and describe their function;
- describe the hormonal control of breastmilk production and ejection;
- describe the difference between good and poor attachment of a baby at the breast;
- describe the difference between effective and ineffective suckling.

### ***Session outline***

(60 minutes)

Participants are all together for a lecture presentation by one trainer.

- I. Introduce the topic (2 minutes)
- II. Present Overheads 3/1-3/12 (45 minutes)
- III. Summarize 'How breastfeeding works' (5 minutes)
- IV. Answer participants' questions (8 minutes)

### ***Preparation***

Refer to pages 9-11 of the Introduction, for general guidance on how to present overhead transparencies and how to use the accompanying notes and questions.

Make sure that Overheads 3/1 - 3/12 are in order.

Study each transparency and the text that goes with it, so that you are able to present them.

Read the **Further information** sections, so that you are familiar with the ideas that they contain, so that you can answer participants' questions.

As you follow the text, remember:

indicates an instruction to you, the trainer  
indicates what you say to the participants

Do not present the **Further information** sections. Use them to help you to answer questions.

## **I. Introduce the topic**

(2 minutes)

Ask participants to keep their manuals closed during the presentation.

Make these points:

In this session, you will learn about the anatomy and physiology of breastfeeding. In order to help mothers, you need to understand how breastfeeding works.

You cannot learn a specific way of counselling for every situation, or every difficulty. But if you understand how breastfeeding works, you can work out what is happening, and help each mother to decide what is best for her.

## **II. Present Overheads 3/1 - 3/12**

(45 minutes)

As you show each overhead transparency, point on the projector or on the screen to the place which shows what you are explaining.

### ***Overhead 3/1 Anatomy of the breast***

This diagram shows the anatomy of the breast.

First, look at the *nipple*, and the dark skin called the *areola* which surrounds it. In the areola are small glands called *Montgomery's glands* which secrete an oily fluid to keep the skin healthy.

Inside the breast are the *alveoli*, which are very small sacs made of *milk secreting cells*. There are millions of alveoli - the diagram shows only a few. The box shows three of the alveoli enlarged. A hormone called *prolactin* makes these cells produce milk.

Around the alveoli are muscle cells, which contract and squeeze out the milk. A hormone called *oxytocin* makes the muscle cells contract.

Small tubes, or *ducts*, carry milk from the alveoli to the outside. Beneath the areola, the ducts become wider, and form *lactiferous sinuses*, where milk collects in preparation for a feed. The ducts become narrow again as they pass through the nipple.

The secretory alveoli and ducts are surrounded by supporting tissue, and fat. It is the fat and other tissue which gives the breast its shape, and which makes most of the difference between large and small breasts. Small breasts and large breasts both contain about the same amount of gland tissue, so they can both make plenty of milk.

### ***Overhead 3/2 Prolactin***

This diagram explains about the hormone *prolactin*.

When a baby suckles at the breast, *sensory impulses* go from the nipple to the brain. In response, the anterior part of the pituitary gland at the base of the brain secretes prolactin. Prolactin goes in the blood to the breast, and makes the milk secreting cells produce milk.

Most of the prolactin is in the blood about 30 minutes after the feed - so it makes the breast produce milk for the NEXT feed.

For this feed, the baby takes the milk which is already in the breast.

*Ask: What does this suggest about how to increase a mother's milk supply?*

It tells us that if her baby suckles more, her breasts will make more milk. So MORE

## SUCKLING MAKES MORE MILK.

Most women can produce more milk than their babies need or take. If a mother has two babies, and they both suckle, her breasts make milk for two. Most mothers can produce enough milk for at least two babies.

If a baby suckles less, the breasts make less milk. If a baby stops suckling, the breasts soon stop making milk.

Some special things to remember about prolactin are:

More prolactin is produced at night; so breastfeeding at night is especially helpful for keeping up the milk supply.

Prolactin makes a mother feel relaxed, and sometimes sleepy; so she usually rests well even if she breastfeeds at night.

Hormones related to prolactin suppress ovulation; so breastfeeding can help to delay a new pregnancy. Breastfeeding at night is important for this.

### ***Overhead 3/3 Oxytocin reflex***

This diagram explains about the hormone *oxytocin*.

When a baby suckles, sensory impulses go from the nipple to the brain. In response, the posterior part of the pituitary gland at the base of the brain secretes the hormone oxytocin. Oxytocin goes in the blood to the breast, and makes the muscle cells around the alveoli contract. This makes the milk which has collected in the alveoli flow along the ducts to the lactiferous sinuses. Sometimes the milk flows to the outside. This is the *oxytocin reflex* or the *milk ejection reflex*.

Oxytocin is produced more quickly than prolactin. It makes the milk in the breast flow for THIS feed. Oxytocin can start working before a baby suckles, when a mother learns to expect a feed.

If the oxytocin reflex does not work well, the baby may have difficulty in getting the milk. It may seem as if the breasts have stopped producing milk. However, the breasts are producing milk, but it is not flowing out.

Another important point about oxytocin is that it makes a mother's uterus contract after delivery. This helps to reduce bleeding, but it

sometimes causes uterine pain and a rush of blood during a feed for the first few days. The pains can be quite strong.

### **Further information**

The oxytocin reflex is sometimes called the 'let-down reflex'.

### ***Overhead 3/4 Helping and hindering the oxytocin reflex***

This diagram shows how the oxytocin reflex is easily affected by a mother's thoughts and feelings and sensations.

Good feelings, for example feeling pleased with her baby, or thinking lovingly of him, and feeling confident that her milk is the best for him, can help the oxytocin reflex to work and her milk to flow. Sensations such as touching or seeing her baby, or hearing him cry, can also help the reflex.

But bad feelings, such as pain, or worry, or doubt that she has enough milk, can hinder the reflex and stop her milk from flowing. Fortunately, this effect is usually temporary.

*Ask: Why is it important to understand the oxytocin reflex?*

It explains these two **key points** about caring for mothers and babies:

- A mother needs to have her baby near her all the time, so that she can see and touch and respond to him. This helps her body to prepare for a breastfeed, and it helps her breastmilk to flow. If a mother is separated from her baby between feeds, her oxytocin reflex may not work so easily.
- You need to remember a mother's feelings whenever you talk to her. It is important that you try to make her feel good and build her confidence, to help her breastmilk to flow well. You must not say anything which may make her worry about or doubt her breastmilk supply.

Mothers are often aware of their oxytocin reflex. There are several signs of an active reflex that they or you may notice.

Ask participants to find page 14 in their manuals, and to find the list  
**SIGNS AND SENSATIONS OF AN ACTIVE OXYTOCIN REFLEX.**

Ask participants to read out the signs in turn.

---

### **SIGNS AND SENSATIONS OF AN ACTIVE OXYTOCIN REFLEX**

A mother may notice:

A squeezing or tingling sensation in her breasts just before she feeds her baby, or during a feed

Milk flowing from her breasts when she thinks of her baby, or hears him crying

Milk dripping from her other breast, when her baby is suckling

Milk flowing from her breasts in fine streams, if her baby comes off the breast during a feed

Pain from uterine contractions, sometimes with a rush of blood, during feeds in the first week

Slow deep sucks and swallowing by the baby, which show that breastmilk is flowing into his mouth

---

You may notice some of these signs when you observe a mother and baby, or you can ask a mother if she notices them.

If one or more of the signs or sensations are present, then a mother can be sure that her oxytocin reflex is active, and that her breastmilk is flowing. However, even if her reflex is active, she may not feel the sensations, and the signs may not be obvious.

#### ***Overhead 3/5 Inhibitor in breastmilk***

Breastmilk production is also controlled within the breast itself.

You may wonder why sometimes one breast stops making milk, while the other breast continues to make milk - although oxytocin and prolactin go equally to both breasts. This diagram shows why.

There is a substance in breastmilk which can reduce or *inhibit* milk production.

If a lot of milk is left in a breast, the inhibitor stops the cells from secreting any more. This helps to protect the breast from the harmful effects of being too full. It is obviously necessary if a baby dies or stops breastfeeding for some other reason.

If breastmilk is removed, by suckling or expression, the inhibitor is also removed. Then the breast makes more milk.

This helps you to understand why:

- If a baby stops suckling from one breast, that breast stops making milk.
- If a baby suckles more from one breast, that breast makes more milk and becomes larger than the other.

It also helps you to understand why:

- For a breast to continue to make milk, the milk must be removed.
- If a baby cannot suckle from one or both breasts, *the breastmilk must be removed by expression* to enable production to continue.

### ***Projector off***

Remove Overhead 3/5.

Ask: *From what you have learnt, can you suggest what controls the production of milk? What controls prolactin production, the oxytocin reflex, and the inhibitor within the breast?*

(Let participants suggest the answer. Give them a few minutes to think about it. Then continue.)

**Key point:** The baby's suckling controls them all. It is the baby's suckling which makes the breasts produce milk.

Make these points:

Sometimes people talk as though to make a mother produce more milk, we should give her more to eat, or more to drink, more rest, or medicines. It is important for a mother to eat and drink enough,

but these things do not help her to produce milk if her baby does not suckle.

For a mother to produce enough milk, her baby must suckle often enough, and he must also suckle in the right way.

### ***Overhead 3/6 Attachment to the breast***

This diagram shows how a baby takes the breast into his mouth to suckle.

Notice these points:

- He has taken much of the areola and the underlying tissues into his mouth.
- The lactiferous sinuses are included in these underlying tissues.
- He has stretched the breast tissue out to form a long 'teat'.
- The nipple forms only about one-third of the 'teat'.
- The baby is suckling from the breast, not the nipple.

Notice the position of the baby's tongue:

- His tongue is forward, over his lower gums, and beneath the lactiferous sinuses. His tongue is in fact cupped round the 'teat' of breast tissue. You cannot see that in this drawing, though you may see it when you observe a baby.

If a baby takes the breast into his mouth in this way, he can suckle in the right way. We say that he is *well attached* to the breast.

### ***Overhead 3/7 Suckling action***

This is the same baby as in Overhead 3/6, and you can see what happens to his tongue when he suckles.

The arrow shows a wave going along the baby's tongue from the front to the back. The wave presses the 'teat' of breast tissue against the baby's hard palate. This presses milk out of the lactiferous sinuses into the baby's mouth, from where he swallows it.

So a baby does not suck milk out of a breast, like drinking through a straw.

Instead:

- He uses suction to pull out the breast tissue to form a teat, and to hold the breast tissue in his mouth.
- The oxytocin reflex makes breastmilk flow to the lactiferous sinuses.

- The action of his tongue presses the milk from the lactiferous sinuses into his mouth.

When a baby is well attached, he removes breastmilk easily, and it is called *effective suckling*.

It is also helpful to understand that when a baby suckles in this way, his mouth and tongue do not rub the skin of the breast and nipple.

### ***Overhead 3/8 Good and poor attachment***

Here you see two pictures. Picture 1 is the same baby as in Overhead 3/6. He is well attached to the breast. Picture 2 shows a baby suckling in a different way.

Ask: *In what way is picture 2 different from picture 1?*

(Let participants make as many observations as they can.

Then make sure that the three following points are clear.

If participants notice signs that are described with Overhead 3/9, accept their observations, but do not repeat or emphasize them yet.)

The most important differences to see in picture 2 are:

-Only the nipple is in the baby's mouth, not the underlying breast tissue.

-The lactiferous sinuses are outside the baby's mouth, where his tongue cannot reach them. -The baby's tongue is back inside his mouth, and not pressing on the lactiferous sinuses.

The baby in picture 2 is poorly attached. He is 'nipple sucking'.

### ***Overhead 3/9 Attachment - outside appearance***

This picture shows the same two babies from the outside.

Ask: *What differences do you see between pictures 1 and 2?*

In picture 1:

- The baby's chin touches the breast.
- His mouth is wide open.
- His lower lip is turned outwards.

- You can see more of the areola above his mouth and less below. This shows that he is reaching with his tongue under the lactiferous sinuses to press out the milk.

These are some of the signs that you can see from the outside which tell you that a baby is well attached to the breast.

In picture 2:

- The baby's chin does not touch the breast.
- His mouth is not wide open, and it points forwards.
- His lower lip is not turned outwards.
- You can see the same amount of areola above and below his mouth, which shows that he is not reaching the lactiferous sinuses.

These are some of the signs that you can see from the outside which show that a baby is poorly attached to the breast.

You may notice more areola outside the poorly attached baby's mouth.

**Key point:** Seeing a lot of areola is not a reliable sign of poor attachment. Some mothers have a very large areola, and you can see a lot even if the baby is well attached. It is more reliable to compare how much areola you see above and below a baby's mouth.

There are other differences which you can see when you look at a real baby, which you will learn about in Sessions 4 and 5.

### **Further information**

The amount of areola that you see outside a baby's mouth may help you to compare the attachment of the same baby before and after you correct it. However, the first time that you see a baby, it is not a reliable sign. A mother may have a very small areola, which all goes inside the baby's mouth easily; or a very large areola, so that you can always see a lot outside.

Show Overhead 3/8 again.

*Ask: What do you think might be the results of a baby suckling in a poor position?*

(Let participants make 4-5 suggestions, from what they see in Overhead 3/8. Then show Overhead 3/10 to complete the answer.)

## ***Overhead 3/10 Results of poor***

***attachment*** Do not show the

whole overhead at once.

Use a piece of paper to cover everything except the title.

Pull the paper down to reveal the lines of text one by one.

Compliment participants on the points that they suggested correctly.

Make sure that the other points are quite clear.

Show Overhead 3/8 again if necessary to help to explain the points.

This diagram summarizes what may happen when a baby is poorly attached to the breast.

*The baby may cause pain and damage to the nipple.*

If a baby is poorly attached, and he 'nipple sucks', it is painful for his mother. Poor attachment is the most important cause of sore nipples.

As the baby sucks hard to try to get milk, he pulls the nipple in and out. This makes the nipple skin rub against his mouth. If a baby continues to suck in this way, he can damage the nipple skin, and cause *fissures* (cracks).

Suction on the tip of the nipple can cause a fissure across the tip.

Rubbing the skin at the base of the nipple can cause a fissure around the

base. *The baby does not remove breastmilk effectively.*

If a baby is poorly attached, he does not remove breastmilk effectively.

The way that he suckles is called *ineffective suckling*. These can be the results:

- The breasts may become engorged.
- The baby may be unsatisfied, because the breastmilk comes slowly. He may cry a lot, and want to feed often, or for a very long time at each feed.
- The baby may not get enough breastmilk. He may be so frustrated that he refuses to feed altogether. He may fail to gain weight.

If the oxytocin reflex works well, he may get enough breastmilk at least for a few weeks, by feeding very often. But it can exhaust his mother.

- The breasts may make less milk, because the milk is not removed.

So poor attachment can make it SEEM as though a mother is not producing enough milk. In other words she has an *apparent* poor milk supply. Then, if the situation continues, her breasts may really make less milk. In either situation, the result may be poor weight gain in her baby and breastfeeding failure.

### **Further information**

The point about frequent suckling being a result of ineffective suckling may seem to contradict what was said about 'more suckling makes more milk'. More suckling makes more milk if a baby is well attached, suckling effectively, and allowed to finish a feed, so that he removes the milk. In this case, if he suckles more often, the breasts will make more milk.

A baby who is suckling effectively may not want to feed very often, though the interval between feeds may be irregular. If a baby wants to feed more often than about every 1-1 hours it is likely that he is either not well attached, or that he is having very short feeds, so that he is not removing much milk. Increased frequency of suckling will not make more milk for him, until the other conditions are corrected. See also Session 21 'Not enough milk'.

### ***Overhead 3/11 Causes of poor attachment***

Cover the overhead with a piece of paper, except for the title. Reveal it line by line as you discuss each point.

This overhead summarizes the common causes of poor attachment to the breast.

*Use of a feeding bottle.*

If a baby feeds from a bottle before breastfeeding is established, he may have difficulty suckling effectively. Some babies who start bottle feeds after a few weeks may also begin to suckle ineffectively.

The action of sucking from a bottle is different from suckling from the breast. Babies who have had some bottle feeds may try to suck on the breast as if it is a bottle, and this makes them 'nipple suck'. When this

happens, it is sometimes called 'sucking confusion' or 'nipple confusion'. So giving a baby feeds from a bottle can interfere with breastfeeding. Skilled help is needed to overcome the problem.

*Inexperienced mother.*

If a mother has not had a baby before, or if she bottle fed or had difficulties breastfeeding previous babies, she may have difficulty getting her baby well attached to her breast. (However, even mothers who have previously breastfed successfully sometimes have difficulties.) *Functional difficulty.*

Some situations can make it more difficult for a baby to attach well to the breast.

For example:

- If a baby is very small or weak;
- If a mother's nipples and the underlying tissue are *poorly protractile* (difficult to stretch out to form a 'teat' - see Session 14, 'Breast conditions');
- If her breasts are engorged;
- If there has been a delay in starting to breastfeed.

Mothers and babies can breastfeed in all these situations, but they may need extra skilled help to succeed.

*Lack of skilled support.*

A very important cause of poor attachment is *lack of skilled help and support.*

Some women are isolated, and lack support from the community. They may lack help from experienced women such as their own mothers; or from traditional birth attendants, who often are very skilled at helping with breastfeeding.

Women in 'bottle feeding' cultures may be unfamiliar with how a breastfeeding mother holds and feeds her baby. They may never have seen a baby breastfeeding.

Health workers who look after mothers and babies, for example doctors and midwives, may not have been trained to help mothers to breastfeed.

## ***Overhead 3/12 Reflexes in the baby***

Earlier overheads showed reflexes in a mother, but it is also useful to know about the reflexes in a baby.

There are three main reflexes - the *rooting reflex*, the *sucking reflex*, and the *swallowing reflex*.

When something touches a baby's lips or cheek, he opens his mouth and may turn his head to find it. He puts his tongue down and forward. This is the 'rooting' reflex. It should normally be the breast that he is 'rooting' for.

When something touches a baby's palate, he starts to suck it, and when his mouth fills with milk, he swallows. All these are reflexes, which happen automatically without the baby having to learn to do them.

But there are some things that a mother and baby have to learn. A mother has to learn how to hold her breast and position her baby, so that he can attach well. A baby has to learn how to take the breast into his mouth to suckle effectively.

Many mothers and babies do it easily. But some need help - especially in any of the situations mentioned with Overhead 3/11.

Notice in the drawing that the baby is not coming straight towards the breast. He is coming up to it from below the nipple. This helps him to attach well because:

- The nipple is aiming towards the baby's palate, so it can stimulate his sucking reflex.
- The baby's lower lip is aiming well below the nipple so he can get his tongue under the lactiferous sinuses.

### **III. Summarize 'How breastfeeding works' (5 minutes)**

Summarize the session with these points and questions:

To help mothers to breastfeed, it is important to understand how breastfeeding works.

*Ask: What does knowing about the oxytocin reflex help you to understand?*

Breastmilk flow depends partly on the mother's thoughts, feelings and sensations. It is important to keep mothers and babies together day and night, and to help mothers to feel good about breastfeeding.

*Ask: What does knowing about how babies suckle help you to understand?*

Many common difficulties can be caused by poor attachment to the breast.

These difficulties can be overcome by helping the mother to correct her baby's position. They can be prevented by helping a mother to position her baby in the first few days.

*Ask: What does knowing about the prolactin reflex help you to understand?*

The amount of milk that the breasts produce depends partly on how much the baby suckles. More suckling makes more milk.

Most mothers can produce more milk than their babies take, and they can produce enough for twins.

*Ask: What does knowing about the inhibitor in breastmilk help you to understand?*

The amount of milk that a breast produces depends partly on how much the baby removes. For a breast to continue to make milk, it is necessary to remove the milk.

Ask participants to find the box **BREASTFEEDING WILL BE SUCCESSFUL IN MOST CASES IF:** on page 18 of their manuals.

Read out the box, and point out that it summarizes the main conclusions from the session.

**BREASTFEEDING WILL BE SUCCESSFUL IN MOST CASES IF:**

The mother feels good about herself

The baby is well attached to the breast so that he suckles effectively

The baby suckles as often and for as long as he wants  
The environment supports breastfeeding

#### **IV. Answer participants' questions** (8 minutes)

Ask participants if they have any questions, and try to answer them.

Recommended reading:

*Helping Mothers to Breastfeed* Chapter 2 'The production of breastmilk and how a baby suckles'.

**Session 4**

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### **ASSESSING A BREASTFEED**

This session must follow Session 3, 'How breastfeeding works'.

#### ***Objectives***

At the end of this session, participants will be able to: -  
assess a breastfeed by observing a mother and baby; -  
identify a mother who may need help.

#### ***Session outline***

(60 minutes)

Participants are all together for a demonstration led by one trainer.

- I. Introduce the topic (5 minutes)
- II. Demonstrate and explain how to assess a breastfeed (35 minutes)
- III. Answer participants' questions (10 minutes)

IV. Explain the B-R-E-A-S-T-FEED Observation Form  
(10 minutes)

***Preparation***

Refer to pages 12-13 in the Introduction for general information about how to give a demonstration.

Study the notes for the session so that you are clear about what to do.

*For Section II:*

Points 1 and 2

Ask two participants to help you with the demonstration.

Explain what you want them to do, and help them to practise.

Make sure that they have dolls for the demonstration.

If you feel that participants cannot do this on the first day of the course, ask other trainers to help instead.

Points 5 and 6

Make sure that you have a model breast available. (See page 6 for instructions on 'How to make a model breast'.)

Point 7

Have Overhead 3/9 ready to show again.

As you follow the text, remember:

indicates an instruction to you, the trainer  
indicates what you say to participants

**I. Introduce the topic**

(5 minutes)

Make these points:

Assessing a breastfeed helps you to decide if a mother needs help or not, and how to help her.

You can learn a lot about how well or badly breastfeeding is going by observing, before you ask questions.

This is just as important a part of clinical practice as other kinds of examination, such as looking for signs of dehydration, or counting how fast a child is breathing.

There are some things you can observe when a baby is not breastfeeding. Other things you can only observe if a baby is breastfeeding.

## **II. Demonstrate and explain how to assess a breastfeed(35 minutes)**

Ask participants to turn to page 19 of their manuals, and to find the list of points **HOW TO**

### **ASSESS A BREASTFEED.**

#### **HOW TO ASSESS A BREASTFEED**

1. What do you notice about the mother?
2. How does the mother hold her baby?
3. What do you notice about the baby?
4. How does the baby respond?
5. How does the mother put her baby onto her breast?
6. How does the mother hold her breast during a feed?
7. Does the baby look well attached to the breast?
8. Is the baby suckling effectively?
9. How does the breastfeed finish?
10. Does the baby seem satisfied?
11. What is the condition of the mother's breasts?
12. How does breastfeeding feel to the mother?

Explain each point in turn.

Read out the *number and title* of each point, or pair of points. Then give the demonstration, or explanation, or conduct the discussion as described.

Ask participants to keep the list in front of them and to refer to it as you explain the points.

***Point 1: What do you notice about the mother? Point 2: How does the mother hold her baby?***

Ask two participants to hold dolls to play the roles of mothers and babies.

---

**Mother A** sits comfortably and relaxed, and acts being happy and pleased with her baby. She holds it close, facing her breast, and she supports its bottom. She looks at her baby, and fondles or touches it lovingly.

**Mother B** sits uncomfortably, and acts being sad and not interested in her baby. She holds it loosely, and not close, with its neck twisted, and she does not support its bottom. She does not look at it or fondle it, but she shakes or prods the baby a few times to make it go on breastfeeding.

---

Ask the other participants to observe the 'mothers and babies'.

Ask the questions for Point 1 and Point 2.

Give them a few minutes to make some suggestions.

Help them to think of the points listed after the questions.

Indicate which points the 'mothers' are acting.

Ask: *Point 1: What may you notice about a mother?*

You may notice:

- Her age, general health, nutrition, socioeconomic status:  
(Clothes may be misleading if women dress up to go to a health centre.)

This may give you some clues about her life situation, and whether it is easy or difficult for her to care for and breastfeed her baby.

- Her expression, which may tell you something about how she feels:  
If she is happy and pleased with her baby, she is more likely to breastfeed successfully (mother A).  
If she is miserable and not interested, she is less likely to breastfeed successfully (mother B).
- Whether she looks comfortable and relaxed or uncomfortable and tense:  
If she is comfortable and relaxed, it helps breastfeeding (mother A).  
If she is uncomfortable and tense, it makes breastfeeding more difficult (mother B).

There are many other things that you may notice in different situations, for example:

- Any other family members who are present, such as the father or grandmother, and how they relate to the mother and baby.
- Whether the mother is carrying a feeding bottle in her bag. - If she has clothes which make it difficult to breastfeed.

*Ask: Point 2: What may you notice about how a mother holds her baby?*

You may notice whether:

- She holds him close, facing her breast, or loosely and turned away:  
If she holds the baby close to the breast and facing it, it is easier for him to suckle effectively (mother A).  
If she holds him loosely, or turned away so that his neck is twisted, it is more difficult for him to suckle effectively (mother B).
- She holds him securely and confidently, or nervously:  
If a mother holds her baby securely and feels confident, it is easier for her baby to suckle effectively, and her milk will flow more easily (mother A).  
If a mother is nervous and lacks confidence, she may show this by shaking or prodding the baby to make him go on feeding. This can upset her baby and interfere with suckling and breastmilk flow (mother B).
- She shows signs of bonding to her baby:

If she looks at him, touches him, and talks to him, these are signs of bonding, which help breastfeeding (mother A).

If she does not look at the baby, and does not touch him or talk to him, these are signs that she has not bonded well. She is more likely to have problems with breastfeeding (mother B).

- She supports his bottom, or only his head and shoulders:  
For a young infant, it is easier to attach to the breast if his bottom is supported, and not just his head (mother A).  
For older babies support of the upper part of the body is usually enough.

Remember from Session 3 that if a mother feels good about breastfeeding, and if her baby is positioned so that he can suckle effectively, breastfeeding is likely to be successful.

Thank the participants who played the two mothers.

***Point 3: What do you notice about the baby?***

Look at his general health, nutrition, and alertness.

Look for signs of conditions which can interfere with breastfeeding:

- blocked nose;
- difficult breathing;
- thrush;
- jaundice;
- dehydration;
- tongue tie;
- a cleft lip or palate.

***Point 4: How does the baby respond?***

Look for these responses:

- If he is a young infant: rooting for the breast when he is ready for a feed.  
He may turn his head from side to side, open his mouth, put his tongue down and forward, and reach for the breast.
- If he is an older baby: turning and reaching for the breast with his hand. Both these responses show that a baby wants to breastfeed.
- The baby crying or pulling back or turning away from his mother.

This response shows that a baby does not want to breastfeed, and that there is a problem with breastfeeding.

- The baby being calm during a feed, and relaxed and contented after a feed. These are signs that he is getting breastmilk.
- The baby being restless and slipping off the breast or refusing to feed.

This may mean that he is not well attached and is not getting the breastmilk.

***Point 5: How does the mother put her baby on her breast?***

Demonstrate these points with a model breast.

Look for these signs:

- The mother trying to push her nipple into her baby's mouth. She may lean forward or pinch up her nipple. This makes it more difficult for a baby to attach to the breast.
- The mother bringing her baby to her breast. She may support her whole breast with her hand, and if necessary shape her breast with her thumb above the breast. This is helpful for a baby.

***Point 6: How does the mother hold her breast during a feed?***

Demonstrate these points with a model breast.

Look for these signs:

- The mother holding her breast very close to the areola. This makes it more difficult for a baby to suckle. It may block the milk ducts so that it is more difficult for the baby to get the breastmilk.
- The mother holding her breast back from her baby's nose with her finger. This is not necessary.
- The mother holding her breast with the 'scissor hold'.

The 'scissor hold' (sometimes called the 'cigarette hold') means when she holds the nipple and areola between her index finger above and middle finger below. This can make it more difficult for a baby to take enough breast into his mouth. The pressure of her fingers may block the milk ducts.

- The mother supporting her whole breast with her hand against her chest wall.  
This usually helps a baby to suckle effectively, especially if his mother has large breasts.

***Point 7: Does the baby look well attached to the breast?***

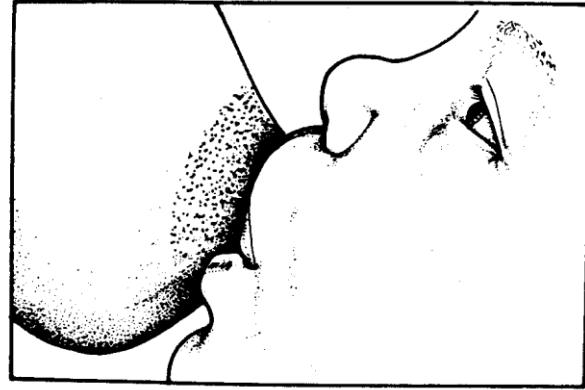
Remind participants that this was explained in Session 3. Show Overhead 3/9 again.
--

*Ask: Which signs of good attachment may you see?*

- The baby's chin touching the breast.
- His mouth wide open.  
(This is important with large breasts, but less important with thin breasts.)
- His lower lip turned outwards.
- His cheeks round, or flattened against his mother's breast.
- More areola above the baby's mouth than below it.- The breast looking rounded during a feed.

*Ask: Which signs of poor attachment may you see?*

- The baby's chin not touching the breast.
- His mouth not wide open (especially with a large breast).
- His lips pointing forwards or his lower lip turned in.
- His cheeks tense or pulled in as he suckles.
- More areola below the baby's mouth than above it, or the same amount above and below.
- The breast looks stretched or pulled during a feed.



**Fig.1 a. A baby well attached      b. A baby poorly attached to his mother's breast      to his mother's breast**

(Fig.19 in Participants' Manual)

***Point 8: Is the baby suckling effectively?***

Give the following demonstrations as you explain:

*To demonstrate good attachment:*

Suck on your fist, with your mouth open wide, your tongue forward, and your lower lip curled back. Give slow deep sucks, about 1 per second.

*To demonstrate poor attachment:*

Suck on your thumb, with your mouth almost closed, your lips pointing forwards, and letting your cheeks pull in. Give quick, small sucks.

Look for these signs:

- The baby taking slow deep sucks.  
This is an important sign that a baby is getting breastmilk. He is well attached to the breast, and suckling effectively.  
A baby usually takes a few quick sucks to start the oxytocin reflex. Then as the milk starts flowing and his mouth fills with milk, his sucks become deeper and slower. Then he pauses, and starts again with a few quick sucks.
- The baby taking quick shallow sucks all the time.  
This is a sign that he is not getting the breastmilk. He is not well attached, and not suckling effectively.
- The baby swallowing so that you can see or hear it.

If a baby swallows, it means that he is getting breastmilk. Sometimes you can hear swallowing; sometimes it is easier to see swallowing.

- The baby making smacking sounds as he sucks. This is a sign that he is not well attached.

- The baby 'gulping' as he swallows.

Gulps are very loud swallowing sounds, when a lot of fluid is being swallowed at once.

This is a sign that a baby is getting a lot of milk. It sometimes means that his mother has an oversupply, and her baby is getting too much milk too fast. Oversupply is sometimes the cause of breastfeeding difficulties.

***Point 9: How does the breastfeed finish? Point 10: Does the baby seem satisfied?***

Look for these signs:

- The baby releasing the breast himself, and looking satisfied and sleepy.

This shows that he has had all that he wants from that side. He may or may not want the other side too.

- The mother taking her baby off her breast before he has finished.

A mother sometimes takes her baby off her breast quickly, as soon as he pauses, because she thinks he has finished; or because she wants to make sure that he suckles from the other side as well.

A baby who comes off the breast too quickly may not get enough hindmilk. He may want to feed again soon.

Notice how long the breastfeed continues:

The exact length of time is not important. Feeds normally vary very much in length. But if breastfeeds are very long (more than about half an hour) or very short (less than about 4 minutes) it may mean that there is a problem.

However, in the first few days, or with a low-birth-weight baby, breastfeeds may be very long and this is normal.

***Point 11: What is the condition of the mother's breasts? Point 12: How does breastfeeding feel to the mother?***

Notice the size and shape of the mother's breasts and nipples:

All breasts are good for breastfeeding, but a mother may be worried that her breasts are not the best size. As a result, she may lack confidence in her ability to breastfeed. Sometimes the shape of a nipple makes it more difficult for a baby to attach to a breast, (see Session 14, 'Breast conditions').

Look and ask for signs of an active oxytocin reflex:

- Milk dripping or spraying out of a mother's breasts.  
This shows that she has an active oxytocin reflex.  
If milk does not flow out, however, it does not mean that her reflex is not active.
- Uterine pains during breastfeeds for the first few days.  
These are called *afterpains*. They are another sign of an active oxytocin reflex.

Look also for these signs:

- Breasts which are full before and soft after a feed, showing that the baby is removing breastmilk.
- Breasts which are very full or engorged all the time, showing that the baby is probably not removing breastmilk effectively.
- Healthy looking skin of the nipples and breast.
- Red skin or fissures which show that there is a problem.
- Nipple looking squashed or with a line across the tip or down the side as the baby releases the breast. This is a sign of poor attachment.

Ask the mother how breastfeeding feels to her:

If it is comfortable and pleasant, her baby is probably well attached.

If it is uncomfortable or painful, the baby is probably not well attached.

**III. Answer participants' questions**

(10 minutes)

Ask participants if they have any questions about assessing a breastfeed, and try to answer them.

#### **IV. Explain the B-R-E-A-S-T-FEED Observation Form(10 minutes)**

Ask participants to turn to page 21 of their manuals, where they will find the B-R-E-A-S-T-FEED Observation Form.

Introduce the form:

This is called the B-R-E-A-S-T-FEED Observation Form. It summarizes the key points for assessing a breastfeed. You will use this form to practise observing breastfeeds with mothers and babies.

Ask participants to read through the form, and to ask if there are any signs that they are not yet clear about. (Allow 5 minutes).

Explain the form:

Ask participants to study the form as you make these points:

The signs are grouped into 6 groups for **B**ody position, **R**esponses, **E**mootional bonding, **A**natomy, **S**uckling and **T**ime spent suckling. The initial letters of the names of the groups spell the word B-R-E-A-S-T.

This is to help you to remember what you have to look for, so that later on, when you have had more practice, you will not need to use the form all the time.

The signs on the left all show that breastfeeding is going well. The signs on the right indicate a possible difficulty.

Beside each sign is a box to mark with a tick if you have seen the sign in the mother that you are observing.

Explain how to use the form:

As you observe a breastfeed, mark a  in the box for each sign that you observe. If you do not observe a sign, you should make no mark.

Explain how to interpret the form:

If all s are on the left hand side of the form, breastfeeding is probably going well.

If there are some s on the right hand side, then breastfeeding may not be going well. This mother may have a difficulty, and she may need your help.

## **Further information**

These points may help you to answer questions about the B-R-E-A-S-T-FEED Observation Form which arise later, as participants practise using it in clinical practice sessions.

The negative signs, such as "no signs of milk ejection", and "cannot see tongue", do not necessarily mean that there is a difficulty. However, the opposite positive signs are always helpful.

If a mother says that breastfeeding is going well, but you see signs that indicate a possible difficulty, you must decide what to do.

- In the days soon after delivery, while the mother is still learning, you may want to offer to help her. Even if she is not aware of any difficulty now, you may prevent one occurring later.

- If breastfeeding seems to be well established, you probably do not want to intervene immediately. It is usually more helpful to see her again soon, and follow the baby's growth, to make sure that breastfeeding continues to go well. Intervene only if a difficulty arises.

# B-R-E-A-S-T-FEED OBSERVATION FORM

Mother's name: \_\_\_\_\_  
\_\_\_\_\_

Date:

Baby's name: \_\_\_\_\_  
of baby: \_\_\_\_\_

Age

[Signs in brackets refer only to newborn, not to older babies]

*Signs that breastfeeding is going well*

*Signs of possible difficulty*

## **BODY POSITION**

Mother relaxed and comfortable Baby's body close, facing breast  
Baby's head and body straight Baby's chin touching breast  
[Baby's bottom supported]

Shoulders tense, leans over baby   
Baby's body away from mother's   
Baby's neck twisted   
Baby's chin not touching breast   
[  Only shoulder or head supported]

## **RESPONSES**

Baby reaches for breast if hungry [Baby roots for breast]  
Baby explores breast with tongue  
Baby calm and alert at breast  
Baby stays attached to breast  
Signs of milk ejection, [leaking, afterpains]

No response to breast   
[  No rooting observed]  
Baby not interested in breast   
Baby restless or crying  Baby slips off breast   
No signs of milk ejection

## **EMOTIONAL BONDING**

Secure, confident hold  
Face-to-face attention from mother  
Much touching by mother

Nervous or limp hold   
No mother/baby eye contact   
Little touching or   
Shaking or poking baby

## ANATOMY

Breasts soft after feed  
Nipples stand out,  
protractile Skin  
appears healthy  
Breast looks round during feed

## SUCKLING

Mouth wide open  
Lower lip turned outwards  
Tongue cupped around breast  
Cheeks round  
More areola above baby's mouth  
Slow deep sucks, bursts with  
pauses  
Can see or hear swallowing

## TIME SPENT SUCKLING

Baby releases breast  
Baby suckled for \_\_\_ minutes

Breasts engorged   
Nipples flat or  
inverted   
Fissures or redness of  
skin   
Breast looks stretched  
or pulled   
Mouth not wide open,  
points forward   
Lower lip turned in   
Baby's tongue not  
seen   
Cheeks tense or  
pulled in   
More areola below  
baby's mouth  Rapid  
sucks only   
Can hear smacking or  
clicking

Mother takes baby off  
breast

Notes:

Adapted with permission from "B-R-E-A-S-T-Feeding Observation Form" by H C Armstrong, *Training Guide in Lactation Management*, New York, IBFAN and UNICEF 1992.

## Session 5

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## OBSERVING A BREASTFEED

### ***Objectives***

Participants practise:

- recognizing signs of good and poor positioning and attachment; - using the B-R-E-A-S-T-FEED Observation Form.

## ***Session outline***

(60 minutes)

Participants are all together for a slide presentation and exercise led by one trainer.

All trainers help to give individual feedback for the exercise.

- I. Introduce the topic (5 minutes)
- II. Show and discuss slides 5/1 to 5/11 (25 minutes)
- III. Practise using the B-R-E-A-S-T-FEED Observation Form  
(Exercise I, Slides 5/12-5/15) (25 minutes)
- IV. Conclude 'Observing a breastfeed' (5 minutes)

## ***Preparation***

Refer to page 9 in the Introduction, for general guidance on showing slides.

### *Before the session:*

Make sure that Slides 5/1 to 5/11 and 5/12 to 5/15 are in order.

Study the slides and the accompanying text together, so that you are familiar with what each slide shows, and the particular points to teach from it.

### *At the beginning of the session:*

Ask participants to arrange their seats so that they are sitting in a half circle near to the screen, without tables or other obstruction in front of them. They need to be able to go to the screen to point out appearances on the slides.

Put a seat for yourself to sit with the participants, so that you do not stand up in front to lecture.

Make sure that participants all have a pencil and eraser to mark the forms.



As you follow the text, remember:

indicates an instruction to you, the  
trainer indicates what you say to  
participants

## **I. Introduce the topic**

(5 minutes)

Explain what will happen:

You will now see a series of slides of babies breastfeeding.

You will practise recognizing the signs of good and poor positioning and attachment that the slides show, and you will practise using the B-R-E-A-S-T-FEED Observation Form.

You will not be able to see all of the signs in the slides.

For example, you cannot see signs with movement in slides. In some slides a sign may not be clear. In some slides you cannot see the position of a baby's body, but you can see how he is attached.

Observe the signs that are clear, and do not worry about signs that you cannot see.

(However, when you see real mothers and babies, you should look for all the signs.)

## **II. Show and discuss Slides 5/1 to 5/11**

(25 minutes)

Explain what to do:

As you look at each slide:

- Decide which signs of good or poor positioning and attachment you see. - Decide if you think the baby's position and attachment are good or poor.

- Ask a participant to come forward to the screen for each of the Slides 5/1 to 5/11. Ask a different participant to come forward for each slide.

As you show each slide:

Ask: *What do you think of this baby's position and attachment?*

Give the participant at the screen a few moments to study the picture, and to describe and point to the signs that she sees.

Then ask other participants to describe the signs that they see.

Then point out any signs that they have missed.

Try not to repeat signs that they have already mentioned.

The text below lists the signs that each slide illustrates particularly well, and which can help the observer to make a decision.

Participants may describe more signs than are given in the text. There are other signs in the slides, but most of them are not very helpful. Accept participants' observations, or gently correct them if they are incorrect.

### ***Slides 5/1 to 5/11 Recognising signs of good positioning and attachment***

#### **Slide 5/1**

Signs that you can see clearly are:

- the baby is close to the breast, and facing it;
- his mouth is quite wide open;
- his lower lip is turned outwards;
- his chin is almost touching the breast;
- his cheeks are round;
- there is more areola above the baby's mouth than below it.

These signs show that the baby is well attached to the breast.

#### ***Additional points for Slide 5/1***

The baby is breathing quite well without his mother holding her breast back with her finger.

#### **Slide 5/2**

Signs that you can see clearly are:

- the baby's chin is not touching the breast;
- his mouth points forwards;
- his cheeks are pulled in.

This baby is poorly attached.

#### ***Additional points for Slide 5/2***

The mother is holding her breast with the 'scissor hold'.

### **Slide 5/3**

Signs that you can see are:

- the baby is not close to the breast;
- his chin is not touching the breast (you can see that this must be so, even though his chin is hidden behind his hand);
- his mouth is not wide open, his lips point forward;
- there is as much or more areola below the baby's mouth as above it.

This baby is poorly attached.

He looks as though he is feeding from a bottle.

### **Slide 5/4**

Signs that you can see are:

- the baby is very close to the breast (which makes it difficult to see many other signs);
- his chin is touching the breast;
- his cheek is round and not pulled in (though it is somewhat flattened against his mother's breast);
- there is a little areola above the baby's mouth.

The baby is well attached.

*Additional points for Slide 5/4*

This is the same baby as in Slide 5/3, after the health worker has helped the mother to position the baby better.

### **Slide 5/5**

Signs that you can see are:

- the baby's body is not close to his mother's;
- his chin is not touching her breast;
- his mouth is not wide open and his lips point forwards;
- there is as much areola below the baby's mouth as above it.

This baby is poorly attached to the breast.

*Additional points for Slide 5/5*

The areola on this mother's breast is very large, so it is likely that you would see a lot of it even if her baby was well attached. However, you should see more above the baby's mouth than below it.

## **Slide 5/6**

Signs that you can see clearly are:

- the baby's chin is close to the breast;- his mouth is wide open;
- his lower lip is turned outwards;
- his cheek is round;
- there is more areola above the baby's mouth than below it.

This baby is well attached.

### *Additional points for Slide 5/6*

This mother has a smaller areola than the mother in Slide 5/5, so you do not see much of it either above or below the baby's mouth.

Her baby's body is turned slightly away from her, and his neck is twisted slightly. So his body position is not very good, even though he seems to be well attached.

## **Slide 5/7**

Signs that you can see are:

- the baby is facing the breast;
- his head and body are straight;- his chin is touching the breast;
- his mouth is quite wide open;
- his lower lip is turned in and not outwards;
- his cheeks are round;
- there is more areola above the baby's mouth than below it.

(Slide 5/7 continued)

This baby is not well attached.

His lower lip is turned in, so he is not well attached, even if the other signs are not bad.

## **Slide 5/8**

Picture A shows a baby suckling, and picture B shows the same baby a few seconds later.

Signs that you can in picture A are:

- the baby's body is twisted away from his mother's;
- his chin is touching her breast;
- his mouth is not wide open, and his lips point forwards;- his cheeks are pulled in.

Signs that you can see in picture B are:

- the baby has pulled away from his mother's breast;
- he is crying with frustration;
- his mother's nipple is quite large and long.

This baby was poorly attached to the breast, and was not getting the milk efficiently, so he pulled away in frustration.

*Additional points for Slide 5/8*

Sometimes when a mother has a large long nipple, her baby does not take enough breast into his mouth. Mother and baby need help to prevent problems (see Session 14, 'Breast conditions').

### **Slide 5/9**

The signs that you can see are:

- the baby is close to the breast, and facing it;
- his chin is touching the breast;
- his mouth is not wide open;
- his lower lip is not turned outwards;
- his cheeks look round;
- there is more areola below the baby's mouth than above it.

This baby is not well attached.

*Additional points for Slide 5/9*

This baby was not satisfied, and wanted to feed often, because he was not getting breastmilk efficiently. The mother has rather large breasts, and she may have put the baby onto the breast from above instead of from below. This can make it more difficult for a baby to take a good mouthful of breast (see Session 10, 'Positioning a baby at the breast').

### **Slide 5/10**

The signs that you can see are:

- the baby is close to the breast and facing it;
- his chin is almost touching the breast;
- his mouth is wide open;
- his lower lip is turned outwards;
- you can just see his tongue, which is cupped round the breast;- his cheeks are round (he has a dimple, but his cheek is not pulled in); - there is more areola above the baby's mouth than below it.

This baby is well attached, though the signs are not perfect.

*Additional points for Slide 5/10*

Notice that the baby's nose is well away from the breast. When a baby is attached in a good position, there is usually plenty of room to breathe.

**Slide 5/11**

Signs that you can see are:

- the mother has no back support. She is leaning forward over the baby, and may be tense and uncomfortable;
- the baby's body is turned away from his mother's;
- his neck is twisted;
- his mother is supporting only his head and not his bottom.  
(He is only a few days old, so it would help if she supported his bottom.)

This baby is poorly positioned.

It is difficult to see any signs of good or poor attachment. However, his mother is holding her breast very close to the nipple, so it is likely that he is poorly attached.

**III. Practise using the B-R-E-A-S-T-FEED Observation Form (25 minutes)**

**EXERCISE I. *Using the B-R-E-A-S-T-FEED***

***Observation Form*** Explain what to do:

With Slides 5/12 to 5/15, you will use your observations to practise filling in the B-R-E-A-S-T-FEED Observation Form.

There are four copies of the form for this exercise in the Participants' Manual . Fill in one form for each slide.

Remind participants:

If you see a sign, make a  in the box next to the sign.

If you do not see a sign, leave the box empty.

If you see something that you think is important, but there is not a box for it, you can make a note in the space 'Notes' at the bottom of the form.

Point to the sections for **BODY POSITION** and **SUCKLING** and explain:

With these slides, most of the signs that you will see are in these two sections for **BODY POSITION** or **SUCKLING**. You only need to mark these for the exercise.

When you see mothers and babies in clinical practice sessions, you should fill in all sections of the form.

Demonstrate with these examples:

- show where to put a if the baby's chin is touching the breast, and where to put a if his chin is not touching the breast;
- show where to put a if the baby's mouth looks wide open, and where to put a if it does not look wide open.

Ask all the trainers to help:

They should circulate and make sure that participants understand what to do. They give individual feedback on participants' observations of the slides.

Show Slides 5/12 to 5/15.

Show each slide for about 4 minutes.

Use these answers to give individual feedback:

On the next three pages, for each of the Slides 12, 13, 14 and 15, the two sections of the B-R-E-A-S-T-FEED Observation Form, **BODY POSITION** and **SUCKLING** are copied. They have been marked with s for the signs which participants should see in these slides. **Slide 5/12**

---

*Signs that breastfeeding is going well*

**BODY POSITION**

Mother relaxed and comfortable  
Baby's body close, facing breast

*Signs of possible difficulty*

Shoulder's tense, leans over baby  
Baby's body away from mother's  
Baby's neck twisted

Baby's head and  
body straight Baby's  
chin touching breast  
[Baby's bottom  
supported]

Baby's chin not  
touching breast  
[Only shoulder or head  
supported]

## SUCKLING

Mouth wide open  
Lower lip turned outwards  
Tongue cupped around breast  
Cheeks round  
More areola above baby's mouth

Mouth not wide open,  
points forward  
Lower lip turned in  
Baby's tongue not seen  
Cheeks tense or pulled  
in  
More areola below  
baby's mouth

---

### *Conclusion*

Most of the s are on the right side, under *Signs of possible difficulty*.  
So the baby in Slide 5/12 is poorly positioned and poorly attached.

## Slide 5/13

---

*Signs that breastfeeding is going well*

### **BODY POSITION**

Mother relaxed and comfortable  
Baby's body close, facing breast  
Baby's head and body straight  
Baby's chin touching breast  
[Baby's bottom supported]

### **SUCKLING**

Mouth wide open  
Lower lip turned outwards  
Tongue cupped around breast  
Cheeks round  
More areola above baby's mouth

*Signs of possible difficulty*

Shoulder's tense, leans over baby  
Baby's body away from mother's  
Baby's neck twisted  
Baby's chin not touching breast  
[Only shoulder or head supported]  
Mouth not wide open, points forward  
Lower lip turned in  
Baby's tongue not seen  
Cheeks tense or pulled in  
More areola below baby's mouth

---

### *Conclusions*

Most of the signs are on the right side, under *Signs of possible difficulty*. So the baby in Slide 5/13 is poorly positioned and poorly attached.

## Slide 5/14

---

*Signs that breastfeeding is going well*

### **BODY POSITION**

Mother relaxed and comfortable  
Baby's body close, facing

*Signs of possible difficulty*

Shoulder's tense, leans over baby  
Baby's body away

breast  
Baby's head and  
body straight  
Baby's chin  
touching breast  
[Baby's bottom  
supported]

from mother's  
neck twisted  
Baby's chin not  
touching breast  
[Only shoulder or head  
supported]

## SUCKLING

Mouth wide open  
Lower lip turned outwards  
Tongue cupped around breast  
Cheeks round  
More areola above baby's mouth

Mouth not wide open,  
points forward  
Lower lip turned in  
Baby's tongue not seen  
Cheeks tense or pulled  
in  
More areola below  
baby's mouth

---

### *Conclusions*

The baby in Slide 5/14 is the same baby as in Slide 13, after a health worker has helped the mother to reposition her baby.

Most of the signs are on the left side, under *Signs that breastfeeding is going well*.

So the baby is now better positioned. He is probably well attached, though he is so close to the breast that it is difficult to see his mouth.

### **Slide 5/15**

---

*Signs that breastfeeding is going well*

**BODY POSITION**  
Mother relaxed and comfortable  
Baby's body close, facing breast  
Baby's head and body straight  
Baby's chin touching breast  
[Baby's bottom supported]

*Signs of possible difficulty*

Shoulder's tense, leans over baby  
Baby's body away from mother's  
neck twisted  
Baby's chin not touching breast  
[Only shoulder or head supported]

	Mouth not wide open, points forward
SUCKLING	Lower lip turned in
Mouth wide open	Baby's tongue not seen
Lower lip turned outwards	Cheeks tense or pulled
Tongue cupped around breast	in
Cheeks round	More areola below
More areola above baby's mouth	baby's mouth

---

### *Conclusions*

Most of the signs are on the left side, under *Signs that breastfeeding is going well*.

So the baby in Slide 5/15 is well positioned and almost certainly well attached. It is difficult to see the baby's mouth, because he is so close to his mother's breast.

This mother has rather small breasts, so it is not necessary for her to support them.

## **IV. Conclude 'Observing a breastfeed'** (5 minutes)

Conclude with these points:

You do not see all the signs with every baby.

Sometimes you see one or two signs of poor positioning, but all the other signs are good. Then you may not be sure if the baby is well or poorly attached. You may not be sure if the mother needs help or not.

Remember that in a live baby, you will also be looking at the baby's suckling. If a baby takes slow deep sucks, then he is probably well attached.

Always ask how breastfeeding feels to the mother. If she has discomfort or pain in her breasts, then her baby may not be well attached. If she is comfortable, then he is likely to be well attached.

Always ask about the baby's general health and his growth and behaviour. If the baby is satisfied, and growing well, he is probably suckling effectively.

## **LISTENING AND LEARNING**

### ***Objectives***

At the end of this session, participants should be able to:

- use non-verbal and verbal techniques to encourage a mother to talk without asking too many questions;
- respond to a mother's feelings with empathy;
- avoid using words which suggest judgement of the mother and baby.

### ***Session outline***

(60 minutes)

Participants work in groups of 8-10 led by two trainers.

- I. Introduce the topic (3 minutes)
- II. Demonstrate listening and learning skills(45 minutes)
- III. Answer participants' questions (7 minutes)
- IV. Summarize 'Listening and learning' (5 minutes)

## ***Preparation***

Refer to pages 13-15 in the Introduction for general guidance on how to conduct work in groups.

Study the notes for the session so that you are clear about what to do.

You need two boards or flipcharts to make two summary lists.

If it is difficult to get two flipchart boards, stick flipchart sheets to the wall. Make sure that participants can see them.

Make copies of all the Demonstrations (B to P). (An alternative would be to use another copy of this guide).

Ask three participants to help you to give the demonstrations. Explain what you want them to do.

Ask Participant 1 to help you with Demonstrations A, B, C and D (Skills 1 and 2).

For Demonstration A, all that she has to do is to sit and breastfeed a doll while you demonstrate different ways of talking to her. She can respond to your greetings, but need not say anything else.

Discuss and agree with her before the demonstration what you can do to demonstrate 'appropriate touch' and 'inappropriate touch'.

For Demonstrations B, C, and D, she reads out the words of the mothers.

Ask Participant 2 to read the mother's words in Demonstrations E, F, G, and H (Skills 3 and 4). Ask Participant 3 to read the words of the mothers in Demonstrations J, K, L, M, N, O, and P (Skills 5 and 6).

Give each of the participants a copy of the Demonstrations that she has to read.

If it is difficult for participants to help with the demonstrations for some reason, another trainer can play the part of the mother.

However, try to involve participants as much as

possible, because it helps them to learn.

As you follow the text, remember:

indicates an instruction to you, the trainer  
indicates what you say to the participants

## **I. Introduce the topic**

(3 minutes)

Ask participants to keep their manuals closed.

Introduce the idea of counselling with these points:

*Counselling is a way of working with people in which you try to understand how they feel and help them to decide what to do.*

In these sessions we will discuss mothers who are breastfeeding and how they feel.

*Breastfeeding is not the only situation in which counselling is useful.*

Counselling skills are useful when you talk to patients or clients in other situations. You may also find them helpful with your family and friends, or your colleagues at work. Practise some of the techniques with them - you may find the result surprising and helpful.

*The first two counselling skills sessions are about 'listening and learning'.*

A breastfeeding mother may not talk about her feelings easily, especially if she is shy, and with someone whom she does not know well.

You need the skill to listen, and to make her feel that you are interested in her. This will encourage her to tell you more. She will be less likely to "turn off", and say nothing.

## **II. Demonstrate listening and learning skills** (45 minutes)

Tell participants that in this session, you will explain and demonstrate six skills for listening and learning.

Write the heading 'LISTENING AND LEARNING SKILLS' on a board or flipchart with room for a list of six points below it. List the six skills underneath as you demonstrate them.

### ***Skill 1. Use helpful non-verbal communication***

Write 'Use helpful non-verbal communication' on the list of listening and learning skills.

Write 'HELPFUL NON-VERBAL COMMUNICATION' on another board or flipchart with room for a list of five points below it.

Explain the skill:

Ask: *What do you think we mean by "non-verbal communication"?*

(Let participants make one or two suggestions, and then give them the following answer.)

Non-verbal communication means showing your attitude through your posture, your expression, everything except through speaking.

Demonstrate the skill:

Tell participants that you will demonstrate five different kinds of non-verbal communication.

Ask Participant 1 to help you. She sits with a doll, pretending to be a mother breastfeeding. She can respond to your greeting, but she does not have to say anything else.

Give the five pairs of demonstrations in Demonstration A.

With each pair, you address the 'mother' in two ways.

One way helps communication, and the other way hinders communication.

Demonstrate the way which helps sometimes first, and sometimes second, so that the participants who are observing cannot guess which is which just from the order of the demonstrations.

Demonstrate 'appropriate touch' (socially acceptable) and 'inappropriate touch' (not socially acceptable) in the way that you agreed with Participant 1 before the session.

Ask other participants to:

- identify the form of non-verbal communication that you demonstrate;
- say which form helps communication and which hinders it.

---

## **Demonstration A: Non-verbal communication**

With each demonstration say exactly the same few words, and try to say them in the same way, for example:

*"Good morning, Susan. How is breastfeeding going for you and the baby?"*

### **1. Posture:**

Hinders: stand with your head higher than the other person's  
Helps: sit so that your head is level with hers.

Write - 'KEEP YOUR HEAD LEVEL' on the flipchart.

## 2. **Eye contact:**

Helps: look at her and pay attention as she speaks  
Hinders: look away at something else, or down at your notes  
Write - 'PAY ATTENTION' on the flipchart.

(Note: eye contact may have different meanings in different cultures. Sometimes when a person looks away it means that he or she is ready to listen. If necessary, adapt this to your own situation.)

## 3. **Barriers:**

Hinders: sit behind a table, or write notes while you talk  
Helps: remove the table or the notes  
Write - 'REMOVE BARRIERS' on the flipchart.

## 4. **Taking time:**

Helps: make her feel that you have time. Sit down and greet her without hurrying; then just stay quietly smiling at her, watching her breastfeed, and waiting for her to answer

Hinders: be in a hurry. Greet her quickly, show signs of impatience, look at your watch  
Write - 'TAKE TIME' on the flipchart.

## 5. **Touch:**

Helps: touch the mother appropriately  
Hinders: touch her in an inappropriate way  
Write - 'TOUCH APPROPRIATELY' on the flipchart.

(Note: If you cannot demonstrate an inappropriate touch, simply demonstrate not touching).

---

Discuss appropriate touch in this community.

Ask: *What kinds of touch are appropriate and inappropriate in this situation in this community?*

*Does touch make a mother feel that you care about her?*

*For a man, if it is not appropriate to touch the woman, is it appropriate to touch the baby?*

(Let participants give some examples from their experience.)

Ask: *Do you know any other kinds of non-verbal communication which could make a mother feel that you are interested in her, and care about her, so that she tells you more?*

(Let participants give some examples. For example smiling, nodding.)

You now have the following list written on the flipchart. Post it up on the wall.

### **HELPFUL NON-VERBAL COMMUNICATION**

Keep your head level  
Pay attention  
Remove  
barriers Take  
time  
Touch appropriately

#### ***Skill 2. Ask open questions***

Write 'Ask open questions' on the list of listening and learning skills.

Explain the skill:

To start a discussion with a mother, or to take a history from her, (Session 17, 'Taking a breastfeeding history'), you need to ask some questions.

It is important to ask questions in a way which encourages a mother to talk to you and to give you information. This saves you from asking too many questions, and enables you to learn more in the time available.

*Open questions* are usually the most helpful. To answer them, a mother must give you some information.

Open questions usually start with "How? What? When? Where? Why?"

For example, "How are you feeding your baby?"

*Closed questions* are usually less helpful. They tell a mother the answer that you expect, and she can answer them with a "Yes" or "No".

Closed questions usually start with words like "Are you?" or "Did he?" or "Has he?" or "Does she?"

For example: "Did you breastfeed your last baby?"

If a mother says "Yes" to this question, you still do not know if she breastfed exclusively, or if she also gave some artificial feeds.

You can become quite frustrated, and think that the mother is not willing to talk, or that she is not telling the truth.

Demonstrate the skill:

Ask Participant 1 to read the words of the mother in Demonstrations B and C while you read the part of the health worker (HW).

After each demonstration, comment on what the health worker learnt.

---

### **Demonstration B. Closed questions to which she can answer 'yes' or 'no'**

HW: "Good morning, (name). I am (name), the community midwife. Is (name of baby) well?"

Mother: "Yes, thank you."

HW: "Are you breastfeeding him?"

Mother: "Yes".

HW: "Are you having any difficulties?"

Mother: "No".

HW: "Is he breastfeeding very often?"

Mother: "Yes".

**Comment:** The health worker got "yes" and "no" for answers and didn't learn much. It can be difficult to know what to say next.

---

### **Demonstration C. Open questions**

HW: "Good morning, (name). I am (name), the community midwife. How is (name of baby)?"

Mother: "He is well, and he is very hungry."

HW: "Tell me, how are you feeding him?"

Mother: "He is breastfeeding. I just have to give him one bottle feed in the evening." HW: "What made you decide to do that?"

Mother: "He wants to feed too much at that time, so I thought that my milk is not enough".

**Comment:** The health worker asked open questions. The mother could not answer with a "yes" or a "no", and she had to give some information. The health worker learnt much more.

---

Explain how to use questions to *start* and to *continue* a conversation:

You need to ask questions to *start* a conversation. For this, very general open questions are often helpful. They give a mother a chance to say what is important to her. For example:

"How is breastfeeding going for you?"

"Tell me about your baby."

However, sometimes a mother just says "Oh, very well thank you."

So then you need to ask questions to *continue* the conversation. For this, more specific questions are helpful. For example:

"How old is your baby now?"

"How many hours after he was born did he have his first feed?"

Sometimes you might need to ask a closed question, for example: "Are you giving him any other food or drink?" or "Are you giving the other feeds by bottle?"

When a mother has answered, you can follow up with another open question.

For example:

"What makes you feel that?" "What made you decide to do that?" Demonstrate the skill:

Ask Participant 1 to read the part of the mother in Demonstration D. You read the part of the health worker (HW).

After the demonstration, comment on what the health worker learnt.

---

### **Demonstration D. Starting and continuing a conversation.**

HW:"Good morning, (name). How are you and (name of baby) getting on?"

Mother:"Oh, we are both doing well thank you."

HW:"How old is (name) now?"

Mother:"He is 2 days old today."

HW:"What are you giving him to eat and drink?"

Mother:"He is breastfeeding, and having drinks of water."

HW:"What made you decide to give the water?"

Mother:"There is no milk in my breasts, and he doesn't want to suck."

**Comment:** The health worker asks an open question, which does not help much. Then she asks two specific questions, and then follows up with an open question. Although the mother at first says that she and the baby are well, the health worker later learns that the mother needs help with breastfeeding.

---

### ***Skill 3. Use responses and gestures which show interest***

Write 'Use responses and gestures which show interest' on the list of listening and learning skills.

Explain the skill:

If you want a mother to continue talking, you must show that you are listening, and that you are interested in what she is saying.

Important ways to show that you are listening and interested are:

- with gestures, for example, look at her, nod and smile;
- with simple responses, for example, you say "Aha", "Mmm", "Oh dear!".

Demonstrate the skill:

Ask Participant 2 to read the words of the mother in Demonstration E, while you play the part of the health worker (HW). You give simple responses, and nod, and show by your facial expression that you are interested and want to hear more. After the demonstration, comment on what it showed.

---

### **Demonstration E: Using responses and gestures which show interest**

HW:"Good morning, (name). How is breastfeeding going for you these days?"

Mother: "Good morning. It is going quite well, I think."

HW: "Mmm." (nods, smiles.)

Mother: "Well, I was a bit worried the other day, because he vomited."

HW: "Oh dear!" (raises eyebrows, looks interested.)

Mother: "I wondered if it was something that I ate, so that my milk did not suit him." HW: "Aha!" (nods sympathetically).

**Comment:** The health worker asked a question to start the conversation. Then she encouraged the mother to continue talking with responses and gestures.

---

Discuss locally appropriate responses:

In different countries, people use different responses, for example, "Nnn", "Eeehh". They are part of the language.

Ask: *What responses do people use locally?*

Let participants give some examples of useful responses.

#### ***Skill 4. Reflect back what the mother says***

Write 'Reflect back what the mother says' on the list of listening and learning skills.

Explain the skill:

Health workers sometimes ask mothers a lot of factual questions. However, the answers to factual questions are often not helpful. The mother may say less and less in reply to each question.

For example, if a mother says: "My baby was crying too much last night," you might want to ask: "How many times did he wake up?". But the answer is not helpful.

It is more useful to repeat back or *reflect* what a mother says. It shows that you understand, and she is more likely to say more about what is important to her. It is best to say it in a slightly different way, so that it does not sound as though you are copying her.

For example, if a mother says: "My baby was crying too much last night." You could say: "Your baby kept you awake crying all night?" Demonstrate the skill:

Ask Participant 2 to read the words of the mother in Demonstrations F and G while you read the part of the health worker (HW).

After each demonstration, comment on what the health worker learnt.

---

### **Demonstration F. Continuing to ask questions**

HW:"Good morning, (name). How are you and (name) today?"

Mother: "He wants to feed too much - he is taking my breast all the time!"

HW: "About how often would you say?" Mother:

"About every half an hour."

HW: "Does he want to suck at night too?" Mother: "Yes".

**Comment:** The health worker asks factual questions, and the mother gives less and less information.

---

---

### **Demonstration G. Reflecting back**

HW:"Good morning (name). How are you and (name) today?"

Mother:"He wants to feed too much - he is taking my breast all the time!"

HW:"(Name) is feeding very often?"

Mother:"Yes. This week he is so hungry. I think that my milk is drying up."

HW:"He seems more hungry just for about a week?"

Mother: "Yes, and my sister is telling me that I should give him some bottle feeds as well."

HW:"Your sister says that he needs something more?"

Mother:"Yes. Which formula is best?"

**Comment:** The health worker reflects back what the mother says, so the mother gives more information.

---

Explain this other point:

If you continue to reflect back what a mother says every time, it can begin to sound rather rude.

It is better to mix up reflecting back with other responses.

For example: "Oh really?" or "Goodness!", or an open question.

Demonstrate the point:

---

Ask Participant 2 to read the words of the mother in Demonstration H, while you read the part of the health worker (HW).

### **Demonstration H. Mixing reflecting back with other responses**

HW: "Good morning. How are you and (name) today?"

Mother: "He wants to feed too much - he is taking my breast all the time."

HW: "(Name) is feeding very often?"

Mother: "Yes. This week he is so hungry. I think that my milk is drying up."

HW: "Oh dear!"

Mother: "Yes, it is exhausting. My sister tells me that I should give some bottle feeds and get some rest."

HW: "Your sister wants you to give some bottle feeds?"

Mother: "Yes - she says that I am foolish to struggle on like this."

HW: "How do you feel about that?"

Mother: "Well, I don't want to give bottle feeds."

**Comment:** The conversation sounds more natural, but the health worker is learning more about how the mother feels.

---

### ***Skill 5. Empathize - show that you understand how she feels***

Write 'Empathize - show that you understand how she feels' on the list of listening and learning skills.

Explain the skill:

When a mother says something which shows how she feels, it is helpful to respond in a way which shows that you heard what she said, and that you understand her feelings *from her point of view*.

For example, if a mother says:

"My baby wants to feed very often and it makes me feel so tired!" you respond to what she *feels*, perhaps like this:

"You are feeling very tired all the time then?"

Empathy is different from sympathy. When you sympathize you are sorry for a person, but you look at it from YOUR point of view.

If you sympathize, you might say: "Oh, I know how you feel. My baby wanted to feed often too, and I felt exhausted." This brings the attention back to you, and does not make the mother feel that you understand her.

You might ask for more facts. For example, you might ask:

"How often does he feed? What else are you giving him?"

But these questions do not help a mother to feel that you understand.

You could reflect back what the mother says about the baby.

For example: "He wants to feed very often?"

But this reflects back what the mother said about the baby's behaviour, and it misses what she said about how she feels. She feels tired.

So empathy is more than reflecting back what a mother says to you.

It is also helpful to empathize with a mother's good feelings. Empathy is not only to show that you understand her bad feelings.

Demonstrate the skill:

Ask Participant 3 to read the words of the mother in Demonstrations J, K, L, M, and N, while you read the part of the health worker (HW).

After each demonstration, comment on what the health worker learnt.

---

### **Demonstration J. Continuing to ask for facts**

HW: "Good morning, (name). How are you and (name) today?"

Mother: "(Name) is refusing to breastfeed - he doesn't seem to like my milk now!"

HW: "How long has he been refusing?"

Mother: "Just this week."

HW: "How old is he now?"

Mother: "He is 6 weeks old."

**Comment:** The health worker asks about facts. She ignores the mother's feelings, so she learns only facts which are not very helpful.

---

---

### **Demonstration K. Sympathizing**

HW:"Good morning, (name). How are you and (name) today?"

Mother:"(Name) is refusing to breastfeed - he doesn't seem to like my milk now!"

HW: "Oh! I know how you feel. My baby refused to breastfeed when I came back to work." Mother: "What did you do about it then?"

**Comment:** The health worker sympathizes, and turns the attention to her own situation. This is not helpful - especially if the health worker ended up bottle feeding.

---

### **Demonstration L. Reflecting back**

HW:"Good morning, (name). How are you and (name) today?"

Mother:"(Name) is refusing to breastfeed - he doesn't seem to like my milk now!"

HW:"He is refusing to breastfeed?"

Mother:"Yes he takes one suck and then just cries and turns away."

**Comment:** When the HW reflects back, the mother continues talking, but she talks about the baby, and not about her feelings.

---

### **Demonstration M. Empathizing**

HW: "Good morning, (name). How are you and (name) today?"

Mother:"(Name) is refusing to breastfeed - he doesn't seem to like my milk now!"

HW: "You feel that he doesn't like you now?"

Mother:"Yes, it's as if he doesn't love me - it just started suddenly this week, after his grandmother came to live with us. She so much likes to give him a bottle feed!"

HW: "You feel that she wants to be the one to feed him?"

Mother:"Yes - she wants to take him over from me!"

**Comment:** The HW empathizes with the mother's feelings and learns some very important things - without asking direct questions.

---

---

## **Demonstration N. Empathizing with a mother's good feelings.**

HW: "Good morning, (name). How is breastfeeding going for you and (name)?" Mother: "He is suckling well and he seems quite contented after feeds now." HW: "You must feel pleased that it is going so well".

Mother: "Yes, I am so happy that I don't have to give bottle feeds."

HW: "You really enjoy breastfeeding. That's wonderful."

**Comment:** It is important to make a mother feel that you are interested in her, even if she does not have a problem.

---

### ***Skill 6. Avoid words which sound judging***

Write 'Avoid words which sound judging' on the list of listening and learning skills.

Explain the skill:

'Judging words' are words like: right, wrong, well, badly, good, enough, properly. If you use judging words when you talk to a mother about breastfeeding, especially when you ask questions, you may make her feel that she is wrong, or that there is something wrong with the baby.

For example: Do not say: "Does the baby sleep well?" Instead say: "How is the baby sleeping?" Demonstrate the skill:

Ask Participant 3 to read the words of the mother in Demonstrations O and P, while you read the part of the health worker (HW).

After each demonstration, comment on what the health worker learnt.

---

### **Demonstration O. Using judging words**

HW: "Good morning, (name). Is (name) breastfeeding normally?"

Mother: "Well - I think so."

HW: "Do you think that you have enough breastmilk for him?"

Mother: "I don't know.....I hope so, but maybe not ..." (She looks worried.)

HW: "Has he gained weight well this month? May I see his growth chart?" Mother: "I don't know....."

**Comment:** The health worker is not learning anything useful, but she is making the mother very worried.

---

---

### **Demonstration P. Avoiding judging words**

HW:"Good morning, (name). How is breastfeeding going for you and (name)?"

Mother:"It's going very well. We both enjoy it!"

HW:"How is his weight? Can I see his growth chart?"

Mother: "Nurse said that he gained more than half a kilo this month. I was pleased."

HW:"He is obviously getting all the breastmilk that he needs."

**Comment:** The health worker learnt what she needed to know without making the mother worried.

---

Make these additional points:

Mothers can use judging words. You may need sometimes to use them yourself, especially the positive ones, when you are building a mother's confidence. But practise avoiding them as much as possible, unless there is a really important reason to use one.

You may have noticed that judging questions are often closed questions. Using open questions often helps to avoid using a judging word.

### **III. Answer participants' questions** (7 minutes)

Ask participants if they have any questions about listening and learning and try to answer them.

### **IV. Summarize 'Listening and learning'** (5 minutes)

You now have a list of the six skills on the flipchart. Post it on the wall.

Read the list through, to remind participants of the six skills.

Ask participants to find the list on page 29 of their manuals.

Ask them to try to memorize it.

Explain that they will use the list for Clinical Practice 1.

## **LISTENING AND LEARNING SKILLS**

Use helpful non-verbal communication  
Ask open questions  
Use responses and gestures which show interest  
Reflect back what the mother says  
Empathize - show that you understand how she feels  
Avoid words which sound judging

**Session 7**

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## **LISTENING AND LEARNING EXERCISES**

### ***Objectives***

Participants practise the listening and learning skills that they learnt in Session 6.

### ***Session outline***

(60 minutes)

Participants continue to work in groups of 8-10 with two trainers.

- I. Introduce the session (3 minutes)
- II. Facilitate the written exercises (Exercises 2-4)  
(42 minutes)
- III. Conduct the group exercise (Exercise 5) (15 minutes)

### ***Preparation***

Refer to pages 15-16 of the Introduction for general guidance on how to facilitate a written exercise.

Study the notes for the session, so that you are clear about what to do.

For Exercises 2-4, make sure that Answer Sheets are available to give to participants at the end of the session.

For Exercise 5, prepare translations of the judging words, and of the examples of judging and non-judging questions. Work with the other trainers to do this. Write your translations in the spaces in the Table **USING AND AVOIDING JUDGING WORDS**.

As you follow the text, remember:

indicates an instruction to you, the trainer  
indicates what you say to the participants

## **I. Introduce the session**

(3 minutes)

Ask participants to turn to page 30 of their manuals, and to find Exercises 2-5.

Explain what they will do:

You will now practise the six listening and learning skills that you learnt about in Session 6.

Exercises 2-4 are individual written exercises.

Write your answers in your manuals.

If possible use pencil, so that it is easier to correct the answers.

Trainers will give feedback individually as you do the exercises, and will give you Answer Sheets at the end of the session.

Exercise 5 is a group exercise on judging words.

## **II. Facilitate the written exercises**

(42 minutes)

Explain what to do:

For each exercise, read the instructions **How to do the exercise** and the **Example** of what to do.

Then answer the questions **To answer**.

When you are ready, discuss your answers with the

trainer. **EXERCISE 2. *Asking open questions***

**How to do the exercise:**

Questions 1-3 are `closed' and it is easy to answer `yes' or `no'. Write a new `open' question, which requires the mother to tell you more. Question 4 is an Optional Short Story Exercise, to do if you have time.

**Example:**

Do you breastfeed your baby?     *How are you feeding your baby?*

**To answer:**                                 *(Suggested answer)*

1. Does your baby sleep with you?     *(Where does your baby sleep?)*
  
2. Are you often away from your baby? *(How much time do you spend away from your baby?)*
  
3. Are your nipples sore? *(How do your breasts feel?)*

**4. Optional Short Story Exercise**

Joseph and Mabel bring 3-month-old Johnny to the clinic. They want to talk to you because he is not gaining weight.

Write two open questions that you would ask Joseph and Mabel. The questions must be ones that they cannot say just `yes' or `no' to.

Possible answers include:

- How are you feeding Johnny?*
- How is breastfeeding going for you?*
- What illnesses has Johnny had?*
- How is Johnny behaving?*
- Tell me how Johnny is feeding?*

**EXERCISE 3. *Reflecting back what a mother says***

**How to do the exercise:**

Statements 1-5 are some things that mothers might tell you.

Beside 1-3 are three responses. Mark the response that 'reflects back' what the statement says. For statements 4 and 5, make up your own response which 'reflects back' what the mother says.

Number 6 is an Optional Short Story Exercise, to do if you have time.

**Example:**

My mother says that I don't have enough milk.

- a. Do you think you have enough?
- b. Why does she think that?
- c. She says that you have a low milk supply?

**To answer:**

1. My baby is passing a lot of stools sometimes 8 in a day.

- a. He is passing many stools each day?
- b. What are the stools like?
- c. Does this happen every day, or only on some days?

2. He doesn't seem to want to suckle from me.

- a. Has he had any bottle feeds?
- b. How long has been refusing?
- c. He seems to be refusing to suckle?

3. I tried feeding him from a bottle, but he spat it out.

- a. Why did you try using a bottle?
- b. He refused to suck from a bottle?
- c. Have you tried to use a cup?

4. Sometimes he doesn't pass a stool for 3 or 4 days.

*(He doesn't pass a stool some days?)*

5. My husband says that our baby is old enough to stop breastfeeding now.

*(Your husband wants you to stop breastfeeding your baby?)*

## 6. Optional Short Story Exercise

You meet Cora in the market with her 2-month-old baby. You say how well the baby looks, and ask how she and the baby are doing. She says "Oh, we're doing fine. But he needs a bottle feed in the evening."

What do you say, to reflect back what Cora says, and to encourage her to tell you more?

Possible answers include:

*He seems to need something extra in the evening? He seems very hungry sometimes?*

### **EXERCISE 4. *Empathizing - to show that you understand how she feels***

#### **How to do the exercise:**

Statements 1-5 are things that mothers might say.

Next to statements 1-3 are three responses which you might make.

Underline the words in the mother's statement which show something about how she feels. Mark the response which is most empathetic.

For statements 4 and 5, underline the feeling words, and then make up your own empathizing response.

Number 6 is an Optional Short Story Exercise, to do if you have time.

#### **Example:**

My baby wants to feed so often at night that I feel exhausted. altogether?

b. Does he wake you every night?

c. You are really tired with the night feeding.

#### **To answer:**

1. My nipples are so painful, I will have to bottle feed.
  - a. The pain makes you want to stop breastfeeding?
  - b. Did you bottle feed any of your previous children?
  - c. Oh! don't do that - it's not necessary to stop just because of sore nipples.
  
2. My breastmilk looks so thin - I am sure it cannot be good.
  - a. That's the foremilk - it always looks rather watery.
  - b. You are worried about how your breastmilk looks?
  - c. Well, how much does the baby weigh?
    - a. You are upset because your breastmilk has not come in yet?
    - b. Has he started suckling yet?
    - c. It always takes a few days for breastmilk to come in.
  
3. I do not have any milk in my breasts, and my baby is a day old already.
  - a. You are upset because your breastmilk has not come in yet?
  - b. Has he started suckling yet?
  - c. It always takes a few days for breastmilk to come in.
  
4. My breasts leak milk all day at work - it is so embarrassing.  
*(It must be embarrassing if it happens at work.)*
  
5. I have bad stomach pains when he is breastfeeding.  
*(You are really having bad pains, aren't you?)*

## 6. Optional Short Story Exercise

Edna brings baby Sammy to see you. She looks worried. She says "Sammy breastfeeds very often, but he still looks so thin!"

What would you say to Edna to empathize with how she feels?

Possible answers include:

*You are worried because Sammy looks thin to you? You are worried about how Sammy looks?*

Give participants the Answer Sheets for Exercises 2, 3 and 4.

### III. Conduct the group exercise

(15 minutes)

#### EXERCISE 5. *Translating judging words*

Ask participants to look at the list of **JUDGING WORDS** on page 34 of their manuals.

---

#### JUDGING WORDS

<b>Well</b>	<b>Normal</b>	<b>Enough</b>	<b>Problem</b>	<b>Crying 'too much'</b>
good	correct	adequate	fail	proper
bad	inadequate	failure	right	unhappy
badly	satisfied	succeed		happy
	wrong	plenty of	success	fussy
		sufficient		colicky

---

Make these points about the list:

The words in **bold** at the top of each group are words that are used most commonly. These are the words that we will work with in the exercises.

Below each of the common words is a list of other words with similar meanings. For example, 'adequate' and 'sufficient' appear below 'enough'. Words with opposite meanings are in the same group. For example 'good' and 'bad'. All of these are judging words, and it is important to avoid them.

Ask participants to look at the table **USING AND AVOIDING JUDGING WORDS**, also on page 34 of their manuals.

Ask them to suggest translations of the five common words in the local language. They can write in their table the translations that you all agree about.

For each word, read out the *Judging question*, and give your translation of it.

Then ask participants to think of a *Non-judging question*. This should be a similar question, which does not use the judging word.

Remind them that judging questions are often closed questions, and that they can often avoid using a judging word if they use an open question.

Ask them to write the translations into the table in their manuals.

---

### USING AND AVOIDING JUDGING WORDS

<i>English</i>	<i>Local language</i>	<i>Judging question</i>	<i>Non-judging question</i>
Well	.....	Does he suckle well?	How is he suckling?
Normal	.....	Are his stools normal?	What are his stools like?
Enough	.....	Is he gaining enough weight?	How much weight did he gain last month?
Problem	.....	Do you have any problems breastfeeding?	How is breastfeeding
Crying too much	.....	Does he cry too much at night?	

going for you?

How does he  
behave at  
night?

---

## Session 8

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### HEALTH CARE PRACTICES

#### *Objectives*

At the end of the session participants should be able to:  
-describe the health care practices summarized by 'The Ten Steps to Successful Breastfeeding'; -explain the reasons for the 'Ten Steps'; -describe a breastfeeding support group.

***Session outline*** (90 minutes)

Participants are all together as a class, for a presentation by one trainer.

I. Introduce the topic (10 minutes) II.

Present Slides 8/1 to 8/15 (40 minutes)

III. Answer participants' questions (10 minutes)

Participants are in groups of 4-5 each with one trainer (This part of the session can be at a separate time if necessary)

IV. Conduct small group discussion (30 minutes)

***Preparation***

Refer to pages 9-11 of the Introduction, for general guidance on giving a presentation with slides.

Make sure that Slides 8/1 to 8/15 are in order.

Study the text and the slides, so that you can present them.

Read the **Further information** notes, so that you are familiar with the ideas that they contain.

Decide if you will conduct part IV of the session after the presentation, or at another time. If it is difficult to form groups for part IV, you may want to consider continuing with the whole class together.

Make sure that participants have copies of the Joint WHO/UNICEF Statement: *Protecting, Promoting and Supporting Breastfeeding: The Special Role of the Maternity Services* to refer to after the session.

Post 'Ten Steps' posters on the wall of the classroom.

If there is a 'Baby Friendly Hospital' in your area, try to obtain a copy of its Breastfeeding Policy for participants to study after the session if they wish.

As you follow the text, remember:

indicates an instruction to you, the trainer  
indicates what you say to participants

Do not present the **Further information** sections. Use them to help you to answer questions.

## **I. Introduce the topic**

(10 minutes)

Ask participants to turn to page 36 of their manuals, where they will find **THE TEN STEPS TO SUCCESSFUL BREASTFEEDING**. Point out the poster on the wall.

Explain that in this session they will learn about the 'Ten Steps', and the reasons for them.

Make these introductory points:

Health care practices can have a major effect on breastfeeding.

Poor practices interfere with breastfeeding, and contribute to the spread of artificial feeding. Good practices support breastfeeding, and make it more likely that mothers will breastfeed successfully, and will continue for a longer time.

Maternity facilities help mothers to *initiate*, or start breastfeeding at the time of delivery; and they help them to *establish* breastfeeding in the post-natal period.

Other parts of the health care service can play a very important part in helping to *sustain* breastfeeding up to 2 years or beyond. We discuss sustaining breastfeeding later in Session 28, 'Sustaining breastfeeding'.

Show a copy of the Joint Statement, and make these points:

In 1989, WHO and UNICEF issued a Joint Statement called *Protecting, Promoting and Supporting Breastfeeding. The Special Role of Maternity Services*. This describes how maternity facilities can support breastfeeding.

The 'Ten Steps' are a summary of the main recommendations of the Joint Statement. They are the basis of the 'Baby Friendly Hospital Initiative'. If a maternity facility wishes to be designated 'baby friendly', it must follow all of the 'Ten Steps'.

Read through **THE TEN STEPS TO SUCCESSFUL BREASTFEEDING**.

Ask participants in turn to read out the 'Ten Steps'.

Explain that you will go through each of the 'Ten Steps' in more detail as you show the slides.

Explain that the policy in Step 1, and the training in Step 2, refer to the practices described in the other eight steps.

If you have an example of a hospital breastfeeding policy, tell participants that it will be available for them to study after the session.

## THE TEN STEPS TO SUCCESSFUL BREASTFEEDING

*Every facility providing maternity services and care for newborn infants should:*

- 1 Have a written breastfeeding policy that is routinely communicated to all health care staff.
- 2 Train all health care staff in skills necessary to implement this policy.
- 3 Inform all pregnant women about the benefits and management of breastfeeding.
- 4 Help mothers initiate breastfeeding within a half-hour of birth.
- 5 Show mothers how to breastfeed, and how to maintain lactation even if they are separated from their infants.
- 6 Give newborn infants no food or drink other than breastmilk, unless *medically* indicated.
- 7 Practise rooming-in - allow mothers and infants to remain together 24 hours a day.
- 8 Encourage breastfeeding on demand.
- 9 Give no artificial teats or pacifiers (also called dummies or soothers) to breastfeeding infants.
- 10 Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic.

### **II. Present Slides 8/1 to 8/15**

(40 minutes)

As you show each slide, point on the screen to the place which shows what you are explaining.

## *Slide 8/1 Antenatal preparation*

This slide summarizes Step 3: 'Inform all pregnant women about the benefits and management of breastfeeding'.

It is important to talk to all women about breastfeeding when they come to an antenatal clinic. Show that you support breastfeeding, and that you want to help them.

It is especially important to talk to young mothers who are having their first baby. They are the ones who are most likely to need help.

There are some things that you can discuss with a group of mothers together, in an antenatal class, or health education session. There are other things that it is usually better to discuss with mothers individually.

The main points to remember when you talk to a group of mothers are to:

*Explain the benefits of breastfeeding, and the dangers of artificial feeding.*

Most mothers decide how they are going to feed their babies a long time before they have the child - often before they become pregnant. If a mother has decided to bottle feed, she may not change her mind. But you may help mothers who are undecided, and give confidence to mothers who intend to breastfeed. You may encourage a mother to breastfeed exclusively instead of partially.

*Give simple, relevant information on how to breastfeed.*

The information that it is useful to include depends on the local breastfeeding practices and common difficulties. For example, it may be helpful to explain how frequent breastfeeds can help to ensure a good breastmilk supply.

*Explain what happens after delivery.*

Tell mothers about the first breastfeeds, and the practices in the hospital, so that they know what to expect. This is especially important if the practices in a hospital have changed recently.

*Discuss mothers' questions.*

Let the mothers decide what they would like to know more about. For example, some of them may worry about the effect that breastfeeding will have on their figures. It may help them to discuss these worries together.

When you talk to mothers individually, make sure that each mother has heard about all the points that you discuss with groups.

In addition, when you talk to a mother individually, remember to:

*Ask about her previous breastfeeding experience, if she has had other babies.*

If she breastfed successfully, she is likely to do so again.

If she had difficulties, or if she bottle fed, explain how she can succeed with breastfeeding this time. Reassure her that you will help her.

*Ask whether she has any questions or worries.*

Encourage her to tell you if she has any worries or doubts about breastfeeding, and try to answer them.

*Examine her breasts if she is worried about them.*

She may be worried about the size of her breasts, or the shape of her nipples.

It is not essential to examine breasts as a routine, if she is not worried about them.

*Build her confidence and explain that you will help her.*

Almost always you will be able to reassure her that her breasts are alright, and that her baby will be able to breastfeed.

Explain that if she wants help, you or another health worker will help her.

Tell participants that they can find a summary of these points in the box **ANTENATAL PREPARATION FOR BREASTFEEDING** on page 37 of their manuals.

### **Further information**

It is not essential to examine women's breasts routinely, because it is not often useful, and it can make a woman worry about them when she was quite confident before. However, it may be the policy in your health service to do so. If so, it gives you an opportunity to talk to the mother about breastfeeding. Almost always you will be able to reassure her that her breasts are good for breastfeeding.

Preparing breasts physically for breastfeeding is not necessary.

Traditional ways of preparing the breasts, that are culturally important, may give a mother confidence. If you feel that they help mothers psychologically, there is no need to discourage them.

If a mother has flat or inverted nipples, doing stretching exercises, or wearing nipple shells during pregnancy, does not help. Most nipples improve towards the end of pregnancy, and in the first week after delivery. A nipple that looked difficult in pregnancy, may not be a problem after the baby is born. The most important time to help a mother is soon after delivery. If a mother is worried about inverted nipples, explain that they will improve, and that you can help her to breastfeed (see Session 15). Explain about how a baby suckles from the breast behind the nipple, not from the nipple itself.

If a mother has a problem with her breasts that you are not sure about, such as previous breast surgery, or burns, try to get help from someone more experienced. Meanwhile, it may help to encourage her that babies often can breastfeed from a breast which has had surgery, or that a baby can get enough milk from just one breast if necessary.

Slide 8/1

### **ANTENATAL PREPARATION FOR BREASTFEEDING**

*With mothers in groups:*

- Explain benefits of breastfeeding
- Give simple relevant information on how to breastfeed
- Explain what happens after delivery
- Discuss mothers' questions

*With each mother individually*

- Ask about previous breastfeeding experience
- Ask if she has any questions or worries
- Examine her breasts if she is worried about them
- Build her confidence, and explain that you will help her

#### ***Slide 8/2 Early contact***

The next two slides illustrate Step 4: 'Help mothers initiate breastfeeding within a half-hour of birth'.

This mother is holding her baby immediately after delivery. They are both naked, so that they have skin-to-skin contact. A mother should

hold her baby like this as much as possible in the first two hours after delivery. She should let him suckle when he shows that he is ready.

This is *early contact*, which helps a mother to bond with her baby - that is, to develop a close, loving relationship. Early contact also makes it more likely that a mother will start to breastfeed, and breastfeed for longer.

*Ask: What can you do to prevent a baby from getting cold?*

Dry the baby, and cover both him and his mother with the same blanket.

### ***Slide 8/3 Separation of baby from mother after birth***

This baby was born about half an hour ago. He has been separated from his mother, while she is resting and being bathed.

*Ask: What is he doing with his mouth?*

He is opening his mouth and rooting for the breast. This shows that he is now ready to breastfeed.

He is separated from his mother, so she is not there to respond to him and put him to her breast when he roots for it.

Separating a mother and her baby in this way, and delaying starting to breastfeed, should be avoided. These practices interfere with bonding, and make it less likely that breastfeeding will be successful.

*Ask: What do you notice about the baby's eyes?*

His eyes are red. This is because silver nitrate drops were put into his eyes soon after delivery.

Putting drops into a baby's eyes, and other practices such as gastric suction, can alter a baby's behaviour and interfere with breastfeeding. These practices should be avoided if possible. However, if there is a high prevalence of sexually transmitted diseases, it is necessary to put drops or ointment into a baby's eyes, to prevent blindness.

Another practice which interferes with the success of breastfeeding is giving a mother analgesics and sedation during labour. These drugs can cross the placenta and make the baby unresponsive and unwilling to breastfeed. Their use should be kept to a minimum.

## **Further information**

### *Bonding*

Participants may need to discuss bonding at some length. Those who were separated from their own babies, or who did not breastfeed them, may feel that this implies that they do not love their children properly. Allow time to discuss this if necessary.

Mothers may not be aware of bonding happening immediately. Strong affectionate ties grow gradually. But early close contact gives them the best possible start. Separation makes bonding more difficult, especially in high risk families, for example, young mothers with poor support. However, the effects of early separation can be overcome, and bonding can also take place later, particularly during the first nine months of a baby's life. If initiation of breastfeeding is delayed, for example, if a mother or her baby is ill, or for cultural reasons, breastfeeding can still be successfully established. It is helpful if the mother and baby have prolonged skin-to-skin contact as soon as possible, and if the mother is well supported.

**However, separation and delay put bonding and breastfeeding at risk, and should be avoided.**

### *Bacterial colonization*

Early skin-to-skin contact also enables harmless bacteria from the mother to be the first to colonize her baby. These harmless bacteria help to protect a baby against more harmful bacteria, such as those from the hospital and hospital staff.

### *Prophylaxis of eye infection*

In countries with a high prevalence of sexually transmitted diseases, it may be health service policy to put either silver nitrate drops or tetracycline ointment into the eyes of all newborns to prevent gonococcal and chlamydial infection, which can lead to blindness. To be effective, the treatment must be given within one hour of delivery. To minimise any interference with breastfeeding, allow the baby to suckle if possible before putting in drops or ointment. Tetracycline ointment may be preferable, because it is less irritating than silver nitrate drops.

### ***Slide 8/4 The first breastfeed***

This slide shows a baby having his first breastfeed. He is about one hour old.

Ask: *What do you think of his position and attachment?*

He is in a good position, and looks well attached.

Babies are normally very alert and responsive in the first 1-2 hours after delivery. They are ready to suckle, and easily attach well to the breast.

Most babies want to feed between half to one hour after delivery, but there is no exact fixed time. If the first feed is delayed more than about an hour, breastfeeding is less likely to be successful. A mother is more likely to stop breastfeeding early.

Sometimes in the past we have tried to force babies to breastfeed immediately after delivery, before they or their mothers were ready. This is not necessary or helpful.

It is best to keep a baby with his mother as in Slide 8/2, and let him breastfeed when he shows that he is ready. Help his mother to recognize rooting, as in Slide 8/3, and other signs that he is ready to breastfeed. If necessary, help her to put him to her breast - especially if this is her first baby.

### ***Slide 8/5 Prelacteal feeds***

This slide illustrates Step 6 and Step 9.

Step 6 says: 'Give newborn infants no food or drink other than breastmilk, unless medically indicated'.

Step 9 says: 'Give no artificial teats or pacifiers (also called dummies or soothers) to breastfeeding infants'.

This baby is being given an artificial feed from a bottle, before starting to breastfeed.

Any artificial feed given before breastfeeding is established is called a *prelacteal feed*.

The dangers of prelacteal feeds are these:

*They replace colostrum as the baby's earliest feeds.*

- The baby is more likely to develop infections such as diarrhoea, septicaemia and meningitis;

- He is more likely to develop intolerance to the proteins in the artificial feed, and allergies, such as eczema.

*They interfere with suckling.*

- The baby's hunger is satisfied, so that he wants to breastfeed less.
- If he is fed the artificial feed from a bottle with an artificial teat, he may have more difficulty attaching to the breast, (nipple confusion).
- The baby suckles and stimulates the breast less.
- Breastmilk takes longer to 'come in' and it is more difficult to establish breastfeeding.

If a baby has even a few prelacteal feeds, his mother is more likely to have difficulties such as engorgement. Breastfeeding is more likely to stop early than when a baby is exclusively breastfed from birth.

Babies who are given pacifiers to suck, are also more likely to stop breastfeeding early.

Tell participants that they can find a summary of these points in the section **The dangers of prelacteal feeds** on page 37 of their manuals.

### **Further information**

Participants may want to discuss further the medical indications for giving artificial feeds.

The commonest reasons for giving prelacteal and supplementary feeds are:

- To prevent low blood sugar, or *hypoglycaemia*;
- To prevent dehydration, especially if a baby is jaundiced, and needs phototherapy; - Because the mother's breastmilk has not 'come in'.

Full-term, normal weight babies are born with a store of fluids and glycogen. Breastfeeding, which provides first colostrum and then mature milk, is all that they need.

Sick or low-birth-weight babies may require special feeding, for example to prevent hypoglycaemia, or because they are unable to breastfeed. However even for these babies, breastmilk is usually the best kind of feed to give. Babies who are jaundiced need more breastmilk, which helps to clear jaundice. Other fluids, such as glucose water, do not help to clear jaundice, and are only needed if the baby is dehydrated. This is discussed further in Session 26, 'Low-birthweight

and sick babies', and also in the reference document Annex to the Global Criteria for Baby Friendly Hospitals: Acceptable medical reasons for supplementation.

### ***Slide 8/6 Putting babies in a nursery***

The next three slides are about Steps 7 and 8.

Step 7 says: 'Practise rooming-in - allow mothers and infants to remain together - 24 hours a day.'

Step 8 says: 'Encourage breastfeeding on demand.'

This baby is in a cot in a nursery. He is crying, but his mother is in another room and is not able to respond to him. His mother feeds him every 3 hours, when the nurses bring him to her.

When babies are separated from their mothers and put in a nursery, they cry more. Nurses are more likely to give bottle feeds to keep the babies quiet. Mothers feel less confident about breastfeeding. Mothers are more likely to have difficulties, and to stop breastfeeding sooner.

Separating a mother and her baby in this way can interfere with both bonding and breastfeeding, and it should not be permitted.

### **Further information**

There are four common reasons why mothers and babies are separated in hospital. The intentions behind them are often good, but the reasons themselves are unsound. Consider the reasons in turn:

1. *To allow the mother to rest.*

Immediately after delivery, both mother and baby are usually alert and need close contact. After this period, they can rest quite well together.

2. *To prevent infection.*

There is no evidence that putting babies in nurseries reduces infection. On the contrary, it may increase crossinfection between babies, which can be carried by health care staff.

3. *A lack of space in the wards for cots.*

Administrators can often overcome the problem of space if they realize how important rooming-in is. In many hospitals, babies stay in the same bed with their mothers, so there is no need for extra space.

#### 4. *To observe the baby.*

Health care staff can observe babies with their mothers just as well as in a nursery. Mothers observe their babies very closely, and they often notice something wrong before busy health care staff. There is no justification for separating mother and baby while waiting for a doctor to examine a baby.

#### ***Slide 8/7 Rooming-in***

The babies in this slide are *rooming-in* with their mothers.

Rooming-in means that a baby stays in the same room as his mother, day and night, from immediately after birth.

The baby in picture 1 is in a cot beside his mother's bed. He is close to her, and she can reach him when she is lying down in bed. In some hospitals, cots are put at the foot of the mother's bed. It is better for the cot to be beside the mother's bed. She needs to be able to touch her baby easily.

The babies in picture 2 are in bed with their mothers. This is called 'bedding-in'.

Bedding-in has extra advantages for breastfeeding, because it is easier for a mother to rest and breastfeed. A baby can breastfeed at night or at other times when the mother is asleep without disturbing her. Bedding-in also helps to overcome the problem of lack of space in a ward for cots.

#### ***Slide 8/8 Advantages of***

***rooming-in*** Rooming-in has

these advantages:

- It enables a mother to respond to her baby and feed him whenever he is hungry. This helps both bonding and breastfeeding.
- Babies cry less, so there is less temptation to give bottle feeds.
- Mothers become more confident about breastfeeding.
- Breastfeeding continues longer after the mother leaves hospital.

#### ***Slide 8/9 Demand feeding***

Rooming-in enables a mother to breastfeed her baby *on demand*. This slide summarizes what we mean by demand feeding. It means breastfeeding a baby whenever he wants, both day and night. A

mother should not be made to give feeds only at fixed times, according to the clock.

A mother does not have to wait until her baby is upset and crying to offer him her breast. She should learn to respond to the signs that her baby gives, for example rooting, which show that he is ready for a feed.

Because of this, some people prefer the terms 'unrestricted feeding' or 'baby-led feeding' to 'demand feeding'.

*Ask: What would you tell a mother about how long she should let her baby suckle?*

(Let participants give their opinions. Then make sure

the answer is clear.) Let a baby suckle as long as he

wants, provided he is well attached.

There is no need to restrict the length of a breastfeed. If a baby is well attached to the breast, his mother will not get sore nipples.

Some babies take all the breastmilk they want in a few minutes; other babies take half an hour to get the same amount of milk, especially in the first week or two. They are all behaving normally. If a mother takes her baby off her breast before he has finished, he may not get enough hindmilk. Usually when a baby has had all that he wants, he releases the breast himself.

*Ask: Would you suggest that a mother lets her baby suckle from one breast, or from both breasts at each feed?*

(Let a few participants give their opinions. Then make sure the answer is clear.)

Let her baby finish feeding on the first breast, to get the fat-rich hindmilk. Then offer the second breast, which he may or may not want.

It is not necessary to feed from both breasts at each feed. If a baby does not want the second breast, his mother can offer that side first next time, so that both breasts get the same amount of stimulation.

### *Slide 8/10 Advantages of*

### *demand feeding* Demand

feeding has these advantages:

- Breastmilk `comes in' sooner;
- The baby gains weight faster;
- There are fewer difficulties such as engorgement; -  
Breastfeeding is more easily established.

Tell participants that they can find a summary of these points in the box **ADVANTAGES OF ROOMING-IN AND DEMAND FEEDING** on page 38 of their manuals.

Slides 8/8 and 8/10

#### **ADVANTAGES OF ROOMING-IN AND DEMAND FEEDING**

Rooming-in and demand feeding help both bonding and breastfeeding.

##### *Advantages of rooming-in:*

- Mother can respond to baby, which helps bonding
- Babies cry less, so less temptation to give bottle feeds
- Mothers more confident about breastfeeding
- Breastfeeding continues longer

##### *Advantages of demand feeding:*

- Breastmilk `comes in' sooner
- Baby gains weight faster
- Fewer difficulties such as engorgement
- Breastfeeding more easily established

### *Slide 8/11 The need for help with early breastfeeds*

The next four slides illustrate Step 5:

`Show mothers how to breastfeed, and how to maintain lactation even if they are separated from their infants'.

This mother is having some difficulty getting her baby to breastfeed. There is no one available to help her. This is a common problem in

many health facilities. Mothers are left to struggle by themselves, and this may result in problems and later failure.

Maternity ward staff often feel that they do not have enough time to help every mother. In many health facilities, mothers are discharged within a few hours of delivery, so there are few opportunities for their babies to breastfeed.

However, a more important reason is that few health workers have been trained to give help, and they lack the necessary skills. Hopefully in future, health workers will be trained to help mothers.

### ***Slide 8/12 Helping a mother with an early breastfeed***

This slide shows a midwife coming to help a mother to put her baby to her breast.

A skilled, experienced midwife or other person should help a mother with an early feed. This may be the very first feed, soon after delivery, or the next time the baby is ready to feed, some time in the first 24 hours after delivery. It should be as early as possible, because it makes it easier to establish breastfeeding.

Many mothers do not need help, or they need very little. But a mother may not know if she needs help or not. It is a good idea for a midwife to spend time with each mother during an early breastfeed to make sure that everything is going well. This should be a routine in maternity wards before a mother is discharged. It need not take a long time.

*Ask: How would you suggest that this midwife helps this mother?*

(Let participants make some suggestions. Encourage them to think of:

- observing a breastfeed;
- helping the mother to position her baby;-  
giving her relevant information.

Then show Slide 8/13 to summarise the answer.)

### ***Slide 8/13 How to help with an early breastfeed***

This slide summarizes how to help a mother with an early feed.

*Avoid hurry and noise.*

Talk quietly, and be unhurried, even if you have only a few minutes.

*Ask the mother how she feels and how breastfeeding is going.*

Let her tell you how she feels, before you give any information or suggestions.

*Observe a breastfeed.*

Try to see the mother when she is feeding her baby, and quietly watch what is happening. If the baby's position and attachment are good, tell her how well she and the baby are doing. You do not need to show her what to do.

*Help with positioning if necessary.*

If the mother is having difficulty, or if her baby is not well attached, give her appropriate help.

*Give her relevant information.*

Make sure that she understands about demand feeding, about the signs that a baby gives that show that he is ready to feed, and explain how her milk will 'come in'.

*Answer the mother's questions.*

She may have some questions that she wants to ask; or as you talk to her, you may learn that she is worried about something, or not sure about something. Explain simply and clearly what she needs to know.

*Ask: What could you tell her about how a baby shows that he is ready for a feed?*

(Let participants make a few suggestions, then continue.)

A baby may be wakeful and restless, or make small noises; he may make hand-to-mouth movements, and sucking movements; he may suck his fingers, and root for the breast.

Tell participants that they can find the list of the points **HOW TO HELP A MOTHER WITH AN EARLY BREASTFEED** on page 39 of their manuals.

### **Further information**

Babies differ very much in how often they want to feed. These patterns are all normal.

- For the first 1-2 days, a baby may not want many feeds. Some babies sleep for 8-12 hours after a good feed. Provided a baby is warm and

well and not low-birth-weight, and he has had at least one good breastfeed, it is not necessary to wake him at any fixed time for another feed.

- For the next 3-7 days, a baby may want to feed very often - as the milk supply becomes established. After that babies usually feed less often, but their habits continue to vary a lot. Any baby may want to feed more on some days and nights than on others.

### ***Slide 8/14 Mothers who are separated from their infants***

Sometimes a baby has to be separated from his mother, because he is ill, or of low-birthweight, and he needs special care.

While they are separated, a mother needs a lot of help and support. She needs help to express her milk as you see a mother doing here. This is necessary both to establish and maintain lactation, and to provide breastmilk for her baby. (See also Session 20, 'Expressing breastmilk'). She may need help to believe that her breastmilk is important, and that giving it will really help her baby. She needs help to get her baby to suckle from her breast as soon as he is able.

The low-birth-weight baby in the other picture is fed with his mother's expressed breastmilk. At first, he was fed by nasogastric tube. Now, his mother can feed him her milk from a cup. There is no need to use a bottle for these babies. Feeding from a bottle is more difficult for them than feeding from the breast. Cups are more satisfactory. (See also Session 26, 'Low-birth-weight and sick babies'.)

### ***Slide 8/15 After Caesarian section***

The mother in this slide was delivered by Caesarian section. She is breastfeeding her baby.

It is usually possible for a mother to breastfeed within about 4 hours of a Caesarian section - as soon as she has regained consciousness. Exactly how soon depends partly on how ill the mother is, and partly on the type of anaesthetic used. After epidural anaesthesia, a baby can often breastfeed within -1 hour.

*Ask: Does a baby need a feed while he waits for his mother to breastfeed him?*

A healthy, term baby usually needs no food or drink before his mother can feed him. He can wait a few hours until she is ready.

A baby can 'room-in' with his mother in the ordinary way, and she can feed him whenever he is hungry. Most mothers need help to find a comfortable position for the first few days.

Often a mother finds it easiest to breastfeed lying down at first.

- She may lie on her back, with her baby on top of her, like the mother in this slide.
- She may find it easier to lie on her side, with the baby lying beside her and facing her. This prevents the baby pressing on her wound. She may need help to turn over, and to move her baby from one side to the other.
- Later, she may like to sit and hold her baby across her abdomen above the operation wound, or under her arm.

Whatever position a mother uses, make sure that her baby is in a good position, facing her breast, so that he is well attached to her breast.

### **Further information**

In one busy hospital, after Caesarian section, most mothers breastfeed in this way:

- for the first 24 hours, lying on their backs;
- for the second 24 hours, turning from side to side;
- from the third day onwards, sitting up with pillows for support.

### **III. Answer participants' questions**

(10 minutes)

Ask participants if they have any questions, and try to answer them.



***Fig.2 Skin-to-skin contact in the first hour after delivery helps breastfeeding and bonding*** (Fig.20 in Participants' Manual)

#### **IV. Conduct small group discussion** (30 minutes)

(This section can be held at a separate time if necessary.)

Gather your group of 4-5 participants, and find a part of the room where you can work together as a group. (Other trainers also gather their groups.)

Ask participants to keep their manuals closed until you tell them to open them.

Introduce the topic with these points:

Step 10 of the 'Ten Steps to Successful Breastfeeding' is:

'Foster the establishment of breastfeeding support groups, and refer mothers to them on discharge from the hospital or clinic'.

*Many mothers give up breastfeeding or start complementary feeds in the early weeks.*

Difficulties arise most often during this time. However, many mothers are discharged within a day or two after delivery, before their breastmilk has 'come in', and before breastfeeding is established.

*Even good hospital practices cannot prevent all the difficulties.*

They cannot make sure that mothers will continue to breastfeed exclusively.

So it is important to think about what happens to mothers after they go home.

Ask: *What difficulties may a mother have when she goes home?*

(Let participants suggest. Add to their suggestions any of the following that they have not included.)

She may have difficulties with breastfeeding;

She has to cope with the demands of the rest of the family;

She may have to listen to a lot of different advice about how to feed the baby; She may be isolated, without help; She may have to go back to work.

If she is to continue to breastfeed successfully, she will need continuing help and support.

Ask: *Where can a mother get continuing help and support, so that*

*breastfeeding is established?* (Let participants make a few suggestions.) Discuss participants' suggestions.

Use the ideas in the notes below, but relate the ideas to the local situation. Which of these sources of support are already available?

Which are not feasible, and what is the reason?

Which sources of support could health workers encourage and strengthen?

Possible sources of help for breastfeeding mothers include:

*Supportive family and friends.*

This is often the most important source of support. Community support is often good where breastfeeding traditions are strong, and family members live near. However, some traditional ideas may be mistaken. Many women, especially in cities, have little support. Or they may have friends or relatives who encourage them to bottle feed.

*An early postnatal check, within 1 week of discharge from hospital.*

This check should include observation of a breastfeed, and discussion of how breastfeeding is going. You can help mothers with minor difficulties before they become serious problems.

*A routine postnatal check at 6 weeks.*

This check also should include observation of a breastfeed, as well as discussion of family planning (see Session 31, 'Women's nutrition, health and fertility').

*Continuing help from health care services.*

At any time that a health worker is in contact with a mother and child under 2 years of age, she should support breastfeeding. (See Session 28 'Sustaining breastfeeding').

*Help from community health workers.*

Community health workers are often in a good position to help breastfeeding mothers, as they may live nearby. They may be able to see a mother more often, and give more time, than facility-based health workers. It may be helpful to train community health workers in some breastfeeding counselling skills.

*A breastfeeding support group.*

(To discuss mother support groups further, use the points in the box **BREASTFEEDING SUPPORT GROUPS**).

Discuss breastfeeding support groups.

Ask participants to find the box **BREASTFEEDING SUPPORT GROUPS** on page 41 of their manuals. Ask them to read out the points in the box in turn.

Discuss each point in relation to the local situation and experience.

### **BREASTFEEDING SUPPORT GROUPS**

- A group may be started by a health worker; by an existing women's group; by a group of mothers who feel that breastfeeding is important; or by mothers who meet in the antenatal clinic or maternity facility and who want to continue to meet and help each other.
- A group of breastfeeding mothers meets together every 1-4 weeks, often in one of their homes, or somewhere in the community. They can have a topic to discuss, such as "The advantages of breastfeeding" or "Overcoming difficulties".
- They share experiences, and help each other with encouragement and with practical ideas about how to overcome difficulties. They learn more about how their bodies work.
- The group needs someone who is accurately informed about breastfeeding to train them. They need someone who can correct any mistaken ideas, and suggest solutions to difficulties. This helps the group to be positive and not to complain. This person could be a health worker, until someone in the group has learnt enough to play this role.
- The group needs a source of information whom they can refer to if they need help. This could be a health worker trained in breastfeeding, whom they see from time to time. The group also needs up-to-date materials to educate themselves about breastfeeding. The health worker can help them to get these.

- Mothers can also help each other at other times, and not only at meetings. They can visit each other when they are worried or depressed, or when they don't know what to do.
- Breastfeeding support groups can provide an important source of contact for socially isolated mothers. They can be a source of support which builds mother's confidence about breastfeeding and which reduces their worries. They can give a mother the extra help that she needs, from women like herself, that health services cannot give.

Ask participants to look at page 42 of their manuals, and to find the box **WHAT TO DO BEFORE A MOTHER LEAVES A MATERNITY FACILITY.**

Explain that this is a summary of what to do before they discharge a mother after delivery.

Ask participants to read out the points in turn.

### **WHAT TO DO BEFORE A MOTHER LEAVES A MATERNITY FACILITY**

Find out what support she has at home.

If possible, talk to family members about her needs.

Arrange a postnatal check in the first week, to include observation of a breastfeed (in addition to a routine check at 6 weeks).

Make sure that she knows how to contact a health worker who can help with breastfeeding if necessary.

If there is a breastfeeding support group in her neighbourhood, refer her to that.

Recommended reading:

*Helping Mothers to Breastfeed:*

Chapter 4, 'How breastfeeding should begin'

Chapter 11, 'Counselling'

Chapter 12, section 12.3, 'Women's groups' and section 12.4, 'Direct mother-to-mother support groups'

*Protecting, Promoting and Supporting Breastfeeding: The Special Role of Maternity Services, A Joint WHO/UNICEF Statement, 1989*

- Annex to the Global Criteria for Baby Friendly Hospitals: Acceptable Medical Reasons for Supplementation
- Example of a hospital breastfeeding policy, if available

## Session 9

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# CLINICAL PRACTICE 1

## Listening and learning

### Assessing a breastfeed

#### ***Objective***

Participants practise 'listening and learning' and 'assessing a breastfeed' with mothers and babies in a ward or clinic.

#### ***Session outline***

(120 minutes)

Participants are together as a class led by one trainer to prepare for the session and to discuss it afterwards.

Participants work in small groups of 4-5 each with one trainer for clinical practice in a ward or clinic.

I. Prepare the participants (20 minutes) II.

Conduct the clinical practice (80 minutes)

III. Discuss the clinical practice (20 minutes)

#### ***Preparation***

*If you are leading the session:*

Make sure that you know where the clinical practice will be held, and where each trainer should take her group. If you did not do so in a preparatory week, visit the wards or clinic where you will go, introduce yourself to the staff members in charge, and make sure that they are prepared for the session (see Director's Guide).

Study the instructions in the following pages, so that you can prepare the participants and conduct the clinical practice.

Make sure that there are copies of the **CLINICAL PRACTICE DISCUSSION CHECKLIST** available for each trainer.

Make sure that there are two copies of the B-R-E-A-S-T-FEED Observation Form and one copy of the list of **LISTENING AND LEARNING SKILLS** available for each participant and trainer.

*If you are leading the group:*

Study the instructions in the following pages, so that you are clear about how to conduct the clinical practice.

Make sure that you have a copy of the **CLINICAL PRACTICE DISCUSSION CHECKLIST**, to help you to conduct discussions.

Make sure that the participants in your group each have two copies of the B-R-E-A-S-T-FEED Observation Form, and one copy of the list of **LISTENING AND LEARNING SKILLS**. Have one or two spare copies with you.

Find out where to take your group, and where to meet for the discussion afterwards.

As you follow the text, remember:

indicates an instruction to you, the trainer

indicates what you say to participants

## I. Prepare the participants

(20 minutes)

One trainer leads a preparatory session with all participants and the other trainers together.

If you have to travel to another facility for the clinical practice, hold the preparatory session in the classroom before you leave. If necessary, this can take place on the evening or the morning before.

*Explain the objective of the exercise:*

You practise 'assessing a breastfeed' and 'listening and learning', using the skills that you learnt in Sessions 4, 5, 6 and 7.

*Explain what each participant should take with her:*

Take with you:

- two copies of the B-R-E-A-S-T-FEED Observation Form;
- one copy of **LISTENING AND LEARNING SKILLS**; - pencil and paper to make notes.

You do not need to take books or manuals or anything else. These other things can interfere with the clinical practice.

*Give each participant the forms that she needs.*

*Make sure that trainers have these to take:*

- spare copies of the B-R-E-A-S-T-FEED Observation Form;
- spare copies of **LISTENING AND LEARNING SKILLS**;
- a copy of the **CLINICAL PRACTICE DISCUSSION CHECKLIST** (see page 136).

*Explain how the participants will work:*

You work in your groups of 4-5 each with a trainer. To start with, the whole group works together. The trainer demonstrates what to do, and then you practise. You take turns to talk to a mother, while the other members of the group observe. When everyone knows what to do, you can work in pairs, while the trainer circulates.

*Explain what the participant who talks to the mother will do:*

Introduce yourself to the mother, and ask permission to talk to her. Introduce the group, and explain that they are interested in infant feeding. Ask permission to watch her baby feed.

(Avoid saying 'breastfeeding': see the box **MISTAKES TO AVOID** on page 131 in this Guide, or page 44 in the Participants' Manual.)

Try to find a chair or stool to sit on. If necessary, and if permissible, sit on the bed.

If the baby is feeding, ask the mother to continue as she is doing. If the baby is not feeding, ask the mother to give a feed in the normal way at any time that her baby seems ready. Ask the mother's permission for the group to watch the feed.

Before or after the breastfeed, ask the mother some open questions about how she is, how her baby is, and how feeding is going, to start the conversation. Encourage the mother to talk about herself and her baby. Practise as many of the listening and learning skills as possible.

*Explain what the other participants will do:*

Stand quietly in the background. (There are unlikely to be enough stools or chairs for the whole group.) Try to be as still and quiet as possible. Do not comment, or talk among yourselves.

Make *general* observations of the mother and baby. Notice for example: does she look happy? Does she have formula or a feeding bottle with her?

Make *general* observations of the conversation between the mother and the participant. Notice for example: who does most of the talking? Does the participant ask open questions? Does the mother talk freely, and seem to enjoy it?

Make *specific* observations of the participant's listening and learning skills.

Mark a  on your list of **LISTENING AND LEARNING SKILLS** when she uses a skill, to help you to remember for the discussion. Notice if she uses helpful non-verbal communication.

Notice if the participant makes a mistake, for example, if she uses a judging word, or if she asks a lot of questions to which the mother says 'yes' and 'no'.

*Explain what participants do when they observe a breastfeed:*

Stay quietly watching the mother and baby as the feed continues.

While you observe, fill in a B-R-E-A-S-T-FEED Observation Form.

Write the name of the mother and baby; mark a beside each sign that you observe; add the time that the feed takes.

Under 'Notes:' at the bottom of the form, write anything else that you observe which seems important for breastfeeding.

*Explain what to do when they have finished observing:*

Thank the mother for her time and cooperation, and say something to praise and support her.

Go with the group into another room or corner to discuss your observations.

*Warn participants about **MISTAKES TO AVOID:***

### **MISTAKES TO AVOID**

**Do not say that you are interested in breastfeeding.**

The mother's behaviour may change. She may not feel free to talk about bottle feeding. You should say that you are interested in "infant feeding" or in "how babies feed".

**Do not give a mother help or advice.**

In Clinical Practice 1, if a mother seems to need help, you should inform your trainer, and a member of staff from the ward or clinic.

**Be careful that the forms do not become a barrier.**

The participant who talks to the mother should not make notes while she is talking. She needs to refer to the forms to remind her what to do, but if she wants to write, she should do so afterwards. The participants who are observing can make notes.

Tell participants that there is a summary of these instructions in the Participants' Manual on page 44 to remind them of the main points of what you said.

## II. Conduct the clinical practice

(80 minutes)

*Take your group to the ward or clinic:*

- Introduce yourself and your group to the staff member in charge.
- Ask which mothers and babies it would be appropriate to talk to, and where they are.
- Try to find a mother and baby who are breastfeeding, or a mother who thinks that her baby may want to feed soon. If this is not possible, talk to any mother and baby.

*Demonstrate to the group what to do:*

- Explain that you will first demonstrate what participants should do.
- Ask participants to stand quietly in the background, and to refer to their list of **LISTENING AND LEARNING SKILLS**, and the B-R-E-A-S-T-FEED Observation Form.
- Introduce yourself and the group to the mother.
- Ask her permission to talk to her and to watch the baby feed.
- Sit on a chair or stool, or the bed if permissible.
- Ask her a few open questions.
- Use as many listening and learning skills as possible to encourage the mother to tell you about herself and the baby. Follow the list of skills.
- Observe the baby breastfeeding, using the B-R-E-A-S-T-FEED Observation Form. - Thank the mother, and say something to praise and support her.

If you cannot speak the mother's language, ask a participant who can speak it to interpret for the demonstration.

*Discuss the demonstration:*

Take the group away from the mother, and discuss what they observed.

Ask them:

- What did they observe generally about the mother and baby?
- What signs from the B-R-E-A-S-T-FEED Observation Form did they observe? - Which listening and learning skills did you demonstrate?

If the mother and baby showed any signs of good or poor positioning and attachment which participants did not see, point them out. *Arrange for a participant to talk to a mother:*

Find another mother, and ask a participant to talk to her. She should practise listening and learning skills, while the rest of the group observes. If the baby breastfeeds, they should all observe the feed.

*Guide the participant who is practising:*

Keep in the background, and try to let the participant work without too much interference. You do not need to correct every mistake that she makes immediately. If possible wait until the discussion afterwards. Then you can both praise what she did right and talk about anything she did not do right.

However, if she is making a lot of mistakes, or not making any progress, then you should help her. Try to help in a way which does not make her embarrassed in front of the mother and the group. Also, if she starts to help or advise the mother, remind her that she should not do that during this practice session.

Additionally, if the mother and baby show something important that the participants may not have observed, you can quietly draw their attention to it.

You need to judge as participants work what will best help them to learn. Use your confidence and support skills to correct participants and to help them to develop confidence in their own clinical and counselling skills.

*Discuss the participant's performance:*

Take the group away from the mother, and discuss what they observed. Use the **CLINICAL PRACTICE DISCUSSION CHECKLIST** to help you to lead the discussion.

Ask the general questions, and then ask the specific questions about 'listening and learning' and about 'assessing a breastfeed'.

(Ask the 'building confidence' and 'history taking' questions in later clinical practice sessions.)

Go through the **LISTENING AND LEARNING SKILLS** checklist, and discuss how the participant practised them. First ask the participant herself to say how well she thinks she did. Then ask the other participants.

Go through the B-R-E-A-S-T-FEED Observation Form, and discuss how many of the signs the group noticed. Ask them to decide if the baby was well or poorly positioned and attached.

*Arrange for the other participants in turn to talk to mothers:*

Find another mother, and ask another participant to talk to her. Discuss the group's observations, and the participant's performance.

Work with the group together until you are sure that they know what to do. Make sure that you are present the first time that a participant talks to a mother.

Try to make sure that each participant talks to at least one mother.

*Let participants work in pairs:*

When you have observed participants talking to at least one mother, and you are confident that they know what to do, let them work in pairs to talk to other mothers without you.

Circulate between the pairs to see how they do. When a pair has finished, move away from the mother, and discuss their observations with them. *Teach about mothers who need help:*

If at any time there is a mother who needs help, or who illustrates a particular situation, take the opportunity to teach about it.

Ask a participant who identifies a mother needing help to report it to you. Ask the staff of the ward or clinic if they would like you to help the mother. If they agree, give the mother the necessary help, together with the participant.

Ask the staff to be present if possible, and make sure that they understand what you suggest to the mother so that they can provide follow-up.

Explain and demonstrate the situation to the other participants. This may take you ahead of what has been covered in the course, but it is important not to miss a good learning opportunity.

If possible, suggest that participants revisit the mothers whom they talked to, to follow them up the next day.

*Encourage participants to observe health care practices:*

Encourage participants, while they are in a ward or clinic, to notice:

- if babies room-in with their mothers;
- whether or not babies are given formula, or glucose water; - whether or not feeding bottles are used;
- the presence or absence of advertisements for baby milk; - whether sick mothers and babies are admitted to hospital together; - how low-birth-weight babies are fed.

Encourage participants also to talk to staff in the health facility, to learn:

- their attitude to breastfeeding;

- how they care for breastfeeding mothers;
- if they have babies of their own, and how they feed them.

Explain that participants should not comment on their observations, or show any disapproval, while in the health facility. They should wait until the trainer invites them to comment privately, or in the classroom.

### **III. Discuss the clinical practice** (20 minutes)

The whole class comes back together to discuss the clinical practice exercise, led by the trainer who led the preparatory session.

*Ask one participant from each group to report briefly on what they learnt:*

Ask them to comment:

- on any special situations of mothers and babies from which they learnt;
- on their experiences using the B-R-E-A-S-T-FEED Observation Form and the list of **LISTENING AND LEARNING SKILLS**.

Do not allow participants to report on details of every individual mother. They should report only on points of special interest.

Use the **CLINICAL PRACTICE DISCUSSION CHECKLIST** to help you to guide the discussion.

However, do not go through the whole checklist, because this was done in the small groups.

*Ask participants to fill in their **CLINICAL PRACTICE PROGRESS FORM**:*

Explain that the form is on page 182 (the last page) of their manuals .

On the form they should record each mother and baby that they talked to during the Clinical Practice 1. They record each mother twice. In Section 1 of the form, they record the skills that they practised with the mother; in Section 2 they record the mother's situation.

## **CLINICAL PRACTICE DISCUSSION CHECKLIST**

### *General questions*

How did your clinical practice go?

What did you do well? What difficulties did you have?

Was the mother willing to talk? Did she seem to enjoy talking to you?

Did the mother ask any questions? How did you respond?

What was the most interesting thing that you learnt from her?

Did she have a special difficulty or situation which helped you to learn?

### *Listening and learning*

How many of the listening and learning skills were you able to use?

What mistakes did you make? Did you ask a lot of questions? Did using the skills encourage the mother to talk?

### *Assessing a breastfeed*

What did you learn by general observation?

What did you learn using the B-R-E-A-S-T-FEED Observation Form?

### *Confidence and support*

How many of the confidence and support skills were you able to use?

(especially praise 2 things, and give 2 pieces of relevant information) What mistakes did you make? Did you give the mother a lot of advice? Did using these skills help you to help the mother?

### *History-taking*

What did you learn by taking a breastfeeding history?

Did you remember to ask something from each section of the form?

Did using the form help you to understand the mother's situation?

VALUE ADDED COURSE**Breastfeeding (Module on Breastfeeding ) PECO6****List of Students Enrolled November 2017 – Jan- 2018**

2 <sup>nd</sup> Year MBBS Student			
Sl. No	Name of the Student	Roll No	Signature
1	AASHIK MUKESH. M. S	U14MB201	
2	ABEETHA.M	U14MB202	
3	ABHINAV. S	U14MB203	
4	ABINAYA. M	U14MB204	
5	ABISHEK. R	U14MB205	
6	ABIRAMI. S	U14MB206	
7	AGALYA. S	U14MB207	
8	AJAY PANDIAN. V	U14MB208	
9	AJEETH. R	U14MB209	
10	AJITH KUMAR. M.K.	U14MB210	
11	AKSHAI. S	U14MB211	
12	ALLEN DANIEL XAVIER.J	U14MB212	
13	ALTHAF AHMED	U14MB213	
14	AMARA LOKESH	U14MB214	
15	AMRESH. K	U14MB215	
16	ANANT SURYA. R	U14MB216	
17	ANDREW MARIE XAVIER.V	U14MB217	
18	APSARA. P	U14MB218	
19	ARPUDHA. A	U14MB219	
20	ARUL PRABHA MADHIVADHANI. M	U14MB220	



**Dr. Abhijeet Shrivastava**

**RESOURCE PERSON**

**ASSISTANT PROFESSOR**  
DEPARTMENT OF PAEDIATRICS  
SRI LAKSHMI NARAYANA INSTITUTE OF  
MEDICAL SCIENCES



**Dr. Raghavendiran**

**COORDINATOR**

**PAEDIATRICS HEAD**  
DEPT. OF PAEDIATRICS  
SRI LAKSHMI NARAYANA INSTITUTE OF  
MEDICAL SCIENCES  
OSUDU, PUDUCHERRY



SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER  
EDUCATION AND RESEARCH

BREASTFEEDING COURSE

QUESTIONS

Annexure -3

Abinaya M

V14MB205

1. Breast feeding should be initiated with in how many hours after normal delivery?
- a-1/2-1 hour
  - b-2 hours
  - c-15 mins

5/10

Q

Ans: half an hour to one hour

2. Breast feeding should be initiated with in how many hours after cesarean section?
- a-5mins
  - b-25mins
  - c-1-2 hours

Ans: 1-2 hours

3. Which policy is one of the important intervention towards global support for breastfeeding
- a-WABA
  - b-BFHI
  - c-WHO

Ans: BFHI

4. The protein of breast milk mostly contains which albumins
- a-caesin
  - b-Lactoferrin
  - c-Lactoalbumin

Ans: lacto albumin

5. Bottle feed babies are mostly likely to develop what GI and respiratory diseases
- a-pneumonia
  - b-diarrhea and ARI
  - c- walri

Ans: diarrhea and ARI

6. Breast milk is produced with the help of which hormone?
- a-prolactin



SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER  
EDUCATION AND RESEARCH

BREASTFEEDING COURSE

QUESTIONS

Annexure -3

Aprana-7  
U14 MB 218

1. Breast feeding should be initiated with in how many hours after normal delivery?  
a-1/2-1 hour  
 b-2 hours  
c-15 mins

6/10

Ans: half an hour to one hour

2. Breast feeding should be initiated with in how many hours after cesarean section?  
a-5mins  
 b-25mins  
c-1-2 hours

Ans: 1-2 hours

3. Which policy is one of the important intervention towards global support for breastfeeding  
a-WABA  
 b-BFHI  
c-WHO

Ans: BFHI

4. The protein of breast milk mostly contains which albumins  
a-caesin  
 b-Lactoferrin  
c-Lactoalbumin

Ans: lacto albumin

5. Bottle feed babies are mostly likely to develop what GI and respiratory diseases  
a-pneumonia  
 b-diarrhea and ARI  
c- walri

Ans: diarrhea and ARI

6. Breast milk is produced with the help of which hormone?

a-prolactin



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that \_\_\_\_\_ ARAVIND.M

\_\_\_\_\_ has actively participated in the Value Added Course on  
*Breastfeeding counselling* held during July 2017 – Oct 2017 Organized by Sri Lakshmi  
Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr. Abijeeth  
Dr. Gayatri vinay  
RESOURCE PERSON

Dr. Raghavendiran  
COORDINATOR

**Student Feedback Form**  
**ANNEXURE -V**

Course Name: Breastfeeding ( MODULE ON breastfeeding )

Subject Code: PEC06

Name of Student: Apsara P Roll No.: U14MB218

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

SI. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear			✓		
2	Course contents met with your expectations			✓		
3	Lecturer sequence was well planned			✓		
4	Lectures were clear and easy to understand			/		
5	Teaching aids were effective			/		
6	Instructors encourage interaction and were helpful			/		
7	The level of the course			/		
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not Satisfactory

**Student Feedback Form**  
**ANNEXURE -V**

Course Name: **Breastfeeding ( MODULE ON breastfeeding )**

Subject Code: **PEC06**

Name of Student: Amresh . k Roll No.: U14MB215

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

SI. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear			✓		
2	Course contents met with your expectations			✓		
3	Lecturer sequence was well planned				✓	
4	Lectures were clear and easy to understand				/	
5	Teaching aids were effective			/		
6	Instructors encourage interaction and were helpful			/		
7	The level of the course			/	/	
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Signature 

Date: 20/7/2017

Date: 01.04.2018

From

Dr. Raghavendran  
Professor and Head,  
Department of Paediatrics,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

Through Proper Channel

To

The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Completion of value-added course: Breastfeeding Module for Undergraduates**

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: Breastfeeding Module for Undergraduates Final Year MBBS from Nov 2017 to March 2018 for 10 Final Year MBBS students . We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards,



Dr. Raghavendran

**PAEDIATRICS HEAD  
DEPT. OF PAEDIATRICS  
SRI LAKSHMI NARAYANA INSTITUTE OF  
MEDICAL SCIENCES  
OSUDU, PUDUCHERRY**

**Encl:**

**Photographs**

PECO6-BREASTFEEDING





# Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,

PUDUCHERRY – 605 502

Date 08.06.2017

From  
Dr.Rajini ,  
Professor and Head,  
Department of Community Medicine,  
Sri Lakshmi Narayana Institute of Medical Sciences,  
Bharath Institute of Higher Education and Research,  
Puducherry.

To  
The Dean,  
Sri Lakshmi Narayana Institute Of Medical Sciences,  
Bharath Institute of Higher Education and Research,  
Puducherry.

## **Sub: Permission to conduct value-added course: Public Speaking**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: **Public Speaking** from **Jul 2017- Sep 2017**. We solicit your kind permission for the same.

Kind Regards

*Rajini*  
PROFESSOR & HOD  
DEPARTMENT OF COMMUNITY MEDICINE  
Sri Lakshmi Narayana Institute of Medical Sciences  
PONDICHERRY - 605 502

---

HOD



# Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,

PUDUCHERRY – 605 502

FOR THE USE OF DEANS OFFICE

Names of Committee members for evaluating the course:

The Dean: Dr. Jayalakshmi

The HOD: Dr. Rajini

The Expert: Dr. J. Barathalakshmi, Associate Professor


The committee has discussed about the course and is approved.

  
PROFESSOR & HOD  
DEPARTMENT OF COMMUNITY MEDICINE  
Sri Lakshmi Narayana Institute of Medical Sciences  
PONDICHERRY - 605 502

HOD



Resource person

  
Dr. G. JAYALAKSHMI, BSC., MBS., DCCD., M.D.  
DEAN  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agaram, Kudapakam Post,  
Villianur Commune, Puducherry - 605502.

Dean



# Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,

PUDUCHERRY – 605 502


## Circular

12.06.2017

### **Sub: Organising Value-added Course: Public Speaking**

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research**, is organising **“Public Speaking”**

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before **30<sup>TH</sup> JUNE 2017**. Applications received after the mentioned date shall not be entertained under any circumstances.



**Dr. G. JAYALAKSHMI, BSC., MBS., GRD., M.D.**  
**DEAN**  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agaram, Kudapakkam Post,  
Villianur Commune, Puducherry-605502.

**Dean**

## VALUE ADDED COURSE

### 1. Name of the programme & Code

Public Speaking PSM02

### 2. Duration & Period

30 hrs – Jul 2017- Sep 2017

### 3. Information Brochure and Course Content of Value Added Courses

*Enclosed as Annexure- I*

### 4. List of students enrolled

*Enclosed as Annexure- II*

### 5. Assessment procedures:

Multiple choice questions- *Enclosed as Annexure- III*

### 6. Certificate model

*Enclosed as Annexure- IV*

### 7. No. of times offered during the same year: 1

### 8. Year of discontinuation: - 2018


### 9. Summary report of each program year-wise

Value Added Course- 2017 July– September 2017					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	PSM01	Public Speaking	Dr. J.Barathalakshmi Dr.Kameshvell.C	III <sup>rd</sup> MBBS	12 (July 2017– September2017)

### 10. Course Feed Back *Annexure V*



RESOURCE PERSON

  
PROFESSOR & HOD  
DEPARTMENT OF COMMUNITY MEDICINE  
Sri Lakshmi Narayana Institute of Medical Sciences  
PONDICHERRY - 605 002

COORDINATOR

## Annexure I

### Course Proposal

**Course Title: “Public Speaking”**

**Course Objective:** To provide participants with the practical skills and knowledge necessary to express themselves clearly, with confidence and power, in a variety of speaking situations.

**Course Outcome: Improvement in Public Speaking skill.**

**Course Audience: Pre- Final year students**

**Course Coordinator: Dr.Rajini**

**Course Faculties with Qualification and Designation:**

**1.Dr.Rajini,Professor & HOD**

**2. Dr. J.Barathalakshmi, Associate Professor**

**3.Dr. C.Kameshvell, Associate Professor**

**Course Curriculum/Topics with schedule (Min of 30 hours)**

Sl no	Date	Topic	Faculty	Time	Hours
1	10.07.2017	Why Learn About Vocal Expression?	Dr.J.Barathalakshmi	4-6pm	2
2	13.07.2017	A Comfortable Setting	Dr.C.Kameshvell	4-6pm	2
3	19.07.2017	Life Skills	Dr.J.Barathalakshmi	4-6pm	2
4	24.07.2017	Self-Assessment & Evaluation	Dr.C.Kameshvell	4-6pm	2
5	31.07.2017	Public Speaking in Other Projects	Dr.J.Barathalakshmi	4-6pm	2
6	02.08.2017	You May Want to Know.	Dr.C.Kameshvell	4-6pm	2
7	09.08.2017	Who’s Talking Around Town?	Dr.J.Barathalakshmi	4-6pm	2
8	16.08.2017	Beyond the Toolkit: More Ideas & Resources	Dr.C.Kameshvell	4-6pm	2
9	23.08.2017	Delivering a Vocal Presentation	Dr.J.Barathalakshmi	4-6pm	2
10	30.08.2017	Using Visual Aids	Dr.C.Kameshvell	4-6pm	2
11	01.09.2017	Overcoming Stage Nerves	Dr.J.Barathalakshmi	4-6pm	2

12	08.09.2017	Writing for Public Speaking	Dr.C.Kameshvell	4-6pm	2
13	15.09.2017	Tips for Effective Demonstrations	Dr.J.Barathalakshmi	4-6pm	2
14	22.09.2017	Speech Warm-Ups	Dr.C.Kameshvell	4-6pm	2
15	29.09.2017	Show & Tell: A Demonstration Workshop	Dr.J.Barathalakshmi	4-6pm	2
				Total Hours	30

**REFERENCE BOOKS: (Minimum 2)**

- 1. Menzel KE, Carrell LJ. The relationship between preparation and performance in public speaking. Communication Education. 1994 Jan 1;43(1):17-26.**
- 2. Nikitina A. Successful public speaking. Bookboon; 2011.**

## **PUBLIC SPEAKING**

### **BROUCHERE**

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Why Learn About Vocal Expression?

A Comfortable Setting

Life Skills

Self-Assessment and Evaluation

Public Speaking and Other Projects

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Who's Talking Around Town?

Beyond the Toolkit: More Ideas & Resources

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Using Visual Aids

Overcoming Stage Nerves

Writing for Public Speaking

Tips for Effective Demonstrations

## Icebreakers

Speech Warm-Ups

This Is My Friend

Imagine It!

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## **What Leaders**

### **Need to Know**

If you asked kids to identify the as-  
public speaking seem fun, not im-

- Develop useful, marketable skills

signment they dread the most,  
possible. This requires you to create

(for example, speech writing and

chances are that most of them

an environment where all levels of  
delivery techniques).

would say “public speaking.” Speak-  
participation are applauded, regard-

- Manage stress and feelings.

ing in front of their peers is prob-  
less of the speaker’s age or skill level.

ably even more nerve-wracking to

- Evaluate their work and set goals

them than speaking to a group of

### **A Comfortable**

for improvement

total strangers. Therefore, the goal

of these public presentation materi-

## **Setting**

### **Self-Assessment**

als is to help young people overcome

Many of the activities mention do-  
their fear of public speaking and in-

### **& Evaluation**

ing them “in a comfortable setting.”

crease their public speaking skills in

Creating a comfortable setting will

After each activity or project you

a nonthreatening environment.

take some thought and planning.

lead with young people, please help

### **Why Learn About**

Keep in mind that young people, like

them think about what they learned.

adults, have a variety of personality

Make copies of the “What I Learned”

**Vocal Expression?** types. That means that some kids self-evaluation form on page 8 and will naturally be more outgoing than

distribute them to your group. Ask

Public speaking can seem daunting,

others. Try not to push them too

them to think quietly about the

but if a young person develops hard or too fast. Encourage them to questions and make notes about these skills early on, the skills will share ideas using a variety of methods what they learned, how they feel be an asset throughout his or her odds. As they become more comfortable about their skills in that area and life. People develop poise and self-able with sharing their ideas and with what they'd like to learn more about. confidence as they grow accustomed the reactions their actions receive, Then lead a discussion with the to standing before a crowd and they'll be more adventurous in the whole group and ask if anyone wants sharing their thoughts and ideas. projects they undertake. to share what they came up with. Young people may want to keep As communication skills become

## **Life Skills**

their “What I Learned” forms to re-  
more critical to the career world, so  
fer to later and as a way to docu-  
does the need for kids to learn these  
Participating in the public speaking  
ment their learning process.

skills. It’s also important for them  
warm-ups and activities in this sec-  
to experience early success with ex-  
tion will help young people develop

### **Public Speaking**

pressing themselves. This means  
their ability to:

that even though you may be afraid

- Organize their thoughts and ideas.

### **in Other Projects**

of public speaking because of bad  
experiences in the past or lack of

- Communicate information to

The skills young people learn while  
experience, it’s time to put your fears  
someone else in a confident and  
practicing public presentations  
aside and really encourage your

convincing manner.

translate well to other project areas

members to stand up and speak up!

- Problem-solve and be flexible (for and should be integrated into

Many kids don't take the chance to

example, overcoming stage nerves or project activities whenever possible.

practice public speaking because the

adapting information to different

Part of the experiential learning

people around them make it sound

audiences and situations).

model is giving kids a chance to

scarier than it is.

share with others what they've

- Use resources wisely (specifically, learned about a particular subject.

The activities in this section of the

to honor the time allotted for a

By demonstrating a skill or illustrat-

*Communications Toolkit* should make presentation or speech)!

ing an idea before a group, kids are

## COMMUNICATIONS TOOLKIT • Vocal Expression & Public Speaking – 29

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practicing their public speaking Wide Web at [<http://www.agcom.purdue.edu/AgCom/Pubs/NCR/>

- Professional speakers

skills and gaining confidence. Soon

[http://www.agcom.purdue.edu/AgCom/Pubs/NCR/](http://www.agcom.purdue.edu/AgCom/Pubs/NCR/NCR-292.html)

- Radio broadcasters

it will seem natural to them to ex-

[NCR-292.html](http://www.agcom.purdue.edu/AgCom/Pubs/NCR/NCR-292.html)]).

- Teachers

press their ideas without a

- Telephone operators

thought about how scary public

### Who's Talking

- Television personalities

speaking "should be."

- Tour guides

### Around Town?

### You May Want to

Many organizations, such as Toast-

To connect the idea of vocal expres-

masters and Optimists Clubs, focus

### Know

sion to careers and make public

on communication skills and may speaking come alive for your group, be good sources of guest speakers. You may want to know the following you may want to arrange a group ing points before getting started visit with someone who uses public

## **Beyond the**

with helping young people learn speaking as a major part of his or more about public speaking.

her job, such as:

## **Toolkit: More**

- Actors
- 1. The basic processes for writing and

- Lawyers

## **Ideas & Resources**

delivering a speech or demonstration

- Lobbyists

(see the “Writing for Public Speak-

To encourage your group to learn

- Managers

ing,” “Delivering a Vocal Presenta-

more about public speaking and vo-

- Ministers

tion” and “Overcoming Stage

cal expression, refer to the “Video,

- Politicians

Nerves” skill sheets located on pp.

Media and Technology” and “Visual

- Presidents of professional

35, 31 and 34, respectively).

Communication and Graphic Design”

associations and civic

sections of the *Communications*

**2.** How to help kids evaluate and

organizations

*Toolkit.*

feel good about their experiences

in communication (see the “What I

The World Wide Web and other sec-

Learned” sheet on pg. 8).

tions of the Internet offer informa-

tion on developing vocal expression

**3.** Where to go for field trips, where skills. Use the general categories

to find speakers to visit or how to

listed here as search terms with any

find out who’s talking around town.

of the Internet search engines: “pub-

4. The developmental needs of the

lic speaking,” “vocal expression,”

kids in your group (see the *Ages and*

“speeches,” “speech writing,”

*Stages of Child and Youth Develop-*

“speakers.” You could also have the

*ment* publication which is available

participants come up with their own

from Purdue University on the World

set of search terms. (See pg. 134 for

information on Internet safety.)

### **30 – COMMUNICATIONS TOOLKIT • Vocal Expression & Public Speaking**

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#### **SKILL SHEET:**

##### **Delivering a Vocal**

##### **Presentation**

In any speech, demon-

stration, play or choral

##### **Delivering a Speech**

reading you must be

##### **Voice**

aware of *how* you’re

As many famous people have discovered, your

voice can be a powerful tool. But like any tool delivering your message you must practice with it to use it well. When as well as the content of giving a speech, you want the entire audience to hear you. The following points may help: the message. This skill

sheet describes the basics

- Project your voice and speak up. Voice projection is not shouting, and you can do it without straining. Speaking from the back of the throat makes your voice sound weak and ing

tires it faster; use your diaphragm muscles to make your voice carry. The diaphragm muscles are between your chest For information on

and stomach. Using them will help you relax and make your writing a piece to be voice sound stronger.

delivered before an

- Try to sound like yourself. Use a conversational tone with familiar words.

audience, refer to the

- Speak at a comfortable pace so everyone can hear and under-

“Writing for Public

stand your entire speech.

Speaking” skill sheet on

- Enunciate (pronounce clearly) all vowels and consonants.

page 35.

- Don’t slur your words – practice pronouncing the d’s, t’s and ing’s on the end of words.

• When you’re rehearsing a speech, have someone stand near the back of the room to give you feedback on your projection and delivery, as well as content.

**Remember:** A strong confident voice will make your message more believable.

## **Eye Contact**

Eye contact, or lack of it, can make a difference in how receptive the audience is to your message.

These points may help:

- Maintain eye contact with your audience. Try to memorize your opening and closing statements so that you can maintain steady eye contact when you need to hold the audience's attention.

## **COMMUNICATIONS TOOLKIT • Vocal Expression & Public Speaking - 31**

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*Delivering a Vocal Presentation skill sheet continued* Your audience will be more receptive and attentive if you look at them.

- Try not to stare at a fixed object. Let your eyes travel casually and naturally from person to person throughout your speech.
- Look for friendly faces with whom to make eye contact, but don't neglect the rest of the audience. Once you get into the body of your presentation, watch the faces of the audience members to see whether they understand and follow you.

## **Gestures and Expressions**

Gestures can be a powerful addition to any speech. They can also be a terrible distraction.

The following points may help you turn gestures into a public speaking asset:

- Use gestures only if they are natural to

you. Effective hand gestures come from being relaxed and spontaneous, not from fidgeting.

- Smile! If you look like you enjoy what you're doing, so will your audience. Be dramatic, but match your facial expressions to your words. Look serious and sincere if your message is serious, smile if your message is positive.

## **Posture**

Posture is very important to maintaining an interested and confident appearance. The following points may help.

- If a podium is available, place your notes on it, but don't lean on it. Leaning gives the impression that you're tired, sick or bored.
- If you choose to walk while you talk, maintain your upright posture and hold your notes above your waist. Avoid pacing because it is distracting and may make you look nervous.

### **Other Tips**

- Warm up your vocal chords and facial muscles before beginning your presentation.
- Be yourself, don't try to imitate others.
- Practice speaking techniques, not just individual speeches.

## **32 – COMMUNICATIONS TOOLKIT • Vocal Expression & Public Speaking**

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### **SKILL SHEET:**

#### **Using Visual Aids**

Some speeches just stand alone.

#### **Audiovisual Tips**

Abraham Lincoln's "Gettysburg Address," President John F. Kennedy's

A few tips to remember when using equipment to inaugurate a speech and the Rev. Dr. Martin Luther King Jr.'s "I Have a Dream" speech are examples of

present visual aids follow.

- Choose your audio and visual aids thoughtfully, keep in mind the size and shape of your room, the expected size of your audience and available equipment.

ex-memorable speeches given without the help of visual aids. However, audiences may need the help of visuals For example: If you're expecting an audience of 50 you to fully comprehend some messages.

wouldn't want to show a video if you only have a single Visual aids come in many forms, such as slides, over-or small monitor. The same is true for writing on a chalk-head transparencies, posters, flipcharts, videos, pup-board or flip chart for a large room where your audience pets or other actors, and objects.

might be spread out over a distance.

For information on creating presentation graphics see

- Practice with all equipment before you deliver your the "Designing Presentation Graphics That Work" skill speech so you're comfortable with how it works. Allow sheet on page 67.

time to make adjustments if necessary. You could practice with the equipment at the same time you check the **When To Use Visual Aids**

microphone (if you're using one).

In many situations, using a visual aid would enhance

- You may need to speak louder than you normally do your presentation, such as:

in order to be heard over some equipment. Test this before your presentation.

- **When you're presenting complicated information.**

If the information you're presenting is detailed and has

- Structure your presentation so that you aren't con-many parts to it, you might want to use posters or stantly turning on and off the lights. Audience adjust-overheads to organize your thoughts. You can point to ment to light and dark may be slow, creating lag time in individual items or place a check mark by items as you your presentation.

talk to keep the audience moving with you.

- Rehearse your speech, including all of your visuals.

- **When pictures speak volumes.** Some pictures really You should be able to use them smoothly to enhance do speak a thousand words and can be very appealing your presentation and not distract the audience from to an audience. Showing slides, videos or posters may your primary message.

be more effective than trying to describe a scene. Imag-

- Always have a backup plan in case you aren't able to ine how much more persuasive a photograph of a de-use your audio or visual aids (for whatever reason). A stroyed rain forest is than describing the way it looks.

presentation that relies completely on a video or slides

- **When your audience may fall asleep.** In some may be a disaster if the equipment doesn't work or isn't speeches it may be necessary to give many statistics or available.

to talk about percentages. Overheads showing pie graphs or charts may break up the monotony of numbers. Better yet would be to show a short video clip illustrating the content of your message between bouts of delivering statistical data.

## **COMMUNICATIONS TOOLKIT • Vocal Expression & Public Speaking – 33**

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### **SKILL SHEET:**

#### **Overcoming Stage Nerves**

The largest bar-

rier to learning

to speak effec-

#### **Tips for Reducing Stage Nerves**

tively in front of

To reduce your stage nerves and work toward becoming a confident a group is the

speaker, follow these tips:

fear that some-

thing terrible will happen. Some

- Be prepared. A well-planned and well-rehearsed talk will people who dread public speaking are

sound clear and organized and seem natural to deliver.

afraid because they've had poor first

- Only speak about things you know well or that interest you, so experiences and were unprepared to

you feel confident you have something to offer the audience.

handle the situation. But for most

people it's the lack of practice or op-

- Complete the "Let's Talk About Nerves" activity found on opportunities to speak that keeps them page 48 to help you identify your anxiety symptoms. Then from feeling like capable public learn to prepare for and eventually overcome them.

speakers.

- If you get nervous speaking in front of strangers, try to chat It is important to recognize the dif-with a few members of the audience before you have to give ference between a real phobia and your speech. This helps establish contact and make you feel just a bad case of stage nerves (also as though you're on friendly ground.

called "stage fright"). The symptoms

- Eat light before a presentation.

of stage nerves could be quite se-

vere, but should lessen as you be-

- Avoid carbonated beverages, which may cause stomach upset come a more experienced presenter.

or uncomfortable gas. Dairy products may coat the mouth You don't have to lose your fear be-and throat, and also may cause stomach upset for some fore you can do a good job. You can

people.

learn the mechanics of overcoming

- Practice giving your presentation several ways so you're fear, and through repetition you'll comfortable making last-minute adjustments.

gain confidence.

- Learn a quick stress-reducing routine for relaxing your neck, If you get nervous before crowds, shoulder and facial muscles just before giving your talk.

remember that a little nervous en-

ergy is absolutely necessary to give

- Visualize yourself succeeding and enjoy the applause!

you that excited spark that the audience can share. Even very experienced speakers and actors feel “butterflies” before going on stage because they all want to give their best performances. Only speakers who don’t care don’t feel anything.

## **34 – COMMUNICATIONS TOOLKIT • Vocal Expression & Public Speaking**

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### **SKILL SHEET:**

#### **Writing for Public Speaking**

#### **Several points that will help you**

Developing an outline first will save

#### **Follow these tips to present your**

#### **write good presentations follow.**

you work and frustration later on.

#### **written ideas in the most effec-**

#### **tive way.**

- **Choose a topic.** When preparing
- **Remember the high points.** Write any good speech, the first important down certain phrases or points that

- **“Tell ’em what you’re gonna**

step is to pick a topic you’re com-

you don’t want to forget.

**say.”** Remember, in the introduction

fortable with. If you’re familiar with

you tell the audience what you’re

- **Use the introduction to grab at-**

and excited about the topic, your

going to say, in the body you say

**tention.** The introduction should

speech will be more interesting for

it and in the conclusion you tell

grab your audience’s attention and

the audience to listen to and easier

the audience what you said.

set the stage for your presentation.

for you to present.

Choose a quote, a joke, a challeng-

- **Follow your notes or an outline.**

- **Consider your audience.** The next

ing question or something surpris-

Don’t be afraid to use your notes or

step is to consider your audience,

ing to get the audience interested.

outline during your talk. However,  
how you'll present your material and

The introduction should also out-

be sure the print is large enough to

how much depth or detail will be

line important parts of your speech

refer to at a glance. This will help

necessary. Targeting your message to

and tell your listeners what you'll

you stay on track and make your

your audience increases the likeli-

be talking about. You may want to

presentation flow. Losing your place

hood that your speech will be a suc-

include some information about

in your notes distracts you and the

cess. If you know something about

yourself, too.

audience.

your audience, you'll be better able

• **Be logical and thorough.** Present

• **Avoid memorizing.** When you're

to plan a talk that speaks directly

your material in a logical order and

truly familiar with your topic, to them. For example, consider how be sure to cover the areas you out-memorizing your speech is unnecessary. Thoroughly prepared speakers would differ from the same tailor your talk to fit the age and interests of your audience.

the major points and supporting information when delivering the

- **Get personal.** Use personal examples, illustrations and stories in the three basic outline parts: introduction, discussion and conclusion.
- **Develop an outline.** Keep in mind speech. Working from a written outline without memorizing the entire your talk.

speech will give you more flexibility

• **Summarize your speech.** The conclusion summarizes the speech. It should stress the most important parts of the speech and tie everything together.

## **COMMUNICATIONS TOOLKIT • Vocal Expression & Public Speaking – 35**

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### **SKILL SHEET:**

#### **Tips for Effective**

#### **Demonstrations**

#### **Demonstrations are**

- Consider how much background
- Consider how much time you have, your audience will need on your the skill level of your audience and

#### **talks that show, one**

topic before you begin demonstrating your own expertise.

#### **step at a time, how to**

ing. For example, if you are showing how to saddle a horse, you may need

#### **perform an activity.**

#### **Organizing**

to first explain how to approach the  
Once your initial planning is done,  
horse and make it hold still.

### **Planning Tips**

make a detailed outline or script for

### **What is my audience**

what you plan to cover in your talk

Your demonstration may take only  
and what visuals or props you will need  
10 minutes, but the time you spend

### **going to be like?**

for each step. A well-organized speech  
planning those 10 minutes will de-

- Plan your demonstration around

contains the following basic parts:

termine your success or failure. Here

the size of the group. Will you have

are some questions to ask yourself

a small group that can cluster

### **1. Introduction** – Where you cap-

and points to consider:

around you, or will you need large

ture the audience's attention with

visual aids and a microphone to be

a relevant story, quote, challenge or

### **Will my topic work as a**

seen and heard?

other interesting remarks and then

### **demonstration?**

explain what the demonstration will

- Try to anticipate how much your audience may already know about the activity that can be demonstrated in a short time period. Pick a skill level that

- Pick a well-defined skill or activity that can be demonstrated in a short time period. For example, showing how to toss a salad is easier to hold your audience's attention but not so high that they can't keep up with you.

### **2. Body** – Where you present a

short time period. For example,

you think will be high enough to

step-by-step procedure, explaining

showing how to toss a salad is easier

hold your audience's attention but

key points as you go along. You

can outline the steps by doing the

activity and writing the steps

up with you.

activity and writing the steps

up with you.

- Select a topic that can be easily broken down as you go.

broken down into illustrated steps

### **What do I want my**

that the audience can be successful

### **3. Conclusion** – Where you restate

at doing themselves. For example,

### **demonstration to**

the purpose of your demonstration

you may be able to wiggle your ears,

### **accomplish?**

and give a brief summary of the

but others may not find it as easy

steps.

- Decide if the purpose of your demonstration will be to do!

onstration will be to **educate** the

### **Tips for Choosing**

audience on how to do something,

**inform** them on how something

### **& Using Visual**

works or **persuade** them that one

method works better than another.

### **Aids**

You can do all of these in one dem-

Use visuals such as posters, slides

onstration if you plan well.

and overheads to help the audience

- Think about what response you

understand your topic. Visuals can

want from your audience. For ex-

help keep the audience's attention,

ample, do you want them to try a

but don't overdo it – too many visu-

new skill, or change an old way of

als can be distracting. It's very im-

doing something?

portant to practice your demonstra-

## **36 – COMMUNICATIONS TOOLKIT • Vocal Expression & Public Speaking**

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*Tips for Effective Demonstrations skill sheet continued* tion using your visuals. Keep them

If you're planning to use electronic

- Stay within your allotted time.

within reach and in the order you

equipment, make sure you'll have

To show all the steps of a process,

will present them. When you're done

outlets available nearby and antici-

you may need to have materials using each one, set it aside so it pate any replacement bulbs or batteries ready to show in various stages doesn't distract from your next teries you might need. Have a back- (baking bread, for example). point. Make sure your visuals: up plan in case your equipment fails.

- End your demonstration by show-
- Are attractive.

### **Tips for Good**

ing the audience your finished product and letting them ask questions.

- Are readable from the farthest

If you don't know an answer, say distance they will be viewed.

### **Delivery**

so – don't guess.

- Highlight important points.
- Be enthusiastic!

### **Practice Makes**

- Are simple and neat.
- Dress for the part.

- Are easy to use.
- Briefly introduce yourself, explain-

## **Perfect**

ing your interest or special skills in

Props may be helpful when realism

Assemble everything you need for

your topic.

is needed. Make sure that your props

your presentation (and friendly vol-

are practical for the setting you will

- Start with your opening, then

unteers to be your test audience) and

be in. For instance, including your

get right into the action. Keep

**practice.** Videotaping your practice

dog as part of a demonstration on

things moving but don't rush.

demonstration is another good way

pet grooming might make it more

to help you fine-tune it. Afterwards

- Know your subject and explain

realistic, but you'll also need to think

ask yourself (or your test audience):

what you're doing as you do it.

about any problems that might arise

- Are my actions in logical order?

from bringing an animal into a un-

- Practice in advance, but if some-familiar situation.

thing doesn't go the way you

- Did I explain what I was doing

planned it in the final demonstra-

while I was doing it?

tion, explain briefly what happened

- Did I give complete information?

and continue.

- Are my visual aids effective?

- Be sure your audience can see what

you're doing at all times. Store items

- Did I keep to my time limit?

away from the center of interest

- Do I know enough about my topic

when you're not using them.

to answer questions from the

- Speak clearly. If you must use

audience?

noisy equipment like a blender, ex-

plain what you're doing before and

after you use it. Don't try to shout

over the noise.

## **COMMUNICATIONS TOOLKIT • Vocal Expression & Public Speaking – 37**

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### **ICEBREAKER:**

#### **Speech Warm-Ups**

#### **PURPOSE:**

#### **PROCEDURE:**

- To help kids feel relaxed with

1. Divide the group into four- or five-person teams.

each other

2. Have each person choose a tongue twister to work on. Give them a

- To help kids learn that it's

minute or two to practice saying their tongue twisters.

okay to make mistakes when

3. Have the participants take turns reading their tongue twisters speaking or reading aloud

aloud and teaching the tongue twisters to the rest of their small **MATERIALS:**

group.

"Tongue Twisters" handout on pg.

4. After they've "sampled" each tongue twister, tell the teams to (3; one per person)

choose one tongue twister to read for the whole group.

#### **SETTING:**

**Leader's Note:** If everyone picks one of the simpler tongue twisters (4, Comfortable room where kids can

5 and 6) to work on the first time, repeat steps 1 through 4 and drop meet in small groups

those tongue twisters from the list. Work with the kids to help them pronounce the more difficult words clearly. Explain that this will help **TIME:**

them learn to speak clearly.

5–10 minutes

*Peter Piper*

*picked a peck of*

*pickled peppers*

### **38 – COMMUNICATIONS TOOLKIT • Vocal Expression & Public Speaking**

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#### **SPEECH WARM-UPS HANDOUT:**

##### **Tongue Twisters**

**Say these slowly at first; then say them as fast as you can without making any mistakes! If you make a mistake, start over, a little more slowly. Speak all final consonant sounds (such as t, d and p) distinctly. Also, take care to make the vowel sounds (a, e, i, o and u) distinctly.**

1. Peter Piper picked a peck of pickled peppers;

A peck of pickled peppers Peter Piper

picked.

4. Through thin cloths, the thief thrust If Peter Piper picked a peck of pickled

thorns.

peppers,

Where's the peck of pickled peppers Peter

Piper picked?

2. When a twister twisting would twist him a twist,

For twisting a twist, three twists he would

twist.

5. Cease sighing, since sighs seldom secure But if one of the twists untwists from the success.

twist,

Then the twist, untwisting, untwists the

twists.

3. If Theofilus Thistle, the thistle-sifter, sifted a sieve of unsifted thistles,

6. Rubber baby buggy bumpers.

where is the sieve of unsifted thistles that Theofilus Thistle the thistle sifter sifted?

## **COMMUNICATIONS TOOLKIT • Vocal Expression & Public Speaking – 39**

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### **ICEBREAKER:**

#### **This Is My Friend**

#### **FOCUS:**

#### **PROCEDURE:**

Beginning to speak in front of a

#### **Before the meeting:**

group

This activity puts young people in situations where other kids in the **PURPOSE:**

group will respond to their presentation skills or give feedback. It should be done only when group members respect each other and are willing

- To give participants opportu-

to abide by the following guidelines for respectful behavior. If you choose nities to speak in front of a

to use this activity, review these points with your group in advance.

group

- Listen carefully to other people's presentations.
- To help participants understand the purpose of a good
- Provide feedback in a positive way.

stand the purpose of a good

- Don't be rude, critical or hurtful.

introduction

- Be aware that everyone has differing abilities.
- Be considerate of other people's feelings.

### **MATERIALS:**

- Follow the Golden Rule: Treat other people the way you would like

Paper

to be treated.

Pens or pencils

### **During the meeting:**

### **SETTING:**

1. Have the participants pair off with someone they don't know well.

Room with chairs, an open area in

Tell them they'll have 2 or 3 minutes to interview and jot a few notes about each other. Suggest that they ask at least the following questions:

notes about each other. Suggest that they ask at least the following questions:

### **TIME:**

- What's your name?

10 minutes

- How old are you?

- What school do you attend?
- What grade are you in?
- What's your favorite project or projects?
- How many people are in your family?
- What's your favorite dessert?

2. Explain that they'll be building imaginary frames around their partners, and that the more information they have for their frames, the nicer those frames will be.

3. Give them another 2 or 3 minutes to write a brief introduction of their partners. Suggest that they follow the format, "Hi, my name is, , and this is my friend, ."

Tell them to read their introductions to their partners to make sure their information is correct.

4. Have the teams take turns introducing their partners to the whole group. After they've finished the introductions, ask the group what they liked or didn't like about talking in front of the large group.

**Leader's Note:** This icebreaker could be used with other speaking activities in this section or to warm up the group before working on any project area.

## 40 – COMMUNICATIONS TOOLKIT • Vocal Expression & Public Speaking

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### ICEBREAKER:

#### Imagine It!

#### FOCUS:

#### PROCEDURE:

To develop creativity and increase

1. Set the stage by being enthusiastic yourself!

participants' comfort with acting in

2. Have group members sit or stand in a circle.

front of a group

3. Start by passing around an imaginary object such as a baseball, a **PURPOSE:**

flower or a basketball. Items that require action to use are the

- To help participants relax

best.

before working on their public

presentation skills

**4.** As the “object” is tossed, rolled or handed around, each person should change the object to something else.

- To create an atmosphere of

creativity and fun

**5.** Encourage the participants to act out the motions completely, even exaggerating motions; the more dramatic they are the better.

### **MATERIALS:**

This can help participants loosen up and relax their muscles before None

they try to do something more difficult like give a demonstration or speech.

### **SETTING:**

**6.** If the kids are enjoying the game, try acting out imaginary scenes Open area (inside or outside) with like picking and eating an apple or learning to ride a bike.

little or no furniture or obstacles

**7.** When you’re ready to quit, have the group talk about how they **TIME:**

felt being “actors.” Connect this to public speaking by explaining 5–10 minutes

the importance of using natural hand gestures and expressions during a presentation. For more advanced groups, try acting out emotions, expressions or action words – things that are not tangible.

### **COMMUNICATIONS TOOLKIT • Vocal Expression & Public Speaking – 41**

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### **ACTIVITY:**

## **Tell Me a Story**

### **(Illustrated Talks)**

#### **FOCUS:**

#### **PROCEDURE:**

Using a visual aid in a presentation

1. Give the group 5 to 8 minutes to select pictures from magazines.

Suggest that they pick pictures that interest them or that seem to **PURPOSE:** fit together.

- To encourage creativity

2. Have the kids glue their pictures to a poster board. Suggest that

- To give participants a chance

they arrange the pictures in the order of a story or just arrange to talk in front of a group them so they look nice.

- To illustrate a connection

3. Depending on their ages or skill levels, you could have older between speaking and using participants make up stories about their pictures and younger visual aids

ones tell why they liked each picture they cut out. Participants could use one of the story starters that follow (you may need to **MATERIALS:**

help younger participants decide on an opening).

Scissors

- I chose these pictures because...

Magazines

- This is a story about...

Poster board

- Once upon a time...

Glue sticks

4. Have the group members tell their stories to the rest of the group.

"What I Learned" self-evaluation

Encourage participants to point to the appropriate pictures at form (on pg. 8; one per person)

each point in their stories. Remind them to re-establish good eye **SETTING:**

contact with the audience after they have pointed out each picture.

Room with space for the group to

spread out

**TIME:**

15–30 minutes

## **42 – COMMUNICATIONS TOOLKIT • Vocal Expression & Public Speaking**

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**ACTIVITY:**

**Show & Tell:**

**A Demonstration Workshop**

**PURPOSE:**

**PROCEDURE:**

To understand the basics of a dem-

**Before the meeting:**

onstration and increase opportuni-

1. This activity puts young people in situations where other kids in ties for public speaking

the group will respond to their presentation skills or give feed-MATERIALS:

back. It should be done only when group members respect each

other and are willing to abide by the following guidelines for

“Tips for Effective Demonstra-

respectful behavior. If you choose to use this activity, review these tions” skill sheet (on pg. 36;

points with your group in advance.

one per person – optional)

- Listen carefully to other people’s presentations.

“Delivering a Vocal Presenta-

- Provide feedback in a positive way.

tion” skill sheet (on pg. 31;

- Don’t be rude, critical or hurtful.

one per person – optional)

- Be aware that everyone has differing abilities.

“Practice Demonstrations”

- Be considerate of other people’s feelings.

handout (on pg. 45; one per

- Follow the Golden Rule: Treat other people the way you would person)

like to be treated.

Demonstration materials

Poster board

2. Read the “Tips for Effective Demonstrations” skill sheet so you can

Markers

describe the basic parts of a demonstration to the kids. You also may

“Tip Sheet for Evaluating

want to copy the skill sheet for each person. See the “Delivering a Demonstrations” handout (on

Vocal Presentation” skill sheet for more helpful hints.

pg. 46; one per person)

3. If you have an older group member who has presented a

“What I Learned” self-evaluation

demonstration before, ask him or her to prepare and give a short form (on pg. 8; one per person)

demonstration.

## **SETTING:**

### **During the meeting:**

Enough space for kids to break up

1. Have the older member give his or her demonstration.

into small groups to work on their

demonstrations; area should include

2. Divide the group into teams or have the participants work alone, a table for spreading out materials

depending on their age and experience.

during demonstrations

3. Hand each team a practice demonstration topic and the materials **TIME:**

necessary for presenting that demonstration.

30 minutes

4. Give teams 5 to 8 minutes to create and practice their demonstrations. Encourage the teams to use posters to list ingredients or materials needed for their presentations.

5. After each team gives their demonstration, pass out the “Tip Sheet for Evaluating Demonstrations” handout. Help the team members identify the points they did well at and the ones they need to work on. Keep in mind that this may be hard for some kids and that just standing up in front of a group will be a challenge –

always look for the positive first.

## **COMMUNICATIONS TOOLKIT • Vocal Expression & Public Speaking – 43**

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### **TALKING IT OVER:**

After all the teams have presented their demonstrations, encourage the whole group to talk about their experiences. Ask the following questions.

- How did it feel to be speaking in front of a group?
- What did you find fun about doing demonstrations?
- Was it as hard as you thought it would be?
- When do you think you might do other demonstrations?

## **44 – COMMUNICATIONS TOOLKIT • Vocal Expression & Public Speaking**

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### **SHOW & TELL HANDOUT:**

#### **Practice Demonstrations**

**Leader’s Note:** These demonstrations can be done alone or as a team. For first-time demonstrators, it might be helpful to do team presentations.

#### **Making a Paper Airplane:**

##### **Pencil Judging:**

Demonstrate how to properly fold a pa-

Explain how you would use judging techniques per airplane for best flight. (Talk about to rank a group of four pencils.

the structures on the plane that have  
to do with aerodynamics.)

### **Folding Tissue Flowers:**

#### **Napkin Folding:**

Demonstrate how to fold a paper rosette

Demonstrate three different ways to

and demonstrate some of its uses.

fold napkins for a dinner table.

### **Sanding Techniques:**

#### **Peanut Butter Sandwich**

Demonstrate proper sanding techniques to

#### **Making:**

achieve a smooth finish (include different

Demonstrate different methods for mak-

weights of sandpaper and what each would

ing a peanut butter and jelly sandwich

be used for).

to suit your taste.

## **COMMUNICATIONS TOOLKIT • Vocal Expression & Public Speaking – 45**

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### **SHOW & TELL HANDOUT:**

#### **Tip Sheet for Evaluating**

#### **Demonstrations**

**The main purpose of any demonstration is to share information, ideas and skills with others. This could be accomplished in many ways. The important thing is for you to have the chance to practice speaking skills.**

**Don't intimidate yourself by trying to achieve a certain set of standards. However, there are some basic areas in which you can evaluate your own progress and set goals for improvement. Think about and answer the following questions.**

### **Topic**

Was the topic appropriate for the audience age and interests? Why or why not?

### **Content**

Did the demonstration give enough information to spark the audience's interest? Why or why not?

Was the information presented in such a way that the audience could replicate the techniques or ideas demonstrated?

### **Poise**

Did you feel comfortable in front of the group? Why or why not?

Do you feel that you presented yourself well? Why or why not?

## **46 – COMMUNICATIONS TOOLKIT • Vocal Expression & Public Speaking**

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### *Tip Sheet for Evaluating Demonstrations* **handout continued Delivery**

Was your demonstration clear and organized?

Was the audience interested enough to ask for more information?

Did people respond as if they could hear everything?

### **Introduction and Conclusion**

Did you tell the audience what you were planning to say and then sum up what you said at the end?

### **Other**

What else did you learn about giving speeches?

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**ACTIVITY:**

**Let's Talk About Nerves**

**FOCUS:**

**PROCEDURE:**

Increase public speaking skills

**1.** Introduce the topic by telling a personal story about a public speaking experience. The story should contain something you **PURPOSE:**

learned about yourself as a result.

- To help kids identify what

**2.** Ask the kids if they also have some fear of speaking in front of makes them scared of public

groups. Explain that some fears and symptoms of nervousness will speaking

go away with practice. However, they need to learn what they

- To help kids learn to plan for

might be afraid of and how they can work around it and still be and around stage nerves

able to share their ideas.

- To help kids feel less afraid of

**3.** Hand out pencils or pens and the "What Are *You* Afraid Of?" hand-the nervous symptoms they

out to each person. Give them 5 to 7 minutes to write down some feel

of the fears they may have and to check off some of the symptoms this stress causes.

**MATERIALS:**

**4.** Bring the group back together to discuss their answers.

"What Are *You* Afraid Of?"

handout (on pg. 50; one per

## **TALKING IT OVER:**

person)

1. Allow at least 10 minutes for discussion, depending on the size of Pens or pencils

the group. Share the following information with the group. (For

“What I Learned” self-evaluation

tips on reducing stage nerves or stage fright, refer to the “Over-form (on pg. 8; one per person)

coming Stage Nerves” skill sheet on page 34.) **SETTING:**

Here are some fears that people have noted about public speaking: Comfortable area where the group

- Boring the audience to sleep

can sit in a circle

- Burping uncontrollably
- False teeth coming loose

## **TIME:**

- Tripping on the way up to the stage 20–30 minutes

2. Ask the group the following questions:

- What other fears can you think of? (Encourage the group to brainstorm as many as they can.)
- Are you surprised at all the things people fear about public speaking? (Explain that when they can identify a fear very specifically they can work on overcoming it.)
- What might you do to prevent some of these fears from coming true? (For example, to help keep from boring an audience to sleep, you could read your speech to a friend to see how it sounds.)

3. Ask the group to come up with at least one solution or problem-solving technique for each fear they listed. Encourage them to be creative and not to worry about whether the solution will work for every public speaking situation.

4. Ask for volunteers to talk about the nervous symptoms they've had before or while speaking in public. (You could open with **48 – COMMUNICATIONS TOOLKIT • Vocal Expression & Public Speaking**)

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something like, "I always seem to get... sweaty hands... cold feet... an upset stomach... when I know I have to get up and talk in front of others.) After they've compiled a list of symptoms, encourage them to come up with some ways they can reduce the symptoms (for example, to remedy or minimize an upset stomach, eat only a light meal before speaking).

5. Give the group a final opportunity to talk about experiences they've had with speaking or reading aloud and how they felt.

6. Remind your group that being scared or nervous is not a good reason to avoid public speaking. Being able to express their ideas and share information is *very important*. Even though public speaking may be hard now, the more they do it the easier it will become.

### **TRY THIS, TOO:**

Ask a local radio, television or sports celebrity to speak to your group about his or her experiences with performance nerves.

### **COMMUNICATIONS TOOLKIT • Vocal Expression & Public Speaking – 49**

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### **LET'S TALK ABOUT NERVES HANDOUT: What Are *You* Afraid Of?**

**Write a sentence or two about the things that scare you about public speaking.**

**This is how I feel if I have to talk in front of others: (Check each symptom that you feel.)**

My hands shake.

I get a headache.

My shoulders ache.

I get dizzy.

My mouth goes dry.

My neck hurts.

My heart beats faster than normal.

I get sweaty palms.

My stomach is upset and I'm nauseated.

My legs are shaky.

I can't stop my feet from tapping.

Other:

## **50 – COMMUNICATIONS TOOLKIT • Vocal Expression & Public Speaking**

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### **ACTIVITY:**

#### **What's Wrong With**

#### **This Picture?**

#### **FOCUS:**

#### **PROCEDURE:**

To enhance understanding of basic

#### **Before the meeting:**

public speaking skills

1. This activity puts young people in situations where other kids in **PURPOSE:**

the group will respond to their presentation skills or give feedback. It should be done only when group members respect each

- To show kids how much they

other and are willing to abide by the following guidelines for already know about good

respectful behavior. If you choose to use this activity, review these speaking skills

points with your group in advance.

- To show how public speaking
- Listen carefully to other people's presentations.

can be fun

- Provide feedback in a positive way.
- Don't be rude, critical or hurtful.
- To give kids a chance to speak
- Be aware that everyone has differing abilities.

in front of a group

- Be considerate of other people's feelings.

### **MATERIALS:**

- Follow the Golden Rule: Treat other people the way you would like to be treated.

"Topics" and "Speaking Rules"

cards (from handout on pg. 53)

**2.** Cut out the "Topics" and "Speaking Rules" cards. If you have a

"Delivering a Vocal Presenta-

large group, you might need more than one copy of each card. You tion" skill sheet (on pg. 31;

may want to add a few topics that are specific to your group's one per person – optional)

interests.

Pencils or pens

"What I Learned" self-evaluation **During the meeting:** form (on pg. 8; one per person)

**1.** You might want to hand out copies of the "Delivering a Vocal Presentation" skill sheet so the kids can refer to it during the rest **SETTING:**

of the activity.

Room with an open area like a

**2.** Tell the group that they'll be demonstrating the basic "how-to's"

stage or speaker's area on one side

of public speaking, but in an upside-down way. Tell them that this **TIME:**

will give them a chance to show what they know about good public speaking skills.

10–15 minutes

3. Have each person pick one card from the Topics pile and one card from the Speaking Rules pile.
4. Tell the participants to prepare a 30-second presentation on the topic from their card. Their presentations should break the rules they know about the speaking skill they picked. For example, someone who chose the Speaking Rules card “Eye Contact” and the Topic card “Talk about your favorite dessert” might talk enthusiastically about chocolate brownies while looking at the floor or ceiling the entire time. This activity works best when the participants *really* exaggerate the rule they’re breaking.
5. Tell them not to reveal what speaking rule they’re trying to break so that the audience can guess which one it is.

## **COMMUNICATIONS TOOLKIT • Vocal Expression & Public Speaking – 51**

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6. When the audience guesses what the speaker is trying to do, ask them to identify how good speakers would handle the speaking rule.
7. Continue in this manner until everyone has had a chance to talk.

### **TALKING IT OVER:**

Ask the group the following questions:

- Did this activity help you learn anything new about public speaking skills?
- Have you tried or heard about other good tips for speaking to a group?
- Did this activity make it seem easier to try making a longer speech in the future?
- How could you share this information about public speaking with other kids or adults?

## **52 – COMMUNICATIONS TOOLKIT • Vocal Expression & Public Speaking**

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### **WHAT’S WRONG WITH THIS PICTURE? HANDOUT: Topics & Speaking**

#### **Rules Cards**

**Topic Card:**

**Speaking Rules Card:**

**Describe your dream vacation.**

**Audience Consideration**

**Topic Card:**

**Speaking Rules Card:**

**Talk about your favorite dessert.**

**Facial Expressions**

**Topic Card:**

**Speaking Rules Card:**

**Talk about your favorite music.**

**Hand Gestures**

**Topic Card:**

**Speaking Rules Card:**

**Create a new commercial for  
one of your favorite products.**

**Voice**

**Topic Card:**

**Speaking Rules Card:**

**Talk about someone who has  
influenced your life.**

**Eye Contact**

**Topic Card:**

**Speaking Rules Card:**

**Talk about a book you've read.**

**Proper Attire**

**COMMUNICATIONS TOOLKIT • Vocal Expression & Public Speaking – 53**

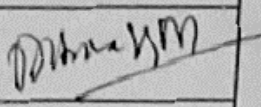
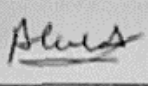
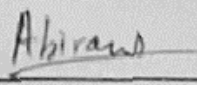
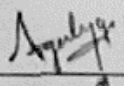
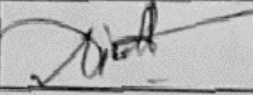
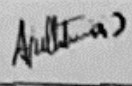
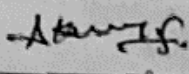
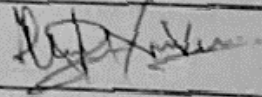
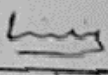
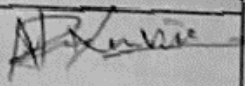
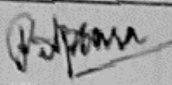
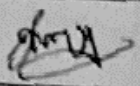
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**54 – COMMUNICATIONS TOOLKIT • Vocal Expression & Public Speaking**

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ANNEXURE II

**SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCE  
DEPARTMENT OF COMMUNITY MEDICINE  
TOPIC: PUBLIC SPEAKING**

Sl. No	Reg. No	Name of the Students	SIGNATURE
1	U14MB204	ABINAYA.M	
2	U14MB205	ABISHEK.R	
3	U14MB206	ABIRAMI.S	
4	U14MB207	AGALYA.S	
5	U14MB209	AJEETH.R	
6	U14MB210	AJITH KUMAR.M.K	
7	U14MB211	AKSHAI.S	
8	U14MB212	ALLEN DANIEL XAVIER.J	
9	U14MB213	ALTHAF AHMED	
10	U14MB217	ANDREW MARIE XAVIER	
11	U14MB218	APSARA.P	
12	U14MB219	ARPUDHA.A	

## ANNEXURE III

### Public speaking -Assessment

1. Public speaking has been taught and studied for thousands of years. True or False
2. Because people have different frames of reference, a public speaker must take care to adapt her or his message to the particular audience being addressed. T or F
3. \_\_\_\_\_ is anxiety over the prospect of giving a speech in front of an audience. \_\_\_ Adrenaline, \_\_\_ Visualization, \_\_\_ Stage Fright
4. It is normal—even desirable—to be nervous at the start of a speech. T or F
5. \_\_\_\_\_ is controlled nervousness that helps energize a speaker for his or her presentation. \_\_\_ Restrained Anxiety, \_\_\_ Positive Nervousness, \_\_\_ Focused Nervousness
6. Listeners usually realize how tense a speaker is. T or F
7. Public speaking and ordinary conversation are similar in that both involve adapting to listener feedback. T or F
8. Critical thinking includes \_\_\_\_\_. \_\_\_ Seeing the relationships among ideas, \_\_\_ Judging the credibility of statements, \_\_\_ Assessing the soundness of evidence, \_\_\_ All answers are correct.
9. The messages, usually nonverbal, sent from a listener to a speaker are called \_\_\_\_\_. \_\_\_ Cues, \_\_\_ Feedback, \_\_\_ Prompts.
10. The knowledge, experience, goals, values, and attitudes through which each listener filters a message make up the listener's \_\_\_\_\_. \_\_\_ Frame of Reference, \_\_\_ Cognitive Screen, \_\_\_ Psychological Filter, \_\_\_ Attitudinal Field about what works.



## SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION AND RESEARCH

### Public speaking

1. Public speaking has been taught and studied for thousands of years. True or ~~False~~
2. Because people have different frames of reference, a public speaker must take care to adapt her or his message to the particular audience being addressed.  or F
3. \_\_\_\_\_ is anxiety over the prospect of giving a speech in front of an audience.  Adrenaline,  Visualization,  Stage Fright
4. It is normal—even desirable—to be nervous at the start of a speech.  or F
5. \_\_\_\_\_ is controlled nervousness that helps energize a speaker for his or her presentation.  Restrained Anxiety,  Positive Nervousness,  Focused Nervousness
6. Listeners usually realize how tense a speaker is.  or F
7. Public speaking and ordinary conversation are similar in that both involve adapting to listener feedback. T or F
8. Critical thinking includes \_\_\_\_\_.  Seeing the relationships among ideas,  Judging the credibility of statements,  Assessing the soundness of evidence,  All answers are correct.
9. The messages, usually nonverbal, sent from a listener to a speaker are called \_\_\_\_\_.  Cues,  Feedback,  Prompts.
10. The knowledge, experience, goals, values, and attitudes through which each listener filters a message make up the listener's \_\_\_\_\_.  Frame of Reference,  Cognitive Screen,  Psychological Filter,  Attitudinal Field about what works.

## ANNEXURE IV



**Sri Lakshmi Narayana Institute of Medical Sciences**

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



### CERTIFICATE OF MERIT

This is to certify that **ABISHEK.R** has actively participated in the Value Added Course on **PUBLIC SPEAKING** held during Jul 2017 – Sep 2017 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr. J. Barathalakshmi, MD

**Resource Person**

Dr. Rajini S. MD

**Professor & HOD**

**Department of Community  
Medicine**

Dr. G. Jayalakshmi, MD

**Dean, SLIMS**



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that **ABINAYA.M** has actively participated in the Value Added Course on **PUBLIC SPEAKING** held during Jul 2017 – Sep 2017 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr. J. Barathalakshmi, MD  
Resource Person

Dr. Rajini S. MD  
Professor & HOD  
Department of Community  
Medicine

Dr. G. Jayalakshmi, MD  
Dean, SLIMS

# ANNEXURE V

## Student Feedback Form

Course Name: **PUBLIC SPEAKING**

Subject Code: **PSM02**

Name of Student: ABINAYA.M Roll No.: 1

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

SI. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear				✓	
2	Course contents met with your expectations			✓		
3	Lecturer sequence was well planned				✓	
4	Lectures were clear and easy to understand				✓	
5	Teaching aids were effective				✓	
6	Instructors encourage interaction and were helpful				✓	
7	The level of the course				✓	
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Good.

Date: 29/09/2017

  
Signature

### Student Feedback Form

Course Name: **PUBLIC SPEAKING**

Subject Code: **PSM02**

Name of Student: ABISHEK . R Roll No.: 2

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear			✓		
2	Course contents met with your expectations				✓	
3	Lecturer sequence was well planned				✓	
4	Lectures were clear and easy to understand			✓		
5	Teaching aids were effective				✓	
6	Instructors encourage interaction and were helpful				✓	
7	The level of the course				✓	
8	Overall rating of the course	1	2	3	4 ✓	5

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Good

Date: 29 / 09 / 2017

  
Signature



# Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,

PUDUCHERRY – 605 502

Date:03.07.2017

From  
Dr.S.Rajini  
Professor and Head,  
Department of Community Medicine,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,Puducherry

Through Proper Channel

To  
The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Puducherry

## **Sub: Completion of value-added course: “Public Speaking”**

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: **“Public Speaking”** on **Jul 2017- Sep 2017**. We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind regards

Enclosure :Photograph

*Rajini*  
PROFESSOR & HOD  
DEPARTMENT OF COMMUNITY MEDICINE  
Sri Lakshmi Narayana Institute of Medical Sciences  
PONDICHERRY - 605 502





## Sri Lakshmi Narayana Institute of Medical Sciences

Date:02.06.2017

From  
DR.V.R Sridhar  
Professor and Head,  
Department of Psychiatry,  
Sri Lakshmi Narayana institute of medical sciences,  
Bharath Institute of Higher Education and Research,  
Chennai.

To  
The Dean,  
Sri Lakshmi narayana institute of medical sciences,  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Permission to conduct value-added course: Various Psychological tests and its application in psychiatry**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: **Various Psychological tests and its application in psychiatry**\_on 3/07/2017. We solicit your kind permission for the same. Kind Regards

Dr.V.R. Sridhar

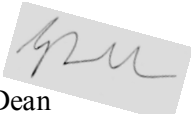
### FOR THE USE OF DEANS OFFICE

Names of Committee members for evaluating the course:

The Dean: **Dr. Jayalakshmi**

The HOD: **Dr. Sridhar**

The Expert: **Dr. Arun Seetharaman**.The committee has discussed about the course and is approved.




Dean

(Sign & Seal)


**Dr. G. JAYALAKSHMI, BSc., MBBS., DTCD., M.D.,**  
**DEAN**  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agaram, Kudapakkam Post,  
Villianur Commune, Puducherry- 605502.

Subject Expert

(Sign & Seal)



**Dr. ARUN SEETHARAMAN, MD.,**  
Reg. No: 91440  
Associate Professor, Psychiatry  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502.



HOD

(Sign & Seal)

**Dr. V. R. SRIDHAR, MD.,D.P.M.,**  
Reg. No: 30995  
Professor & HOD, Psychiatry  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502.



OFFICE OF THE DEAN

# Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P -II ) dt. 11/07/2011 ]  
[ Affiliated to Bharath University, Chennai - TN ]

## Circular

15.06.2017

**Sub: Organising Value-added Course: Various Psychological tests and its application in psychiatry**

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research** is organizing “**Various Psychological tests and its application in psychiatry for final year students**”. The course content and registration form is enclosed below.”

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before 30, June 2017. Applications received after the mentioned date shall not be entertained under any circumstances.

**Dean**

**Dr. G. JAYALAKSHMI, BSC., MBBS., DTCD., M.D.,**  
**DEAN**  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agaram, Kudapakkam Post,  
Villianur Commune, Puducherry - 605502.

Encl: Copy of Course content

## Course Proposal

Course Title: **Various Psychological tests and its application in psychiatry.**

### **Course Objective:**

Basics of psychological assessment

Cognitive and neuropsychological assessments

Understanding Measurement

Difference between Physical measurement and Psychological measurement

Defining a Psychological test

Classification of the Psychological test

Characteristics of a Good Psychological Test

Purpose of Psychological test Measurement

### **Course Outcome:**

**Course Audience: FINAL YEAR STUDENTS of 2017 Batch**

**Course Coordinator: Dr.V.R. Sridhar**

**Course Faculties with Qualification and Designation:**

**1.Dr.V.R.SRIDHAR, Professor & HOD**

**2.Dr.Arun, Assistant Professor**

**Course Curriculum/Topics with schedule (Min of 30 hours)**

SlNo	Date	Topic	Resource persons	Time	Hours
1.	03.07.2017	<ul style="list-style-type: none"><li>• Commentary, Projective testing ; Psychological testing in inpatient psychiatry</li></ul>	Dr.Arun	4-5p.m	1
2.	05.07.2017	<ul style="list-style-type: none"><li>• Measuring coping : examining the internal structure of the COPE</li></ul>	Dr.Arun	2-3p.m	1
3.	07.07.2017	<ul style="list-style-type: none"><li>• Two different operationalisations of psychological type : comparing the Myers-Briggs Type Indicator and the Keirsey Temperament Sorter</li></ul>	Dr.Arun	4-6p.m	2
4.	10.07.2017	<ul style="list-style-type: none"><li>• Neuropsychological assessment</li></ul>	Dr.Arun	4-6p.m	2

5.	12.07.2017	<ul style="list-style-type: none"> <li>Effects of expertise level and motor skill characteristics on mental rotation</li> </ul>	Dr.Arun	4-6p.m	2
6.	14.07.2017	<ul style="list-style-type: none"> <li>Developing and validating psychometric tests for use in high performance settings</li> </ul>	Dr.Arun	4-5p.m	2
7.	17.07.2017	<ul style="list-style-type: none"> <li>Relationship between accuracy, consistency, and confidence in visual recognition memory over weeks in aging</li> </ul>	Dr.Arun	4-5P.M	1
8.	19.07.2017	<ul style="list-style-type: none"> <li>Behavior assessment in neuro-rehabilitation</li> </ul>	Dr.Arun	4-5p.m	1
9.	21.07.2017	<ul style="list-style-type: none"> <li>Computerized psychodynamic psychotherapy</li> </ul>	Dr. Shridhar	4-6p.m	1
10.	24.07.2017	<ul style="list-style-type: none"> <li>Testing patients with subcortical vascular dementia</li> </ul>	Dr.Arun	4-6p.m	2
11.	26.07.2017	<ul style="list-style-type: none"> <li>Adaptation and validation of the Personality Assessment Questionnaire</li> </ul>	Dr.Arun	4-6p.m	1
12.	28.07.2017	<ul style="list-style-type: none"> <li>Psychometric properties of the Eysenck Personality Questionnaire-brief form</li> </ul>	Dr.Arun	4-6p.m	2
13.	01.08.2017	<ul style="list-style-type: none"> <li>TAT AND RORSCHACH</li> </ul>	Dr.Arun	2-5p.m	3
		<b>Practical Class I</b>	Dr. Shridhar		
13.	03.08.2017	APPLICATION OF INTELLIGENCE TESTS	Dr. Shridhar	2-3 PM	1
14.	05.08.2017	PROJECTIVE PERSONALITY TESTS	Dr. Shridhar	2-3 PM	1
15.	08.08.2017	COMPUTERIZED TESTS	Dr. Shridhar	2-4 PM	2

16.	11.08.2017	COGNITIVE BATTERY TESTS	Dr. Shridhar	2-4 PM	2	
17.	13.08.2017	NEUROPSYCHOLOGICAL TESTS	Dr. Shridhar	2-4p.m	2	
			<b>Total</b>			30 hrs

**REFERENCE BOOKS:**

- ▶ Comprehensive textbook of psychiatry – Kaplan & Saddock
- ▶ Oxford Textbook Of Psychiatry
- ▶ Synopsis - Kaplan & Saddock

## VALUE ADDED COURSE

### 1. Name of the programme & Code

Various Psychological tests and its application in psychiatry techniques

### 2. Duration & Period

30 hrs & July– December 2017

### 3. Information Brochure and Course Content of Value Added Courses

*Enclosed as Annexure- I*

### 4. List of students enrolled

*Enclosed as Annexure- II*

### 5. Assessment procedures:

Assessment Evaluation by MCQ method - *Enclosed as Annexure- III*

### 6. Certificate model

*Enclosed as Annexure- IV*

### 7. No. of times offered during the same year:

1 time July– December 2017

### 8. Year of discontinuation: 2018

### 9. Summary report of each program year-wise

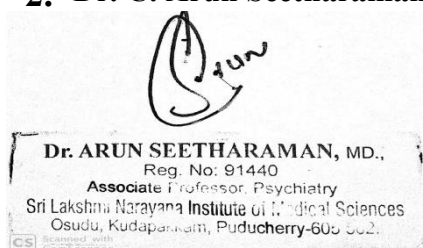
Value Added Course- July– December 2017 & January– June 2018					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	PSYC05	Various Psychological tests and its application in psychiatry	Dr. V.R Sridhar Dr.Arun Seetharaman	Final Year students	7 students July– December 2017

### 10. Course Feed Back

*Enclosed as Annexure- V*

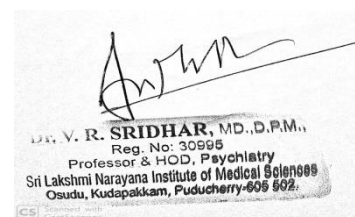
#### Resource Person

1. Dr. V.R. Sridhar
2. Dr. C. Arun Seetharaman



#### COORDINATOR

V.R. Sridhar



# Psychological tests



## PARTICIPANT HANDBOOK

## COURSE DETAILS

Particulars	Description
Course Title	Psychological assessment
Course Code	PSYC05
Objective	<ol style="list-style-type: none"><li>1. Introduction</li><li>2. Basics of psychological assessment</li><li>3. Cognitive and neuropsychological assessments</li><li>4. Understanding Measurement</li><li>5. Difference between Physical measurement and Psychological measurement</li><li>6. Defining a Psychological test</li><li>7. Classification of the Psychological test</li><li>8. Characteristics of a Good Psychological Test</li><li>9. Purpose of Psychological test Measurement</li></ol>
Further learning opportunities	Assessment
Key Competencies	On successful completion of the course the students will have skill in using psychological tests and also apply on patients
Target Student	2 <sup>ND</sup> year MBBS Students
Duration	30hrs Every July 2017 – December 2017
Theory Session	10hrs
Practical Session	20hrs
Assessment Procedure	Multiple choice questions

- Understanding Measurement
- Difference between Physical measurement and Psychological measurement
- Defining a Psychological test

- Classification of the Psychological test
- Characteristics of a Good Psychological Test
- Purpose of Psychological test Measurement

When the quality and the quantity of anything is measured by using standard equipment or device, it is called Measurement.

In the words of Chaplin (1975)- “Measurement means quantifications of variables.” It is an important part of life, which can be divided into two types:

1. Physical Measurement: It is a technique of measuring physical bodies using standard. For example, measurement of the length of a desk or measurement of the volume of a glass of water, etc.

2. Psychological Measurement: It is a technique of measuring attributes, attitudes, personality characteristics and abilities of living beings. It is of two types

a. Psychological tests.

b. Scales.

Differences between Physical measurement and Psychological measurement – 1. In physical measurement, the measurement starts from true zero but in psychological measurement, zero is just as reference point. It is relative zero, not true zero. For example, psychological attributes such as reaction time can never be zero. –

2. The unit of physical measurement are equal and uniform throughout the measurement but there is a lack of equal and uniform unit in psychological measurement. –

3. Physical measurement is applicable on those things about which we get knowledge by the sense organs but in psychological measurement, we can't get knowledge of it's subject matter such as intelligence and personality characteristics by our sense organs. In other words, physical measurements is direct but psychological measurement is not direct. –

4. Physical measurement are to the point and it's measurement is exact but the psychological measurements are not precise. Defining a Psychological Tests In general life, we often use the term ‘Test’ which simply means to examine. According to Reber and Reber (2001)- “Test refers to any measurement which yields quantitative data”. But in context of Psychology, the meaning of test depends upon it's applications. Qualities such as intelligence, attitude, aptitude, personality characteristics and abilities are the subject matter of the psychological tests, which can not be viewed directly. In psychological test, one observe people's behaviour in a systematic way and make inferences about the underlying attributes that stimulate that behaviour. As Reber and Reber (2001) said, “A psychological test refers to all the test of psychological nature.” According to F. S. Freeman (1965)- “A psychological test is a standardized instrument designed to measure objectivity one or more aspects of a total personality by means of samples of verbal and non-verbal responses, or by means of other behaviours.” According to Lee. J. Cronbach (1949)- “A test is a systematic procedure for

observing a person's behaviour and describing with the aid of a numerical scale or category system." This way we can say that 'A psychological test' is a structured technique used to generate a carefully selected sample of behaviour. This behaviour sample is used in turn, to make inferences about the psychological attributes of the people who have been tested, attributes such as intelligence, self-esteem and so forth. Psychological tests are behaviour samples that are uniform, objective and interpretable. They are designed to gauge individual differences and norms are often developed to help interpret these differences.

Psychological Tests Classification of Psychological Test According to Anastasi, there are three criteria of classification of the psychological tests:

1. On the basis of Contents: on this basis. psychological tests can be divided into two types-

(i) Cognitive test: Cognitive tests are those tests which are used to measure different abilities and capacities. It is also called Ability test. Some of its examples are as follows-

(a) Test of general intelligence: these tests are designed to measure general intelligence of people. For example, an adult's ability to cope with general intellectual problems.

(b) Test of creative intelligence: these tests are designed to measure creative capacity.

(c) Test of aptitude: Aptitude usually refers to the ability to learn a particular kind of skill required in a specific situation. Test of aptitude is designed to measure it, such as, musical aptitude test, mechanical aptitude test, clerical aptitude test, etc.

(d) Test of achievement: these tests are designed to measure the capacity or ability to achieve the goal. These tests help in the prediction of the people's achievement in their field.

(ii) Non- Cognitive test: Non-cognitive tests are those tests which are used to measure different aspects of personality. It is also called Personality test. Some of its examples are as follows-

(a) Test of personality: these tests are designed to reveal an individual's personality which includes characteristics patterns of thinking, feeling and behaving.

(b) Test of traits and temperaments: these tests are the deep study of the traits and temperaments of a person, i.e. the way a person responds emotionally and cognitively to another person, thing and/or situation.

(c) Test of values and interests: these tests focused on the personality attributes of interests and values. For example, vocational interest.

2. On the basis of Purpose: on this basis, psychological tests can be divided into two types:

(i) Descriptive test: these are those tests in which the mode of the answer will be descriptive, i.e. the testee has to give his response in a descriptive manner. Descriptive test may be

(a) Cognitive test or (b) Non-Cognitive test or the mixture of both the types.

(ii) Selection test: in selection test the testee has to choose or select the right choice from the multiple choice questions.

Selection test may also be (a) Cognitive test or (b) Non-Cognitive test.

3. On the basis of Form: on this basis, psychological tests can be divided into five types-

(i) Oral test: the mode of this type of test is oral, i.e. spoken. There is a lack of written work.

(ii) Paper-pencil test: in this type of test, a test booklet and an answer sheet is provided to the testee and he perform written work using paper, pencil, etc.

(iii) Speed test: in this type the questions of the test booklet are arranged in such a manner that it can't be completely solved within that time limit. There is a lot of questions in the test booklet and the testee has to solve it in a short timelimit. The scoring is done on the basis of speed, i.e. number of the solved questions.

(iv) Power test: In this type of test, a test booklet and an answer sheet is provided to the testee and there is also the time limitation but the scoring is done on the basis of correctness, i.e. accuracy of the answers.

(v) Performance test: performance tests are those tests in which the language is either used to direct or may not be used when pantomime and gesture is used for the direction but in the items the language is never used. There are few objects kept physically in front of the testee and they are asked to manipulate and/or disentangle. These tests are both, individual as well as group. One of the performance test which is widely used for the measurement of intelligence is Alexander's Battery of Performance test. Characteristics of a Good Psychological test –

There are five main characteristics of a good psychological tests, which are as follows: ❖ Objectivity ❖ Reliability ❖ Validity ❖ Norms ❖ Practicability ❖ 1. **Objectivity:** The test should be free from subjective judgements such as wish, prejudice, etc. regarding various attributes which are to be measured and evaluated like, the ability, skill, knowledge or potentiality, traits, etc.

❖ 2. **Reliability:** This simply refers to the extent to which the results obtained are consistent or reliable, when the test is administered for more than one with a reasonable gap of time, a reliable test will yield the same scores. It simply shows that the test is trustworthy. Though, there are many methods of testing the reliability of a test.

❖ 3. **Validity:** The validity of the test signifies that the test measures what it meant to measure. For example, when an intelligence test is developed to assess the level of intelligence, it should assess the intelligence of the person, not other factors. There are many ways to assess validity of a test. Simply, we can say that it explains us whether the test fulfils the objective of it's development. Characteristics of a Good Psychological test

❖ **4. Norms:** It refers to the average performance of a representative sample on a given test. According to Chaplin (1975)- “A norm may be a single value or a range of values expressing the typical performance of a group against which any individual can be prepared. Norms may be expressed in terms of age, percentile or simple average.” On the basis of nature, there are mainly four types of norms: i. Age norms ii. Grade norms iii. Percentile norms iv. Standard score norms

❖ **5. Practicability:** The psychological test must be practicable in- time required for completion, the length, number of items or questions, scoring, etc. The test should neither be too lengthy nor too short and difficult to answer as well as scoring. Characteristics of a Good Psychological test Purpose of Psychological test Psychological test is an objective and standardised measure of an individual’s mental and/or behavioural characteristics. The purpose of all the psychological tests is to measure or to find out all the dimensions of psychological attributes, i.e. individual differences.

The study of the individual differences is done in the following fields:

1. Prediction: by using psychological test, assessment is done and the gathered information is used for the prediction of future behavioural patterns. There are some fields of prediction which are as follows: (a) Clinical field: for assessment and prediction about any individual, a clinical psychologist generally conducts psychological tests. For example, if he conducts a test of emotional adjustment on a person and he finds that the score of that person is very less than the average score of that test, i.e. poor emotional adjustment. Then he can easily predict that the person may suffer from some mental illness if not helped.

(b) Field of academic achievements: Prediction is also done in the field of academic achievements by psychological testing. For example, in schools, the intelligence is measured of the student by using psychological tests and prediction is done about the probability of his future achievements on the basis of his scores.

(c) In the field of selection for employment: tests are also used to select the appropriate person for a particular job. By the help of the score obtained the prediction is done about the performance. The selection of the best employee is done on the basis of this prediction, which is based on the psychological tests.

2. Description and Selection: on the basis of psychological tests, the assessment and description of the mental and/or behavioural characteristics of an individual and his selection for a particular job or post is done, where he can perform his best.

3. Diagnosis and treatment: the psychological tests play an important role in the interpretation and analysis of the individual behaviour. There is an analysis of different aspects of behaviour. For example, a school counsellor can easily conclude that why a student who is of high I.Q. fails to perform better in his class, on the basis of the psychological tests. A clinical psychologist can easily diagnose any patient suffering from any mental disease on the basis of psychological testing. The treatment is carried out further after the diagnosis.

4. Research: One of the aim of the psychological test is to research about the new theories and techniques. The psychological tests are used widely now a days in the field of research. According to Gulliken (1954), there is mutual relationship between the psychological test and the research. Many psychological tests are the result of the research and many researches are going on the theories which are the product of the psychological tests. In this way it is clear that, the psychological tests are widely used for the various purposes such as for clinical diagnosis, guidance, personnel selection, placement, training, etc. Thank you

Although cognitive and neuropsychological assessments might overlap, these approaches analyze behavior according to two different paradigms.

*Cognitive assessment* is undertaken without reference to the possible neurobiological underpinnings of overt behavior, and it describes the patient very much as others might observe him or her in the world.

*Neuropsychological assessment* is undertaken in the context of growing knowledge about brain-behavior relationships, and it has the additional possibility of describing the child in terms of unseen neural pathways. These approaches provide ways of conceptualizing how children integrate information (and their thinking, learning, and responding) at different levels. General cognitive assessment focuses on understanding behavior at a cognitive level and in descriptive terms. Focused neuropsychological assessment introduces the additional possibility of understanding behavior at neural levels and in neurobiological terms. However, regardless of the theoretical differences among the psychologists undertaking these evaluations, in a practical way it is the patient's referral issues that shape the assessment process and focus the interpretation of results.

## **BASICS OF PSYCHOLOGICAL ASSESSMENT**

Psychological assessment involves more than testing. Although measurements are useful, testing involves more than scores.

### **The Testing Process**

In addition to testing, assessment procedures include examining past records (medical examinations, prior testing, report cards), interviewing the client and his or her family (in structured and unstructured formats), obtaining information from home and school (and, sometimes, onsite observations), and obtaining rating scales that have been filled out by the child's parents and teachers (regarding developmental, behavioral, emotional, and diagnostic issues). The diagnostic aspect of the process involves an attempt to determine the psychiatric and educational categories for which the client meets the criteria. Cognitive and neuropsychological testings are only two aspects of an attempt to get a broad view of the way a child solves problems in the world, to understand his or her unique interaction with any diagnostic category, and to provide recommendations for interventions.

### **Measurements in Testing**

Although many techniques might be used to help understand a child client and his or her

referral question, the emphasis here is on standardized testing (based on regularized procedures as well as normative data). The point of testing is to create a way of comparing one individual to a population of such individuals, as well as the strengths and weaknesses within one individual. The psychologist will select an instrument that is valid (it measures what is intended) and reliable (it measures it consistently). The testing involves establishing a basal level (the level at which all items are passed) and a ceiling (the level at which no items are passed). The testing process involves converting a raw score to a standard score that can be compared with other scores along what is thought of as a normal distribution with predictable statistical properties. The standard deviation (SD) is a measure of dispersion around the mean; the farther scores are from the mean and each other in terms of the SD, the more meaningful is the discrepancy. It is accepted that a measurement is an approximation and not exact. This approximation is recognized by the concept of standard error of measurement (SEM), which is the naturally occurring (random) error that takes place in the real world as one attempts to measure anything. The fact that measurements are not exact is also recognized by the concepts of confidence intervals (the probability that the true score falls within a range of scores) and statistical significance (the probability of finding a result by chance).

### **Beyond Scores and Tests**

It should be noted that the testing process involves more than scores. Although scores are important, how the patient goes about solving cognitive problems is also carefully observed. The examiner is interested not only in test performance, but also in the patient's reaction. It is important to the psychologist to note how the patient arrives at right as well as wrong answers and to explore the patient's cognitive strategies on tasks. In general, it is important to note whether the patient responds in a deliberate or impulsive way.

The testing process is not separate from the therapeutic process. If well handled, the testing can become an extension of the treatment. Feedback about results and their relationship to the presenting problems can be presented as the evaluation unfolds.

### **COGNITIVE AND NEUROPSYCHOLOGICAL ASSESSMENT**

The general cognitive assessment tends to be a descriptive and practical event with an eye to the policies and possibilities in the outside world. As a result, the cognitive tests tend to be "comprehensive" instruments. The very factors that make them useful for general assessment limit them when it comes to understanding neurobiological functioning. The neuropsychological instruments tend to be more "precision" tests that attempt to assess very specific behaviors that represent neural constructs in an inner world. Even when the results are explored at more descriptive levels, functioning within the domains is not seen as separate or independent of their neurobiological underpinnings. Tables 5.6-1 and 5.6-2 list the current cognitive and neuropsychological tests.

#### **Table 5.6-1**

#### **Cognitive Tests**

**Intellectual Testing.** Intelligence is defined as the ability to learn from and adapt to the environment and the ability to think abstractly. Intelligence tests are used to determine the patient's general intellectual functioning. The intelligence quotient (IQ) is a measure of present intellectual functioning. Although intelligence tests yield one IQ score (or several IQ or index scores), they are, in fact, devices for "sampling" many tasks in a variety of verbal

and nonverbal areas. Intelligence testing is often part of a variety of psychological assessment batteries, including psychoeducational and neuropsychological evaluation, along with more general developmental and clinical evaluations.

Although there is some disagreement, IQ scores tend to be relatively stable starting as young as 5 to 7 years of age. In general, the older the child is when tested and the smaller the interval between test administrations, the greater is the correlation between two IQ scores. Although using an IQ score can be useful as a way of assessing the client's basic trajectory through life, the prudent practitioner must be aware that there are a number of factors that can affect intellectual functioning and, thus, IQ scores. Factors associated with a disorder and illness can suppress scores, particularly in psychiatric practice. These can include situational factors, such as lack of motivation, as well as transient factors, including inattention, depression, and psychosis.

Despite conceptual and practical complications, high intelligence is associated with better prognosis in a wide range of psychiatric conditions; lower rates for behavior, conduct, and emotional problems in children; and lower rates of referral for psychiatric problems in adults. In the case of any kind of brain damage (neuronal death), intellectual level accounts for a great deal of variance in predicting outcome, with lower IQs associated with poorer outcomes and higher IQs associated with better outcomes.

**ASSESSMENT.** Although IQ is what is obtained with an IQ test, there are a variety of intellectual tests, as well as other ways of calculating intellectual level. There are a number of instruments from which to choose, and psychologists must make their selection based on the specific characteristics of each test (e.g., normative sample and construction of the instrument) as they relate to the characteristics of the client (e.g., age and referral question). Once the test has been administered, the clinician must make interpretations based on the analysis of overall and subtest scores and their pattern in the context of the diagnostic process.

*Comprehensive Intellectual Tests.* The two best-known intellectual tests are the Wechsler Intelligence Scales and the Stanford-Binet Intelligence Scales (SB). The current editions of both are divided into separate subtests, and the data are analyzed in separate spheres. There are three separate instruments within the Wechsler tests that are designed for three different age groups over the life span: Wechsler Preschool and Primary Scale of Intelligence (WPPSI), Wechsler Intelligence Scale for Children (WISC), and Wechsler Adult Intelligence Scale (WAIS). One SB instrument covers a lifetime. Both instruments have made attempts to assist in decision making regarding attentional problems. The WISC has made particular attempts to link its findings to memory, adaptive, and giftedness scales. The SB includes a routing system so that the examiner can "adapt" the administration to the functioning level of the examinee.

**Achievement Testing.** Achievement testing is used to determine a student's level of functioning in basic academic areas (i.e., reading, mathematics, and writing). The purpose of the assessment is to identify learning problems and usually to rule out other psychological factors that might be complicating learning. Unlike intellectual testing, achievement testing is not necessarily expected to be stable over time because it measures the child's success in formal learning and is highly dependent on the home environment and the school curriculum. Learning disability is commonly defined in terms of "unexpected underachievement"—that is, the child has the potential and opportunities to have learned more. When achievement testing is undertaken along with intellectual and processing testing, the overall evaluation is commonly referred to as a psychoeducational assessment.

**ASSESSMENT.** Psychologists commonly begin an assessment of academic achievement by giving a comprehensive test in order to get a sense of a client's areas of weakness in contrast to his or her strengths in reading, math, and writing. These findings are compared

with school records. Because reading problems are a relatively common reason for referral and their causes are increasingly understood, where indicated, this comprehensive test is commonly followed by other tests of reading skills that separate out accuracy, fluency, and comprehension.

*Comprehensive Achievement Tests.* Each of the tests assesses a range of academic areas, so that they can be compared with each other for any individual or to academic achievement according to more external standards (age/grade expectations). The Wechsler Individual Achievement Tests (WIAT) and the Woodcock-Johnson Tests of Achievement (WJ-ACH) allow for the systematic assessment of reading (basic word recognition/decoding and comprehension), mathematics (calculation and reasoning), and writing (brief to extensive composition), as well as spelling and other academic spheres.

### **FOCUSED NEUROPSYCHOLOGICAL ASSESSMENT**

Neuropsychology is dedicated to the study of brain–behavior relations and has matured into a clinical discipline for the diagnosis and characterization of brain function and dysfunction.

#### **Assessment of Functioning**

Neuropsychological assessment was originally developed for the assessment of *adult* patients and was not generally applied to child assessment until later. This functional assessment was important because the effect of trauma to the brain is highly variable across individuals, even when the precise location and size of the lesion is known. In these situations, neuropsychological tests could provide specific functional information that take the child's age and developmental status into account. This continues to be a prominent point of referral for pediatric neuropsychology because it discusses not just the existence of the brain disruption but also its *meaning* in terms of the child's ability to function. This use of neuropsychological assessment is important with gross injury to the brain, but it is also valuable in situations in which sequelae are subtle and at risk of being attributed to psychological factors such as grief or poor motivation.

#### **Technical Advances**

Recent advances in neuroimaging have added to the use of neuropsychology in child assessment. One reason that neuropsychology was later in being applied to children was that technology for learning about *children's normal brain development* was not available. Given that neuropsychology studies the relationship between *behavior and the brain*, this gap in knowledge meant that inferences about brain function could not be applied to children. Because techniques such as positron emission tomography (PET) were prohibited in research with children, it was not until the introduction of functional magnetic resonance imaging (fMRI) in the early 1990s that full-scale research of child brain development could begin. Since that time, there has been an unprecedented explosion of knowledge that has expanded the scientific understanding of child brain development exponentially every year up to the present.

#### **Developments in Test Instruments**

Other advances in pediatric neuropsychology include the introduction of tests specifically designed for use with children. These instruments assess similar behaviors as do their adult counterparts but use paradigms that are more engaging to children and better measure developmental transitions throughout childhood. These instruments are used in clinical assessments but are now also part of many research protocols examining childhood diseases and genetic conditions. Given its precision in measuring behavior, neuropsychological assessment is now involved, not just in the assessment of function after an injury but also in the initial *diagnostic* processes. Another example of this specificity is the now-routine use of neuropsychological testing in genetic research of developmental disorders of childhood, given the precision that it adds to questions of endophenotype expression.

### **Neuropsychology's Application to Diagnosis and Treatment Planning**

These new technologies have greatly enlarged our understanding of both normal and atypical brain development in children, affecting our knowledge of childhood brain-behavior relationships, as well as diagnosis and treatment planning in pediatric groups. This increased understanding of typical as well as atypical brain development has made neuropsychological assessment useful, not just for children with acquired disorders but also in cases of developmental disorders. In this context, the term *developmental disorders* is used in reference to a child who is not developing in step with peers but who for unknown reasons struggles greatly or fails to develop specific abilities. Examples are difficulty in learning to read in an otherwise intact child (referred to as the developmental disorder of dyslexia) and problems with developing social or self-regulatory skills (seen in, respectively, autism spectrum and attention-deficit disorders). These disorders stand in contrast to “acquired” disorders, in which a known event, such as injury or illness, has affected the child’s developmental trajectory.

### **Integration of Neuropsychological, Educational, and Psychological Paradigms in Testing**

The effect on testing that these breakthroughs have made has also been significant. Most of this subsection focuses on test instruments that are foundational when assessing developmental differences in children. These measures (including tests of IQ or academic achievement) are central when youngsters are not keeping up with their peers in one regard or another and are the backbone of testing, regardless of whether the assessor is trained as a psychologist or a neuropsychologist or has a background in education. These instruments are pivotal because they measure the major paradigms of both education and psychology, paradigms that govern both diagnosis and the provision of services. More recently, however, these established paradigms have been joined and affected by new information emerging from cognitive and neuropsychology in concert with the aforementioned breakthroughs in neuroimaging. The integration of these findings has led to relatively rapid changes in educational law and in the instruments used to test children for learning disabilities.

### **Applications of Neuropsychological Assessment**

The functional and diagnostic assessment of children and adolescents often begins (and ends) with the kinds of evaluations described in the “General Cognitive Assessment” subsection. There are situations, however, in which the use of educational or psychological or cognitive testing alone is not able to clarify the diagnosis and determine the most appropriate treatment plan. In those cases, the psychiatrist should consider additional neuropsychological testing.

### **Descriptions and Assessment of Typical Neuropsychological Domains**

Typically, in addition to assessing IQ, academic achievement, and social and emotional functioning, neuropsychologists assess domains of memory, attention, executive functioning, language, visual perception, and sensory-motor development. Tests have been developed to examine specific aspects of these domains in isolation so as to increase diagnostic clarity. Although these domains are discussed as different constructs in this subsection, in truth they overlap with one another in many different ways. For example, the term *working memory* is often conceptualized as being an aspect of attention as well as a necessary component of good planning (which is part of executive functioning). It is also a component of memory in that, when it is not well developed, it leads to the phenomenon of forgetfulness.

**Memory.** *Memory* is defined as the ability to reproduce or recall what has been learned or retained through activities or experiences. The process of memorizing includes two steps: encoding and retrieving. One metaphor for this two-step memory process is a filing cabinet.

*Encoding*, then, is when a person puts information into the “filing cabinet drawer.” Someone with a true amnesic disorder (such as Alzheimer’s disease) never gets the information into the drawer. No amount of cueing or reminders later on will help the person to recall the information because it never “got into the drawer” in the first place. This type of impairment can be seen in some children, most often those with seizure disorders that adversely affect the temporal lobes. For most children, however, the problem described as “poor memory” is actually a difficulty with retrieval. *Retrieval* is the ability to get information out of the “file cabinet drawer” once it has been put in. Poor retrieval is associated with problems of organization (the folders are missing labels) and is more often the issue when children are described as being forgetful.

To differentiate between encoding and retrieval, children are asked to memorize material and then, 20 to 30 minutes later, to recall it. If they are unable to remember it spontaneously, the examiner does not know whether they have not encoded it or are having problems with retrieval. If the child can remember the material with cueing (e.g., “In the story I read you, was the boy’s name Johnny or Sam?”), retrieval is implicated. For the child who cannot encode, however, cueing will not help.

**ASSESSMENT.** In assessing memory, several guidelines should be followed. Both visual and

verbal memory tasks should be given. Visual memory tasks (such as learning the location of dots or memorizing faces) are usually aided by the right hemisphere. In most people, verbal memory tasks (such as memorizing a shopping list or a story) are supported by the left hemisphere. In addition, material to be memorized should include rote tasks (such as word lists) as well as material that is presented in context (such as stories). Some memory tasks assess learning, or the child’s ability to benefit from several presentations of the material. It is expected that, after three exposures to a picture of dots, the child’s memory of it will be stronger than it was after the first exposure. If not, encoding may be implicated. A 20- to 30-minute delay should also be part of the memory assessment, and cues should be available to differentiate between encoding and retrieval difficulties.

Other terms in the neuropsychological literature appear to describe memory but are actually probably better classified as part of the attention system. These include *short-term memory* and *working memory*. These terms are discussed in the following subsection on attention.

**Attention.** The attention literature is large and includes many different conceptualizations. The following illustration demonstrates some elements of good attention.

Suppose you arrive at a lecture hall, open your notebook, and rather than scanning the room indiscriminately, turn your attention to the instructor, who is just beginning to speak (*selective attention*). The lecture is mildly interesting, and you are able to pay attention for the full 20-minute presentation (*sustained attention* or *vigilance*). At the same time that you are listening to the instructor, you are taking handwritten notes incorporating headings and subheadings. It appears that you are able simultaneously to listen, write, and organize rather effortlessly, although you are probably shifting your attention among these competing tasks (*divided attention*). A fire engine goes by the lecture hall and you look up (*distraction*) but are then able to ignore the dimming noise of the siren (*inhibition*) and continue to listen to the lecture (again, *sustained attention*). Suddenly, the

□re alarm rings, and you smell smoke. These distracters capture your full attention (*disengagement* from lecture), and their importance causes you to change your attention and behavior (*set shifting*) as you hurriedly head for the door. A breakdown in any one of these areas can lead to a breakdown in attention.

**ASSESSMENT.** Assessment of attention requires a number of approaches. Children with attention problems exhibit them at home and at school whenever a task becomes less interesting to them. They function better when working one-on-one with a person or when working on a new activity because it is more stimulating. For this reason, the testing environment may not elicit the inattentive behavior (especially on the first day). To assess the child's attention "in real life" and across settings, attention questionnaires should be completed by both parents and teachers. Many researchers consider this aspect of the assessment of attention to be the most important. Some neuropsychological measures have been found to be sensitive to attention as well. Computerized measures of sustained attention that are designed to be long and boring can capture the loss of attention described here. In addition, specific kinds of performance patterns on these measures have been shown to differentiate different types of attention problems.

Assessment of *verbal* short-term memory might include the repetition of digits or of short sentences. Assessment of *visual* short-term memory can be achieved by having the child point to dots or circles on the page in the same order in which the examiner has just pointed to them. Working memory is usually assessed as the second part of a short-term memory test. It requires that the material that has been stored in short-term memory be manipulated in some way. Verbal working memory can be assessed by having the child repeat digits backward or by doing mathematics in his or her head. Saying the months of the year backward can also assess verbal working memory (as long as the child is able to give them in their usual order without difficulty). Having the child point to the dots on the page in the reverse order in which they are shown can assess visual-spatial working memory.

**Executive Functioning.** Executive functioning could be considered to be the mature product of good attention. Although not developed in earnest until children reach adolescence, many aspects of executive functioning begin to appear when children are younger and, thus, can be measured. *Executive functioning* refers to the person's ability to organize his or her behaviors to perform a specific goal. Good executive functioning allows a person to identify problems, generate solutions, choose among them, follow through on the chosen strategy, and evaluate its effectiveness as the work progresses. Without good executive functioning, children who are bright have difficulty demonstrating their abilities. Their parents often report school underachievement that cannot be explained by learning problems. The issue is not about "knowledge" but rather the application of that knowledge to everyday functioning.

**ASSESSMENT.** Assessment of executive functioning requires several tests, given its many facets. Good attention and working memory, already discussed, are crucial to goal-directed behavior. Inhibition can be tested by giving the child a task in which he or she must control an automatic response.

Fluency can be assessed by having the child generate category words under a time limit. For example, a child might be asked to name as many kinds of toys as he or she can in 1 minute. A variant of this task requires the child to create as many designs as he or she can in a 1-minute period, according to strict guidelines.

Cognitive flexibility is often tested with the Wisconsin Card Sorting Test (WCST), a measure of problem solving. On this test, the child is not told how to solve the puzzles; rather, he or she must use feedback that his or her attempts are "right" or "wrong" and is

then expected to use this information to generate strategies. During the course of this test, the rules often change without warning, requiring that the child “regroup” and develop a new strategy. This measure generates information about the child’s ability to initially figure out the task, his or her tendency to persevere on wrong responses, and his or her ability to use feedback to generate new responses.

Planning is another aspect of executive functioning. Variants of a “tower” test are often used to assess this ability. On a tower test, the child is shown a picture with colored balls or disks stacked on top of one another on wooden pegs in a specific configuration. The child is told to move the balls or disks on the pegs for an actual model on the table to match the configuration shown in the picture. The child is instructed to move only one ball or disk at a time and to use as few moves as possible. To perform the task well, the child must first “hold back” and not make impulsive moves that may get him or her “cornered.” The child must also visualize the first few steps of the problem. Thus, both impulse control and visual working memory are required to exhibit good planning on this rather entertaining test.

**Language.** Human language organizes, supports, and communicates knowledge, memories, and ideas. Beyond just allowing us to communicate with others, language organizes both thoughts and emotions, as well as helping us sequence our actions. Although traditionally discussed in terms of left hemisphere functioning, much of the human cortex is involved in various aspects of language. Communication includes both *speech*, the rapid and complex motor movements involved in talking, and *language*, the code used to express thoughts and ideas.

Linguists conceptualize language as being composed of four separate parts: *phonemes*, defined as the smallest units of sound in a language; *morphemes*, the smallest units of meaning; *syntax* at the level of the sentence (e.g., use of direct or indirect pronouns); and *discourse*, the stringing together of sentences to create a narrative.

In considering language, perhaps the most common distinction made is between expressive and receptive language. *Expressive language* requires the production of language, including articulating clearly, finding the right word, and applying grammar and syntax to one’s ideas, in addition to vocal fluency and voice tone (prosody). *Receptive language* involves the ability to comprehend and remember what is said.

Children with expressive language problems may appear to have little to say and considered to be shy. In fact, however, their difficulty may be with self-expression. Some children who are very talkative (fluent) may also have difficulty with finding the word they want or organizing their sentences to make them clear. The paradox of a fluent child with an expressive language disorder may cause his or her problems to be overlooked.

Receptive language, or the ability to understand what is being said, represents another aspect of the language system. Children with poor receptive language have difficulty in processing information that is spoken to them and may have difficulty learning in the classroom or appear to be inattentive. Sometimes they appear to be oppositional because of their difficulty with understanding (and therefore *doing*) what they are told.

Secondary problems of children with language disorders include difficulties with social interactions and processing of emotions. Language is what humans use to interact and communicate their ideas to one another. When this ability is compromised, children may isolate or try to find less language-intense activities to occupy their time. Emotional problems may ensue from the child’s difficulty with using language to express and, therefore, process his or her inner world.

**ASSESSMENT.** Assessment of language should include several measures meant to identify the

child’s specific language profile. Tests should assess all levels of language, including phonemes, single words, simple phrases, complex sentences, and conversation. Measures of

both expressive and receptive language should be included. In the assessment of receptive language, children are asked to distinguish between similar sounds and words, remember and repeat word lists and related strings of words, point to a picture that depicts a vocabulary word, and follow increasingly complex directions presented only once. In the assessment of expressive language, children are asked to perform tasks such as listing as many round objects as they can within a time limit, naming a depicted or described item, defining words or concepts, or creating a syntactically complex sentence according to strict guidelines.

In addition, the psychologist might explore *pragmatics*, which is the child's ability to participate in conversation and use social language. This involves interpreting nonverbal aspects of communication, as well as observing basic social rules, such as turn-taking in conversation. Although neuropsychologists often evaluate pragmatics in addition to receptive and expressive language, they also work in concert with speech and language specialists when additional assessment is indicated.

**Visuoperceptual Functioning.** There are several associated constructs in neuropsychology that reflect people's ability to make sense of what they see, to organize it, or to copy it. These abilities are referred to as *visuoperceptual–visuoconstructive abilities*. Problems with visuoperception are distinct from problems with vision. A person with acute eyesight can struggle with perceptual difficulties, such as identifying which of several figures are exactly alike. Some children have difficulty seeing exactly where something is, and these children may have trouble localizing a point in space or judging the direction of a line.

*Visuoconstruction* abilities allow a child to join parts to make a whole. These skills require the integration of the motor system with the visual system. Examples include the ability to put together blocks to form a design or to draw three lines to form a triangle.

Problems with visuoperceptual development have academic, as well as social, ramifications. Academic areas, such as mathematics, that are less reliant on verbal support are at risk. In addition, concepts such as time and monetary values may not be clearly understood. Students with these difficulties often exhibit a poor sense of direction, and problems with integrating complex visual arrays may lead to feelings of being overwhelmed. They may also have difficulty “reading between the lines,” thereby making comprehension of less tangible reading concepts (such as theme) more elusive.

Social problems are also often seen in students with these delays. Many elements of good social interactions are nonverbal, including the ability to notice and interpret gestures, facial expression, body posture, and tone of voice. Students with visuoperceptual delays may be overreliant on verbal information and may not understand when people are being sarcastic or when something is said in jest.

**ASSESSMENT.** Assessment of visual processing must address each of the specific elements of

this system. The visuoperceptual abilities should be tested using tasks that do not require the child to use his or her hands to produce the response—for example, activities that require the child to identify designs that match or differ from the target, as well as

measures of mental rotation (determining which design is the same as the target, only rotated). Visuoconstruction tasks add the demand of integrating the hands and eyes in producing the response—for example, having the child draw copies of designs or use blocks to create a replica of a model.

**Sensory/Motor Functioning.** The sensory/motor system is also assessed as part of the neuropsychological examination. Lateralized sensory or motor problems suggest neurological problems on the opposite side of the brain and are often correlated with cognitive processes localized to the right or left hemisphere. Tasks requiring the perception of visual or auditory fields or specific actions with right or left sides of the body are part of this domain. In addition, integration of perceptions or movements is also assessed. Motor assessment is further categorized into the assessment of handedness and tests of large versus fine motor development, as well as the ability to plan motor responses (praxis).

**ASSESSMENT.** The sensory exam usually includes assessment of visual fields using clinical methods, such as having the child look at the examiner's nose and then determine whether the assessor is moving the right or left extended hand. Similarly, assessment of bilateral auditory perception might include the assessor standing behind the child and rubbing his or her fingers near the child's right or left ear. Other perceptual tests might assess the ability to name unseen objects placed in the child's right or left hand. Finger agnosia is tested by touching a finger when the child's hand is hidden behind a screen and then having him or her indicate which finger was touched. Integration of perception might include having the child follow directions involving a picture that is shown. Age-based normative data are available for all of these tasks.

Both fine and large motor tests are usually assessed on both the right and left sides of the body. Lateralized fine motor tasks include quickly placing pegs in holes with each hand or squeezing a hand dynamometer with each hand to assess grip strength. Fingertip tapping is one way of testing motor sequencing, as are activities that require the child to repeat sequences of movements from memory. Handedness is best assessed by having the child do a number of tasks with one hand (e.g., "Show me how you use this spoon," "Hand me the dime," and "Throw me the ball.") in random order. Assessment of difficulties with motor planning can be done using pantomime.

Large motor testing involves having the child demonstrate gait while walking forward and backward, running, skipping, walking a straight line, and balancing on one foot. In cases in which the findings of motor screening are significant, the neuropsychologist might refer the child to an occupational or physical therapist for further, more specific, evaluation.

Neuropsychological testing is commonly undertaken according to several discrete domains that reflect areas of brain functioning. Typically, these include attention and executive functioning, memory, and language as well as visuo-perceptual and sensory/motor functioning. In considering neuropsychological issues, the following factors should be kept in mind:

After early brain injury, language and motor functioning are the most likely to benefit from "plasticity." Some research suggests that, with this process of reorganization, other functions (most notably, visuo-perceptual abilities) may be "crowded out," yielding scores that are lower than expected.

Interventions for neurologically driven developmental delays have their most profound effect on younger children. Recent studies have shown that, in children with reading disabilities, bilateral representation of language identified with fMRI before intervention shifted to the left hemisphere by several orders of magnitude in every subject after only 80 hours of reading intervention. These changes in the brain were accompanied by

improved reading skills. Thus, the philosophy of delaying intervention until a deficit is fully expressed may keep children from receiving the full benefit that early intervention provides.

Risk factors for reading disabilities include family history, early language delays, poor articulation, chronic ear infections, poor early rhyming abilities, inability to recite (not sing) the alphabet by the end of kindergarten, and early brain injury.

Ambidexterity (consistently using the right hand for some specific tasks and the left hand for other specific tasks) often runs in families in which several members are left handed.

In contrast, ambiguous handedness (or the use of either hand for the same task; sometimes writing with the right hand, sometimes writing with the left hand) can be a pathognomonic sign suggesting poor cerebral organization for specific behaviors.

Attention-deficit/hyperactivity disorder (ADHD) more adversely affects abilities typically associated with right hemisphere functioning (such as fine motor skills and visuo-perceptual abilities) and affects attention and executive functioning.

Psychostimulant medication has been shown to improve functioning in all of these domains in children with ADHD.



## Rorschach test

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The **Rorschach test** is a psychological test in which subjects' perceptions of inkblots are recorded and then analyzed using psychological interpretation, complex algorithms, or both. Some psychologists use this test to examine a person's personality characteristics and emotional functioning. It has been employed to detect underlying thought disorder, especially in cases where patients are reluctant to describe their thinking processes openly.<sup>[4]</sup> The test is named after its creator, Swiss psychologist Hermann Rorschach. The Rorschach can be thought of as a psychometric examination of pareidolia, the active pattern of perceiving objects, shapes, or scenery as meaningful things to the observer's experience, the most common being faces or other pattern of forms that are not present at the time of the observation.<sup>[5]</sup> In the 1960s, the Rorschach was the most widely used projective test.<sup>[6]</sup>

## Method

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The Rorschach test is appropriate for subjects from the age of five to adulthood. The administrator and subject typically sit next to each other at a table, with the administrator slightly behind the subject. Side-by-side seating of the examiner and the subject is used to reduce any effects of inadvertent cues from the examiner to the subject. In other words, side-by-side seating mitigates the possibility that the examiner will accidentally influence the subject's responses.<sup>[25]</sup> This is to facilitate a "relaxed but controlled atmosphere". There are ten official inkblots, each printed on a separate white card, approximately 18 by 24 cm in size.<sup>[26]</sup> Each of the blots has near perfect bilateral symmetry. Five inkblots are of black ink, two are of black and red ink and three are multicolored, on a white background.<sup>[27][28][29]</sup> After the test subject has seen and responded to all of the inkblots (*free association* phase), the tester then presents them again one at a time in a set sequence for the subject to study: the subject is asked to note where they see what they originally saw and what makes it look like that (*inquiry* phase). The subject is usually asked to hold the cards and may rotate them. Whether the cards are rotated, and other related factors such as whether permission to rotate them is asked, may expose personality traits and normally contributes to the

assessment.<sup>[30]</sup> As the subject is examining the inkblots, the psychologist writes down everything the subject says or does, no matter how trivial. Analysis of responses is recorded by the test administrator using a tabulation and scoring sheet and, if required, a separate location chart.<sup>[25]</sup>

The general goal of the test is to provide data about cognition and personality variables such as motivations, response tendencies, cognitive operations, affectivity, and personal/interpersonal perceptions. The underlying assumption is that an individual will class external stimuli based on person-specific perceptual sets, and including needs, base motives, conflicts, and that this clustering process is representative of the process used in real-life situations.<sup>[31]</sup> Methods of interpretation differ. Rorschach scoring systems have been described as a system of pegs on which to hang one's knowledge of personality.<sup>[32]</sup> The most widely used method in the United States is based on the work of Exner.

Administration of the test to a group of subjects, by means of projected images, has also occasionally been performed, but mainly for research rather than diagnostic purposes.<sup>[25]</sup>

Test administration is not to be confused with test interpretation:

The interpretation of a Rorschach record is a complex process. It requires a wealth of knowledge concerning personality dynamics generally as well as considerable experience with the Rorschach method specifically. Proficiency as a Rorschach *administrator* can be gained within a few months. However, even those who are able and qualified to become Rorschach *interpreters* usually remain in a "learning stage" for a number of years.<sup>[25]</sup>

### **Features or categories**

The interpretation of the Rorschach test is not based primarily on the contents of the response, i.e., *what* the individual sees in the inkblot (the *content*). In fact, the contents of the response are only a comparatively small portion of a broader cluster of variables that are used to interpret the Rorschach data: for instance, information is provided by the time taken before providing a response for a card can be significant (taking a long time can indicate "shock" on the card).<sup>[33]</sup> As well as by any comments the subject may make in addition to providing a direct response.<sup>[34]</sup>

In particular, information about *determinants* (the aspects of the inkblots that triggered the response, such as form and color) and *location* (which details of the inkblots triggered the response) is often considered more important than content, although there is contrasting evidence.<sup>[35][36]</sup> "Popularity" and "originality" of responses<sup>[37]</sup> can also be considered as basic dimensions in the analysis.<sup>[38]</sup>

### **Content**

The goal in coding content of the Rorschach is to categorize the objects that the subject describes in response to the inkblot. There are 27 established codes for identifying the name of the descriptive object. The codes are classified and include terms such as "human", "nature", "animal", "abstract", "clothing", "fire", and "x-ray", to name a few. Content described that does not have a code already established should be coded using the code "idiographic contents" with the shorthand code being "Idio."<sup>[39]</sup> Items are also coded for statistical popularity (or, conversely, originality).<sup>[40]</sup>

More than any other feature in the test, content response can be controlled consciously by the subject, and may be elicited by very disparate factors, which makes it difficult to use content alone to draw any conclusions about the subject's personality; with certain individuals, content responses may potentially be interpreted directly, and some information can at times

be obtained by analyzing thematic trends in the whole set of content responses (which is only feasible when several responses are available), but in general content cannot be analyzed outside of the context of the entire test record.<sup>[41]</sup>

### **Location**

Identifying the location of the subject's response is another element scored in the Rorschach system. Location refers to how much of the inkblot was used to answer the question. Administrators score the response "W" if the whole inkblot was used to answer the question, "D" if a commonly described part of the blot was used, "Dd" if an uncommonly described or unusual detail was used, or "S" if the white space in the background was used. A score of W is typically associated with the subject's motivation to interact with his or her surrounding environment. D is interpreted as one having efficient or adequate functioning. A high frequency of responses coded Dd indicate some maladjustment within the individual. Responses coded S indicate an oppositional or uncooperative test subject.<sup>[26][39]</sup>

### **Determinants**

Systems for Rorschach scoring generally include a concept of "determinants": These are the factors that contribute to establishing the similarity between the inkblot and the subject's content response about it. They can also represent certain basic experiential-perceptual attitudes, showing aspects of the way a subject perceives the world. Rorschach's original work used only *form*, *color* and *movement* as determinants. However currently, another major determinant considered is *shading*,<sup>[42]</sup> which was inadvertently introduced by poor printing quality of the inkblots. Rorschach initially disregarded shading,<sup>[43]</sup> since the inkblots originally featured uniform saturation, but later recognized it as a significant factor.<sup>[44][45][46]</sup>

*Form* is the most common determinant, and is related to intellectual processes. *Color* responses often provide direct insight into one's emotional life. *Movement* and *shading* have been considered more ambiguously, both in definition and interpretation. Rorschach considered *movement* only as the experiencing of actual motion, while others have widened the scope of this determinant, taking it to mean that the subject sees something "going on".<sup>[47]</sup>

More than one determinant can contribute to the formation of the subject's perception. Fusion of two determinants is taken into account, while also assessing which of the two constituted the primary contributor. For example, "*form-color*" implies a more refined control of impulse than "*color-form*". It is, indeed, from the relation and balance among determinants that personality can be most readily inferred.<sup>[47]</sup>

### **Symmetry of the test items**

A striking characteristic of the Rorschach inkblots is their symmetry. Many unquestionably accept this aspect of the nature of the images but Rorschach, as well as other researchers, certainly did not. Rorschach experimented with both asymmetric and symmetric images before finally opting for the latter.<sup>[48]</sup>

He gives this explanation for the decision:

Asymmetric figures are rejected by many subjects; symmetry supplied part of the necessary artistic composition. It has a disadvantage in that it tends to make answers somewhat stereotyped. On the other hand, symmetry makes conditions the same for right and left handed subjects; furthermore, it facilitates interpretation for certain blocked subjects. Finally, symmetry makes possible the interpretation of whole scenes.<sup>[49]</sup>

The impact of symmetry in the Rorschach inkblot's has also been investigated further by other researchers.<sup>[48]</sup>

### **Exner scoring system**

The *Exner scoring system*, also known as the *Rorschach Comprehensive System (RCS)*,<sup>[50]</sup> is the standard method for interpreting the Rorschach test. It was developed in the 1960s by Dr. John E. Exner, as a more rigorous system of analysis. It has been extensively validated and shows high inter-rater reliability.<sup>[7][51]</sup> In 1969, Exner published *The Rorschach Systems*, a concise description of what would be later called "the Exner system". He later published a study in multiple volumes called *The Rorschach: A Comprehensive system*, the most accepted full description of his system.

Creation of the new system was prompted by the realization that at least five related, but ultimately different methods were in common use at the time, with a sizeable minority of examiners not employing any recognized method at all, basing instead their judgment on subjective assessment, or arbitrarily mixing characteristics of the various standardized systems.<sup>[52]</sup>

The key components of the Exner system are the clusterization of Rorschach variables and a sequential search strategy to determine the order in which to analyze them,<sup>[53]</sup> framed in the context of standardized administration, objective, reliable coding and a representative normative database.<sup>[54]</sup> The system places a lot of emphasis on a cognitive triad of *information processing*, related to how the subject processes input data, *cognitive mediation*, referring to the way information is transformed and identified, and *ideation*.<sup>[55]</sup>

In the system, responses are scored with reference to their level of vagueness or synthesis of multiple images in the blot, the location of the response, which of a variety of determinants is used to produce the response (i.e., what makes the inkblot look like what it is said to resemble), the form quality of the response (to what extent a response is faithful to how the actual inkblot looks), the contents of the response (what the respondent actually sees in the blot), the degree of mental organizing activity that is involved in producing the response, and any illogical, incongruous, or incoherent aspects of responses. It has been reported that popular responses on the first card include bat, badge and coat of arms.<sup>[32]</sup>

Using the scores for these categories, the examiner then performs a series of calculations producing a structural summary of the test data. The results of the structural summary are interpreted using existing research data on personality characteristics that have been demonstrated to be associated with different kinds of responses.

With the Rorschach plates (the ten inkblots), the area of each blot which is distinguished by the client is noted and coded—typically as "commonly selected" or "uncommonly selected". There were many different methods for coding the areas of the blots. Exner settled upon the area coding system promoted by S. J. Beck (1944 and 1961). This system was in turn based upon Klopfer's (1942) work.

As pertains to response form, a concept of "form quality" was present from the earliest of Rorschach's works, as a subjective judgment of how well the form of the subject's response matched the inkblots (Rorschach would give a higher form score to more "original" yet good form responses), and this concept was followed by other methods, especially in Europe; in contrast, the Exner system solely defines "good form" as a matter of word occurrence frequency, reducing it to a measure of the subject's distance to the population average.<sup>[56]</sup>

### **Performance assessment system**

### *Main article: Rorschach Performance Assessment System*

Rorschach performance assessment system (R-PAS) is a scoring method created by several members of the Rorschach Research Council. They believed that the Exner scoring system was in need of an update, but after Exner's death, the Exner family forbade any changes to be made to the Comprehensive System.<sup>[57]</sup> Therefore, they established a new system: the R-PAS. It is an attempt at creating a current, empirically based, and internationally focused scoring system that is easier to use than Exner's Comprehensive System.<sup>[58]</sup> The R-PAS manual is intended to be a comprehensive tool for administering, scoring, and interpreting the Rorschach. The manual consists of two chapters that are basics of scoring and interpretation, aimed for use for novice Rorschach users, followed by numerous chapters containing more detailed and technical information.<sup>[59]</sup>

In terms of updated scoring, the authors only selected variables that have been empirically supported in the literature. To note, the authors did not create new variables or indices to be coded, but systematically reviewed variables that had been used in past systems.<sup>[60]</sup> While all of these codes have been used in the past, many have been renamed to be more face valid and readily understood. Scoring of the indices has been updated (e.g. utilizing percentiles and standard scores) to make the Rorschach more in line with other popular personality measures.

In addition to providing coding guidelines to score examinee responses, the R-PAS provides a system to code an examinee's behavior during Rorschach administration. These behavioral codes are included as it is believed that the behaviors exhibited during testing are a reflection of someone's task performance and supplements the actual responses given. This allows generalizations to be made between someone's responses to the cards and their actual behavior.

The R-PAS also recognized that scoring on many of the Rorschach variables differed across countries.<sup>[60]</sup> Therefore, starting in 1997, Rorschach protocols from researchers around the world were compiled.<sup>[61]</sup> After compiling protocols for over a decade, a total of 15 adult samples were used to provide a normative basis for the R-PAS. The protocols represent data gathered in the United States, Europe, Israel, Argentina and Brazil.

### **Cultural differences**

Comparing North American Exner normative data with data from European and South American subjects showed marked differences in some features, some of which impact important variables, while others (such as the average number of responses) coincide.<sup>[62]</sup> For instance, texture response is typically zero in European subjects (if interpreted as a need for closeness, in accordance with the system, a European would seem to express it only when it reaches the level of a *craving* for closeness),<sup>[63]</sup> and there are fewer "good form" responses, to the point where schizophrenia may be suspected if data were correlated to the North American norms.<sup>[64]</sup> Form is also often the only determinant expressed by European subjects;<sup>[65]</sup> while color is less frequent than in American subjects, color-form responses are comparatively frequent in opposition to form-color responses; since the latter tend to be interpreted as indicators of a defensive attitude in processing affect, this difference could stem from a higher value attributed to spontaneous expression of emotions.<sup>[63]</sup>

The differences in form quality are attributable to purely cultural aspects: different cultures will exhibit different "common" objects (French subjects often identify a chameleon in card VIII, which is normally classed as an "unusual" response, as opposed to other animals like cats and dogs; in Scandinavia, "Christmas elves" (*nisser*) is a popular response for card II, and "musical instrument" on card VI is popular for Japanese people),<sup>[66]</sup> and different


languages will exhibit semantic differences in naming the same object (the figure of card IV is often called a *troll* by Scandinavians and an *ogre* by French people).<sup>[67]</sup> Many of Exner's "popular" responses (those given by at least one third of the North American sample used) seem to be universally popular, as shown by samples in Europe, Japan and South America, while specifically card IX's "human" response, the crab or spider in card X and one of either the butterfly or the bat in card I appear to be characteristic of North America.<sup>[67][68]</sup>

Form quality, popular content responses and locations are the only coded variables in the Exner systems that are based on frequency of occurrence, and thus immediately subject to cultural influences; therefore, cultural-dependent interpretation of test data may not necessarily need to extend beyond these components.<sup>[69]</sup>

The cited language differences mean that it's imperative for the test to be administered in the subject's native language or a very well mastered second language, and, conversely, the examiner should master the language used in the test. Test responses should also not be translated into another language prior to analysis except possibly by a clinician mastering both languages. For example, a bow tie is a frequent response for the center detail of card III, but since the equivalent term in French translates to "butterfly tie", an examiner not appreciating this language nuance may code the response differently from what is expected.<sup>[70]</sup>

## Inkblots

Below are the ten inkblots printed in *Rorschach Test – Psychodiagnostic Plates*,<sup>[71]</sup> together with the most frequent responses for either the whole image or the most prominent details according to various authors.

Card	Popular responses <sup>[72][73][74]</sup>	Comments <sup>[75][76]</sup>
	<p><b>Beck:</b> bat, butterfly, moth  <b>Piotrowski:</b> bat (53%), butterfly (29%)  <b>Dana (France):</b> butterfly (39%)</p>	<p>When seeing <b>card I</b>, subjects often inquire on how they should proceed, and questions on what they are allowed to do with the card (e.g. turning it) are not very significant. Being the first card, it can provide clues about how subjects tackle a new and stressful task. It is not, however, a card that is usually difficult for the subject to</p>



**Beck:** two humans  
**Piotrowski:** four-legged animal (34%, gray parts)  
**Dana (France):** animal: dog, elephant, bear (50%, gray)

handle, having readily available popular responses.

The red details of **card II** are often seen as blood, and are the most distinctive features.

Responses to them can provide indications about how a subject is likely to manage feelings of anger or physical harm. This card can induce a variety of sexual responses.

**Card III** is typically perceived to contain two humans involved in some interaction, and may provide information about how the subject relates with other people (specifically, response latency may reveal struggling social interactions).

**Card IV** is notable for its dark color and its shading (posing difficulties for



**Beck:** two humans (gray)  
**Piotrowski:** human figures (72%, gray)  
**Dana (France):** human (76%, gray)



**Beck:** animal hide, skin, rug  
**Piotrowski:** animal skin, skin rug (41%)  
**Dana (France):** animal skin (46%)

depressed subjects), and is generally perceived as a big and sometimes threatening figure; compounded with the common impression of the subject being in an inferior position ("looking up") to it, this serves to elicit a sense of authority. The human or animal content seen in the card is almost invariably classified as male rather than female, and the qualities expressed by the subject may indicate attitudes toward men and authority. Because of this Card IV is often called "The Father Card".<sup>[77]</sup> **Card V** is an easily elaborated card that is not usually perceived as threatening, and typically instigates a "change of pace" in the test, after the previous more challenging



**Beck:** bat, butterfly, moth  
**Piotrowski:** butterfly (48%), bat (40%)  
**Dana (France):** butterfly (48%), bat (46%)



- Beck:** animal hide, skin, rug  
**Piotrowski:** animal skin, skin rug (41%)  
**Dana (France):** animal skin (46%)



- Beck:** human heads or faces (top)  
**Piotrowski:** heads of women or children (27%, top)  
**Dana (France):** human head (46%, top)

cards. Containing few features that generate concerns or complicate the elaboration, it is the easiest blot to generate a good quality response about.

Texture is the dominant characteristic of **card VI**, which often elicits association related to interpersonal closeness; it is specifically a "sex card", its likely sexual percepts being reported more frequently than in any other card, even though other cards have a greater variety of commonly seen sexual contents.

**Card VII** can be associated with femininity (the human figures commonly seen in it being described as women or children), and function as a "mother card", where difficulties in responding may

be related to concerns with the female figures in the subject's life. The center detail is relatively often (though not popularly) identified as a vagina, which makes this card also relate to feminine sexuality in particular.

People often express relief about **card VIII**, which lets them relax and respond effectively.

Similar to card V, it represents a "change of pace"; however, the card introduces new elaboration difficulties, being complex and the first multi-colored card in the set. Therefore, people who find processing complex situations or emotional stimuli distressing or difficult may be uncomfortable with this card.



**Beck:** animal: not cat or dog (pink)

**Piotrowski:** four-legged animal (94%, pink)

**Dana (France):** four-legged animal (93%, pink)



**Beck:** human (orange)  
**Piotrowski:** none  
**Dana (France):** none

Characteristic of **card IX** is indistinct form and diffuse, muted chromatic features, creating a general vagueness.

There is only one popular response, and it is the least frequent of all cards. Having difficulty with processing this card may indicate trouble dealing with unstructured data, but aside from this there are few particular "pulls" typical of this card.

**Card X** is structurally similar to card VIII, but its uncertainty and complexity are reminiscent of card IX: people who find it difficult to deal with many concurrent stimuli may not particularly like this otherwise pleasant card. Being the last card, it may provide an opportunity for the subject to "sign out" by indicating what



**Beck:** crab, lobster, spider (blue)  
 crab, spider (37%, blue),  
**Piotrowski:** rabbit head (31%, light green),  
 caterpillars, worms,  
 snakes (28%, deep green)  
**Dana (France):** none

they feel their situation is like, or what they desire to know.

## Usage

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### United States

The Rorschach test is used almost exclusively by psychologists. Forensic psychologists use the Rorschach 36% of the time.<sup>[78]</sup> In custody cases, 23% of psychologists use the Rorschach to examine a child.<sup>[79]</sup> Another survey found that 124 out of 161 (77%) of clinical psychologists engaging in assessment services utilize the Rorschach,<sup>[80]</sup> and 80% of psychology graduate programs teach its use.<sup>[81]</sup> Another study found that its use by clinical psychologists was only 43%, while it was used less than 24% of the time by school psychologists.<sup>[78]</sup>

During World War II, United States Army Medical Corps chief psychiatrist Dr. Douglas Kelley and psychologist Gustave Gilbert administered the Rorschach test to the 22 defendants in the Nazi leadership group prior to the first Nuremberg trials.<sup>[82]</sup>

### United Kingdom

Many psychologists in the United Kingdom do not trust its efficacy and it is rarely used.<sup>[83]</sup> Although skeptical about its scientific validity, some psychologists use it in therapy and coaching "as a way of encouraging self-reflection and starting a conversation about the person's internal world."<sup>[23]</sup> It is still used, however, by some mental health organisations such as the Tavistock Clinic.<sup>[84]</sup> In a survey done in the year 2000, 20% of psychologists in correctional facilities used the Rorschach while 80% used the MMPI.<sup>[85]</sup>

### Japan

Shortly after publication of Rorschach's book, a copy found its way to Japan where it was discovered by one of the country's leading psychiatrists in a second-hand book store. He was so impressed that he started a craze for the test that has never diminished.<sup>[86]</sup> The Japanese Rorschach Society is by far the largest in the world and the test is "routinely put to a wide range of purposes".<sup>[24]</sup> In 2012 the test was described, by presenter Jo Fidgen, for BBC Radio 4's programme *Dr Inkblot*, as "more popular than ever" in Japan.<sup>[84]</sup>

## Controversy

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Some skeptics consider the Rorschach inkblot test pseudoscience,<sup>[8][87]</sup> as several studies suggested that conclusions reached by test administrators since the 1950s were akin to cold reading.<sup>[88]</sup> In the 1959 edition of *Mental Measurement Yearbook*, Lee Cronbach (former President of the Psychometric Society and American Psychological Association)<sup>[89]</sup> is quoted in a review: "The test has repeatedly failed as a prediction of practical criteria. There is nothing in the literature to encourage reliance on Rorschach interpretations." In addition, major reviewer Raymond J. McCall writes (p. 154): "Though tens of thousands of Rorschach tests have been administered by hundreds of trained professionals since that time (of a previous review), and while many relationships to personality dynamics and behavior have been hypothesized, the vast majority of these relationships *have never been validated empirically*, despite the appearance of more than 2,000 publications about the test."<sup>[90]</sup> A moratorium on its use was called for in 1999.<sup>[91]</sup>

A 2003 report by Wood and colleagues had more mixed views: "More than 50 years of research have confirmed Lee J. Cronbach's (1970) final verdict: that some Rorschach scores, though falling woefully short of the claims made by proponents, nevertheless possess 'validity greater than chance' (p. 636). [...] Its value as a measure of thought disorder in schizophrenia research is well accepted. It is also used regularly in research on dependency, and, less often, in studies on hostility and anxiety. Furthermore, substantial evidence justifies the use of the Rorschach as a clinical measure of intelligence and thought disorder."<sup>[92]</sup>

### **Test materials**

The basic premise of the test is that objective meaning can be extracted from responses to blots of ink which are supposedly meaningless. Supporters of the Rorschach inkblot test believe that the subject's response to an ambiguous and meaningless stimulus can provide insight into their thought processes, but it is not clear *how* this occurs. Also, recent research shows that the blots are not entirely meaningless, and that a patient typically responds to meaningful as well as ambiguous aspects of the blots.<sup>[7]</sup> Reber (1985) describes the blots as merely "... the vehicle for the interaction ..." between client and therapist, concluding: "... the usefulness of the Rorschach will depend upon the sensitivity, empathy and insightfulness of the tester totally independently of the Rorschach itself. An intense dialogue about the wallpaper or the rug would do as well provided that both parties believe."<sup>[93]</sup>

### **Illusory and invisible correlations**

In the 1960s, research by psychologists Loren and Jean Chapman showed that at least some of the apparent validity of the Rorschach was due to an illusion.<sup>[94][95]</sup> At that time, the five signs most often interpreted as diagnostic of homosexuality were 1) buttocks and anuses; 2) feminine clothing; 3) male or female sex organs; 4) human figures without male or female features; and 5) human figures with both male and female features.<sup>[95][96]</sup> The Chapmans surveyed 32 experienced testers about their use of the Rorschach to diagnose homosexuality. At this time homosexuality was regarded as a psychopathology, and the Rorschach was the most popular projective test.<sup>[6]</sup> The testers reported that homosexual men had shown the five signs more frequently than heterosexual men.<sup>[95][97]</sup> Despite these beliefs, analysis of the results showed that heterosexual men were just as likely to report these signs, which were therefore totally ineffective for determining homosexuality.<sup>[94][96][97]</sup> The five signs did, however, match the guesses students made about which imagery would be associated with homosexuality.<sup>[96]</sup>

The Chapmans investigated the source of the testers' false confidence. In one experiment, students read through a stack of cards, each with a Rorschach blot, a sign and a pair of "conditions" (which might include homosexuality). The information on the cards was fictional, although subjects were told it came from case studies of real patients.<sup>[94]</sup> The students reported that the five invalid signs were associated with homosexuality, even though the cards had been constructed so there was no association at all.<sup>[96][97]</sup> The Chapmans repeated this experiment with another set of cards, in which the association was negative; the five signs were never reported by homosexuals. The students still reported seeing a strong positive correlation.<sup>[6][97]</sup> These experiments showed that the testers' prejudices could result in them "seeing" non-existent relationships in the data. The Chapmans called this phenomenon "illusory correlation" and it has since been demonstrated in many other contexts.<sup>[94][95]</sup>

A related phenomenon called "invisible correlation" applies when people fail to see a strong association between two events because it does not match their expectations.<sup>[95]</sup> This was also found in clinicians' interpretations of the Rorschach. Homosexual men are more likely to see a monster on Card IV or a part-animal, part-human figure in Card

V.<sup>[6][96]</sup> Almost all of the experienced clinicians in the Chapmans' survey missed these valid signs.<sup>[6][94]</sup> The Chapmans ran an experiment with fake Rorschach responses in which these valid signs were always associated with homosexuality. The subjects missed these perfect associations and instead reported that invalid signs, such as buttocks or feminine clothing, were better indicators.<sup>[94]</sup>

In 1992, the psychologist Stuart Sutherland argued that these artificial experiments are easier than the real-world use of the Rorschach, and hence they probably underestimated the errors that testers were susceptible to. He described the continuing popularity of the Rorschach after the Chapmans' research as a "glaring example of irrationality among psychologists".<sup>[94]</sup>

Wechsler Adult Intelligence Scale  
Wechsler Intelligence Scale for Children  
Stanford–Binet Intelligence Scales  
Woodcock–Johnson Tests of Cognitive Abilities  
Kaufman Assessment Battery for Children  
Cognitive Assessment System  
Differential Ability Scales  
Ammons Quick Test

Minnesota Multiphasic Personality Inventory  
16PF Questionnaire  
Revised NEO Personality Inventory

**Projective tests**

Thematic Apperception Test  
Ink blot test (Rorschach test, Holtzman Inkblot Test)  
Szondi test  
Animal Metaphor Test  
Sentence completion tests

Mini-Mental State Examination (MMSE)  
Luria-Nebraska neuropsychological battery  
Rey-Osterrieth Complex Figure  
Delis-Kaplan Executive Function System (D-KEFS)

Mental status examination  
Wechsler Memory Scale  
Benton Visual Retention Test  
Vineland Social Maturity Scale

## TAT

The TAT was developed by American psychologist Murray and lay psychoanalyst Morgan at the Harvard Clinic at Harvard University during the 1930s. Anecdotaly, the idea for the TAT emerged from a question asked by one of Murray's undergraduate students, Cecilia Roberts.<sup>[3]</sup> She reported that when her son was ill, he spent the day making up stories about images in magazines and she asked Murray if pictures could be employed in a clinical setting to explore the underlying dynamics of personality.

Murray wanted to use a measure that would reveal information about the whole person but found the contemporary tests of his time lacking in this regard. Therefore, he created the TAT. The rationale behind the technique is that people tend to interpret ambiguous situations in accordance with their own past experiences and current motivations, which may be conscious or unconscious. Murray reasoned that by asking people to tell a story about a picture, their defenses to the examiner would be lowered as they would not realize the sensitive personal information they were divulging by creating the story.<sup>[4]</sup>

Murray and Morgan spent the 1930s selecting pictures from illustrative magazines and developing the test. After 3 versions of the test (Series A, Series B, and Series C), Morgan and Murray decided on the final set of pictures, Series D, which remains in use today.<sup>[3]</sup> Although she was given first authorship on the first published paper about the TAT in 1935, Morgan did not receive authorship credit on the final published instrument. Reportedly, her role in the creation of the TAT was primarily in the selection and editing of the images, but due to the primacy of the name on the original publication the majority of written inquiries about the TAT were addressed to her; since most of these letters included questions that she could not answer, she requested that her name be removed from future authorship.<sup>[5]</sup>

During the time Murray was developing the TAT he was also involved in Herman Melville studies. The therapeutic technique originally came to him from the "Doubloon chapter" in *Moby Dick*.<sup>[6]</sup> In this chapter, multiple characters inspect the same image (a Doubloon), but each character has vastly different interpretations of the imagery—Ahab sees symbols of himself in the coin, while the religiously devout Starbuck sees the Christian Trinity. Other characters provide interpretations of the image that give more insight into the characters themselves based on their interpretations of the imagery. Crew members, including Ahab, project their self perceptions onto the coin which was nailed to the mast. Murray, a lifelong Melvillist, often maintained that all of Melville's oeuvre was for him a TAT.

After World War II, the TAT was adopted more broadly by psychoanalysts and clinicians to evaluate emotionally disturbed patients. Later, in the 1970s, the Human Potential Movement encouraged psychologists to use the TAT to help their clients understand themselves better and stimulate personal growth.

### Procedure[edit]

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The TAT is popularly known as the *picture interpretation technique* because it uses a series of provocative yet ambiguous pictures about which the subject is asked to tell a story. The TAT manual provides the administration instructions used by Murray,<sup>[7]</sup> although these procedures are commonly altered. The subject is asked to tell as dramatic a story as they can for each picture presented, including the following:

- what has led up to the event shown
- what is happening at the moment

- what the characters are feeling and thinking
- what the outcome of the story was

If these elements are omitted, particularly for children or individuals of low cognitive abilities, the evaluator may ask the subject about them directly. Otherwise, the examiner is to avoid interjecting and should not answer questions about the content of the pictures. The examiner records stories verbatim for later interpretation.

The complete version of the test contains 32 picture cards. Some of the cards show male figures, some female, some both male and female figures, some of ambiguous gender, some adults, some children, and some show no human figures at all. One card is completely blank and is used to elicit both a scene and a story about the given scene from the storyteller. Although the cards were originally designed to be matched to the subject in terms of age and gender, any card may be used with any subject. Murray hypothesized that stories would yield better information about a client if the majority of cards administered featured a character similar in age and gender to the client.<sup>[7]</sup>

Although Murray recommended using 20 cards, most practitioners choose a set of between 8 and 12 selected cards, either using cards that they feel are generally useful, or that they believe will encourage the subject's expression of emotional conflicts relevant to their specific history and situation.<sup>[8]</sup> However, the examiner should aim to select a variety of cards in order to get a more global perspective of the storyteller and to avoid confirmation bias (i.e., finding only what you are looking for).

Many of the TAT drawings consist of sets of themes such as: success and failure, competition and jealousy, feeling about relationships, aggression, and sexuality.<sup>[9]</sup> These are usually depicted through picture cards.

#### Psychometric characteristics[edit]

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Thematic Apperception Tests are meant to evoke an involuntary display of one's subconscious. There is no standardization for evaluating one's TAT responses; each evaluation is completely subjective because each response is unique. Validity and reliability are, consequently, the largest question marks of the TAT.<sup>[10]</sup> There are trends and patterns, which help identify psychological traits, but there are no distinct responses to indicate different conditions a patient may or may not have. Medical professionals most commonly use it in the early stages of patient treatment. The TAT helps professionals identify a broad range of issues that their patients may suffer from. Even when individual scoring procedures are examined, the absence of standardization or norms make it difficult to compare the results of validity and reliability research across studies. Specifically, even studies using the same scoring system often use different cards, or a different number of cards.<sup>[11]</sup> Standardization is also absent amongst clinicians, who often alter the instructions and procedures.<sup>[12]</sup> Murstein<sup>[13]</sup> explained that different cards may be more or less useful for specific clinical questions and purposes, making the use of one set of cards for all clients impractical.

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VALUE ADDED COURSE STUDENT DETAILS

PSYCHOLOGICAL TESTS- 2<sup>ND</sup> YEAR STUDENTS

S.No	Register No	Students List	Department	SIGNATURE
1	U13MB266	SNEHA. T (DOB- 15.01.1996)	Psychiatry	Sneha
2	U13MB267	SOBICA.D	Psychiatry	D. Sobica
3	U13MB268	SOWNDARAVEL.S	Psychiatry	S. Sowndarvel.
4	U13MB269	SRI SAKTHI PRIYA.N	Psychiatry	Sri Sakthi Priya
5	U13MB270	SRILEKHA.D.J	Psychiatry	Srilekha D.J.
6	U13MB271	SRIMUKESH.A	Psychiatry	Mukesh A.
7	U13MB272	STEPHEN.A	Psychiatry	Stephen A.
8	U13MB273	SUGANYA.P	Psychiatry	Suganya
9	U13MB274	SUGESH CHANDRAN.V	Psychiatry	Chandra Sugesh
10	U13MB275	SURIYAKUMAR.G	Psychiatry	Suriyakumar
11	U13MB276	SUSINDHARAN. K	Psychiatry	Susindharan

12	U13MB277	SWEDHA.P.	Psychiatry	<i>Swedha</i>
13	U13MB278	THAMIZHARUVI. M.	Psychiatry	<i>Thamizharuvi</i>
14	U13MB279	THAMIZHSELVAN. G	Psychiatry	<i>ThamizhSelvan</i>
15	U13MB280	THARSHINI. N	Psychiatry	<i>Tharshini</i>



# SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION AND RESEARCH

Candidate Name		Assessor Name	
Date of Assessment		Assessor Position	

## Various Psychological tests and its application in psychiatry

### MULTIPLE CHOICE QUESTIONS

Course Code: PSYC05

#### I. ANSWER ALL THE QUESTIONS

1) What is Rorschach's projective test designed to measure?

- a) Unconscious intentions.
- b) Dreams.
- c) Conscious desires.
- d) Brain size.

Check your answer

2) Which of the following is not a projective test?

- a) Word association test.
- b) Rorschach's ink blot test.
- c) Thematic apperception test.
- d) Sentence completion test.

Check your answer

3) An IQ test does NOT provide which of the following?



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- a) High test re-test reliability.
- b) Good predictor of behaviour.
- c) High internal consistency.
- d) Good validity.

Check your answer

4) The Weschler adult intelligence scale can be used to assess eligibility for:

- a) Housing benefit.
- b) Disability allowance.
- c) Suicide risk.
- d) Special educational needs.

Check your answer

5) Which of the following is true of test-retest reliability?

- a) The test is measuring what it claims to be measuring.
- b) The test will produce consistent results.
- c) The client will improve performance second time\round.
- d) All of the above.

Check your answer

6) Which of the following refers to Inter-rater reliability?

- a) The degree to which two tests measure the same construct.



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- b) The degree to which a clinician can predict future behaviour.
- c) The degree to which two clinicians will agree on interpretation or scoring of a test.
- d) The degree to which the items in the test relate to each other.

Check your answer

7) Which of the following refers to concurrent validity?

- a) That two tests are done at the same time.
- b) Two or more clinicians agree on the outcome.
- c) The items on the test consistently relate to each other.
- d) The notion that scores on a test correlate highly with scores from tests that measure the same attribute.

Check your answer

8) Face validity refers to which of the following:

- a) Facial expression is used to make a diagnosis.
- b) The scale of emotional responding.
- c) The notion that an assessment method may appear to be valid simply because it has questions which intuitively seem relevant to the trait or characteristic being measured.
- d) A construct is a hypothetical or inferred attribute that may not be directly observable or directly measurable

Check your answer

9) Construct validity is a notion that refers to:



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- a) The notion that scores on a test correlate highly with scores from tests that measure the same attribute.
- b) The level of which a construct is related to other similar measures.
- c) The degree to which the items in the test consistently relate to each other.
- d) The test will produce consistent results.

Check your answer

10) Case formulation is:

- a) Using information to draw up a psychological explanation of the client's problems and to develop a plan for therapy.
- b) Using the psychiatric diagnostic model of psychopathology.
- c) Using previous case studies for diagnosis.
- d) Analysing clients behaviour on a case by case basis.



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Annexure - IV

Psychological tests

MULTIPLE CHOICE QUESTIONS

CANDIDATE NAME:- SRILAKSHMI D.J  
DATE OF ASSESSMENT - 13.11.2017  
UNIVERSITY REG NO:- U13MB2

ASSESSOR NAME:- DR. ARUN  
Course Code: PSYC05  
ASSESSOR POSITION:- ASSISTANT PROFESSOR

I. ANSWER ALL THE QUESTIONS

1) What is Rorschach's projective test designed to measure?

- a) Unconscious intentions.
- b) Dreams.
- c) Conscious desires.
- d) Brain size.

Check your answer

2) Which of the following is not a projective test?

- a) Word association test.
- b) Rorschach's ink blot test.
- c) Thematic apperception test.
- d) Sentence completion test.

Check your answer

3) An IQ test does NOT provide which of the following?

- a) High test re-test reliability.
- b) Good predictor of behaviour.



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- c) High internal consistency.
- d) Good validity.

Check your answer

4) The Weschler adult intelligence scale can be used to assess eligibility for

- a) Housing benefit.
- b) Disability allowance.
- c) Suicide risk.
- d) Special educational needs.

Check your answer

5) Which of the following is true of test-retest reliability?

- a) The test is measuring what it claims to be measuring.
- b) The test will produce consistent results.
- c) The client will improve performance second time round.
- d) All of the above.

Check your answer

6) Which of the following refers to Inter-rater reliability?

- a) The degree to which two tests measure the same construct.



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scoring of a test.

- d) The degree to which the items in the test relate to each other.

Check your answer

7) Which of the following refers to concurrent validity?

- a) That two tests are done at the same time.
- b) Two or more clinicians agree on the outcome.
- c) The items on the test consistently relate to each other.
- d) The notion that scores on a test correlate highly with scores from tests that measure the same attribute.

Check your answer

8) Face validity refers to which of the following:

- a) Facial expression is used to make a diagnosis.
- b) The scale of emotional responding.
- c) The notion that an assessment method may appear to be valid simply because it has questions which intuitively seem relevant to the trait or characteristic being measured.
- d) A construct is a hypothetical or inferred attribute that may not be directly observable or directly measurable

Check your answer

9) Construct validity is a notion that refers to



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- a) The notion that scores on a test correlate highly with scores from tests that measure the same attribute.
- b) The level of which a construct is related to other similar measures.
- c) The degree to which the items in the test consistently relate to each other.
- d) The test will produce consistent results.

Check your answer

10) Case formulation is

- a) Using information to draw up a psychological explanation of the client's problems and to develop a plan for therapy.
- b) Using the psychiatric diagnostic model of psychopathology.
- c) Using previous case studies for diagnosis.
- d) Analysing clients behaviour on a case by case basis.

Check your answer

11) Which of the following is an acronym for MMSE?

- a) Multi memory state examination.
- b) Multiple mental strata evaluation.
- c) Mini mental state examination.
- d) Meta mental structural evaluation.



Check your answer



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- c) High internal consistency.
- d) Good validity.

Check your answer

4) The Weschler adult intelligence scale can be used to assess eligibility for

- a) Housing benefit.
- b) Disability allowance.
- c) Suicide risk.
- d) Special educational needs.

Check your answer

5) Which of the following is true of test-retest reliability?

- a) The test is measuring what it claims to be measuring.
- b) The test will produce consistent results.
- c) The client will improve performance second time round.
- d) All of the above.

Check your answer

6) Which of the following refers to Inter-rater reliability?

- a) The degree to which two tests measure the same construct.
- b) The degree to which a clinician can predict future behaviour



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This is to certify that THARSHINI. N has actively participated in the Value Added Course on **Various Psychological tests and its application in psychiatry** held during July – Dec 2017 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

  
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**CERTIFICATE OF MERIT**

This is to certify that **THAMIZHSELVAN. G** has actively participated in the Value Added Course on **Various Psychological tests and its application in psychiatry** held during July – Dec 2017 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

  
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SI. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					
2	Course contents met with your expectations					
3	Lecturer sequence was well planned					
4	Lectures were clear and easy to understand					
5	Teaching aids were effective					
6	Instructors encourage interaction and were helpful					
7	The level of the course					
8	Overall rating of the course	1	2	3	4	5

*\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory*

Suggestions if any:

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Student Feedback Form

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1	Objective of the course is clear		✓			
2	Course contents met with your expectations			✓		
3	Lecturer sequence was well planned				✓	
4	Lectures were clear and easy to understand					✓
5	Teaching aids were effective		✓			
6	Instructors encourage interaction and were helpful				✓	
7	The level of the course					✓
8	Overall rating of the course	1	2	3 ✓	4	5

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

*Soundar*  
Signature



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Subject Code: PSYC05

Name of Student: SOBICA D Roll No.: UI3MB267

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Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear				✓	
2	Course contents met with your expectations					✓
3	Lecturer sequence was well planned			✓		
4	Lectures were clear and easy to understand				✓	
5	Teaching aids were effective		✓			
6	Instructors encourage interaction and were helpful			✓		
7	The level of the course					✓
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

*Sobica*



# SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION AND RESEARCH

Date: 30-12-2017

From  
Dr. V.R.Sridhar  
Professor and Head,  
Department of Psychiatry,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

Through Proper Channel

To  
The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Completion of value-added course: Various Psychological tests and its application in psychiatry**

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: **Various Psychological tests and its application in psychiatry**. We solicit your kind action to send certificates for the participants that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards,

Dr. Sridhar

**Dr. V. R. SRIDHAR, MD.,D.P.M.,**  
Reg. No: 30995  
Professor & HOD, Psychiatry  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Pudukcherry-605 502.

**Encl: Certificates**

**Photographs**



# SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION AND RESEARCH

PSYC05 Various Psychological tests and its application in psychiatry- JULY TO DECEMBER -2017





# SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION AND RESEARCH



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**Sri Lakshmi Narayana Institute of Medical Sciences**

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[ Affiliated to Bharath University, Chennai - TN ]

Date:23.06.2017

From  
DR.vijayaragavan  
Associate Professor and Head,  
Department of orthopaedics,  
SLIMS,  
Bharath Institute of Higher Education and Research,  
Pondicherry.

To  
The Dean,  
SLIMS,  
Bharath Institute of Higher Education and Research,  
Pondicherry.

**Sub: Permission to conduct value-added course: Plaster of paris**

Respected Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled:  
**Plaster of Paris** on 17.07.2017. We solicit your kind permission for the same.

Kind Regards

DR.vijayaragavan

Dr. R. VIJAYA RAGAVAN, MCh. (Ortho.)  
Reg. No. 65472  
Associate Professor Orthopaedics  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakam, Puducherry - 605 502

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**FOR THE USE OF DEANS OFFICE**

Names of Committee members for evaluating the course:

The Dean:DR.Sugumaran

The Associate professor: dr.vijayaragavan

The Expert:Dr.Boblee james

The committee has discussed about the course and is approved.



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Dean

DEAN  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Ageram Kudapakkam, Post,  
Villanur Commune Puducherry-605 502.

Subject Expert

Department of Orthopaedics  
Sri Lakshmi Narayana Institute of Medical Sciences  
Pondicherry - 605 502.

HOD

PROFESSOR & HOD  
Department of Orthopaedics  
Sri Lakshmi Narayana Institute of Medical Sciences  
Pondicherry - 605 502.



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**Circular**

07.06.2020

**Sub: Organising Value-added Course: PLASTER OF PARIS–SHORT HISTORY OF CASTING AND INJURED LIMB IMMOBILIZATION**

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research** is organizing **PLASTER OF PARIS–SHORT HISTORY OF CASTING AND INJURED LIMB IMMOBILIZATION 30 hrs & July2017– october 2017**

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before JULY 2017- OCT 2017. Applications received after the mentioned date shall not be entertained under any circumstances.

**Dean**

DEAN  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Ageram Kudapakkam, Post,  
Villanur Commune Puducherry-605 502.



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### **COURSE PROPOSAL**

**Course Title: Plaster of Paris.**

**Course Objective: to evaluate the skill of application of POP.**

**Course Outcome: POP Application skill and when to use it.**

**Course Audience: 20**

**Course Coordinator: DR.Sugumaran**

**Course Faculties with Qualification and Designation:**

**1. DR.Vijayaragavan DNB ORTHO**

**Course Curriculum/Topics with schedule (Min of 30 hours)**

SINo	Date	Topic	Time	Hours
1	17.07.17	HISTORY OF INJURED LIMB IMMOBILIZATION	4:30 - 7:00pm	TWO AND HALF HOURS
2	31.07.17	ORIGINS OF PLASTER OF PARIS	4:30 - 7:00pm	TWO AND HALF HOURS
3	04.08.17	APPLICATION OF PLASTER OF PARIS	4:30- 7:00pm	TWO AND HALF HOURS
4	11.08.17	COMPLICATIONS ASSOCIATED WITH SPPLINTING AND CASTING	4:30- 7:00pm	TWO AND HALF HOURS



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PRACTICAL:				
1	17.08.17	Composition/precautions of pop	4-7PM	3HRS
2	20/7/27	Application of pop	4-7PM	3
3	24/7/17	Humerus	4-7PM	3
4	28/7/17	Elbow	4-7PM	3
5	7/8/17	Wrist/hand	4-7PM	3
6	14/8/17	Pelvis	4-6PM	2
7	21/8/17	Lower limb	4-7PM	3
			Total Hours	30

**REFERENCE BOOKS:**

1) CLOSED TREATMENT OF FRACTURES  
CHARNLEY

**JOHN**

2) WATSON AND JONES FRACTRE AND JOINT INJURIES  
WILSON



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### VALUE ADDED COURSE

**1. Name of the programme & Code**

Plaster of Paris–Short History of Casting and Injured Limb Immobilization. – OR06

**2. Duration & Period**

30 hrs & July2017– october 2017

**3. Information Brochure and Course Content of Value Added Courses**

*Enclosed as Annexure- I*

**4. List of students enrolled**

*Enclosed as Annexure- II*

**5. Assessment procedures:**

Multiple choice questions- *Enclosed as Annexure- III*

**6. Certificate model**

*Enclosed as Annexure- IV*

**7. No. of times offered during the same year:**

Value Added Course- july-17 – oct 17					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	OR06	Plaster of Paris–Short History of Casting and Injured Limb Immobilization	Dr. Vijayaragavan	THIRD YEAR MBBS	19 (July17 – oct 17)

1 July 2017– october 2017

**8. Year of discontinuation: 2018**

**9. Summary report of each program year-wise**

**10. Course Feed Back**

*Enclosed as Annexure- V*

**RESOURCE PERSON  
DR.VIJAYARAGHAVAN**

**COORDINATOR  
DR.A.SUGUMARAN**

Dr. R. VIJAYA RAGAVAN, DMB.,  
Reg. No. 68472  
Asso Professor Orthopaedics  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502

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Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Ageram Kudapakkam, Post,  
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## PLASTER OF PARIS–SHORT HISTORY OF CASTING AND INJURED LIMB IMMOBILIZATION

17/7/17



PARTICIPANT HAND BOOK



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Particulars	Description
Course Title	Plaster of paris–short history of casting and injured limb immobilization.
Course Code	OR06
Objective	1. History of injured limb immobilization 2. Origins of plaster of paris 3. Application of plaster of paris 4. Complications associated with splinting and casting
Further learning opportunities	Plaster of Paris & Injured limb immobilization
Key Competencies	On successful completion of the course the students will have skill in handling and Plaster of Paris
Target Student	Pre final yearStudents
Duration	30hrsJuly 2017– october 2017
Theory Session	10hrs
Practical Session	20hrs
Assessment Procedure	Short notes

### HISTORY OF INJURED LIMB IMMOBILIZATION

Immobilization of injured limbs has been performed for thousands of years. Before contemporary casting materials became widely used, people used a variety of materials to form rigid casts. Over the centuries immobilization has evolved from using simple wooden splints and rags to plaster of Paris, fibre and soft casts.

The earliest examples of the active management of fractures in humans were discovered at Naga-ed-Der in 1903 during the Hearst Egyptian Expedition of the University of California lead by Dr. GA Reisner]. In a paper published in the British Medical Journal in 1908, Mr. G. Elliot-Smith describes two sets of splints that were found during excavations of tombs from the fifth dynasty (2494-2345 BC) . One of the earliest descriptions of casting material was by Hippocrates in 350 BC. He wrote about wrapping injured limbs in bandages soaked in wax and resin . According to the earliest known surgical text *The Edwin Smith Papyrus* (copied circa 1600 BC), the Egyptians were using self setting bandages, probably derived from those used by the embalmers. Later descriptions of casting came from the Arab



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physician Rhazes Athuriscus. El Zahrawi (960-1013 AD), a surgeon born near Córdoba in Spain, described the use of both clay gum mixtures and flour and egg white as casting materials . Starch based casts appear to have been the standard treatment with only minor changes until the beginning of the 19th century with only a few minor changes . Further advances in the choice of materials were made during the wars. In the 18<sup>th</sup> century, Henri François Le Dran, who practiced surgery at Hôpital de la Charité in Paris and was a surgeon in Germany Army and consulting surgeon to the camps and armies of King Louis XV, used to soak his bandages with egg white, vinegar and clay powder or plaster . A modification to the materials used was introduced by the father of modern military surgery, Baron Dominique Jean Larrey, a French surgeon in Napoleon's army. He was surgeon in chief from 1797 till the Battle of Waterloo in 1815 . Larrey's modification was adopted from Don Eugenio de la Penna who bandaged the fracture with linen that had first been moistened with Camphor spirit, egg whites and lead-acetate. Unfortunately these were not used on a large scale due to costs .

Baron Louis Joseph G Seutin (1793-1862) was a belgian professor and surgeon in chief at the Universite Libre de Bruxelles. As a chief doctor of the Belgian Army he fought in at Waterloo. He became famous for inventing starch bandages known as "La Bandage Immobile" or "L'Appareil Amidonnee" that consisted of strips of linen or bandages and carton splints, soaked in starch and wrapped around the limb . Seutin's method was popular in England by Joseph Samson Gamgee, the Birmingham surgeon who amongst other things invented Gamgee tissue. In the first half of the 19th century, it was not popular to reduce fractures until the swelling of the soft tissue decreased. Following Seutin's rules Gamgee insisted on immediate reduction and application of the starched apparatus, and registered spectacular success.

### **ORIGINS OF PLASTER OF PARIS**

Plaster of Paris is produced by removing the impurities from the mined gypsum and then heating it under controlled conditions to reduce the amount of water of crystallization. Plaster of Paris was well known as a building material for many centuries before it was introduced as casting material. Egyptians as well as Romans used it for plastering walls however not more is known on plaster use after the end of Roman occupation. In modern day England, it was widely excavated in Roman coffins discovered in York, and on the walls in the military barracks of the Second Augustian Legion excavated at Caerleon in Monmouthshire. In mediaeval times gypsum was used only for alabaster statuary. There are various accounts describing the origin for the name plaster of Paris. One account mentions King Henry III who visited Paris in 1254 and was so impressed by fine white walls that he introduced similar plastering in England where it became known as plaster of Paris. The first use of plaster of Paris as a cast for injured limbs took place through a technique known as *plâtre coulé* that became popular in Europe at the beginning of 19th century. This technique involved pouring plaster of Paris around injured limbs encased in a



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wooden construct. Due to the weight of the construct, the patient was largely confined to bed during the period of fracture healing. This disadvantage was highlighted by Seutin, but this remained a relatively popular technique in Europe with some surgeons using it for lower limbs only and some using it for both upper and lower. Starched and albuminated bandages were also used as a casting method. In 1839, Lafargue of St. Emilion used fresh warm starch paste mixed with plaster of Paris powder applied to layers of linen strips. That dressing had the advantage of hardening much quicker, reducing setting time down to six hours. The Dutch military surgeon Anthonius Mathijssen while working at the military hospital in Haarlem discovered that bandages soaked in water and plaster of Paris were becoming hard within minutes providing sufficient casting for injured limbs. He published his monograph in 1852 in a medical magazine called *Repertorium*. His plaster bandage was based on the principles of Seutin, who 10 years earlier introduced starched bandages known as *bandage amidonnee*. In his paper entitled “*New Method for Application of Plaster-of-Paris Bandage*”, Mathijssen highlighted many disadvantages of Seutin’s dressings including lack of self-adjustment to the changing conditions of the limb, long duration of days needed for the casing to become sufficiently solid, carton splints shrinking and becoming shorter when they dried off adversely affecting fractures, and in cases of suppuration or with small children urinating, dressing becoming soft and loosen. Mathijssen’s bandages consisted of strips of coarse cotton cloth with finely powdered plaster rubbed in. This method of preparation was used until 1950.

Nikolay Ivanovich Pirogov, a head of the department of surgery at the St Petersburg Medico-Surgical Academy and a Russian army surgeon during the Crimean War, conceived his idea to use plaster splints around 1852 while observing the work of a sculptor who used strips of linen soaked in liquid plaster to make models. Pirogov used coarse cloth, either in large pieces or in strips that were immersed in a liquid mixture of plaster of Paris immediately before applying them to limbs protected by stockings and cotton pads. Based on his Crimean experience, Pirogov believed that all patients with fractures due to missile wounds should not be evacuated from the forward dressing stations until the limb had been immobilized in a proper dressing of plaster of Paris. After the war he refined his method by cutting coarse sail cloth to a defined pattern shaped to fit a part of body and soaking it in plaster before application. Use of plaster of Paris bandages for fracture casts became widespread after Mathijssen’s death and replaced most other forms of splintage. Early plaster bandages used at hospitals were made by nursing staff. They were usually freshly made from plaster powder kept in air tight containers that was applied on to the woven bandage or strips of cloths. Care was required while soaking dry bandage in water to prevent the plaster coming off the bandages and dissolving in water. In the early 1930’s, the first commercially manufactured bandages were available in Germany. They were made by spreading plaster mixed with minute quantities of volatile liquids on soft cloth



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### **APPLICATION OF PLASTER OF PARIS**

Plaster of Paris ( $2\text{CaSO}_4 \cdot \text{H}_2\text{O}$ ) is calcium sulphate with water. It is prepared by heating gypsum ( $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ ) at  $120^\circ\text{C}$  to allow partial dehydration. When mixed with water, it gives out heat and quickly sets to a hard porous mass within 5 to 15 minutes. The first step is called the setting stage with a slight expansion in volume. The second stage is the hardening stage. Properties of plaster of Paris bandages have not greatly changed since their first use in the 19th century. Plaster is still widely popular, it is cheap, non-irritant and easy to apply. As quoted by AJ Steele in his article from 1893 on the use of plaster of Paris in orthopaedics, *“The property of rapidly hardening when once wet, gives to plaster its value. Additionally it has merit in its cheapness and convenience; it is ever ready, is easily prepared, and simple in its application”*.

In 1906, Meisenbach published a 24 pages study on plaster of Paris bandages in the American Journal of Orthopaedic Surgery. He outlined the four essential properties of plaster dressings to include strength, quick set, light weight and ventilation, summarizing that ideal plaster dressing should be thin and strong. Plaster can be used not only for treatment of fractured bones but also supports sprained ligaments, and inflamed and uninfected soft tissues. It usually sets in few minutes, but needs between 36-72 hours to completely dry. Leg plasters are able to bear weight after 48 hours. Completely dry casts when tapped with knuckles will sound crisp and clear whereas wet casts emit a dull sound. Cast should only be dried by natural methods. No artificially generated heat is recommended. Despite its frequent use, allergic reactions to plaster of Paris are extremely uncommon. There are only a few cases of allergic contact dermatitis from benzalkonium chloride described in the literature; benzalkonium chloride has been used as an additive in certain brands of plaster of Paris since the 1970's in order to improve its binding properties.

When plaster of Paris dries off it becomes porous which helps to maintain patient's skin free from moisture. It is radiolucent which makes X-ray examination possible. The strength of the plaster cast is determined by the quality of plaster, water to gypsum ratio, product age and storage conditions. The success of non-operative treatment of fractures relies on a clear understanding of fracture healing and the proper use of stabilizing techniques. Non-operative management of fractures has been declining in recent years due to significant advances in operative technology and greater patient expectations of an early return to activity. Younger surgeons are not as familiar with non-operative treatment of fractures with a plaster cast as their predecessors. This is due to a lack of experience in application of plaster casts and the subsequent management. Plaster of Paris is unique and still remains the favoured casting material in many countries. It is cheap, non-toxic, and can easily be moulded to the desired shapes and contours of the body. Skin irritation and allergy is extremely rare. Application of plaster of Paris requires good knowledge of anatomy and pathology that we are aiming to treat. It has to be applied with a great care that also needs its supervision afterwards. The perfect plaster dressing must retain the limb under all



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conditions in the desired position with complete comfort. It must be strong yet light, effective in use but easily removed when no longer required. Prior to casting, any skin lesions or soft tissue injuries must be carefully noted. It is important to observe and document neurovascular status of the extremity, and this needs to be repeated following application of plaster. Patients with neuropathy or neurologic deficits are at greater risk for skin problems with abnormal sensation under the plaster. It is crucial that plaster bandages are rolled on to the limb and not pulled. Figure of eight turns, creases and ridges have to be avoided. Rubbing and massaging plaster bandages during application helps to bond layers together creating stronger and lighter casts. Plaster bandages should be soaked in tepid or slightly warm water. Plaster sets quicker with warm water compared with cold water. The faster the material sets the greater heat produces and the greater the risk of burns. Fast setting plasters have increased risk of thermal injury. There is a risk if casts are allowed to dry resting on pillow. Temperature elevations could be related to the plaster being dipped too briefly and the water being squeezed too aggressively out of the plaster. The water helps release heat, and if there is not enough, the plaster gets hotter. Lavalette and Ganaway proposed that pre-existing plaster residue in the water might also play a role in elevating cast temperature by maintaining the peak temperature for a longer period, therefore water should be clean. Water temperature of 32 degrees Celsius can be high enough to cause burns. Moritz and Henriques showed that 6 hours at 44 degrees Celsius can cause a third degree burn.

A fiberglass cast is a newer synthetic alternative to plaster of Paris. Fiberglass cast is a lightweight and extremely strong material. Fiberglass, also called glass-reinforced plastic (GRP) or glass fiber reinforced plastic (GFRP) is a fiber reinforced polymer made of a plastic matrix reinforced by fine glass. As compared to traditional plaster of Paris cast, it is light in weight and more durable. It is three times stronger and but is only one third in weight. Fiberglass cast is a lightweight and extremely strong material. Fiberglass cast is used for fracture management but is not applied in the acute settings because it is less accommodating to swelling and does not allow moulding.

### **COMPLICATIONS ASSOCIATED WITH SPLINTING AND CASTING**

There are risks associated with plaster cast immobilization and patient has to be made aware of these. Patients with known diabetes or sensory impairment due to spinal cord injury are those who need particular attention at the time of plaster application and later. Below we discuss some common complications.



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### **1. Deep Vein Thrombosis (DVT)**

Prolonged lower limb immobilization in plaster carries the risk of deep vein thrombosis (DVT) that the patient has to be made aware of. Two independent studies found that adults treated with a lower extremity cast for an average of 3 weeks had an incidence of DVT between 15% and 36%. Low molecular weight heparin did not significantly reduce the risk of developing DVT . Although these are more common in the lower limbs, these have also been described in upper limb immobilisation.

### **2. Compartment Syndrome**

One of the most serious complications to be considered is compartment syndrome. This is a condition in which increased pressure within a limited space compromises the circulation and function of the tissues within that space. Compartment syndrome may lead to fatal complications including major loss of limb function and even death and are more common in lower leg and forearm fractures.

### **3. Soft Tissue Swelling**

Soft tissue swelling associated with the fractured limb will usually subside within 48 hours from the injury leaving the cast loose. This may lead to displacement of well positioned or reduced fracture, and the reapplication of a new well-fitted cast may be needed. This is more likely to be an issue with unstable fractures. This is more noticeable in lower limb injuries where after education and elevation, swelling can reduce significantly. It is vital to ensure sufficient padding with swelling to prevent complications.

### **4. Pressure Sores**

Plaster pressure sores can occur as a result of poor plastering technique associated with inadequate skeletal protection or failure to trim the extremities of the cast correctly. Foreign bodies especially with young children can be easily misplaced in the cast and exert pressure on the skin that can lead to a break in the skin. Every patient should be warned about dangers



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of scratching beneath the cast with different sharp implements as this can cause infection. Cutting windows in plasters and leaving them unprotected may lead to oedema developing within the window area that will lead to soreness of the skin at the margins. Bivalving casts can be considered as an alternative to enable inspection.

### **5. Venous Congestion**

Swelling or blue discoloration of the extremities suggests impaired venous return due to tightness of the plaster. The blue discoloration of venous congestion must be differentiated from bruising. There are a number of other complications that relate to long periods of immobilization and include joint stiffness, muscle atrophy, cartilage degradation, ligament weakening, and osteoporosis. Some risks can be minimized with correct casting technique. It is important to make patients aware of what can potentially go wrong with a plaster cast. Our review article shows that plaster of Paris has stood the test of time and is still commonly used. Although there have been developments with the use of the lighter, stronger and more durable synthetic fiberglass of Paris, plaster of Paris is still more widely used as it can be used in the acute setting and allows moulding. It is important to appreciate the complications and how these can be avoided to ensure we continue to use it safely.



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### VALUE ADDED COURSE

Annexure- II

Plaster of Paris–Short History of Casting and Injured Limb Immobilization  
OR06

#### 4. List of Students Enrolled July 2017– october - 2017

1 <sup>st</sup> Year MBBS Student			
Sl. No	Name of the Student	Roll No	sign
1	BHALA KUMARAN .S	U15MB270	B.B
2	CHELLAMARIAPPAN. S	U15MB271	Chellam
3	CIBIBALAA. D	U15MB272	Bala C
4	DEEPIKA DIVYA KUMARI. B	U15MB273	D.D.P
5	DEEPIKA PRIYADHARSHINI. B	U15MB274	Deepika
6	DEVANAND .M	U15MB275	Devanand
7	DEVANATHAN. R	U15MB276	devanathan
8	DHANA PRIYA .P	U15MB277	priya
9	DHANALAKSHMI. M	U15MB278	Lakshmi
10	DHANUSH .R	U15MB279	Dhanush
11	DHANUSH KODALI	U15MB280	Kodali
12	DHIVYA KUMARI .P	U15MB281	Dhivya
13	DIVYA .S	U15MB282	S. Divya
14	DIVYA DHARSHINI .N	U15MB283	darshini
15	EVANGELINE PRETTY .G	U15MB284	Evangeline
16	EZHILARASI. R	U15MB285	R.E
17	FATHIMA BANU. A	U15MB286	Fathima
18	GAYATHRI .M	U15MB287	M.G
19	GOGUL SUGAN. K	U15MB288	Sugan



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### Annexure 4

#### Course/Training Feedback Form

Course: PLASTER OF PARIS  
Date: 21/8/17  
Name: DEEPIKA PRIYADHARSHINI.B  
Reg NO.  
Department: ORTHO

Q 1: Please rate your overall satisfaction with the format of the course:

a.  Excellent b.  Very Good c.  Satisfactory d.  unsatisfactory

Q 2: Please rate course notes:

a.  Excellent b.  Very Good c.  Satisfactory d.  unsatisfactory

Q 3: The lecture sequence was well planned

a.  Excellent b.  Very Good c.  Satisfactory d.  unsatisfactory

Q 4: The lectures were clear and easy to understand

a.  Excellent b.  Very Good c.  Satisfactory d.  unsatisfactory

Q 5: Please rate the quality of pre-course administration and information:

a.  Excellent b.  Very Good c.  Satisfactory d.  unsatisfactory

Q 6: Any other suggestions:

Comments:

Thank you for taking the time to complete this survey, your comments are much appreciated.

OPTIONAL Section: Name \_\_\_\_\_ Date \_\_\_\_\_  
Signature \_\_\_\_\_



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Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



### CERTIFICATE OF MERIT

This is to certify that DEEPIKA PRIYADHARSHINI.B has actively participated in the Value Added Course on *Plaster of Paris–Short History of Casting and Injured Limb Immobilization* held during July 2017 – October 2017 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr.

VIJAYARAGHAVAN

RESOURCE PERSON

Dr. SUGUMARAN

COORDINATOR



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**Sri Lakshmi Narayana Institute of Medical Sciences**

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[ Affiliated to Bharath University, Chennai - TN ]

Pro

## Student Feedback Form

Course Name: PLASTER OF PARIS-SHORT HISTORY OF CASTING AND INJURED LIMB IMMOBILIZATION

Subject Code: OR06

Name of Student: Gibibala - D Roll No.: U15MB272

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					✓
2	Course contents met with your expectations					✓
3	Lecturer sequence was well planned					✓
4	Lectures were clear and easy to understand					✓
5	Teaching aids were effective					✓
6	Instructors encourage interaction and were helpful					✓
7	The level of the course					✓
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Date: 21/5/17

Gibibala  
Signature



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[ Affiliated to Bharath University, Chennai - TN ]

Date 21.08.2017

From  
DR. Vijayaragavan  
Department of orthopaedics,  
SLIMS,  
Bharath Institute of Higher Education and Research,  
Pondicherry.

Through Proper Channel

To  
The Dean,  
SLIMS,  
Bharath Institute of Higher Education and Research,  
Pondicherry.

**Sub: Completion of value-added course: Plaster of paris**

Respected Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: **Plaster of paris** on 21/8/2017. We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards

DR. vijayaragavan

Dr. R. VIJAYA RAGAVAN, DNB.,  
Reg. No. 68472  
Asso Professor Orthopaedics  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502.

**Encl: Certificates**

**Photographs**



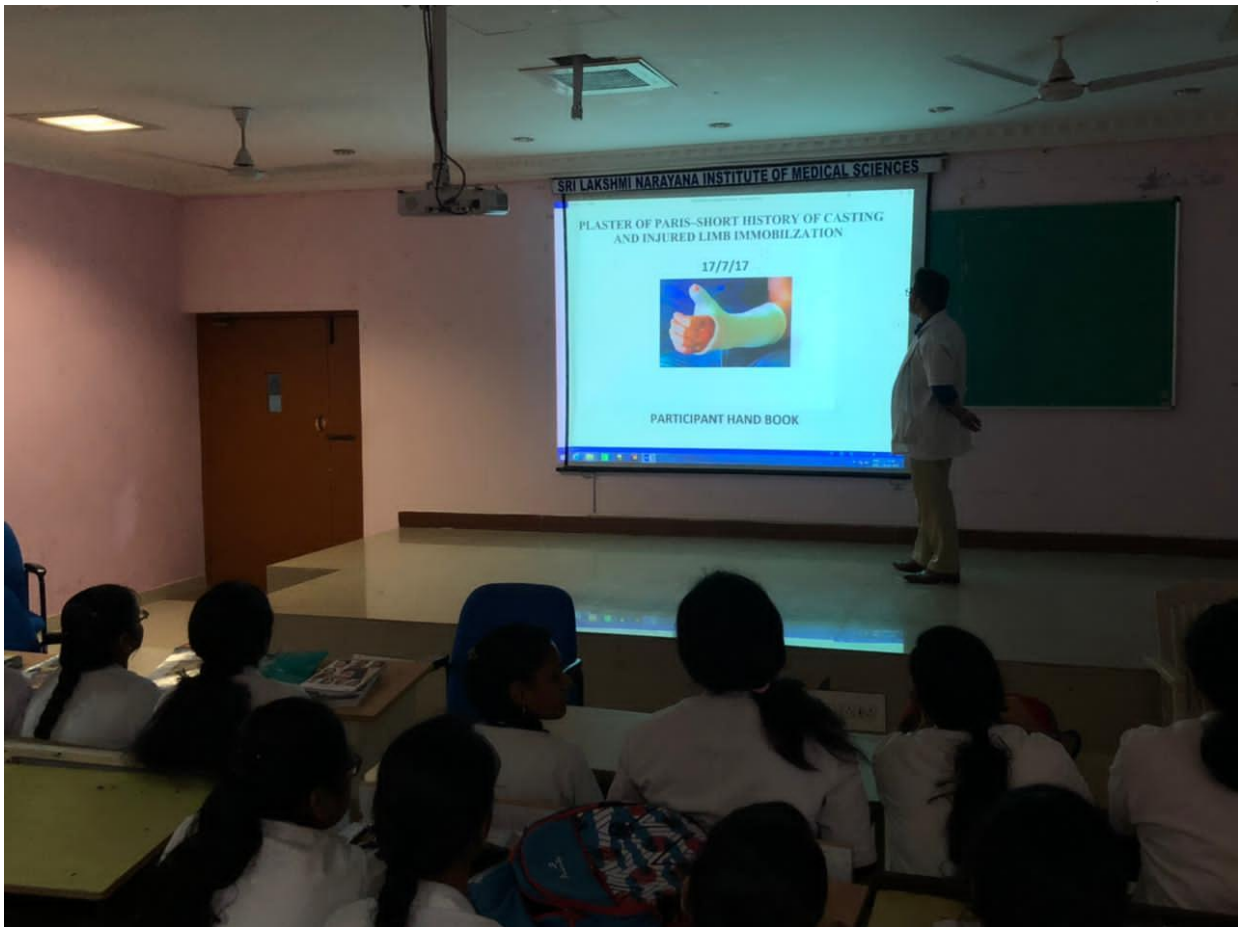
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# Sri Lakshmi Narayana Institute of Medical Sciences

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[ Affiliated to Bharath University, Chennai - TN ]



Sri Lakshmi Narayana Institute of Medical Sciences



Date-20-07-2017

From  
Dr. K. Harsha Vardhan  
Professor and Head,  
Department of Dermatology,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

To  
The Dean  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Permission to conduct value-added course: Systemic sclerosis**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: **Systemic sclerosis** on 20-08-2017. We solicit your kind permission for the same.

Kind Regards

Dr. K. Harsha Vardhan

---

**FOR THE USE OF DEANS OFFICE**

Names of Committee members for evaluating the course:

The Dean: Dr. Jayalakshmi

The HOD: Dr. K. Harsha Vardhan

The Expert: Dr. A. Buvanaratchagan

The committee has discussed about the course and is approved.

**Dr. G. JAYALAKSHMI, BSC., MBBS., DTCD., M.D.,**  
**DEAN**  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agaram, Kudapakkam Post,  
Villanur Commune, Puducherry - 605502.

Subject Expert

HOD

Sri Lakshmi Narayana Institute of Medical Sciences



Date-20-07-2017

From  
Dr. K. Harsha Vardhan  
Professor and Head,  
Department of Dermatology,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

To  
The Dean  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

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Dear Sir,

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Kind Regards

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**FOR THE USE OF DEANS OFFICE**

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The Dean: Dr. Jayalakshmi

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The committee has discussed about the course and is approved.

Dr. G. JAYALAKSHMI, BSC., MBBS., DTCD., M.D.,  
Dean  
DEAN  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agaram, Kudapakkam Post,  
Villanur Commune, Puducherry - 605502.

Dr. A. BUVANARATCHAGAN, MD.,  
Reg. No: 37150  
Asso. Professor, Dermatology  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agaram, Kudapakkam Post,  
Villanur Commune, Puducherry - 605502.

Subject Expert

PROFESSOR & HEAD  
DEPT. OF DERMATOLOGY  
SRI LAKSHMI NARAYANA INSTITUTE OF  
MEDICAL SCIENCES  
OSUDU, AGARAM, KUDAPAKKAM POST,  
VILLANUR COMMUNE, PUDUCHERRY.  
HOD



OFFICE OF THE DEAN

# Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P -II ) dt. 11/07/2011 ]  
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## Circular

26.07.2017

### **Sub: Organising Value-added Course: Systemic sclerosis (Jul 2017 – Oct 2017)**

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research** is organizing “**Systemic sclerosis**”. The course content is enclosed below.”

The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before 14-08-2017. Applications received after the mentioned date shall not be entertained under any circumstances.

**Dr. G. JAYALAKSHMI, BSC., MBBS., DTC.D., M.D.,**  
**DEAN**  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agaram, Kudapakkam Post,  
Villianur Commune, Puducherry - 605502.

Encl: Copy of Course content

## COURSE PROPOSAL

**Course Title:** Systemic sclerosis

**Course Objective:** To evaluate the clinical features and management of systemic sclerosis

**Course Outcome:** Completed

**Course Audience:** 2<sup>nd</sup> year mbbs students

**Course Coordinator:** Dr. K. Harsha Vardhan

**Course Faculties with Qualification and Designation:**

1. Dr. K. Harsha Vardhan  
Professor, Department of Dermatology

2. Dr. Buvanaratchagan  
Associate professor, Dept. of Dermatology

**Course Curriculum/Topics with schedule (Min of 30 hours)**

SINo	Date	Topic	Time	Hours	Lecture taken by
1	20-8-17	Introduction	4 to 6 pm	2 hours	Dr. K. Harsha Vardhan
2	22-8-17	Etiology	4:30 to 6:30 pm	2 hours	Dr. Buvanaratchagan
3	29-8-17	Pathogenesis	5 to 7 pm	2 hours	Dr. K. Harsha Vardhan
4	5-9-17	Risk factors	5 to 7 pm	2 hours	Dr. Buvanaratchagan
5	8-9-17	Criteria	4 to 6 pm	2 hours	Dr. K. Harsha Vardhan
6	11-9-17	Clinical features	4:30 to 6:30 pm	2 hours	Dr. Buvanaratchagan
7	15-9-17	Complications	5 to 7 pm	2 hours	Dr. K. Harsha Vardhan
8	19-9-17	Investigations	4 to 6 pm	2 hours	Dr. Buvanaratchagan
9	22-9-17	Treatment	4:30 to 6:30 pm	2 hours	Dr. K. Harsha Vardhan
10	25-9-17	Newer modalities of treatment	5 to 7 pm	2 hours	Dr. Buvanaratchagan
11	26-9-17	Daily care of ss patients	4 to 6 pm	2 hours	Dr. K. Harsha Vardhan
12	29-9-17	Case discussion	4:30 to 6:30 pm	2 hours	Dr. Buvanaratchagan
13	3-10-17	Variants	5 to 7 pm	2 hours	Dr. K. Harsha Vardhan
14	10-10-17	Prophylaxis	4 to 6 pm	2 hours	Dr. Buvanaratchagan
15	13-10-17	Q&A, mcqs	4:30 to 6:30 pm	2 hours	Dr. K. Harsha Vardhan
			Total Hours	30	

### REFERENCE BOOKS:

Rooks Textbook of dermatology 9th edition

Fitzpatrick dermatology in general medicine

## ABSTRACT-VALUE ADDED COURSE

### 1. Name of the programme & Code

Systemic sclerosis and DR05

### 2. Duration & Period

30 hrs & July 2017– October 2017

### 3. Information Brochure and Course Content of Value Added Courses

*Enclosed as Annexure- I*

### 4. List of students enrolled

*Enclosed as Annexure- II*

### 5. Assessment procedures:

Multiple choice questions- *Enclosed as Annexure- III*

### 6. Course Feed Back

*Enclosed as Annexure- IV*

### 7. No. of times offered during the same

July 2017– October 2017

### 8. Year of discontinuation: 2018

### 9. Summary report of each program year-wise

Value Added Course- July 2017– October 2017					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	DR05	Systemic sclerosis	Dr. Buvanaratchagan	2 <sup>nd</sup> yr MBBS	15 (july 17– oct 17)

### 10. Certificate model

*Enclosed as Annexure- V*

Dr. Buvanaratchagan

**RESOURCE PERSON**

Dr. K. Harsha Vardhan

**COORDINATOR**

**ABSTRACT-VALUE ADDED COURSE**

**1. Name of the programme & Code**

Systemic sclerosis and DR05

**2. Duration & Period**

30 hrs & July 2017– October 2017

**3. Information Brochure and Course Content of Value Added Courses**

*Enclosed as Annexure- I*

**4. List of students enrolled**

*Enclosed as Annexure- II*

**5. Assessment procedures:**

Multiple choice questions- *Enclosed as Annexure- III*

**6. Course Feed Back**

*Enclosed as Annexure- IV*

**7. No. of times offered during the same**

July 2017– October 2017

**8. Year of discontinuation: 2018**

**9. Summary report of each program year-wise**

Value Added Course- July 2017– October 2017					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	DR05	Systemic sclerosis	Dr. Buvanaratchagan	2 <sup>nd</sup> yr MBBS	15 (july 17– oct 17)

**10. Certificate model**

*Enclosed as Annexure- V*

Dr. Buvanaratchagan

**RESOURCE PERSON**

Dr. A. BUVANARATCHAGAN, MD.,  
Reg. No: 37150  
Asso. Professor, Dermatology  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502.

*Vardhan KH*  
Dr. K. Harsha Vardhan  
PROFESSOR & HEAD  
DEPT. OF DERMATOLOGY  
SRI LAKSHMI NARAYANA INSTITUTE OF  
MEDICAL SCIENCES  
PUDUCHERRY.

**COORDINATOR**



ANNEXURE-1

**SYSTEMIC SCLEROSIS-AN OVERVIEW**



<b>Particulars</b>	<b>Description</b>
Course Title	Systemic sclerosis- an overview
Course Code	DR05
Objective	<ol style="list-style-type: none"> <li>1. To learn about the clinical features</li> <li>2. To learn about the diagnosis</li> <li>3. To learn about the treatment</li> </ol>
Further learning opportunities	Recent advances in management of the disease
Key Competencies	To make a diagnosis and provide adequate treatment To prevent complications
Target Student	2 <sup>nd</sup> MBBS Students
Duration	30hrs: July 2017 to Oct 2017
Theory Session	10hrs
Practical Session	20hrs
Assessment Procedure	Multiple choice questions

## **PARTICIPANT HAND BOOK**

### Introduction

Systemic sclerosis (SSc) is a systemic autoimmune disease in which inflammation and fibrosis play a crucial role and lead to severe damage and failure of multiple organs such as the skin, joints, tendons, gastrointestinal tract, lungs, heart, blood vessels, and kidneys. It primarily affects women (female:male ratio of 4:1-10:1, depending on age and ethnicity)], and there are 2 clinical subsets according to the extent of skin involvement: diffuse cutaneous SSc (dcSSc) (skin damage proximal to elbows and/or knees or that affects thorax and/or abdomen at any given time during the disease) and limited cutaneous SSc (lcSSc) (skin damage distal to elbows and knees without involvement of either thorax or abdomen). This disease may lead to major disabilities due to vascular complications, cardiopulmonary involvement, inflammatory myopathy, and arthritis; likewise, it can cause malnutrition due to gastrointestinal tract involvement, and it can decrease quality of life as a consequence of the psychological and social impact. Additionally, it can be

fatal, with a 3-year survival rate of 47-56% in cases of serious pulmonary or cardiac involvement, particularly PAH]; in fact, it is the single connective tissue disease with the worst survival prognosis. Groups of experts have tried to come to a consensus regarding treatment for specific organ involvement. Such is the case of EULAR's recommendations for the treatment of systemic sclerosis, which aims to guide treatment for patients based on evidence and clinical experience from worldwide experts; however, there is still no standardized and effective treatment for this disease to date]. The understanding of the pathogenesis of the disease has improved considerably in recent years. Although there are still many unanswered questions, the participation of the immune response cells and inflammatory mediators, fibroblasts, and other components of the extracellular matrix and the central role of endothelial damage have changed the paradigm of this disease that was previously considered as predominantly fibrotic. Now it is conceived as a complex syndrome with multiple pathogenic pathways that may be treated simultaneously.

In recent years, there has been substantial progress in the management of some complications developed by these patients, which has led to increased disease survival and quality of life. This includes better control of complications in specific organs (such as interstitial lung disease, pulmonary arterial hypertension, renal crisis, and Raynaud's phenomenon) as well as standardized follow-up and earlier detection of potential complications]. The ideal of "targeted therapy" will be an increasingly attainable objective insofar as our understanding of the disease improves. As stated by Dr. Denton], this concept in systemic sclerosis can have different meanings: the first one refers to the treatment of specific organ complications such as renal crises, interstitial lung disease, and pulmonary arterial hypertension; the second one refers to the treatment of symptoms of a determined organ involvement such as Raynaud's phenomenon or gastroesophageal reflux; the third one refers to the treatment of individual disease processes such as immune activation, inflammation, fibrosis, or vasculopathy; and the last one refers to the blocking of certain cell types or interactions between cells that impact on various aspects of the disease through the same mechanism, even and ideally blocking an intracellular target or a specific pathway that modifies several pathological processes of the disease. Many molecules involved in the pathogenesis of this disease have been evaluated as therapeutic targets in preclinical and clinical trials with diverse results. Here we present the state of the art of the pathogenic pathways and proposed targeted therapies. To perform this literature review, we conducted a research through electronic resources (PubMed, ScienceDirect, Nature, Elsevier, BMJ, and Wiley Online), reviewing references in the English language from the last 10 years. We identified articles via general search of the terms "systemic sclerosis OR scleroderma" and "systemic sclerosis pathogenesis;" the first search yielded 6334 articles, which were handpicked according to relevance that was determined according to the article's date of publication, ranging from 2008 to October 2018, and its direct relation to scleroderma pathogenesis and directed therapies. Subsequently, we directed a specific search of the terms "Bosentan", "Macitentan", "Ambrisentan", "Selexipag", "Riociguat", "bardoxolone methyl", "Infiximab", "Adalimumab", "Rituximab", "Basiliximab", "Efalizumab", "Abatacept", "AIMSPRO", "Tocilizumab", "AM095", "SAR100842", "Imatinib", "Dasatinib", "Nilotinib", "CAT-192", "GC-1008", "FG-3019", integrin", "Pirfenidone", and "Nintedanib", which resulted in a range of 2 to 300 references per term.

## Etiopathogenesis of Systemic Sclerosis and Therapeutic Targets

The triggering factors that unleash the pathogenic processes that lead to the development of systemic sclerosis have not been yet identified. The most accepted working hypothesis implies that, in a genetically susceptible subject, a triggering event occurs (probably exposure to an infectious or environmental agent such as vinyl chloride or silica, or an event that supposes an important immunological challenge such as a pregnancy or the development of a neoplasia), which causes the activation of various cells of the immune system, the endothelium, and the extracellular matrix. These cells then lead to inflammation, fibrosis, and endothelial damage that cannot be counterbalanced by the natural resolution mechanisms of inflammatory processes and scarring.

**1. Involvement of the Immune System.** The most acknowledged evidence of the participation of the immune system in this disease is the presence of various autoantibodies, several of which are present exclusively in this disease and are associated with clinical complications and specific phenotypes as has been broadly described by Dr. Tomas A. Medsger Jr. and his work team. Furthermore, several genetic studies have found, as additional evidence, an association of different gene polymorphisms related to the immune response with the predisposition to suffer systemic sclerosis. Some of the most important ones are polymorphisms in genes of the major histocompatibility complex [8], in regulatory genes of types I and II interferons, in genes of cytokines and chemokines, and of Toll-like receptors (TLR).

Skin from SSc patients shows inflammatory infiltrates in which macrophages, T lymphocytes, and dendritic cells are the predominant cell types. These cells produce cytokines and chemokines with proinflammatory and profibrotic activities, and it is very possible that they participate in the process of endothelium-mesenchymal and epithelial-mesenchymal transition, processes by which endothelial and epithelial cells are activated and acquire characteristics similar to myofibroblasts. The powerful signals generated by cytokines and chemokines also produce the recruitment of bone marrow cells and fibrocytes from the peripheral circulation for their subsequent activation into fibroblasts that will produce collagen and other extracellular matrix proteins that predominate in the fibrotic phase of this disease.

**1. Innate Immune System.** Although the factors that promote the persistent activation of cells of the immune system are unknown, recent studies of various groups have pointed towards the Toll-like receptors as possibly responsible for interacting with their classical agonists or with other exogenous or endogenous agonists from damaged tissue to activate dendritic cells, which could secrete proinflammatory cytokines and present antigens to the T cells to activate them. Overexpression of TLR4 and TLR2 has been found in skin and fibroblasts of patients with SSc. On the other hand, the TLR3, TLR7, TLR8, and TLR9, generally viral nucleic acid sensors, could be involved in inflammation in systemic sclerosis; Farina et al. demonstrated the association between Epstein-Barr virus infection, overexpression of interferon-associated genes, transforming growth factor-beta (TGF-beta), and other markers of fibroblast activation. In this sense, persistent damage after a viral infection could cause chronic inflammation and fibrosis in susceptible subjects. Activation of dendritic cells through TLRs generally leads to the production of several proinflammatory cytokines particularly type I interferons, which have been found overexpressed in peripheral blood in patients with systemic sclerosis (interferon signature). In fact, nearly 50% of SSc patients show the so-called "interferon signature" in peripheral blood and sera. These abnormalities are seen in some SSc patients even at early phases of the disease, before skin

fibrosis is well established. In this group of patients, the type I IFN signature in peripheral monocytes correlates with inflammation and fibrosis mediators (B cell activating factor (BAFF) expression and type III procollagen N-terminal propeptide serum levels], which suggests an association between abnormal activation of the IFN-I signaling pathway and disease activity. The consequences of increased type I IFN expression in SSc are diverse and affect immune and endothelial cell function as well as fibroblasts. These effects have been extensively reviewed by Ciechomska and Skalska [38] and are outlined below. IFN type I effects on immune cells include increased monocyte activation, as well as increased differentiation, survival, proliferation, and activation of T, B, and dendritic cells. Moreover, Kim et al. showed that serum of SSc patients containing anti-topoisomerase I antibodies induces the production of interferon-alpha by PBMCs cocultured with nuclear extracts. This was particularly higher when they used serum from dcSSc patients and from SSc patients with lung fibrosis. On the other hand, type I IFN effects on endothelial cells include the increased expression of MxA (marker of type I IFN activity) and interferon regulatory factors (IRGs), which correlate with the presence of digital ischemic ulcers. Also, human dermal microvascular endothelial cells (HDMVECs) and fibroblasts stimulated with IFN and IFN show increased vessel permeability, increased expression of alpha smooth muscle actin (-SMA), connective tissue growth factor (CTGF), transforming growth factor beta 2 (TGF-2), and endothelin 1 (ET-1), via downregulation of friend leukemia integration 1 transcription factor (Fli1) and downregulation of vascular endothelial cadherin (VEcadherin). Finally, type I IFN stimulates the expression of TLRs on DCs and fibroblasts; this leads to increased inflammatory cytokine production by fibroblasts. For instance, type I IFN induces fibroblasts to increase IP-10 production, a profibrotic chemokine that has been associated with severe SSc subtypes. Additionally, positive feedback has been demonstrated between type I IFN and TLR expression, since TLR3 stimulation with its ligand poly I:C also induces upregulation of type I IFNs and IFN2 responsive genes on fibroblasts. It is also known that the number of plasmacytoid dendritic cells (pDCs) is increased in the circulation of SSc patients, and they secrete large amounts of CXCL4 [50], a chemokine associated with transition from epithelial to mesenchymal cells, the activation of endothelial cells, inhibition of regulatory T cells, and induction of T17 cells. On the same line, a murine model showed that IL-33, an alarmin of the IL-1 family related to inflammation and fibrosis, favours IL-13-dependent lung. Another group showed that TLR4-deficient mice developed less tissue fibrosis, decreased polarization of T17 responses, and decreased TGF- in the bleomycin-induced fibrosis and the tight skin models. It is unknown whether IL-33 can induce fibrosis by this or another pathway in SSc patients. One of these pathways could be the production of profibrotic cytokines by type 2 innate lymphoid cells. Proliferation and function of these cells are stimulated by exposure to cytokines with epithelial alarmin function such as IL-33 and IL-25, both elevated in patients with systemic sclerosis, and they can produce profibrotic cytokines (IL-4 and IL13), so they could participate in the pathogenesis of this disease. There is controversial evidence on the abundance and relevance of these cells in patients with systemic sclerosis [53, 54]; however, in a murine model of pulmonary fibrosis it was found that the IL-13 derived from these cells increases the deposit of collagen by the fibroblasts and induces the differentiation of macrophages towards a profibrotic phenotype [55]. Evidence of the involvement of macrophages in the pathogenesis of systemic sclerosis is extensive. Infiltrates of CD68+ cells (macrophage marker) CD163+, CD204+ and an M2

macrophage markers panel were found in the perivascular regions and between the collagen fibers of patients with SSc. Increased CD14+CD163+CD204+ cells have also been found in peripheral blood of patients with SSc, as well as increased markers of macrophage migration and activation (CCL18 and CD163) in microarrays of lung tissue from patients with progressive pulmonary fibrosis [41]. Macrophages can also be stimulated through TLRs and their activation, particularly that of so-called M2 or “alternatively activated” macrophages, would lead to the production of profibrotic substances such as IL-13, TGF, platelet-derived growth factor (PDGF), and chemokines such as CCL19 which stimulates the activation of macrophages.

### 2.1.2. Adaptive Immune System.

T lymphocytes are also found in inflammatory infiltrates in tissues of patients with SSc; they display higher expression of activation markers and there is evidence indicating that they express a rather oligoclonal repertoire of T cell receptors, suggesting an antigen-mediated expansion [56]. T2 cells, producing IL-4 and IL-13, and T17, producing IL-17, have been found to be increased in both skin and peripheral blood of patients with SSc, particularly in patients with the diffuse form of the disease. The cytokines they produce have important profibrotic and proinflammatory functions; it is likely that these cells are activated by antigen-presenting cells such as dendritic cells. The role of regulatory T cells is less clear since several studies have shown controversial results, but given that it is a very small population of cells, it is possible that its function and regulation, rather than its number, is what is found altered in this and other autoimmune diseases. B cells, on the other hand, are the producers of the autoantibodies characteristic of this disease, but we also know that these cells infiltrate tissues and show increased activation markers such as CD19, CD21, costimulatory molecules, and B cell activating factor (BAFF). There is evidence in murine models that overexpression of CD19 induces the production of cutaneous fibrosis and that the absence of B cells is associated with decreased fibrosis [58].

### 2.2. Targeted Therapies for Inflammatory Process

#### 2.2.1. Type I Interferon Modulation.

Interferons are pleiotropic cytokines that play a fundamental role as factors responsible for the immune response, mainly in bacterial and viral infections; however, they have also been strongly associated with the pathogenesis of SSc because of their notorious correlation with skin thickness and disease activity when found in elevated levels in patients' blood and sera [38]. Consequently, several clinical trials have been executed in order to test the potential benefits on directed anti-IFN treatments, as follows:

(1) Anifrolumab → Type I Interferon Receptor. Displaying promising results, anifrolumab is an investigational human IgG1 monoclonal antibody that has been tested on a phase I trial to treat SSc [59]. According to Peng et al., this drug blocks the formation of the ternary IFN/IFNAR1/IFNAR2 signaling complex by sterically inhibiting the binding of IFN ligands to IFNAR1 [60]. At the same time, regarding SSc patients, this antibody's safety profile is considered favorable because of the mild to moderate adverse events triggered by it, which include upper respiratory tract infection, headache, diarrhea, and nausea.

(2) MEDI7734 → Anti-ILT7. Recently AstraZeneca conducted a phase I study of MEDI7734 on a human monoclonal antibody that binds to and causes temporary depletion of plasmacytoid dendritic cells (pDCs) in which the safety, drug levels, and pDC levels in patients with type I

IFN-mediated autoimmune diseases were evaluated. pDCs are one of the main type I IFN sources [62]. No results have been published yet.

2.2.2. Rituximab→ CD20. Rituximab is a chimeric monoclonal antibody (mAb) that targets CD20, which is expressed from pre-B cell stage to the pre-plasma cell stage . In systemic sclerosis, there is evidence that suggests this drug has an antifibrotic effect , as well as potential to improve inflammatory alterations and lung function , which characterize several SSc manifestations. According to Giuggioli's literature review, after six months of rituximab treatment in patients with either lcSSc or dcSSc, there was clear improvement of both articular and skin SSc manifestations, as well as a safety profile and tolerance; more specifically, it has been documented that the number of swollen and tender joints was markedly reduced after treatment, skin sclerosis improved significantly (especially in patients with diffuse cutaneous involvement), and, similarly, other skin and joint manifestations mitigated, such as melanoderma, pruritus, calcinosis, and arthritis .

2.2.3. Basiliximab→ IL-2R. Basiliximab is a chimeric mAb directed against the chain (CD25) of the IL-2 receptor that has recently been proposed for the treatment of SSc based on the latest discoveries regarding the crucial role of effector T cells in this disease, particularly T-17 and T regulatory subsets . As stated by Schmidt et al., skin involvement, lung fibrosis disease progression, and mortality in systemic sclerosis could be ameliorated by the treatment with this drug, since they are strongly correlated with serum levels of soluble IL-2 receptor [68]; regarding side-effects, the ones recorded are mostly minor and, in general, therapy with basiliximab was well tolerated in an open-label SSc study .

2.2.4. Efalizumab → LFA1/ICAM-1. The binding of leucocyte function associated antigen 1 (LFA-1) to intracellular adhesion molecule 1 (ICAM-1) is a key step in the migration of T lymphocytes through the endothelial lining of the vascular system during inflammation in skin disorders [69]. In the presence of efalizumab, a humanized recombinant IgG1 monoclonal antibody, the  $\alpha$ -subunit of LFA-1 (CD11a) is targeted; thus, the interaction between LFA-1 and ICAM1 is blocked, hence hindering T-cell's activation, migration into the skin, and cytotoxic functions [12]. This mechanism of action seems attractive for systemic sclerosis treatment, since increased numbers of T lymphocytes are usually found in dermal infiltrates in this disease. Currently, efalizumab is approved to ameliorate the size and severity of skin lesions in patients with psoriasis, and it has shown sustained long-term response [70]. No SSc clinical trials have been published.

2.2.5. Abatacept→ CTLA4. Abatacept is a recombinant CTLA4Ig fusion protein that inhibits T-cell activation by selectively modulating costimulation it binds to CD80 or CD86 on the T-cell surface. It has been approved for the treatment of arthritis [71], and it is proposed that its effects on inhibition of T-cell activation may be efficacious in dcSSc . There is also evidence that suggests that this drug could be safe and effective in patients with refractory polyarthritis secondary to scleroderma .

2.2.6. AIMSPRO → MSH, IL10, CCL2. Otherwise known as hyperimmune caprine serum, AIMSPRO is a polyclonal antibody that contains mainly caprine immunoglobulins as well as

cytokines, including IL-4 and IL-10, proopiomelanocortin, arginine vasopressin,  $\beta$ -endorphin, and corticotropin-releasing factor. This drug could potentially modulate serum levels of relevant cytokines. Results in Quillinan's trial on AIMSPRO treatment in scleroderma showed potential benefit in skin tightness in late cases as well as improvement in overall pain, which is presumably of clinical importance since pain related to tissue ischaemia, inflammation, and intermittent release of neuropathic mediators, presumptively. The drug's safety profile was adequate, and it was well tolerated.

2.2.7. Tocilizumab IL-6R. Tocilizumab is a monoclonal antibody to the IL-6 receptor that has been tested for diverse SSc clinical manifestations, since an increased production of IL-6 in fibroblasts isolated from the affected skin of SSc patients has been documented. This pleiotropic cytokine has several significant roles in hematopoiesis, inflammation, and immune homeostasis, as well as in T-cell growth and differentiation; there is also evidence that elevated levels of IL-6 are present in other fibrotic diseases such as keloid scars and lung fibrosis, among others. According to Ong et al., recent findings suggest that therapeutic intervention in fibrotic pathways could be viable by IL-6 modulation, in addition to being a useful tool to promote immune tolerance in systemic sclerosis because of its regulatory effect in the balance between T17 and Tregs. Regarding clinical effectiveness, there is evidence that this drug highly improves joint parameters after five months of treatment, as well as skin involvement; it has been reported to be effective in refractory polyarthritis and myopathy. Recent evidence in a phase 3 double-blinded clinical trial suggested mild skin improvement and stabilization of lung involvement.

2.2.8. AM095 and SAR100842  $\rightarrow$  LPA1. Lysophosphatidic acid (LPA) is a phospholipid growth factor that targets specific G-protein-coupled receptors that have recently been associated with the pathogenesis of systemic sclerosis. It is generated at inflammation sites or cell damage via autotaxin on lysophosphatidylcholine and other lysophospholipids and could possibly contribute to excessive tissue fibrosis, primarily through the activation of the LPA 1 receptor. SAR100842 is a low molecular weight, orally available selective inhibitor of LPA 1 receptor that aims to ameliorate or even revert fibrotic progression in SSc. According to Allanore's research, there is important mRSS score improvement after 24 weeks of treatment, which is of clinical significance; and it is an overall well tolerated drug in dcSSc patients, with mild to moderate intensity adverse effects. There is also evidence that SAR 100842 lowers expression of fibrosis-related genes in scleroderma skin fibroblasts.

2.2.9. TAK242  $\rightarrow$  TLR4. As previously stated, TLR4 stimulation promotes the production of T1 and T17 cytokines, and increased levels of this molecule and its ligands have been found in SSc patients. Dr. Varga research group has elegantly shown that TLR4 inhibition with TAK242 prevents and induces regression of experimental fibrosis in bleomycin-induced fibrosis and in TSK/+ mice. His findings suggest that TAK242 might represent a therapeutic strategy for the treatment of SSc and other fibrotic diseases.

2.2.10. Inebilizumab  $\rightarrow$  Anti-CD19. Also referred to as MEDI-551, it is a humanized, affinity-optimized, and afucosylated monoclonal antibody that binds to CD19. In 2014 a phase I clinical trial regarding the safety and tolerability of this drug was completed, in which Schiopu et al. determined that B-cell depletion should be further studied because of its significance regarding

the pathogenesis of the disease along with inebilizumab's pharmacodynamics, which could potentially become a highly beneficial disease-modifying treatment in SSc .2.3. Fibrosis.

Fibrosis is the most prominent clinical feature of systemic sclerosis and, largely, the process that leads to the deterioration of the organs' function affected by the 8 BioMed Research International disease. It occurs because of excess production of collagen and other extracellular matrix proteins in the connective tissue of various organs. Myofibroblasts, the main cells responsible for the production of the extracellular matrix in this disease, can have different origins. It has been suggested that they may come from endothelial cells (endothelium-mesenchymal transdifferentiation), from epithelial cells (epithelial-mesenchymal transdifferentiation), from bone marrow stem cells, from circulating fibrocytes, from fibroblasts already resident in tissues, and from resident stem cells in skin and subcutaneous cellular tissue .Endothelium to mesenchymal transdifferentiation has been elegantly studied by Dr. Sergio Jimenez and his group . In summary, it is proposed that the endothelial cell of a susceptible subject would be subjected to some initial insult that could be the presence of autoantibodies, reactive oxygen species, hypoxia, viral antigens, or own neoantigens; this initial insult would cause the abnormal activation of endothelial cells, which would undergo a transformation that would lead them to express more alpha smooth muscle actin (SMA), vimentin and type I collagen, and lower amount of cadherin and von Willebrand factor (vWF), converting them into collagen-producing cells similar to myofibroblasts. The epithelium has a very important role in the repair of injuries; in patients with systemic sclerosis there is evidence that the process of epithelial regeneration is altered. We know that there are many factors derived from the epithelium that influence the behavior of fibroblasts; particularly endothelin 1 (ET-1) and TGF- have profibrotic activity. There is evidence that the epithelial to mesenchymal transdifferentiation process occurs in pulmonary fibrosis and that both ET-1 and TGF- participate in this process [83]. During epithelialmesenchymal transdifferentiation, epithelial cells lose their intercellular junctions and change their polarity, different surface markers are expressed, and there may be remodeling of their cytoskeleton to express a mesenchymal phenotype. Some in vitro studies have shown that alveolar epithelial cells can be transdifferentiated to mesenchymal cells . In addition, some studies in murine models have shown that alveolar epithelial cells can coexpress markers of both epithelial cells and mesenchymal cells, including cadherin and -SMA . Another evidence in this sense is that, in the murine model of pulmonary fibrosis induced by bleomycin, pulmonary fibrosis is preceded by epithelial damage. This evidence suggests that epithelial damage is important in the pathogenesis of systemic sclerosis, at least for some organs, such as in pulmonary fibrosis and, most likely, the skin. Regardless of their origin, we know that fibroblasts have different functional phenotypes according to their location (dermis, subcutaneous cellular tissue, lungs, etc.) and can be distinguished by their gene expression profile and their functional activity. Depending on their microenvironment, they can produce different amounts of procollagen, fibronectin, proteases, collagenases, and other regulators of the extracellular matrix. For example, inactive fibroblasts express ET-1 and intracellular adhesion molecules 1 (ICAM-1), whereas fibroblasts exposed to mechanical stress in the microenvironment, a situation that occurs in systemic sclerosis, express -SMA, TGF-, and genes associated with the production of extracellular matrix proteins. This phenotype is like that of fibroblasts exposed to an excess of TGF- signaling . Likewise, it is known that during different phases of tissue repair after a lesion fibroblasts of different origin

produce different amounts and types of collagen that influence this process and that could be altered in patients with SSc .

## 2.4. Targeted Therapies for Fibrosis

2.4.1. Imatinib, Dasatinib, Nilotinib → c-Abl, c-Kit, PDGF. Imatinib is a tyrosine kinase inhibitor (TKI) capable of blocking both PDGF and TGF-signalling pathways. It showed antifibrotic effects in SSc experimental models and then it was evaluated in small clinical trials [16]. Dasatinib and nilotinib, which are second-generation TKIs with higher affinity to Bcr-Abl, and their ability to block c-abl and PDGF were also evaluated for the treatment of dermal fibrosis in vitro and in murine models with promising results . Initial studies showed that low-dose imatinib had an adequate safety profile and a better tolerability than at high doses in the long term for SSc, Furthermore, while it had no significant effects on skin involvement in a phase II pilot study, it was effective when used to stabilize lung function in patients with SSc-ILD [88].

2.4.2. CAT-192 → TGF1. Also known as metelimumab, CAT-192 is a human recombinant IgG monoclonal antibody that specifically counteracts the TGF- $\beta$ 1 isoform in SSc. Despite its potential benefit via the inhibition of TGF- $\beta$ 1, a multicenter, randomized, placebo-controlled phase I/II trial using this drug proved no efficacy and significant side effects, including mortality in patients that received the active treatment .

2.4.3. Fresolimumab → TGF1,-2,3. Otherwise called GC-1008, fresolimumab is a monoclonal antibody that, unlike metelimumab, can target all isoforms of TGF and has yielded very promising results in SSc. Patients treated with this drug generally display expeditious declines in mRSS scores and infiltration of myofibroblasts into the dermis, as well as in TGF-regulated genes' expression .Bleeding is the main side effect that was recorded in the initial trial [89].

2.4.4. FG-3019 → CCN2. FG3019 is a specific IgG1 monoclonal antibody to CTGF that has shown potential in decreasing lung fibrosis and scarring according to recent research; however, no specific trials have been conducted in SSc [19]. Treatment with FG-3019 is highly efficient in reducing the number of CD45-positive cells; it also has an antifibrotic effect similar to the genetic deletion of CTGF in collagen-producing cells, which ameliorates angiotensin II-induced skin fibrosis as well as inflammation .BioMed Research International 9

2.4.5. P144 → TGF1. Peptide 144 is the acetic salt of a 14-mer peptide from human TGF1 type III receptor that was precisely designed to block the interaction between TGF1 and TGF1 type III receptor, consequently inhibiting its biological effects [90]. This drug has shown important antifibrotic activity in mice receiving repeated subcutaneous injections of bleomycin; however, P144 is still undergoing investigations regarding the treatment of skin fibrosis in patients with SSc [20].

2.4.6. Anti-Integrin V6 (Abituzumab) → TGF Activation. The integrin V6 is a LAP-binding integrin, mostly expressed in epithelial cells adjacent to wounds [91], that is involved in the initiation of fibrosis and inflammation by TGF activity. It promotes activation and differentiation of fibroblasts into myofibroblasts, which causes abnormal extracellular matrix deposition, leading to the destruction of tissue architecture, scarring, and reduced function [92]. Truncation of this

integrin's cytoplasmic tail (associating with the cytoskeleton) prevents latent TGF-1 activation, thus suppressing the fibrotic process [93]. More precisely, evidence from preclinical models of lung, kidney, and liver fibrosis proposes that inhibition of V6-mediated TGF- activation could potentially be useful to attend to multiple fibrotic disorders in humans [91] since specifically targeting v6 may reduce the risk of interfering with the beneficial homeostatic control of inflammation and immunity in the treatment of tissue fibrosis [94]. No clinical studies have been completed in this pathway at this time. However, it has been reported by Henderson et al. that V integrins collectively regulate the key profibrotic pathways during organ fibrosis [21]. Indeed, overexpression of integrin V consequently leads to TGF-overactivation in SSc dermal fibroblasts because of miR-29's involvement as a modulator of integrin's genes implicated in this pathway, as well as miR-142-3p, which directly regulates the expression of integrin V, as stated by Li et al. [95], whose work is supported by Taniguchi's epigenetic study on bleomycin induced skin fibrosis Fli-1 +/- mice, which proved latent TGF- activation to be an V3 integrin- and V5 integrin-independent mechanism [96]. Regarding directed therapies on this pathway, abituzumab is a novel, humanized monoclonal IgG2 antibody to the v subunit that inhibits binding to v heterodimers, preventing ECM attachment, cell motility, and apoptosis, without cross-reacting with other integrins, which is elemental in inhibiting TGF- a key mediator of fibrosis [97]. According to the Clinical Trials registry, there was an ongoing randomized clinical trial on this drug which was recently terminated due to difficulties in enrolling subjects under the eligibility criteria, not allowing for completion of the study within a reasonable time-frame [98].

2.4.7. Pirfenidone → TNF, IL1 TGF. Pirfenidone is an orally active pyridone small molecule with known anti-inflammatory, antifibrotic, and antioxidant properties that has proven to reduce fibroblast proliferation and block TGF--stimulated collagen synthesis; it has been approved for the treatment of mild to moderate idiopathic pulmonary fibrosis, disease in which it was associated with modest improvement in function (IPF) [22]. According to Xiao, pirfenidone attenuates lung fibrosis by interfering with the hedgehog signaling pathway in SSc-ILD lung fibroblasts [99]; and consistent with the LOTUSS trial, it has an acceptable tolerability and safety profile in patients with SSc-IP [23]. Scleroderma Lung Study III, a pirfenidone clinical trial for SSc-ILD, is currently ongoing, and it will shed light on the possible indication of pirfenidone for this disease.

2.4.8. Nintedanib → VEGF, PDGF, FGF. Nintedanib, also known as BIBF 1120, is a TKI targeting fibroblast growth factor (FGF) receptor, PDGF receptor, and vascular endothelial growth factor (VEGF) receptor, as well as Src-family tyrosine kinases [71], that is characterized by its broad spectrum of profibrotic targets, which likely offers additive effects as compared with selective inhibition of individual profibrotic molecules [100]. As stated by Varga et al., there is evidence that this drug reduces dermal microvascular endothelial cell apoptosis and modulates the pulmonary vascular restoration by its effect on the number of vascular smooth muscle cells [73]; similarly, it has been confirmed to block proliferation and transformation of human lung fibroblasts, as well as collagen synthesis in skin fibroblasts from SSc patients. A clinical trial involving this molecule is currently ongoing (SENSCIS study)

2.5. Vasculopathy. Raynaud's phenomenon and vasculopathy associated with it, renal crises, and pulmonary arterial hypertension (PAH) are the classic vascular manifestations of scleroderma. Without a doubt, the endothelium plays a very important role in the initiation and perpetuation of vascular damage in this disease. It is known that the endothelial damage that occurs from early stages in SSc could lead to 3 paths: (1) Endothelial cell apoptosis, which can lead to blood vessel destruction, that decreased blood flow seen as capillary loss in capillaroscopy (2) Endothelial to mesenchymal transdifferentiation explained previously (3) Endothelial cell "activation," which refers to overexpression of chemotactic and vasoconstrictor substances such as ICAM-1, vascular adhesion molecule 1 (VCAM-1), E-selectin, and endothelin-1 (ET-1) on endothelial cell surface, leading to vasoconstriction and subendothelial fibrosis, as this process contributes to the development of intraluminal thrombosis and proliferation of the muscular layers, typical characteristics of vasculopathy in systemic sclerosis [82] Another prominent process in systemic sclerosis, as a reaction to the loss of blood vessel function and hypoxia, is neoangiogenesis. In SSc patients, angiogenesis is abnormal. Angiogenic factors such as PDGF, VEGF and its receptors, 10 BioMed Research International ET-1, TGF-, the monocyte chemoattractant protein 1 (MCP1), and the urokinase-type plasminogen activator receptors are upregulated, despite the lack of adequate angiogenic responses in ischemic tissues in patients with SSc [Likewise, counter-regulatory factors such as angiostatin and endostatin are persistently increased. The regulation of these systems in patients with SSc is not completely understood. The generalized vasculopathy in this disease has 2 variants of particular interest: the thrombotic microangiopathy that develops during renal crisis and is histologically indistinguishable from the changes produced in malignant hypertension and the plexiform lesions produced in the advanced phases of pulmonary arterial hypertension.

## 2.6. Targeted Therapies for Vascular Damage

### 2.6.1. Bosentan, Macitentan → ET/ET<sub>A</sub> Receptor. PAH has been treated for a long time now by using either bosentan or macitentan, two currently approved ERAs, which block both ET and ET<sub>A</sub> endothelin receptors that mediate the detrimental effects of ET-1 in this particular disease in which the ET pathway plays a very important role. Bosentan has higher affinity towards ET<sub>B</sub> receptors and essentially the same affinity for the ET<sub>A</sub> receptors, and it occupies the orthosteric site of the receptor to block the action of ET-1 by sterically preventing the inward movement of transmembrane helix six of the ET<sub>A</sub> receptor [103], mechanism that is expected to be preserved in the ET<sub>B</sub> subtype. Aside from PAH, it has also been proven to reduce the number of new digital ulcers, even in patients with multiple ones, regardless of usage of calcium channel blockers, PDE-5 inhibitors or iloprost therapy, having a highly evident effect in patients with four or more digital ulcers at baseline in the RAPIDS-2 trial. Its effectiveness indicated no difference in either of the disease's subsets. On the other hand, macitentan was designed to have improved efficacy and higher potency and selectivity over bosentan, and according to Davenport et al., that advantage is due to a longer receptor occupancy. Additionally, pharmacokinetic data have demonstrated that macitentan and its active metabolite both have a long elimination half-life of approximately 16 and 48 hours, respectively, which supports a once-daily dosing regimen [104]. It has been approved in more than 55 countries for the long-term treatment of patients with PAH as monotherapy or in combination with other PAH therapies, as was studied in the SERAPHIN

Trial [26]. There have also been several studies regarding both drugs' efficacy on the fibrotic component of the disease, more specifically, pulmonary fibrosis with modest results [105].

2.6.2. Ambrisentan → ET Receptor. Ambrisentan, which is meant to block the action of endothelin-1 at the ET receptor, has been approved for the treatment of pulmonary arterial hypertension [106]. This selective ET antagonist was developed in an effort to allow vasodilation at the same time that vasoconstriction is being targeted. The pivotal trials ARIES-1, ARIES-2 [27], and AMBITION [107] proved its long-term benefit in idiopathic and SSc-associated PAH patients. Regarding pulmonary fibrosis, ambrisentan has not shown positive outcomes and is probably associated with an increased risk for disease progression, according to Raghu et al.

2.6.3. Selexipag → IP Receptor Agonist. Selexipag is an oral, selective IP prostacyclin receptor agonist that has recently been approved for the long-term treatment of PAH. Due to its high selectivity, its pharmacokinetic properties, and the treatment regime that is followed, selexipag is considered to have a rather reliable safety profile, with minimal adverse effects, ranging from mild to moderate in severity, considering those associated with prostacyclin use [108]. Moreover, oral selexipag has been noted to afford wide dosing flexibility, which might enable reaching the maximum therapeutic effect with acceptable tolerability in patients. Regarding Raynaud's phenomenon, there has been no evidence that suggests that this drug has a particular effect on reducing the number of attacks as shown by Denton et al.

2.6.4. Riociguat → GMPc Agonist. Riociguat is a soluble guanylate cyclase (sGC) modulator with both vasoactive and antifibrotic effects. It is currently under evaluation for skin involvement in dcSSc patients in the RISE-SSc trial. It was approved to be used for the treatment of pulmonary arterial hypertension. Its safety and efficacy were established in the PATENT studies. It is important to note that, according to the PATENT-2 trial, survival of patients with PAH associated with connective tissue diseases (PAH-CTD) was similar to that seen in patients with idiopathic/familial PAH after over 2 years of treatment, which is an important observation, as mortality for PAH-CTD has been previously reported to be higher than IPAH despite modern therapy, which indicates this drug's tolerability and satisfactory clinical response.

2.6.5. Bardoxolone Methyl → Nrf2 and NF- $\kappa$ B. Bardoxolone methyl is a semisynthetic triterpenoid that upregulates antioxidant responses and suppresses proinflammatory signaling to reduce oxidative stress and inflammation and promote mitochondrial function, through activation of Nrf2 (nuclear factor erythroid derived 2-related factor 2) and inhibition of NF- $\kappa$ B (nuclear factor kappa-light-chain enhancer of activated B cells) [111]. It is currently being tested to treat several pathologies including pulmonary arterial hypertension, cancer, and kidney diseases. Preliminary results from the extension of the LARIAT study, a phase 2 study to evaluate the safety of bardoxolone methyl in PAH patients with different causes (NCT02036970), which included some patients with PAHCTD, showed good tolerance and sustained improvement in 6-minute walk test (6MWT) for up to 32 weeks. CATALYST is a phase 3, double-blinded, placebo-controlled study to assess the safety and efficacy of bardoxolone methyl relative to placebo in patients with connective tissue disease-associated pulmonary arterial hypertension, to determine the change from baseline in 6-minute walk distance (6MWD) following 24 weeks of study participation (NCT02657356). This study started

in October of 2016 and it is still active; it should be completed by mid-2020. 3. Conclusions  
Systemic sclerosis is an autoimmune disease of unknown etiology. There are still many questions in its pathogenesis, particularly in the complex regulation of inflammatory and fibrotic processes, and in the factors that trigger its onset. Research efforts in this regard will allow finding more effective treatments, directed against therapeutic targets suitable for the different phases and complications of this condition.

Annexure 2

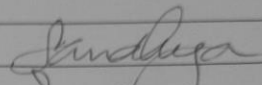
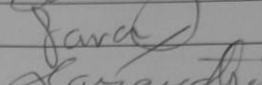
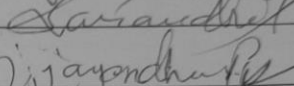
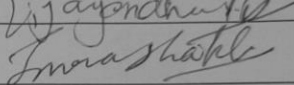
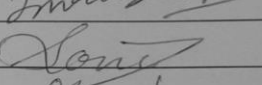
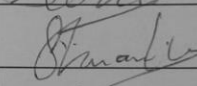
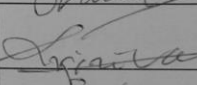
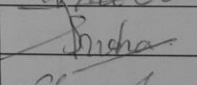
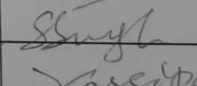
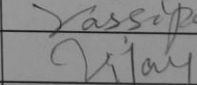
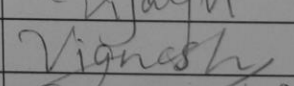
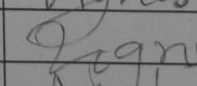
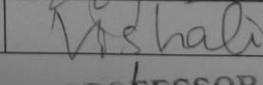
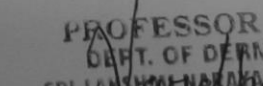
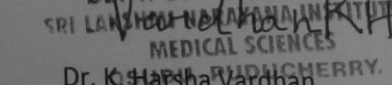
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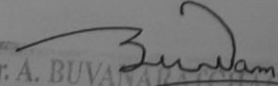
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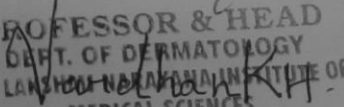
Sri Lakshmi Narayana Institute of Medical Sciences

Participant list of Value-added course: **SYSTEMIC SCLEROSIS -DR05**

(Jul 2017 – Oct 2017)

2 <sup>nd</sup> Year MBBS Student			
Sl. No	Name of the Student	Reg No	Signature
1	SANDHYA	U16MB371	
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3	SARASWATI .N	U16MB373	
4	SATHYA VIJAYENDRAN P.U	U16MB374	
5	SHAIKH IMRAN SHAIKH NAJIR	U16MB375	
6	SHIKHA SONI	U16MB376	
7	SINGAMSETTY SANDEEP	U16MB377	
8	SINGAMSETTY SRINIVAS	U16MB378	
9	SNEHA	U16MB379	
10	SNEHA SINGH	U16MB380	
11	VASIPALLI SUJITHA	U16MB391	
12	VIJAY M	U16MB397	
13	VIGNESH S	U16MB396	
14	VIGNESH D	U16MB395	
15	VISHALINI S	U16MB400	

  
Dr. A. BUVANARATCHAGAN, MD.  
Reg. No: 37150  
Dr. Buvanaratchagan  
Sri Lakshmi Narayana Institute of Medical Sciences  
Coimbatore, Karnataka  
**RESOURCE PERSON**

  
PROFESSOR & HEAD  
DEPT. OF DERMATOLOGY  
SRI LAKSHMI NARAYANA INSTITUTE OF  
MEDICAL SCIENCES  
Dr. K. Harsha Vardhan  
**COORDINATOR**

ANNEXURE-3

**SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL  
SCIENCES**



**SYSTEMIC SCLEROSIS**

MULTIPLE CHOICE QUESTIONS

Annexure- III

ANSWER ALL QUESTIONS

Course code: DR05

1. Systemic sclerosis belongs to:

- A.endocrine disorder
- B.autoimmune disorder
- C.cardiac disorder alone
- D.renal disorder

2. Most deaths from systemic sclerosis are due to involvement of the heart, lungs, and which of the following?

- A.Skin
- B.Esophagus
- C.Kidneys
- D.Lower GI tract

3. Systemic sclerosis is most common among which of the following age groups?

- A.Age 6 mo to 3 yr
- B.Age 10 to 16 yr
- C.Age 20 to 50 yr
- D.Age 60 to 75 yr

4. The most common initial symptoms and signs of systemic sclerosis include which of the following?

- A.Dysphagia
- B.Heartburn
- C.Dyspnea
- D.Raynaud syndrome

5.systemic sclerosis also known as?

- A.multiple sclerosis
- B.scleroderma
- C.arthritis
- D.Tb

6.systemic sclerosis mostly affects?

- A.males
- B.Children
- C.females
- D.all of the above

7. systemic sclerosis characterized by?

- A.multisystem disorders
- B.only dermatological manifestations
- C.only cardiac
- D.only renal

8. Not a feature of systemic sclerosis?

- A.negri bodies
- B.ana antibodies
- C.rheumatoid factor
- D.anti topo-isomerase 1

9.Not true?

- A. fibrosis of brain
- B. Fibrosis of heart
- C. Fibrosis of lung
- D. Fibrosis of GIT

10. CREST does not include?

- A. Calcinosis
- B. Tumor
- C. Telangiectasia
- D. Raynaud 's phenomenon



ANNEXURE-3

SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES

SYSTEMIC SCLEROSIS

MULTIPLE CHOICE QUESTIONS

Annexure- III

ANSWER ALL QUESTIONS

Course code: DR05

Sneha Singh

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9/10

Vardhan K P  
13-10-17

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C. arthritis  
D. Tb
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C. rheumatoid factor  
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D. Raynaud 's phenomenon



ANNEXURE-3

SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES

SYSTEMIC SCLEROSIS

MULTIPLE CHOICE QUESTIONS

Annexure- III

ANSWER ALL QUESTIONS

Course code: DR05

Sandhya

10  
10

Vardhan/Ch.  
13/10/17

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- C. cardiac disorder alone
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- D. Fibrosis of GIT



10. CREST does not include?

- A. Calcinosis
- B. Tumor
- C. Telangiectasia
- D. Raynaud 's phenomenon



**ANNEXURE-4**  
**Student Feedback Form**

Course Name: **SYSTEMIC SCLEROSIS**

Subject Code: **DR05**

Name of Student: \_\_\_\_\_ Roll No.:

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					
2	Course contents met with your expectations					
3	Lecturer sequence was well planned					
4	Lectures were clear and easy to understand					
5	Teaching aids were effective					
6	Instructors encourage interaction and were helpful					
7	The level of the course					
8	Overall rating of the course	1	2	3	4	5

**\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory**

Suggestions if any:

Date:13-10-2017

Signature



**ANNEXURE-4**  
**Student Feedback Form**

Course Name: **SYSTEMIC SCLEROSIS**

Subject Code: **DR05**

Name of Student: Sanha Singh Roll No.: U16MB380

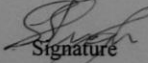
We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear				✓	
2	Course contents met with your expectations				✓	
3	Lecturer sequence was well planned				✓	
4	Lectures were clear and easy to understand				✓	
5	Teaching aids were effective				✓	
6	Instructors encourage interaction and were helpful				✓	
7	The level of the course					✓
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Date:13-10-2017

  
Signature

**ANNEXURE-4**  
**Student Feedback Form**

Course Name: **SYSTEMIC SCLEROSIS**

Subject Code: **DR05**

Name of Student: Sandhya Roll No.: U16MB371

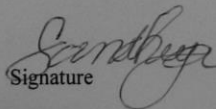
We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear				✓	
2	Course contents met with your expectations					✓
3	Lecturer sequence was well planned					✓
4	Lectures were clear and easy to understand					✓
5	Teaching aids were effective					✓
6	Instructors encourage interaction and were helpful				✓	
7	The level of the course					✓
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Date: 13-10-2017

  
Signature



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research

(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

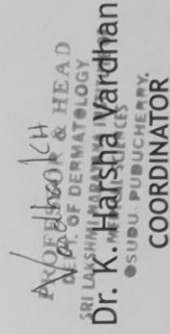
This is to certify that SNEHA SINGH has actively participated in the Value

Added Course on *Systemic sclerosis* held during July 2017 – Oct 2017 Organized by Sri

Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

  
Dr. Buvanaratchagan

Dr. B. BUVANARATCHAGAN, MD,  
Reg. No: 37103/2007  
RESOURCE PERSON  
Sri Lakshmi Narayana Institute of Medical Sciences  
Ozandi, Kudappalkam, Pondicherry-605 502.

  
Dr. K. Harisha Vardhan  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
PONDICHERRY  
COORDINATOR



# Sri Lakshmi Narayana Institute of Medical Sciences

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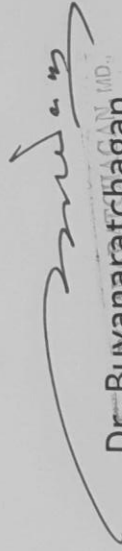


## CERTIFICATE OF MERIT

This is to certify that SANDHYA has actively participated in the Value

Added Course on *Systemic sclerosis* held during July 2017 – Oct 2017 Organized by Sri

Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

  
Dr. Buyanarat Chagan

Reg. No. 37160  
DEPARTMENT OF DERMATOLOGY  
Sri Lakshmi Narayana Institute of Medical Sciences  
Cauddu, Kudalpraktam, Pondicherry-605 502

RESOURCE PERSON

PROFESSOR & HEAD  
DEPT. OF DERMATOLOGY  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
Dr. K. Hatsha Vardhan  
OSUBU, PONDICHERRY,  
COORDINATOR

**Course completion letter**

Date -17-10-17

From,  
Dr. K. Harsha Vardhan  
Department of Dermatology  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

Through Proper Channel

To  
The Dean  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Completion of value-added course: systemic sclerosis**

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled:**systemic sclerosis** on 20-8-17. We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards

Dr. K. Harsha Vardhan

<HOD Sign and Seal>

**Encl: Certificates**

**Photographs**

Course completion letter

Date -17-10-17

From,  
Dr. K. Harsha Vardhan  
Department of Dermatology  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

Through Proper Channel

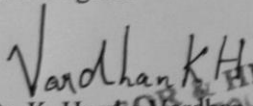
To  
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Kind Regards

  
Dr. K. Harsha Vardhan  
PROFESSOR & HEAD  
DEPT. OF DERMATOLOGY  
SRI LAKSHMI NARAYANA INSTITUTE OF  
MEDICAL SCIENCES  
MOU, PUBUCHEPPEY  
<HOD, Sign and Seal>

**Encl: Certificates**

**Photographs**



---

11



SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH

Annexure - III

DIAGNOSIS AND TREATMENT OF PULMONARY HYPERTENSION  
MULTIPLE CHOICE QUESTIONS

*Sri Lakshmi Narayana Institute of Medical Sciences, Puducherry*



CANDIDATE AND ASSESSOR INFORMATION

Course code: CT04

Candidate Name PRITHIVIRAT S.

Assessor Name Dr. VISHAY KUMAR

Date of Assessment 16.9.2017

Assessor Position ASSISTANT PROFESSOR

Questions and Answers:

1. Which of the following regarding pulmonary hypertension (PH) is FALSE?

A. PH has many underlying etiologies

B. The disease affects the left side of the heart

C. The hemodynamic definition of PH is a mean pulmonary arterial pressure (PAP) greater than or equal to 25 mmHg

D. Pulmonary arterial hypertension (PAH) is a subset of PH

2. Which of the following regarding pulmonary arterial hypertension (PAH) is FALSE?



SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH

- A. The disease affects men much more than women
- B. Non-specific symptoms such as fatigue and edema present clinically
- C. Catheterization is required when PH is suspected
- D. Underlying causes and PCWP or LVEDP are evaluated

3. Which of the following regarding PAH is FALSE?

- A. Vasoconstriction is an issue
- B. Vascular wall remodeling is an issue
- C. There is a cure for PAH
- D. The balance of vasoconstriction and vasodilation may indicate PAH

4. All of the following are true regarding calcium channel blockers (CCBs) in PAH EXCEPT

- A. CCBs have a selective effect on vascular smooth muscle
- B. Normal physiologic doses are sufficient for treatment purposes
- C. Adverse effects must be considered
- D. Long-term clinical response is less than 10%

5. Which of the following regarding epoprostenol is FALSE?

- A. The drug is a prostacyclin analog



SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH

- B. There are two products: Flolan and Veletri
- C. The drug improves mortality
- D. The drug is selective

6. Which of the following regarding treprostinil is FALSE?

- A. It has a longer half-life than epoprostenol
- B. It is also shown to have a survival benefit
- C. It has a higher cost than epoprostenol
- D. It is stable at room temperature without a need for a back-up cassette.

7. Treprostinil, similar to epoprostenol, has two products.

- A. True
- B. False

8. Regarding iloprost, which of the following is FALSE?

- A. It is a prostacyclin analog
- B. It is approved for PAH WHO class 3 or 4 symptoms
- C. Very few doses are given per day
- D. There is a significant improvement in 6MWD and hemodynamics

9. Which of the following regarding bosentan is TRUE?



SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH

- A. It is an ET-1 receptor agonist
- B. It is safe to use in pregnant women
- C. It is highly selective for the endothelin A (ETA) receptor
- D. It has many drug interactions

10. Which of the following regarding ambrisentan is FALSE?

- A. It is a non-selective ETA antagonist
- B. Teratogenicity is an issue
- C. Drug interactions are still concerning

11. All of the following are true regarding macitentan EXCEPT

- A. It is safe to use in pregnant women
- B. It is a tissue selective ET-1 receptor antagonist
- C. Hepatotoxicity is a concern
- D. Drug interactions are a concern



SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH

Annexure - III

DIAGNOSIS AND TREATMENT OF PULMONARY HYPERTENSION  
MULTIPLE CHOICE QUESTIONS

*Sri Lakshmi Narayana Institute of Medical Sciences, Puducherry*



CANDIDATE AND ASSESSOR INFORMATION

Course code: CT04

Candidate Name **RAVEEN + S,**

Assessor Name **Dr. VIJAY KUMAR**

Date of Assessment **16.9.2017**

Assessor Position **ASSISTANT PROFESSOR**

Questions and Answers:

1. Which of the following regarding pulmonary hypertension (PH) is FALSE?

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**B.** The disease affects the left side of the heart

C. The hemodynamic definition of PH is a mean pulmonary arterial pressure (PAP) greater than or equal to 25 mmHg

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SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH

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SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH

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SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH

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- D. Drug interactions are a concern



## Sri Lakshmi Narayana Institute of Medical Sciences



This is to certify that \_\_\_\_\_Praveen.S(U13MB231)\_ has actively participated in the Value Added Course on **DIAGNOSIS AND TREATMENT OF PULMONARY HYPERTENSION** held during August - September 2017 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

  
Dr. Prakash Rao Balan  
RESOURCE PERSON

  
Dr. Vijay Kumar  
COORDINATOR



## Sri Lakshmi Narayana Institute of Medical Sciences



Department of Postgraduate Education & Research  
Sri Lakshmi Narayana Institute of Medical Sciences  
Pondicherry - 605 002

### SIGNIFICATE OF MEMEB

This is to certify that \_\_\_\_\_Praveena.M.FM(UI3MB232)\_ has actively participated in the Value Added Course on **DIAGNOSIS AND TREATMENT OF PULMONARY HYPERTENSION** held during August - September 2017 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr. Prakash Rao Balan  
RESOURCE PERSON

Dr. Vijay Kumar  
COORDINATOR

### Student Feedback Form

Course Name: DIAGNOSIS AND TREATMENT OF PULMONARY HYPERTENSION

Subject Code: CT 04

Name of Student: PRITHIVIRAT S Roll No.: U13MB233

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					✓
2	Course contents met with your expectations				✓	
3	Lecturer sequence was well planned			✓		
4	Lectures were clear and easy to understand					✓
5	Teaching aids were effective					✓
6	Instructors encourage interaction and were helpful					✓
7	The level of the course					✓
8	Overall rating of the course	1	2	3	4	5 ✓

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

SATISFACTORY.

  
Signature

Date: 16. 9. 2017

### Student Feedback Form

Course Name: DIAGNOSIS AND TREATMENT OF PULMONARY HYPERTENSION

Subject Code: CT 04

Name of Student: PRAVEEN S Roll No.: U13MB231

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					✓
2	Course contents met with your expectations				✓	
3	Lecturer sequence was well planned					✓
4	Lectures were clear and easy to understand					✓
5	Teaching aids were effective					✓
6	Instructors encourage interaction and were helpful				✓	
7	The level of the course					✓
8	Overall rating of the course	1	2	3	4	✓5

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

EXCELLENT .

*Praveen S*  
Signature

Date: 16.9.2017































**Sri Lakshmi Narayana Institute of Medical Sciences**

Date 14.07.2017

From  
DR.Senthil kumar,  
Professor and Head,  
Department of Physiology,  
SLIMS  
Bharath Institute of Higher Education and Research,  
Chennai.

To  
The Dean,  
SLIMS  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Permission to conduct value-added course:** Recent advances in autonomic function test & its applications

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: Recent advances in autonomic function test & its applications on August 21017–October 2017. We solicit your kind permission for the same.

Kind Regards

Dr.Senthil kumar

---

**FOR THE USE OF DEANS OFFICE**

Names of Committee members for evaluating the course:

The Dean: *Dr. Jayalakshmi .*

The HOD: *Dr. Senthil Kumar*

The Expert: *Dr. B. Deivanayagam.*

The committee has discussed about the course and is approved.

Dean

(Sign & Seal)

**DEAN**

Subject Expert

(Sign & Seal)

*Vsk*  
HOD

(Sign & Seal)

**PROFESSOR & HOD**

**DEPARTMENT OF PHYSIOLOGY**

**Sri Lakshmi Narayana Institute Of Medical Sciences**  
**PONDICHERRY - 605 502.**

**SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES**  
**OSUDU, AGARAM VILLAGE,**  
**KOODAPAKKAM POST,**  
**PUDUCHERRY - 605 502**



Circular

18.07.2017

**Sub: Organising Value-added Course: reg** Recent advances in autonomic function test & its applications

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research**, is organising “\_Recent advances in autonomic function test & its applications”. The course content and registration form is enclosed below.”

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before July 28. Applications received after the mentioned date shall not be entertained under any circumstances.



Dean

**DEAN**  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
OSUDU, AGARAM VILLAGE,  
KODAPAKKAM POST,  
PUDUCHERRY - 605 502



## Course Proposal

**Course Title:** Recent advances in autonomic function test & its applications

**Course Objective:** 1. To diagnose limited autonomic neuropathy  
2. To evaluate the severity and distribution of autonomic function

**Course Outcome:** Perform autonomic testing proficiently and efficiently  
Recognize technical errors/pitfalls Identify patients requiring additional studies Identify most common autonomic abnormalities on testing

**Course Audience:** medical undergraduates

**Course Coordinator:**Dr.B.Deivanayagame

### **Course Faculties with Qualification and Designation:**

1.Dr.senthil kumar

2.Dr.B.Deivanayagame

3.Dr.Vijayakumar

### **Course Curriculum/Topics with schedule (Min of 30 hours)**

SlNo	Date	Topic	Time	Hours
1	11.08.2017	introduction	2-4pm	2hrs
2	14.08.2017	Development of autonomic nervous system	1-4pm	4hrs
3	19.08.2017	symptoms of autonomic dysfunction	1-4pm	4hrs
4	25.09.2017	classification of autonomic function tests	1-3pm	3hrs
5	28.09.2017	Indications for autonomic function testing	1-3pm	3hrs
6	1.10.2017	Parasympathetic function tests	1-2pm	1hrs
7	08.10.2017	Sympathetic function tests	1-3pm	3hrs
8	11.10.2017	practical	1-3pm	3hrs
9	14.10.2017	Methodological Information	1-3pm	3hrs
10	14.10.2017	Recent advances in autonomic function tests	1-3pm	3hrs
			Total Hours	30

REFERENCE BOOKS: (Minimum 2) 1. G.K. Pal and Pravathy Pal, "Autonomic function tests", In: Text book of practical physiology, India: Orient longman, 2009; Ch 40: 296-304.

2. . William F.Ganong, The Autonomic nervous system, In; Review of medical physiology, 23<sup>rd</sup> ed, India: MCGraw-Hill Company 2010; Ch 17: 261-271



## VALUE ADDED COURSE

**1. Name of the programme & Code**

Recent advances in autonomic function test & its applications and PHYC04

**2. Duration & Period**

30 hrs & August 21017– October 2017

**3. Information Brochure and Course Content of Value Added Courses**

*Enclosed as Annexure- I*

**4. List of students enrolled**

*Enclosed as Annexure- II*

**5. Assessment procedures:**

Multiple choice questions- *Enclosed as Annexure- III*

**6. Certificate model**

*Enclosed as Annexure- IV*

**7. No. of times offered during the same year:**

**8. Year of discontinuation: 2017**

**9. Summary report of each program year-wise**

Value Added Course- September 2016 - August 2017					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	AFT 01	Recent advances in autonomic function test & its applications and AFT01	Dr. B.Deivanayagame	1 <sup>st</sup> MBBS	20 (Aug 17- oct 17)

**10. Course Feed Back**

*Enclosed as Annexure- V*

**RESOURCE PERSON**

*B. Deivanayagame*  
**COORDINATOR**



## annexure 1

Recent advances in autonomic function test & its applications and  
AFT01

**PARTICIPANT HAND BOOK**



## COURSE DETAILS

<b>Particulars</b>	<b>Description</b>
Course Title	Recent advances in autonomic function test & its applications
Course Code	AFT01
Objective	<ol style="list-style-type: none"><li>1. introduction</li><li>2. Development of autonomic nervous system</li><li>3. symptoms of autonomic dysfunction</li><li>4. classification of autonomic function tests</li><li>5. Indications for autonomic function testing</li><li>6. Methodological Information</li><li>7. Recent advances in autonomic function tests</li></ol>
Further learning opportunities	Heart rate variability
Key Competencies	On successful completion of the course the students will have skill in doing autonomic function testing
Target Student	1st MBBS Students
Duration	30hrs Every September 2016– January 2017 & February – August 2017
Theory Session	10hrs
Practical Session	20hrs
Assessment Procedure	Multiple choice questions



**Introduction:** The innervation of all tissues other than muscle is by way of autonomic nervous system. It regulates the activity of smooth muscles like heart, glands of GIT, sweat glands, adrenal gland and of certain endocrine organs

Its main aim is to maintain the optimal internal environment of body. It governs the body functions which are normally carried out without conscious control, this is why ANS is also called vegetative or efferent visceral or involuntary nervous system

The ANS is divided into two divisions sympathetic and parasympathetic functionally the two divisions of the ANS are essentially antagonistic and mutual interaction between the two tends to maintain the homeostasis in the dynamics of the body

The individual with the disturbances of the ANS shows complex clinical abnormalities. The diagnosis of autonomic neuropathy is often difficult to establish, since clinical symptoms generally appear late in the course of the disease and may be nonspecific

In progressive autonomic failure, there is the degeneration of both preganglionic and postganglionic neurons, leading to inability to maintain the blood pressure in the erect position (orthostatic or postural hypotension) constipation, incontinence of urine, impotence, paralysis of accommodation, pupillary areflexia, disturbances of sweating and loss of lacrimation

Some of the common causes of autonomic neuropathy are

i) Diabetic neuropathy, where postganglionic fibres of both divisions of ANS get involved

ii) Uremic neuropathy



ii)Alcoholic neuropathy

### **DEVELOPMENT OF AUTONOMIC NERVOUS SYSTEM SYMPATHETIC**

**NEURONS** The sympathetic pathway consists of two neurons i.e., a preganglionic and a postganglionic neuron. The preganglionic neurons develop in the mantle layer of the Thoraco-lumbar region of the spinal cord (segments T1 to L2 or L3) these cells are located near the sulcus limitans and form the lateral horn of the cord. The axons growing out from them are myelinated. They pass into the ventral nerve roots to enter the spinal nerves. After a very short course through the spinal nerves they leave them and grow towards the postganglionic neurons. The postganglionic neurons are derived from cells of the neural crest. These neurons form the various ganglia of the sympathetic trunk. Some postganglionic neurons come to lie near the viscera and form visceral sympathetic ganglia. The preganglionic fibers meant for them do not relay in the sympathetic trunk but pass through branches of the trunk to reach the visceral ganglia. The axons of the postganglionic neurons grow towards the various viscera of the body to innervate them. Some of them enter the spinal nerves and are distributed through them to the blood vessels and sweat glands, sympathetic ganglia. The preganglionic fibers meant for them do not relay in the sympathetic trunk but pass through branches of the trunk to reach the visceral ganglia. The axons of the postganglionic neurons grow towards the various viscera of the body to innervate them. Some of them enter the spinal nerves and are sympathetic ganglia. The preganglionic fibers meant for them do not relay in the sympathetic trunk but pass through branches of the trunk to reach the visceral ganglia. The axons of the postganglionic neurons grow towards the various viscera of the body to innervate them. Some of them enter the spinal nerves and are

**PARASYMPATHETIC NEURONS** The preganglionic neurons of the parasympathetic system are formed in two distinct situations. Some of them are



formed in relation to the general visceral efferent nuclear column of the brain stem. They give rise to the Edinger – Westphal nucleus, salivatory and lacrimatory nuclei and the dorsal nucleus of the vagus. Their axons constitute the cranial parasympathetic out flow. Other preganglionic neurons are formed in the mantle layer of the sacral part of the spinal cord. These cells lie near the sulcus limitans. Their axons constitute the sacral parasympathetic outflow. There is considerable doubt regarding the origin of the postganglionic parasympathetic neurons.

**PARASYMPATHETIC NEURONS** sacral part of the spinal cord. These cells lie near the sulcus limitans. Their axons constitute the sacral parasympathetic outflow. There is considerable doubt regarding the origin of the postganglionic parasympathetic neurons. They are generally believed to be sympathetic neurons. They are generally believed



**Autonomic dysfunction:Definition** :Autonomic dysfunction develops when the nerves of the ANS are damaged. This condition is called autonomic neuropathy or dysautonomia. Autonomic dysfunction can range from mild to life-threatening. It can affect part of the ANS or the entire ANS. Sometimes the conditions that cause problems are temporary and reversible. Others are chronic, or long term, and may continue to worsen over time.

**classification of the different types of autonomic dysfunction**, adapted from Freeman (2005)<sup>5</sup> and Macdougall and McLeod (1996),<sup>6</sup> can be made as follows:

- Diabetic autonomic neuropathy
- Amyloid neuropathy
- Immune-mediated neuropathy Protocol Autonomic Nervous System Testing Last Review Date: 01/20 Page 5 of 8 o Rheumatoid arthritis o Systemic lupus erythematosus o Sjögren syndrome
- Paraneoplastic neuropathy
- Inflammatory neuropathy o Guillain-Barré syndrome o Chronic inflammatory demyelinating polyneuropathy o Crohn disease o Ulcerative colitis
- Hereditary autonomic neuropathies
- Autonomic neuropathy secondary to infectious disease o HIV disease o Lyme disease o Chagas disease o Diphtheria o Leprosy
- Acute and subacute idiopathic autonomic neuropathy
- Toxic neuropathies. Other chronic diseases may involve an ANS imbalance, without outright dysfunction of the nerves themselves. Approximately 40% of individuals with essential hypertension will show evidence of excess sympathetic activity.<sup>7</sup> Sympathetic overactivity is also a prominent feature of generalized



anxiety, panic disorder, and some types of depression, as well as certain cardiac disorders such as chronic heart failure. These types of ANS imbalances are not usually classified as ANS disorders.



**Autonomic function tests:**The assessment of autonomic functions is an important part of the evaluation of peripheral and central nervous system .the diagnosis of autonomic neuropathy is indirect ,often being based on the measurement of physiological variables which are controlled by ANS.These tests are reliable,reproducible,simple,quick to carry out and all non invasive.In these test, emphasis is placed on the measurement of heart rate from a continuously running electrocardiographic ECG record and recording of systemic arterial blood pressure.some of the commonly employed clinical tests for the early detection of autonomic dysfunctions are classified into parasympathetic and sympathetic function tests

#### Parasympathetic function test

- 1.standing to lying ratio(S/L ratio)
- 2.immediate heart rate response to standing (30:15 R-R ratio)
- 3.valsalva ratio
- 4.tachycardia ratio
- 5.heart rate variation with respiration :sinus arrhythmia

#### Sympathetic function tests

- 1.QT/QTc ratio\sympathetic skin response
- 2.Hand grip test :blood pressure response to isometric exercise
- 3.Cold pressor response

#### Miscellaneous tests:

- 1.Tests of pupillary function



## 2. Tests for lacrimation

### **Parasympathetic function test**

**Deep breathing test:** This test is used to assess the parasympathetic activity. Principle: Heart rate increases during inspiration due to decreased cardiac vagal activity and decreases during expiration due to increased vagal activity. This is detected by recording lead-II E.C.G continuously when the subject is breathing deeply.

Apparatus: 1. Cardiowinsystem:

#### 2. ECG Jelly

Method 1. Subject was instructed to maintain deep breathing at a rate of six breaths per minute. 2. Subject was made to lie down comfortably in supine position with head elevated to 300 59 3. ECG electrodes were connected for recording Lead II ECG continuously in Audacity software and the R-R interval was measured using the beat finder tool in the software. 4. While subject was breathing deeply at a rate of 6 breaths per minute (allowing 5 seconds each for inspiration and expiration) maximum and minimum heart rates were recorded with each respiratory cycle. 5. Expiration to inspiration ratio was determined by using the formula

- I. Normal Values of E: I ratio in different age groups (34)  
16 – 20 years → > 1.23  
21 – 25 years → > 1.20  
26 – 30 years → > 1.18  
31 – 35 years → > 1.16  
36 – 40 years → > 1.14  
41 – 45 years → > 1.12  
46 – 50 years → > 1.11  
51 – 55 years → > 1.09  
56 – 60 years → > 1.08  
61 – 65 years → > 1.07  
66 – 70 years → > 1.06  
m R-R interval during deep expiration E: I ratio = Minimum R-R interval during deep inspiration

### **Valsalva Manoeuvre:**



The Valsalva ratio is a measure of parasympathetic and sympathetic functions. For the response to occur in Valsalva manoeuvre parasympathetic acts as afferent and efferent and sympathetic acts as a part of the efferent pathway. Therefore the Valsalva ratio assesses more of parasympathetic function. .

### Principle

The Valsalva ratio is a measure of the change of heart rate that takes place during a brief period of forced expiration against closed glottis or mouth piece (Valsalva manoeuvre). During and after the Valsalva manoeuvre there will be change in cardiac vagal efferent and sympathetic vasomotor activity, resulting from stimulation of carotid sinus, aortic arch baroreceptors and other intrathoracic stretch receptors

### Apparatus :

1. Cardiovascular system :
  2. ECG Jelly
  3. Sphygmomanometer (Diamond)
  4. Mouth Piece
  5. Automatic Method
1. Subject was made to lie down in a semi recumbent or sitting position.
  2. Nostrils were closed manually.
  3. Mouth piece was put into the mouth of the subject and the Mercury manometer was connected to the mouth piece.



4. ECG machine was switched on for continuous recording.
  5. Subject was asked to exhale forcefully into the mercury manometer and asked to maintain the expiratory pressure at 40 mm of Hg for 10 – 15 seconds.
  6. ECG changes were recorded throughout the procedure, 30 seconds before and after the procedure.i.e the ratio of the longest R-R interval (which comes shortly after the release) to the shortest R-R interval which occurs during maneuver
- tic BP monitor (Omron HEM 780)
7. Valsalva ratio was calculated by using the formula

Longest R-R interval after the manoeuver (Phase-IV)

---

Valsalva =  $\frac{\text{Longest R-R interval after the manoeuver (Phase-IV)}}{\text{Shortest R-R interval during the manoeuver (Phase-II)}}$

Valsalva ratio more than 1.45 is considered to be normal. When it is 1.2 – 1.45, it is border line and if it is less than 1.2, it is regarded as abnormal.

#### IV. Heart rate response to standing :

On changing the posture from supine to standing heart rate increases immediately by 10-20 beats per minute. This response is detected by recording ECG in supine and standing postures. Lead II ECG is recorded continuously in Audocity software

ECG in supine and standing postures. Lead II ECG is recorded continuously in Audocity software

**Principle :** Immediately on standing from supine posture, heart rate increases by

- 10-20 beats.
1. Subject was made to lie down in supine posture.
  2. ECG electrodes were connected from the subject to the cardiowin system.
  3. Subject was asked to relax completely for a minimum period of 10 minutes.



4. Basal heart rate was recorded by using cardiowin system.
5. Subject was asked to stand up immediately and change in heart rate was noted from the cardiowin monitoring screen.
6. Heart rate response to standing was determined by using the formula

$$\text{Heart rate in standing position} - \text{Heart rate in supine position. III.}$$

Sympathetic function test: Cold Pressor test (cold pressure test)

The afferent limb of the reflex pathway in cold pressor test is somatic fibers where as the efferent limb is sympathetic fibers. <sup>(11,12,14)</sup>

**.Principle :** Submerging the limbs in cold water results in an increase in systolic and diastolic blood pressures, which is detected by sphygmomanometer

Apparatus :

1. Beaker containing Ice cold water
2. Sphygmomanometer (Diamond)
3. Stethoscope (Littmann)

Method :

1. Subject was instructed regarding the test.
2. Blood pressure was recorded under basal conditions.
3. Cold water was taken in a container.
4. Subject was asked to submerge one of his hand to his wrist in cold water .



5. Blood pressure was recorded from the other hand at 30 seconds interval for a period of 2 minutes using automatic BP Monitor (omron HEM780) .

Submersion of the limb in ice cold water increases systolic blood pressure by about 10-20 mm of Hg and diastolic blood pressure by about 10 mm of Hg. V.

Hand Grip Test :

In the hand grip test, there is a rise in heart rate and blood pressure. The blood pressure rise is due to increased sympathetic activity and heart rate rise is due to decreased parasympathetic activity<sup>(11,12)</sup>

**Principle :** Sustained hand grip against resistance causes an increase in heart rate and blood pressure. These responses are detected by using ECG and blood pressure monitors using electronic automatic B.P apparatus(omron brand)

Apparatus :

1. Cardiowin system :
2. ECG Jelly
3. Sphygmomanometer (Diamond)
4. Stethoscope (Littmann)
5. Hand Grip Dynamometer
6. Automatic BP monitor(omron HEM 780)

Method :

1. Subject was instructed regarding the test
2. Subject was made to lie down in semi recumbent position.



3. ECG electrodes were connected for lead II recording of ECG and sphygmomanometer for blood pressure measurement.
4. Basal heart rate and blood pressure were recorded.
5. Subject was asked to maintain a pressure of 30% of the maximum voluntary contraction in the hand grip dynamometer for about 5 minutes with the dominant hand
6. Heart rate and change in SBP, DBP were recorded every minute using Automatic BP monitor (omron HEM 780) for measurement of Blood pressure. The normal response is rise in DBP by  $> 10-15$  mm of Hg and rise in heart rate by about 30% of the pre test value

Recent advances in autonomic function tests:various new autonomic function tests includes

- 1.Initial heart rate response to postural change
- 2.Monitoring of cerebral circulation by near infrared spectroscopy
- 3.Sympathetic skin test
- 4.pressure flow test
- 5.videourodynamics



**Annexure 2**

**Bharath Institute of Higher Education and Research (SLIMS)**

**LIST OF STUDENTS ENROLLED**

Participant list of Value added course: Recent advances in autonomic function test & its applications

Sl.No	Reg.No	Name of the candidate	Signature
1	U17MB380	SOUNDHARYA.K	<i>K Soundarya</i>
2	U17MB381	SOURABH DAS	<i>Sourabh Das</i>
3	U17MB382	SRIKAVYA .G	<i>Srikavya</i>
4	U17MB383	SRISHTI SINGH	<i>Srishti Singh</i>
5	U17MB384	SRITAMA SAHA	<i>Sritama Saha</i>
6	U17MB385	SUBHASHREE ABHIPSA GIRI	<i>Subhashree</i>
7	U17MB386	SUMAN KUMAR SAHOO	<i>Suman Kumar Sahoo</i>
8	U17MB387	SURVE BHUSHAN SUNIL	<i>Surve Bhushan Sunil</i>
9	U17MB388	SURVESH PODDAR	<i>Survesh Poddar</i>
10	U17MB389	SURYAWANSHI SIDDHANT AJAY	<i>Suryawanshi Siddhant</i>
11	U17MB390	SYAMA SHAJEEV	<i>Syama Shajeev</i>
12	U17MB391	THIRUKKUMARAN J.T	<i>Thirukkumaran</i>
13	U17MB392	TWINKLE JAISWAL	<i>Twinkle Jaiswal</i>
14	U17MB393	UDAY CHANDRA KARUMANCHI	<i>Udaychandra Karumanchi</i>
15	U17MB394	VIDHYA.V	<i>Vidya</i>
16	U17MB395	VISHAL.S	<i>V. Vishal</i>
17	U17MB396	VISHNU .K	<i>Vishnu K</i>
18	U17MB397	VIVEK AMAN SINGH	<i>Vivek Aman Singh</i>
19	U17MB398	YASHWANT RATHORE	<i>Yashwant Rathore</i>
20	U17MB399	YAZHINI MURUGAN	<i>Yazhini Murugan</i>

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.Annexure 3

Recent advances in autonomic function test & its applications

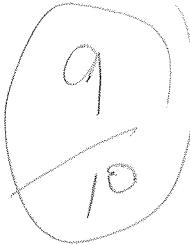
MULTIPLE CHOICE QUESTIONS

Course Code: PHYC04

I. ANSWER ALL THE QUESTIONS

**1. The sympathetic nervous system is:**

- a. activated by exposure to cold weather
- b. inhibited by exposure to hot weather
- c. concerned/ involved in erection of external genital organised with initiation of Micturition

✓ 

**2. The vagus nerve:**

- a. When stimulated has little direct effect on the strength of ventricular contraction.
- b. Contains afferent nerve fibres only.
- c. Exerts at rest a tonic effect on the heart which becomes more marked
- d. with regular long distance running
- e.  Contains parasympathetic postganglionic fibre

✓

**3. which of the following is not a sympathetic function test?**

- a. cold pressor test
- b. isometric handgrip test
- c.  deep breathing difference
- d. galvanic skin response

✓

**4. which of the following is not a test for sudomotor function**

- a. Sympathetic skin response
- b. Thermoregulatory sweat test
- c. QSAR test
- d.  Adrenaline test

✓



**5. Parasympathetic tone is mostly responsible for:**

- a. Decreasing the blood flow to the gut (GIT or alimentary canal).
- b. Maintenance of the systemic arterial blood pressure constant.
- c. Keeping the fasting blood glucose level constant. ✓
- d. ~~Maintaining~~ resting heart rate within normal. ✓
- e. Causing bronchodilatation

**6. Sympathetic tone serves the following autonomic functions:**

- a. Maintenance of basal cardiac rhythm.
- b. Maintenance of basal gastrointestinal motility.
- c. ~~Maintenance~~ of normal arterial blood pressure. ✓
- d. Maintenance of basal sleep rhythm ✓

**7. which of the following is more accurate sympathetic reactivity test**

- a. Tachycardia ratio
- b. ~~Norepinephrine~~ spillage technique ✓
- c. HRV analysis ✗
- d. Isometric handgrip test

**8. which of the following ratio is not a parasympathetic function test**

- a. E/I ratio
- b. tachycardia ratio of valsalva maneuver
- c. 30:15 ratio
- d. ~~standing~~ to lying ratio ✓

**9. which of the following is more accurate parasympathetic reactivity test?**

- a. 30:15 ratio
- b. heart rate response to deep breathing
- c. Bradycardia ratio
- d. ~~Hfnu~~ and TP of HRV Analysis ✓

**10. which of the following is used as a measure of orthostatic hypotension on standing from**

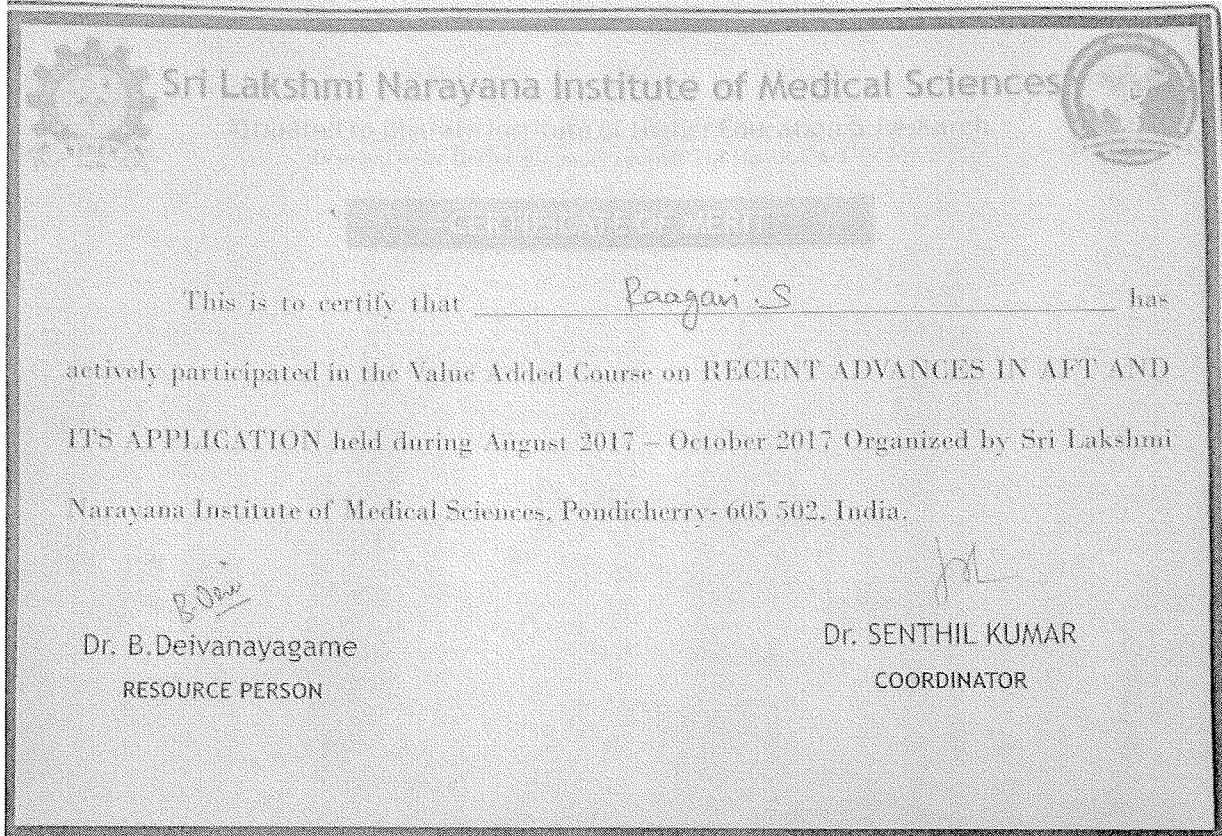


**Lying to standing posture**

- a. sustained fall in SBP>20mm Hg,DBP>10 mm Hg
- b. sustained fall in SBP>10mm Hg,DBP>5 mm Hg
- c. sustained fall in SBP>40mm Hg,DBP>20 mm Hg
- d. sustained fall in SBP>50mm Hg,DBP>25 mm Hg



Annexure 4





ANNEXURE 5

Course/Training Feedback Form

Course: Recent advances in Autonomic Functions test & its application  
Date:  
Name: Soundharya  
Reg NO. U17MB380.  
Department: physiology

Q 1: Please rate your overall satisfaction with the format of the course:

- a. Excellent  b. Very Good  c. Satisfactory  d. unsatisfactory

Q 2: Please rate course notes:

- a. Excellent  b. Very Good  c. Satisfactory  d. unsatisfactory

Q 3: The lecture sequence was well planned

- a. Excellent  b. Very Good  c. Satisfactory  d. unsatisfactory

Q 4: The lectures were clear and easy to understand

- a. Excellent  b. Very Good  c. Satisfactory  d. unsatisfactory

Q 5: Please rate the quality of pre-course administration and information:

- a. Excellent  b. Very Good  c. Satisfactory  d. unsatisfactory

Q 6: Any other suggestions:

Comments:

Thank you for taking the time to complete this survey, your comments are much appreciated.

OPTIONAL Section: Name Soundharya

Signature Soundharya Date \_\_\_\_\_



**COURSE COMPLETION LETTER**

Date 16.10.2017

From  
B.Deivanayagame,  
Department of physiology,  
SLIMS  
Bharath Institute of Higher Education and Research,  
Chennai.

Through Proper Channel

To  
The Dean,  
SLIMS  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Completion of value-added course:** Certificate course in Role of music in emotional well being

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: \_ Certificate course in Role of music in emotional well being on aug 2017 - oct 2017 We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards

Dr.B.Deivanayagame

**Encl: Certificates**

**Photographs**



PHOTOGRAPHS







**Sri Lakshmi Narayana Institute of Medical Sciences**

Date:08.05.2017

From

Dr.Kamatchi  
Professor and Head,  
Department of Microbiology,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

To

The Dean,  
Sri Lakshmi Narayana Institute of Medical College  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Permission to conduct value-added course: Hospital information system & Environmental health and hygiene**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: Hospital information system for July to September 2017 & Environmental health and hygiene October to November 2017. We solicit your kind permission for the same.

Kind Regards

Dr. Kamatchi

---

**FOR THE USE OF DEANS OFFICE**

Names of Committee members for evaluating the course:

The Dean: **Dr. Jayalakshmi.G**

The HOD: **Dr. Kamatchi**

The Expert: **Dr. Jayapradha.S**

The committee has discussed about the course and is approved.

Dean

(Sign & Seal)

Subject Expert

(Sign & Seal)

HOD

(Sign & Seal)

Dr. G. JAYALAKSHMI  
DEAN  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Ageram Kudapakkam, Post, Villanur Commune Puducherry-605 502.

DEPT OF MICROBIOLOGY

SRI LAKSHMI NARAYANA INSTITUTE OF

MEDICAL SCIENCES-PONDICHERY, 605 507

PROFESSOR & HOD

DEPARTMENT OF MICROBIOLOGY

Sri Lakshmi Narayana Institute of Medical Sciences  
PONDICHERY, 605 502





**Sri Lakshmi Narayana Institute of Medical Sciences**

**Circular**

29.08.2017

**Sub: Organising Value-added Course: Environmental health and Hygiene -reg**

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research**, is organising “**Environmental health and Hygiene** ” from october 2017 to november 2017. The course content form is enclosed below.”

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before September 1<sup>st</sup> 2017. Applications received after the mentioned date shall not be entertained under any circumstances.

**Dr. G. JAYALAKSHMI**, BSC.,MBBS.,DTCD.,M.D.,  
Dean  
DEAN  
Sri Lakshmi Narayana Institute of Medical Sciences  
G. Jayalakshmi, Kothnakkal, Post,  
Vadakkanchery, Thrissur, Kerala-686 502.

Encl: Copy of Course content



## Course Proposal

**Course Title: Environmental health and Hygiene**

**Course Objective:**

1. Environmental health &
2. Components of environmental health
3. Concepts and principles in hygiene and environmental health
4. Environmental intervention models
5. Environmental risk factors

**Course Outcome: knowledge on the various aspects of Environmental health and hygiene**

**Course Audience: Medical undergraduates**

**Course Coordinator: Dr. Jayalakshmi.G**

**Course Faculties with Qualification and Designation:**

1. Dr.S.Jayapradha, MD,Assistant Professor
2. Mrs.Swathi, Msc, Tutor

**Course Curriculum/Topics with schedule (Min of 30 hours)**

Date	Time	Topic	Hour	Lecture taken by
4.9.2017	4-7pm	Pre-test & Introduction	3hrs	Dr.Jayapradha.S
11.9.2017	4-7pm	Environmental health & Componentsofenvironmental health	3hrs	Dr.Jayalakshmi.G
18.9.2017	4-7pm	Concepts and principles in hygiene and environmental health	3hr	Dr.Jayapradha.S
25.9.2017	4-7pm	Environmental intervention models	3hrs	Dr.Jayapradha.S
1.10.2017	4-7pm	Environmental risk factors	3hrs	Mrs.Swathi
8.10.2017	4-7pm	Human interaction with the environment	3hrs	Dr.Jayapradha.S
15.10.2017	4-7pm	The role of environmental health in public health	3hrs	Dr.Jayalakshmi.G
22.10.2017	4-7pm	Environmental health planning	3hrs	Mrs.Swathi
29.10.2017	4-7pm	Writing a planning report	3hrs	Dr.Jayapradha.S
31.10.2017	4-7pm	Post test	3hrs	Mrs.Swathi



		Total	30hrs	
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**REFERENCE BOOKS:**

1. Textbook of Environmental studies for undergraduates- Erach Bharucha
2. Textbook of uninhabitable Earth- David Wallace



## VALUE ADDED COURSE

**1. Name of the programme & Code**

Environmental health and hygiene and MIC06

**2. Duration & Period**

30 hrs & October 2017- November 2017

**3. Information Brochure and Course Content of Value Added Courses**

*Enclosed as Annexure- I*

**4. List of students enrolled**

*Enclosed as Annexure- II*

**5. Assessment procedures:**

Self-assessment questionnaire- *Enclosed as Annexure- III*

**6. Course Feed Back**

*Enclosed as Annexure- IV*

**7. No. of times offered during the same year:**

2 October 2017- November 2017

**8. Year of discontinuation: 2017**

**9. Summary report of each program year-wise**

Value Added Course- September 2016 - August 2017					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	MIC06	Environmental health and hygiene	Dr. S.Jayapradha Mrs.Swathi.S	2 <sup>nd</sup> yrMBBS	21 October 2017- November 2017

**10. Certificate model**

*Enclosed as Annexure- V*

  
**RESOURCE PERSON**

  
**COORDINATOR**



## Environmental health and hygiene

### COURSE DETAILS

Particulars	Description
Course Title	Environmental health and hygiene
Course Code	MIC06
Objective	<ol style="list-style-type: none"><li>1. Definition</li><li>2. Environmental health</li><li>3. Components of environmental health</li><li>4. Concepts and principles in hygiene and environmental health</li><li>5. Environmental intervention models</li><li>6. Environmental risk factors</li><li>7. Human interaction with the environment</li><li>8. The role of environmental health in public health</li><li>9. Environmental health planning</li><li>10. Writing a planning report</li></ol>
Further learning opportunities	Role of public health
Key Competencies	On successful completion of the course the students will have skill to observe planning report
Target Student	2 <sup>nd</sup> yr MBBS Students
Duration	30hrs Every October 2017- November 2017 & December 2017-January 2018
Theory Session	10hrs
Practical Session	20hrs
Assessment Procedure	Short answers

<b>Date</b>	<b>Time</b>	<b>Topic -</b>	<b>Resource person</b>
4.9.2017	4-7pm	Pre-test & Introduction	Dr.Jayapradha.S
11.9.2017	4-7pm	Environmental health & Components of environmental health	Dr.Jayalakshmi.G
18.9.2017	4-7pm	Concepts and principles in hygiene and environmental health	Dr.Jayapradha.S
25.9.2017	4-7pm	Environmental intervention models	Dr.Jayapradha.S
1.10.2017	4-7pm	Environmental risk factors	Mrs.Swathi
8.10.2017	4-7pm	Human interaction with the environment	Dr.Jayapradha.S
15.10.2017	4-7pm	The role of environmental health in public health	Dr.Jayalakshmi.G
22.10.2017	4-7pm	Environmental health planning	Mrs.Swathi
29.10.2017	4-7pm	Writing a planning report	Dr.Jayapradha.S
31.10.2017	4-7pm	Post test	Mrs.Swathi

**Definition:**

**Hygiene** generally refers to the set of practices associated with the preservation of health and healthy living. The focus is mainly on personal hygiene that looks at cleanliness of the hair, body, hands, fingers, feet and clothing, and menstrual hygiene.

Improvements in personal knowledge, skill and practice that modify an individual's behaviour towards healthy practice are the focus of hygiene

promotion. Safe hygiene practice includes a broad range of healthy behaviours, such as handwashing before eating and after cleaning a child's bottom, and safe faeces disposal. When you carry out hygiene education and promotion the aim is to transfer knowledge and understanding of hygiene and associated health risks in order to help people change their behaviour to use better hygiene practices.

**Sanitation** means the prevention of human contact with wastes, for hygienic purposes. It also means promoting health through the prevention of human contact with the hazards associated with the lack of healthy food, clean water and healthful housing, the control of vectors (living organisms that transmit diseases), and a clean environment. It focuses on management of waste produced by human activities.

There are different types of sanitation relating to particular situations, such as:

**Basic sanitation:** refers to the management of human faeces at the household level. It means access to a toilet or latrine.

**Onsite sanitation:** the collection and treatment of waste at the place where it is deposited.

**Food sanitation:** refers to the hygienic measures for ensuring food safety. Food hygiene is similar to food sanitation.

**Housing sanitation:** refers to safeguarding the home environment (the dwelling and its immediate environment).

**Environmental sanitation:** the control of environmental factors that form links in disease transmission. This category includes solid waste management, water and wastewater treatment, industrial waste treatment and noise and pollution control.

**Ecological sanitation:** the concept of recycling the nutrients from human and animal wastes to the environment.

**Environmental health**

Environmental health is broader than hygiene and sanitation; it encompasses hygiene, sanitation and many other aspects of the environment that are not included in this Module such as global warming, climate change, radiation, gene technology, flooding and natural disasters. It also involves studying the environmental factors that affect health.

The World Health Organization's definition is as follows:

Environmental health addresses all the physical, chemical, and biological factors external to a person, and all the related factors impacting behaviours. It encompasses the assessment and control of those environmental factors that can potentially affect health.

Key phrases in this definition are environmental factors and potentially affect health

### **Components of environmental health**

- Personal hygiene -Hygiene of body and clothing
- Water supply-Adequacy, safety (chemical, bacteriological, physical) of water for domestic, drinking and recreational use
- Human waste disposal-Proper excreta disposal and liquid waste management
- Solid waste management-Proper application of storage, collection, disposal of waste. Waste production and recycling
- Vector control-Control of mammals (such as rats) and arthropods (insects such as flies and other creatures such as mites) that transmit disease
- Food hygiene-Food safety and wholesomeness in its production, storage, preparation, distribution and sale, until consumption
- Healthful housing-Physiological needs, protection against disease and accidents, psychological and social comforts in residential and recreational areas

- Institutional hygiene-Communal hygiene in schools, prisons, health facilities, refugee camps, detention homes and settlement areas
- Water pollution-Sources, characteristics, impact and mitigation
- Occupational hygiene-Hygiene and safety in the workplace

### **Concepts and principles in hygiene and environmental health:**

#### Environmental health and disease transmission

The description of diarrhoea transmission represents a good way to understand the pathways of disease through the environment and how environmental health and hygiene can help prevent disease transmission.

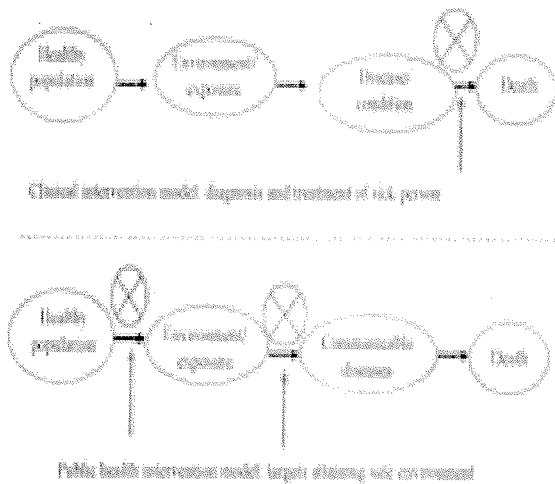
On the left is a person defecating, representing the source of diarrhoea. The infectious agent or disease agent is actively discharged by a patient or carrier of the disease. On the right is the host, who is the person that could be affected by the disease. Between the two, there is the part of the environment that links the two; in other words, the pathway that the disease travels between the source and the host.

- Faeces: resulting from defecation.
- Fluids: through contaminated water and other contaminated liquids.
- Fingers: contaminated fingers transmit diseases.
- Flies: all sorts of animals such as flies can carry and transmit diseases.
- Fomites or fields: fomites are inanimate objects that carry the infectious agent (e.g. dishes, cups and other contaminated surfaces in contact with food or water).
- Food: infected by fluids, flies, fingers or fomites and then eaten.

#### **Environmental intervention models**

According to the Federal Ministry of Health, more than 80% of communicable diseases in Ethiopia are believed to be preventable using environmental health interventions. Generally, there are two intervention models: the clinical

intervention model, which looks at treating the sick person, and the public health model, including environmental health, which looks at how to stop people getting sick in the first place by providing a healthy environment. This is indicated in Figure 1.4.



### Environmental risk factors:

- Contaminated water, lack of latrines, poor hand washing, inappropriate solid waste management, open defecation, vector infestation
- Indoor air pollution
- Outdoor/ambient air pollution
- General environmental hazards (climate, mosquitoes, nutrition)
- Environmental hazards in workplaces (excess noise, heat, dust, chemicals)

### Human interaction with the environment

Urbanisation and industrialisation bring rural people into urban centres that may not be ready to handle the additional sanitary needs. Ethiopia is at the stage of

rapid development with priorities in agriculture and industry. Currently small-scale industries that bridge agriculture and industrialisation are booming. Large-scale industries, such as textiles, food and cement, are growing. The need to improve and expand social infrastructures such as water supply, waste management and health services is obvious in order to handle the needs of the growing urban centres. As a healthworker you need to understand that these developments have environmental health risks due to overcrowding, inappropriate waste management and a shortage of safe drinking water.

### **The role of environmental health in public health**

Environmental health is a part of public health where the primary goal is preventing disease and promoting people's health. Environmental health is associated with recognising, assessing, understanding and controlling the impacts of people on their environment and the impacts of the environment on the public. The role of the environmental healthworker, therefore, includes the following functions of public health:

- a.Improving human health and protecting it from environmental hazards.
- b.Developing liaison between the community and the local authority, and between the local and higher levels of administration.
- c.Acting independently to provide advice on environmental health matters;designing and developing plans of action for environmental health.
- d.Initiating and implementing health/hygiene, sanitation and environmental programmes to promote understanding of environmental health principles.
- e.Enforcing environmental legislation.
- f.Monitoring and evaluating environmental health activities, programmes and projects.

You, as a healthworker, are very much involved in all of the above except (e) and (f), which are mainly carried out by the woreda environmental healthworker. However, the kebele administrator may ask you to help with the enforcement of environmental legislation, if deemed appropriate.

## **Environmental health planning**

Environmental health planning refers to a systematic process by which goals are established, facts are gathered and analysed, alternative proposals and programmes are considered and compared, resources are measured, priorities are established, and strategies and activities are designed to meet the established goals or objectives within a specified period of time. You, as part of kebele cabinet, will be requested to prepare an environmental health plan. The approach to planning is similar to that described in the Health Management, Ethics and Research Module. However, the primary focus is what makes it different. The following planning steps are suggested.

### **Writing a planning report**

This is a systematic description of the planning functions. The recommended sub-titles are:

1. Title of the plan
2. Introduction or background
3. Objectives
4. Strategies and activities
5. Indicators
6. Resources (i.e. budget, human resource and materials)
7. Plan of action (i.e. activities by time and responsible person)

**VALUE ADDED COURSE**

**Annexure- II**

**Environmental health and Hygiene and MIC06**

**List of Students Enrolled October 2017- November 2017**

<b>2<sup>nd</sup> Year MBBS Student</b>			
<b>Sl. No</b>	<b>Name of the Student</b>	<b>Roll No</b>	<b>Signature</b>
1	AVIDI VENKATA SAISUSHMA	U16MB271	<i>As..</i>
2	AVIRAL PATPATIA	U16MB272	<i>Pat</i>
3	BALACHANDRAN .A	U16MB273	<i>Bala</i>
4	BALAJI .S	U16MB274	<i>Kb</i>
5	BHASKARAN .K.C	U16MB275	<i>Jeef</i>
6	BHAVANI . K.M	U16MB276	<i>B. Aravind</i>
7	BLESSY AMALA RISHA .J	U16MB277	<i>Dr.</i>
8	CAREENA DANIEL	U16MB278	<i>Cpn</i>
9	CHANDRA PRAKASH.M	U16MB279	<i>Chinju</i>
10	CHINJU S.R	U16MB280	<i>Chinju</i>
11	DASARI VENKATA SAI MOUNISH	U16MB281	<i>Sm</i>
12	DEBARPITA NATH	U16MB282	<i>DD</i>
13	DEEBAK .I	U16MB283	<i>Deepak D</i>
14	DEEKSHITH D.R	U16MB284	<i>Deekshith</i>
15	DEEPIKAA D.V	U16MB285	<i>DD</i>
16	DELFI MARY .E	U16MB286	<i>Delphi</i>
17	DEVIKA.U.M	U16MB287	<i>Devika</i>
18	DHAKSHANA .M	U16MB288	<i>DM</i>
19	EDA SAI VENKATA TEJA	U16MB289	<i>Eda</i>
20	GAURAV KUMAR	U16MB290	<i>Gk</i>

*P. Jeef*  
**RESOURCE PERSON**

*Camatchi*  
**COORDINATOR**





SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH

Annexure - III

Environmental Health and Hygiene

Deebak J P  
JTBMB283  
Course Code: MIC06

I. Short answers

1. SAQ 1

Outline the differences and similarities in hygiene theory and practices in ancient and modern times.

- Hygiene is important theory in practice

2. SAQ 2

Make a quick visit in your village or town and make a list for yourself of the hygiene and sanitation problems that you can see.

- Sanitation - not closed  
- Hand hygiene

3. SAQ 3

Diarrhoea among children under 5 is common in many rural villages. What environmental factors or practices may cause diarrhoea in young children?

- contaminated food & water  
- ponds should be chlorinated.





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AND RESEARCH

Annexure - IV

Environmental Health and Hygiene

Dhakeshanna M  
V16M8288  
Course Code: MIC06

I. Short answers

1. SAQ 1

Outline the differences and similarities in hygiene theory and practices in ancient and modern times.

- Hand hygiene
- Personal hygiene

2. SAQ 2

Make a quick visit in your village or town and make a list for yourself of the hygiene and sanitation problems that you can see.

- fecal products not disposed properly

3. SAQ 3

Diarrhoea among children under 5 is common in many rural villages. What environmental factors or practices may cause diarrhoea in young children?

- rotavirus



AnnexureIV

Student Feedback Form

Course Name: Environmental health and hygiene

Subject Code: MIC06

Name of Student: Deepak Roll No.: V16MB283

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

SI. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear			✓	✓	
2	Course contents met with your expectations				✓	
3	Lecturer sequence was well planned				✓	
4	Lectures were clear and easy to understand				✓	
5	Teaching aids were effective			✓		
6	Instructors encourage interaction and were helpful			✓		
7	The level of the course			✓		
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Date: 31/10/2017

Deepak  
Signature



**AnnexureIV**

**Student Feedback Form**

Course Name: **Environmental health and hygiene**

Subject Code: **MIC06**

Name of Student: Dhakshana .M Roll No.: V16MB288

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear			✓		
2	Course contents met with your expectations			✓		
3	Lecturer sequence was well planned				✓	
4	Lectures were clear and easy to understand				✓	
5	Teaching aids were effective			✓		
6	Instructors encourage interaction and were helpful			✓		
7	The level of the course			✓		
8	Overall rating of the course	1	2	3	4	5

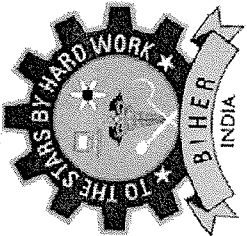
\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Date: 31/10/2014

  
Signature





# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research

(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that DEEPAK . T has

actively participated in the Value Added Course on Environmental health & Hygiene held during Oct 2017– Jan 2018 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

  
Dr. S. Jayapradha

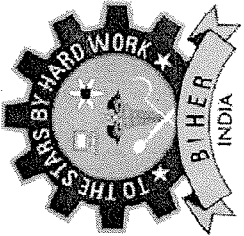
RESOURCE PERSON



Dr. Kamatchi

COORDINATOR





# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research

(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that DHA KAGHANA - M has

actively participated in the Value Added Course on Environmental health & Hygiene held during Oct 2017– Jan 2018 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

  
Dr. S. Jayapradha

RESOURCE PERSON



Dr. Kamatchi

COORDINATOR



From  
Dr.S.Jayapradha  
Department of Microbiology,  
Sri Lakshmi Narayana Institute of Medical Sciences, Pudhucherry  
Bharath Institute of Higher Education and Research, Chennai

Date : 29.10.2017

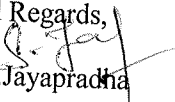
Through Proper Channel

To  
The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences, Pudhucherry  
Bharath Institute of Higher Education and Research, Chennai

**Sub: Completion of value-added course : Environmental health&Hygiene**

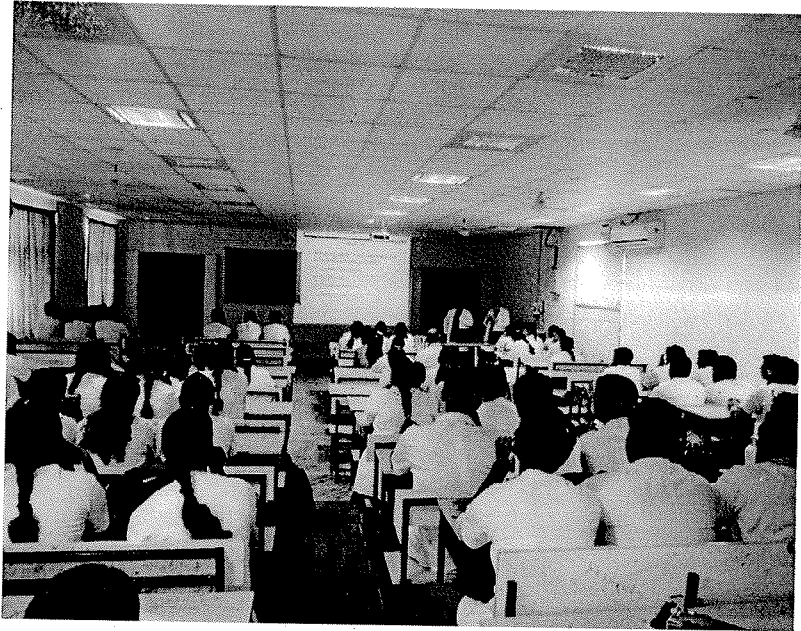
Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled Hospital information system for 20 students. We solicit your kind action to send certificates for the participants, hat is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards,  
  
Dr.S.Jayapradha

**Encl: Certificates& photographs**





10/10/10



**SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES**  
**Osudu, Agaram Village, Koodapakkam post, Puducherry - 605502**

**Date:01.08.2017**

From  
Dr.G.Somasundaram  
Professor and Head,  
Department of Pharmacology  
Sri Lakshmi Narayana Institute of Medical sciences  
Pondicherry

To  
The Dean,  
Sri Lakshmi Narayana Institute of Medical sciences  
Pondicherry

**Sub: Permission to conduct value-added course: Applications of Computer in CAL**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: **Applications of Computer in CAL September 2017– January 2018**. We solicit your kind permission for the same.

Kind Regards

Dr.G.Somasundaram

---

**FOR THE USE OF DEANS OFFICE**

Names of Committee members for evaluating the course:

The Dean:Dr.Jayalakshmi

The HOD:Dr.G.Somasundaram

The Expert:Dr.S.Jaikumar, Dr.J.Jayasheela.



OFFICE OF THE DEAN

# Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P-II ) dt. 11/07/2011 ]  
[ Affiliated to Bharath University, Chennai - TN ]

Circular

Date: 04.08.2015

## Sub: Organising Value-added Course: Applications of Computer in CAL

With reference to the above mentioned subject, it is to bring to your notice that a Sri Lakshmi Narayana Institute of Medical science is organizing “**Applications of Computer in CAL**” **September 2015– January 2016**. The course content is enclosed below.

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before **August 2015**.

Applications received after the mentioned date shall not be entertained under any circumstances.

Dean

Dr. G. JAYALAKSHMI, BSC., MBS., DFCB., M.D.,  
DEAN  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agaram, Kudapakam Post,  
Villianur Commune, Puducherry - 605502.

Encl: Copy of Course content.

# Course Proposal

**Course Title: Applications of Computer in CAL**

**Course Objective:**

1. Game and introduction
2. Pharmacy practical with demonstration of various preparations
3. Demonstrations of routes of drug administration using colorful pictures
4. Learning by role play in therapeutics
5. Therapeutic teaching with visual aids
6. Teaching pharmacology theory without visual aids
7. Pharmacokinetic learning with the help of CAL software
8. Pharmacodynamic learning with the help of CAL software
9. Community pharmacological case studies
10. Clinical pharmacology case studies

**Course Outcome:** Computer-simulated experiments appear to be feasible and effective as a major part of practical lessons of pharmacology. Given the learning objectives of pharmacology practical lessons in medical students is to enhance students' understanding of the subject, computer-simulations may serve as an alternative to the traditional live animal experiments.

**Course Audience:** 2<sup>nd</sup> Year MBBS Students

**Course Coordinator:** Dr.G.Somasundaram

**Course Faculties with Qualification and Designation:**

- 1 Dr.Jaikumar Associate Prof, Dept of Pharmacology
2. Dr.Jayasheela.J Assistant Prof, Dept of Pharmacology

**Course Curriculum/Topics with schedule (Min of 30 hours)**

SINo	Date	Topic	Time	Hours	Name of the Faculty
1	05.09.2017	Game and Introduction	9 - 12am	3	Dr.Jaikumar
2	19.09.2017	Pharmacy practical with demonstration of various preparations	9-12 am	3	
3	03.10.2017	Demonstrations of routes of drug administration using colorful pictures	9-12 am	3	
4	24.10.2017	Learning by role play in therapeutics	9-12 am	3	
5	21.11.2017	Therapeutic teaching with visual aids	9-12 am	3	Dr.Jayasheela
6	28.11.2015	Teaching pharmacology theory without visual aids	9-12 am	3	
7	05.12.2017	Pharmacokinetic learning with the help of CAL software	9-12 am	3	
8	12.12.2017	Pharmacodynamic learning with	9-12 am	3	

		the help of CAL software			Dr.Jayasheela
9	02.01.2018	Community pharmacological case studies	9-12 am	3	
10	09.01.2018	Clinical pharmacology case studies	9-12 am	3	
			Total Hours	30	

## Reference books

### 1. Applied Computing in Medicine and Health

1st Edition Authors: **Dhiya Al-Jumeily Abir Hussain Conor Mallucci Carol Oliver**

### 2. Visual Computing for Medicine

2nd Edition Authors: **Bernhard Preim Charl Botha**

## VALUE ADDED COURSE

**1. Name of the programme & Code**

Applications of Computer in CAL

**2. Duration & Period**

30 hrs & September 2017– January 2018

**3. Information Brochure and Course Content of Value Added Courses**

*Enclosed as Annexure- I*

**4. List of students enrolled**

*Enclosed as Annexure- II*

**5. Assessment procedures:**

Short answers *Enclosed as Annexure- III*

**6. Certificate model**

*Enclosed as Annexure- IV*

**7. No. of times offered during the same year:**

September 2017– January 2018

**8. Year of discontinuation: 2018**

**9. Summary report of each program year-wise**

Value Added Course- September 2017 – January 2018					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	PH05	Applications of Computer in CAL	Dr.Jayasheela.J Dr.S.Jaikumar	2 <sup>nd</sup> MBBS	20 (Sep 17 – Jan 18)

**10. Course Feed Back**

*Enclosed as Annexure- V*

**RESOURCE PERSON**

*S.S. L*

*[Signature]*

**COORDINATOR**

*[Signature]*

PROFESSOR & HOD  
DEPARTMENT OF PHARMACOLOGY,  
Sri Lakshmi Narayana Institute Of Medical Sciences,  
PONDICHERRY - 605 002

## Applications of Computer in CAL

Particulars	Description
Course Title	Applications of Computer in CAL
Course Code	PH05
Objective	<ol style="list-style-type: none"> <li>1. Game and introduction</li> <li>2. Pharmacy practical with demonstration of various preparations</li> <li>3. Demonstrations of routes of drug administration using colorful pictures</li> <li>4. Learning by role play in therapeutics</li> <li>5. Therapeutic teaching with visual aids</li> <li>6. Teaching pharmacology theory without visual aids</li> <li>7. Pharmacokinetic learning with the help of CAL software</li> <li>8. Pharmacodynamic learning with the help of CAL software</li> <li>9. Community pharmacological case studies</li> </ol> <p style="text-align: center;">Clinical pharmacology case studies</p>
Further learning opportunities	<p>Computer-simulated experiments appear to be feasible and effective as a major part of practical lessons of pharmacology. Given the learning objectives of pharmacology practical lessons in medical students is to enhance students' understanding of the subject, computer-simulations may serve as an alternative to the traditional</p>

	live animal experiments.
Key Competencies	On successful completion of the course the students will have skill in Handling the computer and able to apply the knowledge in forensic aspects
Target Student	II MBBS Students
Duration	30hrs Every Sep 2017 to Jan 2018
Theory Session	10hrs
Practical Session	20hrs
Assessment Procedure	Short notes

## **PARTICIPANT HAND BOOK**

### **Introduction**

In the modern century, pharmacology has turned into an emerging area with high career orientation. Recently the undergraduate training in pharmacology has been revolutionized with adoptions of newer teaching tools like group discussions, role plays, using audio-visual aids, clinical and community pharmacology studies.<sup>1</sup> Nowadays, these are being adopted by many colleges at both postgraduate and undergraduate levels. Today, computer assisted learning has become a vital part in the pharmacology curriculum. Recent trends in the developments of information technology support such methods. Both CAL and laboratory practical classes are valuable tools for pharmacological experiments. Further, it is quite time consuming to demonstrate minute details of pharmacological procedures and drug effects to a batch of students and the increasing strength of practical batches is making it difficult to interact with each student. Hence CD containing CAL software for teaching animal experiments is becoming a revolution in pharmacological teaching.<sup>2</sup>

The term Computer Assisted Learning deals with a range of computer-based packages, which are focused on to provide interactive instruction usually in a specific subject area. CAL projects are designed in such a way that it helps to

provide students with an alternative to traditional lectures. These can range from sophisticated and expensive commercial packages to applications developed by projects in other educational institutions or national initiatives to simple solutions developed by individuals with no funding or support to tackle a very local problem. They offer a range of benefits like it is convenient and flexible. It has got unique presentational benefits, helps in personalized learning, and helps in achieving the ultimate goal of higher education.<sup>3</sup>

This paper aims to convey information about the useful web resources available for handling pharmacology practical with special emphasis on its advantages and limitations.

### **CAL in pharmacology**

Computer-assisted learning is almost similar to the experiential model of learning. Demonstration of the effect of drugs on various models like tissues or on whole animal is an integral and essential part of practical pharmacology teaching for medical students. But it requires the usage of a large number of animals and a lot are sacrificed during each experiment even for studying and demonstrating the action of drugs which are already established. With our own experience we felt that this affects the mental state of the student also. So it should be the constant effort of a pharmacology teacher to bring down the usage of animals and increase the teaching quality in pharmacy. One of the best ways to reduce this is to utilize

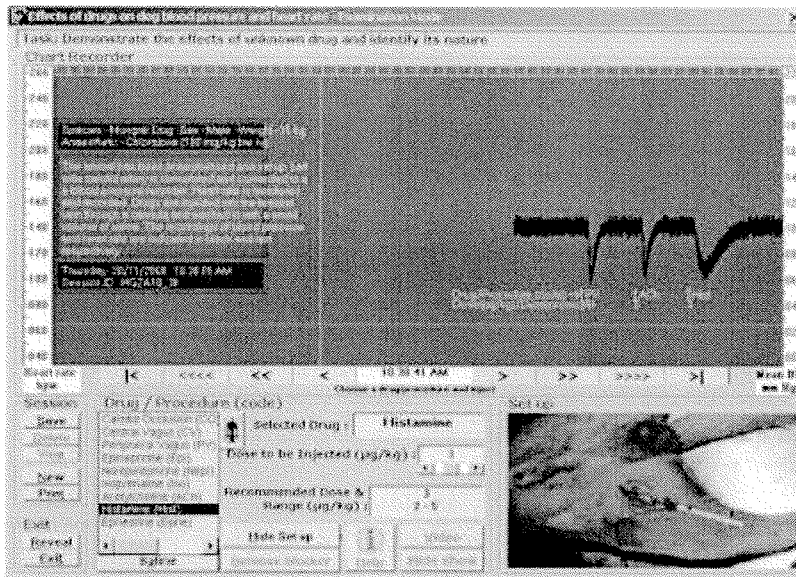
the web resources available for the same. Like a laboratory class, it must be fully integrated into a module if real benefits are to be obtained. Students need to be taught how to learn from computer-based learning materials and how to integrate this learning tool in their learning strategy. Thus by the use of CAL we can replace the use of animals in pharmacology practical classes.

A few use of CAL in pharmacology is listed below

- Pharmacy practical with demonstration of various preparations
- Demonstrations of routes of drug administration using colorful pictures
- Learning by role play in therapeutics
- Therapeutic teaching with visual aids
- Teaching pharmacology theory without visual aids
- Pharmacokinetic learning with the help of CAL software
- Pharmacodynamic learning with the help of CAL software
- Community pharmacological case studies
- Clinical pharmacology case studies etc.4,5

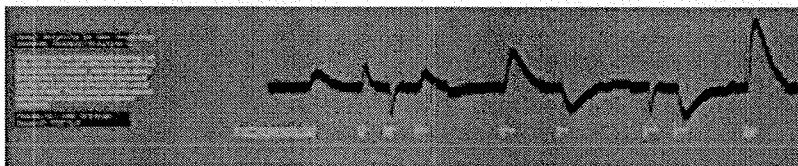
### **Figure 1**

Figure 1: An interface showing video demonstration of effects of drugs on dog blood pressure and heart rate



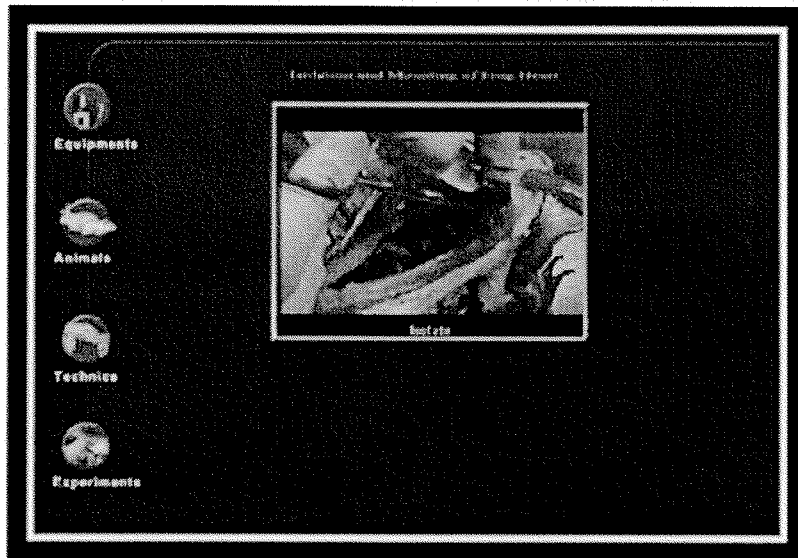
**Figure 2**

Figure 2: Graph showing recordings of blood pressure and heart rate of different drugs



**Figure 3**

Figure 3: An interface showing video demonstration showing isolation and mounting of frog heart



## **Comparison Between Traditional Methods And CAL**

One of the major problems of performing tissue based experiments is the variability in tissue response. There are certain other limitations while carrying out the routine animal experiments. A few of them include lack of ready availability of animals, cost of purchasing and maintaining them are major constraints in many institutions, and also large animals like dog and cat are difficult to handle during demonstrations in the laboratory etc.

Although traditional live animal experiments are invaluable, they do have shortcomings, and their cost effectiveness has been questioned. Apart from being time consuming, animal experiments can only test a limited number of drugs at a given period of time. Furthermore, animal experiments, in particular whole animal studies, are often labour-intensive and costly.<sup>6,7</sup>

### Major Advantages Of CAL

1. Avoids use of animals
2. Exercises difficult to be conducted in the laboratory can be demonstrated using CAL.
3. Many students can observe experiments at the same time.
4. Experiments can be observed repeatedly without loss of animals with minimum errors.
5. Many experiments can be demonstrated in a short time.
6. Drug effects can be visualized clearly
7. No experimental errors are seen as in laboratory exercises

### **Limitations Of CAL**

Even though there are various advantages of CAL, some arguments against this new method of learning are

1. No direct interaction with living tissue
2. Experiment is programmed with prefixed doses
3. Many a times, variations in response as observed in living tissue cannot be observed.
4. Requires expertise to handle problems related to computers.
5. Expensive method of teaching.
6. Experiments performed in laboratory are easier to remember and one may easily forget these methods.

7. Above all practical knowledge of how to do the experiment is lost.

The traditional practical classes should not be replaced with the computer simulation. It is therefore essential that the merits of both forms of teaching are considered and that a balance is struck in the armory of the educationalist. This can only be to the advantage of students receiving such equity.<sup>8,9,10</sup>

### **Conclusion**

In conclusion, computer-simulated experiments appear to be feasible and effective as a major part of practical lessons of pharmacology. Given the learning objectives of pharmacology practical lessons in medical students is to enhance students' understanding of the subject, computer-simulations may serve as an alternative to the traditional live animal experiments.

Pharmacology, as a discipline, is the study of how drugs exert their effects on the living systems. It involves understanding the properties of drugs and their actions, including interactions between drug molecules and receptors and how these interactions elicit an effect. Laboratory based practical classes, which includes the demonstration of drug effects on tissues or on whole animal, has been the central feature of undergraduate pharmacology learning.[1] In the recent years, the undergraduate training in pharmacology has been revolutionized with the adoption of several innovative teaching approaches such as small group discussions, role

plays, computer assisted learning (CAL), use of audio-visual aids, clinical and community pharmacology studies.[2] The use of animals for teaching and learning of basic sciences has shown a downward trend over the last decade.[1,3,4] Laboratory based sessions are replaced by computer assisted learning which is now being used as an effective teaching and learning tool.[5,6] Increasing ethical concerns with the use of animals for undergraduate training and the development of information technology in the early 1900's contributed significantly to this trend.

Computer assisted learning consists of a range of computer based packages, which focuses on providing interactive instruction in a specific subject area. CAL in pharmacology includes collection of animal experiments on course software package which helps in understanding concepts and techniques in pharmacology.[7] CAL has now become an integral component of the pharmacology curriculum in the medical schools. A number of studies from various medical schools have documented the effectiveness of CAL in terms of knowledge acquisition and meeting learning objectives.[1,8-11] CAL in medical education has been increasingly adopted by several medical schools across the world (India,[1,2,7,12-14]), United Kingdom[3,8,9,11,15-17] Canada,[18,19] United States,[20-22] Australia,[23-25] Germany,[26] Balkan countries,[27] Malaysia[28] and Korea.[29] CAL in medical education has been implemented by

95% of medical schools in the United States and 100% across medical schools in Canada and United Kingdom.

This trend review on CAL in undergraduate pharmacology curriculum considers nature of the trend, factors leading to this trend, advantages, limitations of CAL and pitfalls in implementation of this trend in the medical curriculum.

#### Search strategy

To find evidence of examples of CAL in undergraduate medical pharmacology, a search was carried out using PubMed (Medline), ProQuest, Cochrane Library, Medscape and Google Scholar search engines from January 1990 to December 2009, since 1990's reflected the beginning of wide spread interest in CAL in pharmacology teaching. The search terms included "Computer assisted learning and pharmacology", "Computer based learning and pharmacology learning", "CAL and undergraduate pharmacology", "CAL and pharmacology teaching", Computer assisted instruction and pharmacology, Computer simulations in pharmacology learning and "Computer based alternatives and pharmacology". The types of articles included in this review are original research, review papers and editorials from various medical schools across the globe. Both abstracts and full text articles were identified and reviewed. All the articles focusing on the factors leading to the trend, advantages, disadvantages and hindrances to implementation

were included. Articles published in English language and English abstracts of articles published in other languages were included. A total 23 studies were included, 15 of them were research articles, six were letters to editor and editorials, and two were review articles. The details from 8 articles are given in Table 1

Table 1

Summary of findings from studies on knowledge assessment and students' opinion of computer assisted learning in medical undergraduate teaching

Parameters	Comparison			
	Govindaraja <i>et al.</i> <sup>[28]</sup> (Malaysia)	Kuruvilla A <i>et al.</i> <sup>[1]</sup> (India)	Brain S <i>et al.</i> <sup>[32]</sup> (United Kingdom)	Sewell R <i>et al.</i> <sup>[33]</sup> (United Kingdom)
Number of students	127	141	78	99
Knowledge assessment in CAL (mean (%))		(65+76)		
Pretest	64.36±18.04%		58.0±14.4	
Post test	75.41±17.09%		83.8±10.4	
	(Higher post test scores <i>P</i> <0.05)		(Higher post test scores <i>P</i> <0.01)	
Outcome				
Good	83.3%	99%	Yes	Yes
Acheives learning objectives	70%	NM	Yes	NM
Improves understanding	75%	NM	Yes	Yes
Enjoyable/interesting	75%	100%	NM	NM
Recommend CAL use	70%	96%	Yes	Yes
Advantages				
Repeated observation without animal loss	90%	9%	NM	Yes
Many students can observe at same time	>80%	13%	NM	NM
Less time consuming	NM	100%	NM	NM
Many experiments performed	NM	100%	NM	NM
Difficult experiments demonstrated	>80%	24%	NM	NM
Avoid use of animals	>50%	51%	NM	NM
Learning at their own pace	NM	NM	Yes	Yes
Better visualization of drug effects	70%	46%	NM	NM
Accurate results	60%	3%	NM	Yes
Easy to use	NM	NM	Yes	NM
Better teacher student	NM	NM	NM	NM

Open in a separate window

Factors leading to this trend

Although laboratory practical classes are invaluable, eventually they are only a vehicle for effective teaching and learning of laboratory and animal handling skills.

Concerns were raised with regard to use of animals for undergraduate training as compared to that for research. The practical sessions in pharmacology training involving animal experiments were perceived to be unnecessary by medical students educationists as the learning objectives of these practical sessions primarily focus on observational, analytical and interpretative skills, which are components of the cognitive domain and not psychomotor domain.[11,30]

Furthermore, the use of animals has reduced due to ethical concerns, practical problems associated with the animal experiments such as availability of animals, cost of purchasing animals and maintaining animal houses. Animal experiments are often time consuming and associated with practical difficulties. It is often difficult to demonstrate minute details to large numbers of students and only limited number of drugs can be tested at a given period of time.[1,7,16,17,31]

One of the major problems with animal experiments is the biological variability in the response and non reproducibility. This aspect can affect student learning and have an adverse impact on their motivation. Several published reports from the

medical schools have documented that CAL can be an effective replacement for these practical sessions to overcome these limitations.[1,4,12-17,26,27,31,32]

With widespread use of computers among medical students and the abundance of computer based resources available for supporting teaching and learning in the medical sciences, there was a perceived need that medical graduates need to be both familiar with and have competency in information technology and computing skills.[31] CAL can also help to achieve a greater theoretical understanding of the experiments as simulations mimic the actual experimental set up in the laboratory.[1,33]

Nature of the trend

Until the 1990's laboratory based practical classes had been the central feature of pharmacology teaching. The use of animals for educational purpose declined since then when many academicians suggested that the need for using animals for education and training is small as compared to that with research.[11] Around the same period, the use of computers and e-learning were increasingly incorporated in the medical schools and subsequently an increasing trend of CAL in pharmacology teaching. Large number of high quality computer simulations of animal experiments in pharmacology were developed by many medical schools and also made available for teaching and learning.[33]

CAL in pharmacology consists of various softwares with demonstrations of animal experiments. These softwares mimicked the actual experimental set up in laboratory and include illustration of methods of anesthesia, dissection and mounting of tissues. Computer simulations and interactive interface in pharmacokinetics and pharmacodynamics and clinical pharmacology of various drug classes help in reinforcing the theoretical knowledge of different drugs acting on various organ systems in the body. CAL software has also been developed to promote rational and evidence based medication utilization among the medical students.[5,30,34] The majority of the CAL software includes self-assessment tools such as multiple choice questions.

#### Advantages of computer assisted learning

CAL has a number of perceived advantages to both students and teachers. Modern computers with multimedia capabilities and presentational benefits can provide an interactive and personalized learning experience and thus promote active and self-directed learning[6,7]; it offers the students the advantage to learn at their convenience and pace of learning; it can save faculty time as well as resources.[32]

The most important advantage of CAL is that they meet the majority of the learning objectives. There is supporting evidence from many medical schools that CAL is the best suitable alternative to practical laboratory classes and successfully

meets the learning objectives of the sessions.[8,9,25,28,30,32] The learning objectives addressed by CAL include the cognitive domain (understanding the pharmacological effects) as well as skill components such as handling the data and communication skills. CAL increases the understanding of the theoretical concepts when it is applied in the setting of simulated experiments.[33] CAL can also supplement lectures and enable students to learn better in their self-study; it can extend the learning experience into fields which are too costly or time consuming and also staff expertise may not be available.[34]

The drug effects can be clearly visualized in simulations; time consuming and difficult experiments can be demonstrated very conveniently with the help of CAL. Biological variations observed in the animal experiments may lead to discouragement among students and also waste faculty and student time, while animal simulations in the CAL session provides results that are reproducible. These experiments can be observed repeatedly without the loss of animals as well as experimental errors.[1,7] The students can observe the effects of drugs at varying dose ranges which would be time consuming when performed on animals. Large number of students can perform the experiment at the same time at their respective stations and their individual computers, whereas the animal experiments are usually conducted among groups of students and depending on the availability of animals the group size varies. Reduction in expenses involved with use of

animal experiments is a definitive advantage.[1,31] Studies have documented that computer simulations of animal experiments are more cost effective than establishing and maintaining animal houses.[1,7-9] Leathard HL *et al.* study reported the total cost of carrying out sessions on the GI motility with CAL was around £320 and £860 with tutor demonstration of animal experiments.[9]

Dewhurst DG *et al.* study results revealed that the cost of conventional teaching method with animal experiments (\$540) was five times greater than that of CAL (\$2598).[8]

CAL is an innovative teaching method and primarily focuses on increasing the understanding of the subject rather than psychomotor skill acquisition. The assessment methods for CAL sessions are those used for assessment of the cognitive domain, unlike the conventional methods where in the evaluation is based more on animal handling skill and to lesser extent the knowledge. The advantage of these assessments is that the higher levels of cognitive domain such as application and analysis can also be tested. Communication skills can also be assessed with the use of interactive multimedia softwares.[9]

#### Disadvantages of CAL

Despite all the benefits of CAL, there are few associated disadvantages. In a virtual laboratory environment, there are certain skills that cannot be adequately taught,

which pharmacology teachers consider essential in pharmacology training. These include making up of drug solutions in varying concentrations, setting up and use of experimental equipments, administration of test drugs and monitoring of the physiological signs.[7,11,31]

CAL limits the direct interaction with the living tissue and observation of variations in responses in living tissue. The practical knowledge and experience of a real experiment is lost. Despite all the benefits that CAL may bring, it is often easily forgotten in comparison to traditional animal experiments.[1] The virtual experiments and simulations have prefixed doses which hinder students to observe biological response at desired doses. CAL is expensive in the initial stages of implementation in the curriculum. Dependence on computers and technical problems arising during class are other disadvantages with CAL. Technical snags are commonly encountered during CAL learning session which can be precluded with good technical support.[28] Development of CAL software is labor intensive, requiring appropriate hardware, backup and frequent upgrading. Many teachers have little expertise in developing software and require the support of information technology staff.[35]

Pitfalls in implementation

Any change in the existing system is encountered with resistance and challenges at multiple stages. These include difficulties at the academic, administrative, financial and logistics level. Appropriate software programs need to be developed based on the learning objectives and the programs should be modified to meet the local educational needs. Faculty resistance to change the traditional animal experiments to CAL is another stumbling block. Many teachers consider CAL inferior and introduction of technology based learning methods a retrograde step.[11] Also, many of them are less inclined to use electronic resources due to lack of computer literacy.[35] Many teachers are unwilling to use software packages, particularly those which are developed by other universities.[32] Persuading teachers and convincing them to use CAL is critical and requires strategies to raise awareness in this direction. Faculty should support the integration of CAL into pharmacology teaching and devise suitable steps to overcome faculty resistance.[11]

Faculties often lack time to develop the skills to integrate this new method of teaching into the modules and learning strategies.[16] Teachers should be informed regarding the availability of CAL softwares and also its integration into the mainstream teaching.[34]

Many of the existing CAL software was developed in the early 1990s; rapid changes in the technologies that were used have rendered it difficult to use and in many instances the software has become obsolete despite the content being still

valid.[36] Initiatives should be taken to develop software at the institutional level based on the local needs and also enable faculty to modify content, educational approach and avoid technological redundancy. In addition, a dedicated information technology staff is necessary to provide practical advice and maintenance of the software and hardware.[34]

It is insufficient to just develop computer based learning material available to students. Like a laboratory class, it must be fully integrated into the modules to obtain the desired benefits.[36] Students should be guided on how to learn from computer-based learning materials as well as to incorporate this learning tool in their learning strategy.<sup>34</sup>

## CONCLUSION

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In conclusion, computer assisted learning is a feasible and very effective teaching and learning method in pharmacology with huge potential to change the way of learning as it meets the majority of the learning objectives. In the medical curriculum, where teaching and learning is delivered and facilitated in a rapidly changing environment, computer based learning methods have the qualitative and quantitative potential to raise teaching standards to new levels of sophistication. However, there is a need to invoke awareness among the teachers of the advantages of this method of teaching

1. Kuruvilla A, Ramalingam S, Bose AC, Shastri GV, Bhuvanewari K, Amudha G. Use of computer assisted learning as an adjuvant to practical Pharmacology teaching: Advantages and limitations. *Indian J Pharmacol.* 2001;33:272–5. [[Google Scholar](#)]
2. Sharma R, Verma U, Kapoor B, Chopra VS. Novel teaching approaches in Pharmacology. *JK Science.* 2004;6:172–3. [[Google Scholar](#)]
3. Greenhalgh T. Computer assisted learning in undergraduate medical education. *BMJ.* 2001;322:40–4. [[PMC free article](#)] [[PubMed](#)] [[Google Scholar](#)]
4. Hansen LA, Boss GR. Use of live animals in the curricula of U.S. medical schools: Survey results from 2001. *Acad Med.* 2002;77:1147–9. [[PubMed](#)] [[Google Scholar](#)]
5. Wiecha JM. Collaborative online learning (COL): A new distance education methods. *Essential Drug Monitor.* 2003;33:36. [[Google Scholar](#)]
6. Moss S. Computer technology in education. *Pharm J.* 1993;251:491. [[Google Scholar](#)]
7. Baby LT, Kavalakkat JC, Abraham S, Sathianarayanan S. CAL: A modern tool for Pharmacology. *Internet J of Medical Simulation.* 2009;2:2. [[Google Scholar](#)]
8. Dewhurst DG, Hardcastle J, Hardcastle PT, Stuart E. Comparison of a computer simulation program and a traditional laboratory practical class for teaching the principles of intestinal absorption. *Am J Physiol.* 1994;267:S95–104. [[PubMed](#)] [[Google Scholar](#)]
9. Leathard HL, Dewhurst DG. Comparison of cost effectiveness of a computer assisted learning program with tutored demonstration to teach intestinal motility to medical students. *ALT-J.* 1995;3:118–25. [[Google Scholar](#)]
10. McAteer E, Neil D, Barr N, Brown M, Draper S, Henderson F. Simulation software in a life sciences practical laboratory. *Computers and Education.* 1996;26:101–12. [[Google Scholar](#)]
11. Dewhurst D. Is it possible to meet the learning objectives of undergraduate pharmacology classes with non-animal models? *AATEX.* 2008;14:207–12. [[Google Scholar](#)]
12. Bhavsar VH, Vajpeyee SK, Joshi NJ, Mistry SD, Kantharia ND, Sharma AK. Training during practical pharmacology sessions for undergraduate medical students: An experience with a modified teaching programme. *Indian J Pharmacol.* 1999;31:176–86. [[Google Scholar](#)]

13. Desai M. Changing face of pharmacology practicals for medical undergraduates. *Indian J Pharmacol.* 2009;41:151–2. [[PMC free article](#)] [[PubMed](#)] [[Google Scholar](#)]
14. Badyal DK, Modgill V, Kaur J. Computer simulation models are implementable as replacements for animal experiments. *Altern Lab Anim.* 2009;37:191–5. [[PubMed](#)] [[Google Scholar](#)]
15. Stevens R, Lewis D, Sewell R. Initial experiences of creating multimedia computer simulations to replace pharmacology practicals. *Br J Educ Technol.* 1995;26:122–30. [[Google Scholar](#)]
16. Markham T, Jones SJ, Hughes I, Sutcliffe M. Survey of methods of teaching and learning in undergraduate pharmacology within the UK higher education. *Trends Pharmacol Sci.* 1998;19:257–62. [[PubMed](#)] [[Google Scholar](#)]
17. Hughes I. Changes in the technological methods of teaching and learning in undergraduate pharmacology in UK Higher Education. *BEE-j.* 2003;1:1. [[Google Scholar](#)]
18. Rangachari PK. Quality education for undergraduates in pharmacology: A Canadian experiment. *Trends Pharmacol Sci.* 1994;15:211–4. [[PubMed](#)] [[Google Scholar](#)]
19. Rangachari PK. The teaching of pharmacology: Needs, challenges and response for the future. *Trends Pharmacol Sci.* 1994;15:399–402. [[PubMed](#)] [[Google Scholar](#)]
20. Ward JP, Gordon J, Field MJ, Lehmann HP. Communication and information technology in medical education. *Lancet.* 2001;357:792–6. [[PubMed](#)] [[Google Scholar](#)]
21. Liras A. Computer-assisted instruction and scientific method in medical schools. *Acad Med.* 1990;65:687. [[PubMed](#)] [[Google Scholar](#)]
22. Moore L, Waechter D, Aronow L. Assessing the effectiveness of computer-assisted instruction in a pharmacology course. *Acad Med.* 1991;66:194–6. [[PubMed](#)] [[Google Scholar](#)]
23. Bell C. Education in pharmacology. Comments from the Australian Physiological and Pharmacological Society. *Trends Pharmacol Sci.* 1994;15:176. [[PubMed](#)] [[Google Scholar](#)]
24. South M, Nolan T. Computer-assisted instruction in Australian medical schools. *Med J Aust.* 1993;159:175–6. [[PubMed](#)] [[Google Scholar](#)]

25. Wang L. Computer-simulated pharmacology experiments for undergraduate pharmacy students: Experience from an Australian university. *Indian J Pharmacol.* 2001;33:280–2. [[Google Scholar](#)]
26. Haberman E. Education in pharmacology: Comments from E. Habermann, University of Geissen, Germany. *Ibid.* 1994;15:175–6. [[PubMed](#)] [[Google Scholar](#)]
27. Kojic ZZ, Dewhurst DG. The impact of introducing computer-based alternatives to the use of animals in the teaching of physiology and pharmacology at Balkan universities-a pilot study. *Altern Lab Anim.* 2009;37:547–56. [[PubMed](#)] [[Google Scholar](#)]
28. Govindaraja C, Jaiprakash H, Annamalai C, Vedhavathy SS. Computer assisted learning: Perceptions and knowledge skills of undergraduate medical students in a Malaysian medical school. *Natl J Physiol Pharm Pharmacol.* 2011;1:63–7. [[Google Scholar](#)]
29. Kim KJ, Kee C. Reform of medical education in Korea. *Med Teach.* 2010;32:113–7. [[PubMed](#)] [[Google Scholar](#)]
30. Hughes IE. Do computer simulations of laboratory practicals meet learning needs? *Trends Pharmacol Sci.* 2001;22:71–4. [[PubMed](#)] [[Google Scholar](#)]
31. Dewhurst D. Computer-based alternatives to using animals in teaching physiology and pharmacology to undergraduate student. *Altern Lab Anim.* 2004;32:517–20. [[PubMed](#)] [[Google Scholar](#)]
32. Brain S, Dewhurst D, Williams A. Evaluation of a computer-based learning program to support student learning in pharmacology. *ALT-J.* 1999;7:37–45. [[Google Scholar](#)]
33. Sewell RD, Stevens RG, Lewis DJ. Pharmacology experimental benefits from the use of computer assisted learning. *Am J Pharm Educ.* 1996;60:303–7. [[Google Scholar](#)]
34. Hughes IE. Computer-based learning-an aid to successful teaching of pharmacology? *Naunyn Schmiedebergs Arch Pharmacol.* 2002;366:77–82. [[PubMed](#)] [[Google Scholar](#)]
35. Haq I, Dacre J. Computer-assisted learning in undergraduate and postgraduate rheumatology education. *Rheumatology (Oxford)* 2003;42:367–70. [[PubMed](#)] [[Google Scholar](#)]
36. Dewhurst D. Computer-based alternatives in higher education--past, present and future. *ALTEX.* 2006;23:197–201. [[PubMed](#)] [[Google Scholar](#)]



ANNEXURE - II

VALUE ADDED COURSE

Applications of Computer in CAL

List of Students Enrolled Sep 2017 – Jan 2018

Sl. No	Name of the Student	Register No	Signature
1	PRIYANKA BANDOPADHYAY	U17MB351	Priyanka
2	PRIYANKA KUMARI	U17MB352	Priyanka
3	PRIYANKA SINGH	U17MB353	Priyanka Singh
4	RAAGAVI .S	U17MB354	Raagavi
5	RAHUL RAI	U17MB355	Rahul
6	RICHI SWARN	U17MB356	Swarn
7	RINI DAS	U17MB357	Rini das
8	RISHABH SUMAN	U17MB358	Rishab
9	RISHIKA	U17MB359	Rishika
10	RISHIRAAJ KAR	U17MB360	Rishiraj
11	RIYA M.A	U17MB361	Riya
12	ROFIQUL ISLAM	U17MB362	Rofiqul
13	ROHAN DAS	U17MB363	Rohan
14	SAKSHI SHARMA	U17MB364	Sakshi
15	SAMYUKTHA	U17MB365	Samyuktha
16	SANORITA	U17MB366	Sanorita
17	SANTOSHKUMAR NK	U17MB367	Santosh
18	SAPTARSHI CHATTOPADHYAY	U17MB368	Saptarshi
19	SATHIYA JAINAUB T.S.	U17MB369	Sathiya
20	SHABAN OS	U17MB370	Shaban

S. Jayashree

Somasundar

PROFESSOR & HOD  
DEPARTMENT OF PHARMACOLOGY  
Sri Lakshmi Narayana Institute Of Medical Sciences  
PONDICHERRY - 605 502.



**SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES**

Osudu, Agaram Village, Koodapakkam post, Puducherry – 605502

**Annexure -II†**

1. The combination of operating system and processor in a compute is referred to as computers.

(A) Minimum requirements (B) Specifications

~~(C) Platform~~ (D) Firmware

2. Which was the computer conceived by babbage

(A) Donald knuth

(B) Arithmetic machine

~~(C) Analytical engine~~

(D) All of the above

4. Name the application used for creating presentations \_\_\_\_\_

(A) MS Access (B) MS Word (C) MS Excel ~~(D) MS PowerPoint~~

5. Modem is a

(A) Word processing software

(B) Application software

~~(C) Hardware~~

(D) Live ware

6. Which of the following can be considered as portable computer?

(A) Desktop (B) PDA (C) Mainframe computer (D) Mini computer

7. Where is the DVD disk put in a computer?

(A) Floppy drive

(B) USB port

(C) Hard disk drive

~~(D) DVD drive~~

8. CPU is the \_\_\_\_\_ of computer.

~~(A) Brain~~

(B) Eye

(C) Ear

(D) All above these

9. A desktop computer is also known as

(A) Laptop

(B) Mainframe

(C) Palmtop

~~(D) PC~~

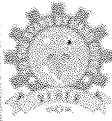
10. Numeric pad is in the

(A) Keyboard

~~(B) Monitor~~

(C) Speaker

(D) Mouse




**Sri Lakshmi Narayana Institute of Medical Sciences**

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)




**CERTIFICATE OF MERIT**

This is to certify that Priyanka Kumari has actively participated in the Value Added Course on "Applications of Computer in CAL" held during September 2017-February 2018 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

  
Dr. S. Jai Kumar  
Dr. Jayasheela.J

RESOURCE PERSON

  
Dr. Somasundaram

COORDINATOR  
PROFESSOR & HOD  
DEPARTMENT OF THE BIOLOGICAL  
SCIENCE Sri Lakshmi Narayana Institute of Medical Sciences  
Pondicherry-605 502.

## Student Feedback Form

Course Name: Applications of computer in CAL

Subject Code: PH 05

Name of Student: Rahul Raj Roll No.: V17MB 355

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear				/	
2	Course contents met with your expectations				/	
3	Lecturer sequence was well planned					/
4	Lectures were clear and easy to understand				/	
5	Teaching aids were effective				/	
6	Instructors encourage interaction and were helpful					/
7	The level of the course					/
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

From

Date:11.01.2018

Dr.G.Somasundaram

Professor and Head,

Department of Pharmacology

Sri Lakshmi Narayana Institute of Medical sciences

Pondicherry

To

The Dean,

Sri Lakshmi Narayana Institute of Medical sciences

Pondicherry.

**Sub: Completion of value-added course: Applications of Computer in CAL**

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: **Applications of Computer in CAL** on **Sep2017– Jan 2018**. We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards

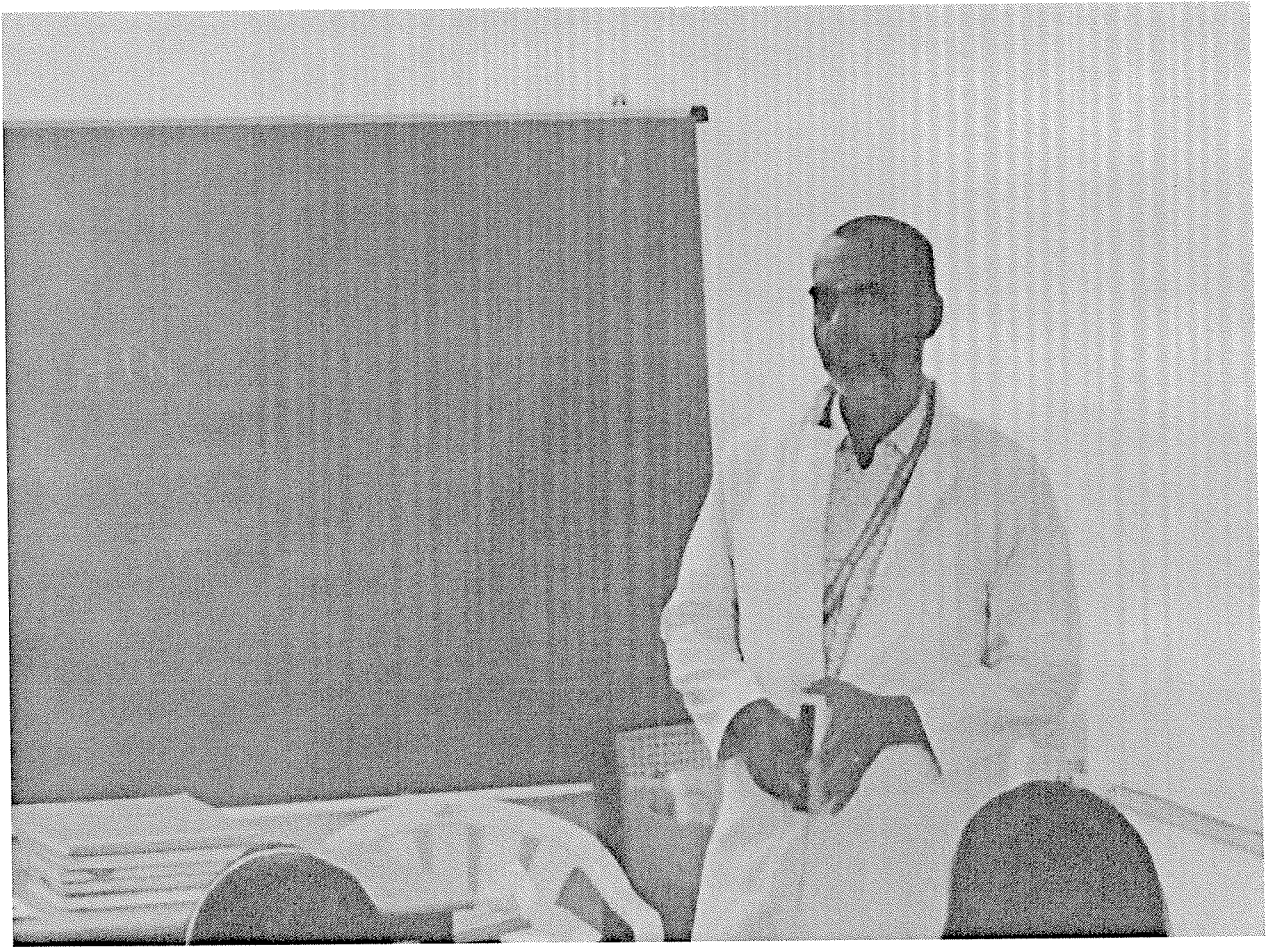
Dr.G.Somasundaram



PROFESSOR & HOD  
DEPARTMENT OF PHARMACOLOGY,  
Sri Lakshmi Narayana Institute of Medical Sciences,  
PONDICHERRY - 605 002.

**Encl: Certificates**

**Photographs**







**Sri Lakshmi Narayana Institute of Medical Sciences**  
**OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,**  
**PUDUCHERRY – 605 502**

Date: 04.08.2017

From  
Dr.Rajini ,  
Professor and Head,  
Department of Community Medicine,  
Sri Lakshmi Narayana Institute Of Medical Sciences,  
Bharath Institute of Higher Education and Research,  
Puducherry.

To  
The Dean,  
Sri Lakshmi Narayana Institute Of Medical Sciences,  
Bharath Institute of Higher Education and Research,  
Puducherry.

**Sub: Permission to conduct value-added course: Leadership Skills**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: **Leadership Skills** from **Sept 2017 – Feb 2018**. We solicit your kind permission for the same.

Kind Regards

*Rajini S*  
PROFESSOR & HEAD  
DEPARTMENT OF COMMUNITY MEDICINE  
Sri Lakshmi Narayana Institute of Medical Sciences  
Puducherry - 605 502

HOD

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**Sri Lakshmi Narayana Institute of Medical Sciences  
OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY – 605 502**

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**FOR THE USE OF DEANS OFFICE**

Names of Committee members for evaluating the course:

The Dean: Dr.G.Jayalakshmi

The HOD: Dr.S.Rajini

The Expert: Dr.C.Kameshvell, Associate Professor

The committee has discussed about the course and is approved.

*Rajini*  
DEPARTMENT OF MEDICAL EDUCATION  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
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HOD of the Department

*Amal*

Resource Person

*G. Jayalakshmi*

**Dr. G. JAYALAKSHMI, BSC, MBS, DCC, M.D.**  
**DEAN**  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agaram, Villianur Commune, Kudapakkam Post,  
Villianur Commune, Puducherry - 605502.

**Dean**



## **Sri Lakshmi Narayana Institute of Medical Sciences**

**OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY – 605 502**

11.08.2017

**Sub: Organising Value-added Course: Leadership Skills**

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, Bharath Institute of Higher Education and Research, is organising “Leadership Skills ” on september 4<sup>th</sup>. 2017

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered speed post only so as to reach on or before 30<sup>th</sup> AUGUST 2017 . Applications received after the mentioned date shall not be entertained under any circumstances.

**Dr. G. JAYALAKSHMI, BSc., MEds., SRCC, M.D.**  
**DEAN**  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agaram, Kudapakam Post,  
Villianur Commune, Pudukottai, 605502.

**Dean**

## VALUE ADDED COURSE

### 1. Name of the programme & Code

Leadership skills and PSM04

### 2. Duration & Period

30 hrs & Sept 2017 – Feb 2018

### 3. Information Brochure and Course Content of Value Added Courses

*Enclosed as Annexure- I*

### 4. List of students enrolled

*Enclosed as Annexure- II*

### 5. Assessment procedures:

Multiple choice questions- *Enclosed as Annexure- III*

### 6. Certificate model

*Enclosed as Annexure- IV*

### 7. No. of times offered during the same year: 1

### 8. Year of discontinuation: - 2018


### 9. Summary report of each program year-wise

Value Added Course- Sept 2017 – Feb 2018					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	PSM01	Leadership skills	Dr. Rajini.S Dr.Kameshvell.C Dr.K.Kannan	III <sup>rd</sup> MBBS	15(Sept 17 – Feb 18)

### 10. Course Feed Back: *Enclosed as Annexure- V*



RESOURCE PERSON



PROFESSOR & MOD  
DEPARTMENT OF COMMUNITY MEDICINE  
St. John's Medical Institute of Medical Sciences  
PONDICHERRY - 605 002.

COORDINATOR

## Annexure 1 – Course Proposal

**Course Title: “Leadership Skills ”**

**Course Objective:** To provide participants with the practical skills and knowledge necessary to express themselves clearly, with confidence and power, in a variety of speaking situations.

**Course Outcome: Improvement in Leadership Skills .**

**Course Audience: Pre- Final year students**

**Course Coordinator: Dr.Rajini**

**Course Faculties with Qualification and Designation:**

**1.Dr.Rajini,Professor & HOD**

**2.Dr. Dr.Kameshvell.C Associate Professor**

**3.Dr.K.Kannan, Assistant Professor**

**Course Curriculum/Topics with schedule (Min of 30 hours)**

SlNo	Date	Topic	Resource person	Time	Hours
1	04.09.2017	INTRODUCTION	Dr.S.Rajini	4-6pm	2
2	11.09.2017	INTERPERSONAL SKILLS	Dr.C.Kameshvell	4-6pm	2
3	22.09.2017	Life Skills	Dr.K.Kannan	4-6pm	2
4	02.10.2017	THE ART OF COMMUNICATION	Dr.C.Kameshvell	4-6pm	2
5	16.10.2017	ELEMENTS OF COMMUNICATION	Dr.K.Kannan	4-6pm	2
6	27.10.2017	COMMUNICATING MORE EFFECTIVELY	Dr.C.Kameshvell	4-6pm	2
7	01.11.2017	IMPROVING YOUR LISTENING SKILLS	Dr.K.Kannan	4-6pm	2
8	06.11.2017	REFLECT UPON YOUR CURRENT STRENGTHS AND AREAS FOR IMPROVEMENT AS A COMMUNICATOR	Dr.C.Kameshvell	4-6pm	2
9	20.11.2017	INFLUENCING & PERSUADING	Dr.K.Kannan	4-6pm	2
10	01.12.2017	THE PROCESS OF INFLUENCING	Dr.C.Kameshvell	4-6pm	2
11	06.12.2017	THINK OF A RECENT SITUATIO	Dr.K.Kannan	4-6pm	2
12	21.12.2017	LEADERSHIP STYLES	Dr.C.Kameshvell	4-6pm	2
13	10.1.2018	SITUATIONAL LEADERSHIP THEORY	Dr.K.Kannan	4-6pm	2
14	07.02.2018	THINK ABOUT YOUR LEADERSHIP STYLE	Dr.C.Kameshvell	4-6pm	2
15	22.02.2018	CONCLUSION	Dr.K.Kannan	4-6pm	2
				Total Hours	30

### **REFERENCE BOOKS: (Minimum 2)**

- 1. Mumford MD, Marks MA, Connelly MS, Zaccaro SJ, Reiter-Palmon R. Development of leadership skills: Experience and timing. The Leadership Quarterly. 2000 Mar 1;11(1):87-114.**
- 2. Adair JE. Develop your leadership skills. Kogan Page Publishers; 2007.**

# **Leadership Skills**

**A guide to help you review your  
interpersonal skills and  
leadership style**

**The range of activities you undertake as a manager is substantial with the result that the variety of skills needed to succeed is broad. This guide is designed to help you to review capacity in terms of your interpersonal skills and leadership style.**

# Personal Leadership Effectiveness: Leadership Skills Guide

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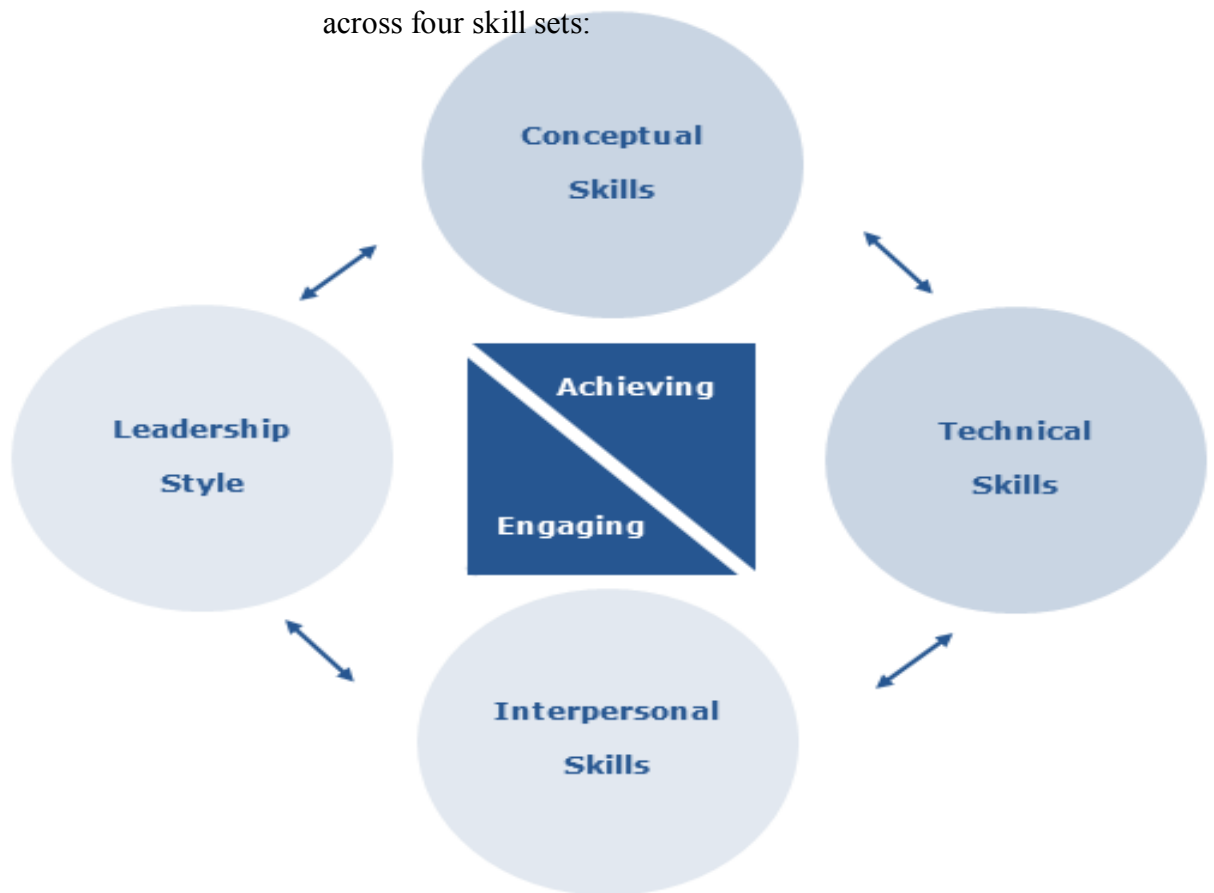
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# 1. Introduction

The range of activities you undertake as a manager is substantial with the result that the variety of skills needed to succeed is broad. To summarise, you could say that everything you do as a leader can be grouped into two areas:

<i>Engage</i>	Engage <b>People</b> to ensure their commitment, competence and motivation	The 'leading' part
<i>Achieve</i>	Harness that engagement by focusing on <b>Process</b> to ensure productivity,	The 'managing'

To be successful, you therefore need to both lead *and* manage and the variety of skills needed to do so is extensive. Actually, any skill possessed can in some way be put to good use on the leadership stage; of course, the reverse is true too and your skills gaps quickly become a liability. The best leaders have talents across four skill sets:



Now, it would be laughable to suggest that every successful manager masters all these skills to the same degree, but they do have talents in all these areas which allow them to:

**Conceptual:** see the big picture and ensure that the organisation, or that part of it for which they are responsible, is consistently in tune with a changing operating environment. They are good at recognising and analysing complex issues, problem solving and decision-making.

**Technical:** get to grips with the range of technical skills such as planning or financial management relevant to their level in the organisation.

**Interpersonal:** communicate effectively so that they really connect with others.

**Leadership Style:** adjust how they deal with and respond to the roller coaster ride that is life in organisations today.

## 2. Interpersonal Skills

Relationship building is a vital part of attention to your strengths and the management role and it is the weaknesses in this area because you quality of your interpersonal skills can all develop your ability to better which facilitate the building of relate to others and doing so will help relationships with others. As such, you to lead more effectively. The prime regardless of your current level of interpersonal skill is the ability to experience, you should pay a lot of communicate.

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### 2.1 The art of communication

This guide should be read in conjunction with the [Personal Leadership Effectiveness Guide](#).

You have probably heard the phrase 'But lots of talking does not mean lots of communication' before, but the art of communicating: it can often mean you might not realise just how difficult the opposite.

an art it is to master. Every day we see

people around us interacting and It is a fact that, for all of us, our ability to communicate is a greater area for improvement than we might think. Sadly, we tend to equate quantity with quality in relation to how we communicate. Most of us believe that we are good at it and rarely does someone openly admit that they are not.

But if we all have such strong communication skills, then;

- ❑ Why are there so many communication breakdowns in our daily lives?
- ❑ Particularly in a work context, why are there so many communication related problems?
- ❑ Why are there so many misunderstandings and disputes?
- ❑ Why do two people often hear the same message, but end up with two differing perceptions of what it meant?

There must be something behind and other failings and it is useful to explore the issue, so that can clearly define steps to help improve your ability to communicate. One of the difficulties

that arise in relation to how we

communicate is the fact that it is seen as a natural activity, one which have been doing in one form or another since we were born.

Even in the absence of being able to you could still let your feelings known as a baby! You do not get thing every morning and okay, now I am going downstairs to interact with my family

at breakfast. You just do it and it

requires little thought.

That is part of the problem and our communication is a natural process is actually one of the

underlying causes for our collective

shortcomings in this area.

### 2.1.1 Elements of

#### communication - content & context

How you currently communicate is an example of *conditioning* (learned

develop a roadmap to guide your these improvement efforts. As you do so, we will primarily focus on the most you common form of communication you to utilised by a leader at work, namely face to face interaction.

When you talk directly to an individual or group, you are in effect we sending and receiving messages.

Sounds simple, but as you know this isn't always the case. To have rea

communication, there must be speak common understanding as a result. be When you look more closely at up first what's really going on, it becomes think, clearer why the process is more complex than it seems at first.

When you interact directly with another person, you know that the

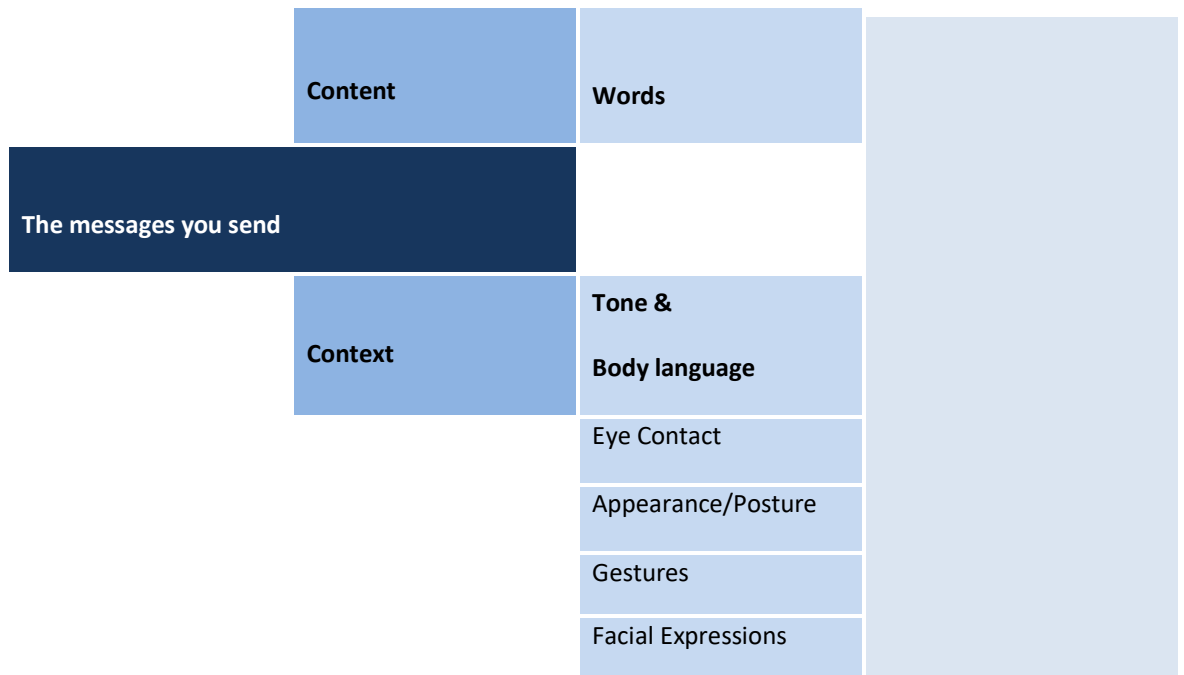
message is made up of three belief that components, Words, Tone and Body Language.

You might have been on training courses over the years where you

were given a rule such as; any

message is made up of Words 7%, Tone 38% and Body Language 55%, or something similar. Whilst this is

useful in highlighting the importance of the tone and body language, it is



It is clear that the *content* of your messages is provided by the words you use, whereas the *context* is delivered by your tone and body language. Let's totally forget about percentages and say that to be an effective communicator, the *content* and *context* of your message must always be in alignment. When you look more closely at the context of the message, you see that it is in fact made up of your emotions – how you feel about what you are saying. When happy, your tone and body language change as they do when you are sad, angry, hurt and so on. This is where the link can be made between your ability to keep in control and your effectiveness as a communicator.

In seeking to become a better communicator, you naturally need to consider both content and context. Some basic points to think about when seeking to get the content right;

- Preparation is really important and the longer, or more important the interaction you are facing, the more you need to prepare.
- Match the content of what you have to say with the requirements of your audience, be that one person or many.
- Consider what they need to know, what they know already and how best to devise the message to make it 'stick' for them.
- Be clear, concise and don't waffle.
- Be knowledgeable about your work and up-to-date with current trends. Take proactive steps to build your knowledge base.

### 2.1.2 Communicating more effectively

In seeking to get the context right, things become somewhat more complicated for a lot of what you are currently doing in relation to tone and body language is subconscious. As stated, having leadership qualities like *self-control* will help you here, as it will allow you to manage your emotions more effectively and therefore improve how you communicate. Your inner emotions rush out through your external behaviours and that is why you need to work on your self-control as part of your attempts to become a better communicator. There are too many interpersonal situations to cover how you should manage context in each one, but it is possible to show the impact on context of three emotional states:

	<b>Out of Control</b> Being too shy or Passive	<b>In Control</b>	<b>Out of Control</b> Being too angry, or Aggressive
<b>Tone of Voice</b>	<ul style="list-style-type: none"> <li>• Quietly spoken</li> <li>• Obviously nervous</li> <li>• Overly apologetic</li> <li>• Soft spoken</li> <li>• Dry mouth</li> </ul>	<ul style="list-style-type: none"> <li>• Firm</li> <li>• Calm</li> <li>• Clear</li> </ul>	<ul style="list-style-type: none"> <li>• Loud</li> <li>• Raised voice</li> <li>• Shouting</li> </ul>
<b>Words</b>	<ul style="list-style-type: none"> <li>• Talking around the subject</li> <li>• Avoiding getting to the issue</li> <li>• Overly apologetic in choice of words</li> <li>• Qualifying everything you say</li> </ul>	<ul style="list-style-type: none"> <li>• Concise</li> <li>• No waffle</li> <li>• Clearly expressing your opinion</li> <li>• Using 'I' but in a non-selfish way</li> </ul>	<ul style="list-style-type: none"> <li>• Abrupt</li> <li>• Threatening</li> <li>• Accusing</li> <li>• Using 'you' in a blaming fashion</li> <li>• Swearing</li> </ul>
<b>Eyes</b>	<ul style="list-style-type: none"> <li>• Uncomfortable making eye contact</li> <li>• Looking down or away a lot</li> </ul>	<ul style="list-style-type: none"> <li>• Maintaining good eye contact</li> <li>• Not seeking to intimidate</li> </ul>	<ul style="list-style-type: none"> <li>• Staring down</li> <li>• Eyes bulging</li> <li>• Trying to intimidate</li> </ul>
<b>Hand Gestures</b>	<ul style="list-style-type: none"> <li>• Nervous gestures</li> <li>• Fidgeting</li> <li>• Hand-wringing</li> </ul>	<ul style="list-style-type: none"> <li>• Open hand gestures</li> </ul>	<ul style="list-style-type: none"> <li>• Lots of pointing</li> <li>• Clenched hands</li> <li>• Thumping table</li> </ul>

<b>Body Language</b>	<ul style="list-style-type: none"> <li>• Inward posture</li> <li>• Obviously uncomfortable</li> <li>• Hunched, self-Protecting</li> </ul>	<ul style="list-style-type: none"> <li>• Upright posture</li> <li>• Head up</li> <li>• Using active listening</li> </ul>	<ul style="list-style-type: none"> <li>• Forward posture</li> <li>• In your face</li> <li>• Leaning</li> <li>• Threatening</li> </ul>
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Clearly, there is no easy answer as to how to manage the context of your communications, but a natural starting point is to be clear on where your current areas for improvement lie. The key message here is that to be an effective communicator, your goal should be to ensure that what you

say and how you say it always complement each other.

In terms of your external body language, the ability to make positive eye contact is of utmost importance for a leader, because it signals attentiveness, confidence and honesty.

### 2.1.3 Improving your listening skills

<b>Maintaining Eye Contact</b>	<p>Obviously, this shows you are actually willing to listen, but it also reads as a sign of interest. It helps you to understand the content of what the other person is saying doesn't stack up.</p>
<b>Nodding</b>	<p>This again is an obvious sign that you are attentive and it encourages the speaker to keep going.</p>
<b>Encouraging</b>	<p>Simply, interjecting on occasion with 'Yes, go on' gets them to continue to open up. This has less impact if you are not making eye contact too. Shuffling through your papers doesn't work!</p>
<b>Allowing short silences</b>	<p>Most of us hate silences and often try to quickly fill the gap. Don't let short silences occur, as it lets the other person know that you are not automatically going to jump in and often this will encourage them to continue.</p>
<b>Paraphrasing</b>	<p>This means showing the person that you have got the gist of what they have said by saying things such as; 'So what you are saying is...'</p>
<b>Summarising</b>	<p>This means confirming in precise detail what they have said to show that you understood what was said.</p>

---

Active listening is about concentration us to listen to them. In a leadership and focus. Some people help us to do role, you must continuously strive to this because they are good become a better listener regardless of communicators and make us want to the context that the other person uses listen. Others can make it very hard for for their delivery.

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## Activity 1 – Reflect upon your current strengths and areas for improvement as a communicator.

Consider the following questions:

1. Are you an open-minded individual and are you willing to change your viewpoint based on the valid opinions/arguments of others?
2. Do you prepare for all communications (large and small) and really think things through before you speak, or do you have a tendency to speak first and think later?
3. Do you always try to tailor your message to suit the person(s) you are talking to, or do you focus more on what you have to say?
4. Do you find it easy to listen to what other people have to say without interrupting them?
5. Are you good at making eye contact with people when you are talking to them?
6. Are you intimidated by situations where you must communicate with difficult employees or customers?
7. Are you confident when you talk to people and do you speak clearly without mumbling?
8. Are you good at getting your point across in a clear, concise manner without waffling?
9. Do you find it easy to concentrate on what others are saying without losing your focus and concentration?
10. When others are speaking, do you begin planning your response without really listening to what they have to say?
11. Are you the type of person who thinks their opinion is the most important in the room?
12. Are you the type of person who only speaks up if you have something valuable to contribute to the conversation and do you avoid talking just for the sake of it?
13. Do you make a conscious effort to match your body language to the message you want to convey?
14. Are you good at reading the body language of others?
15. Can you keep your cool when talking to other people even if you feel angry about what they are saying?
16. When other people in the group are quiet, do you encourage them to contribute?
17. When in a heated conversation, are you the type of person who shouts and points at people a lot?
18. When group discussions get heated, are you good at keeping everyone calm and on the point?
19. Do you feel comfortable holding meetings and/or speaking in public?
20. Are you good at summarising the key points of conversations which you have with other people, or do you quickly forget what has been said?

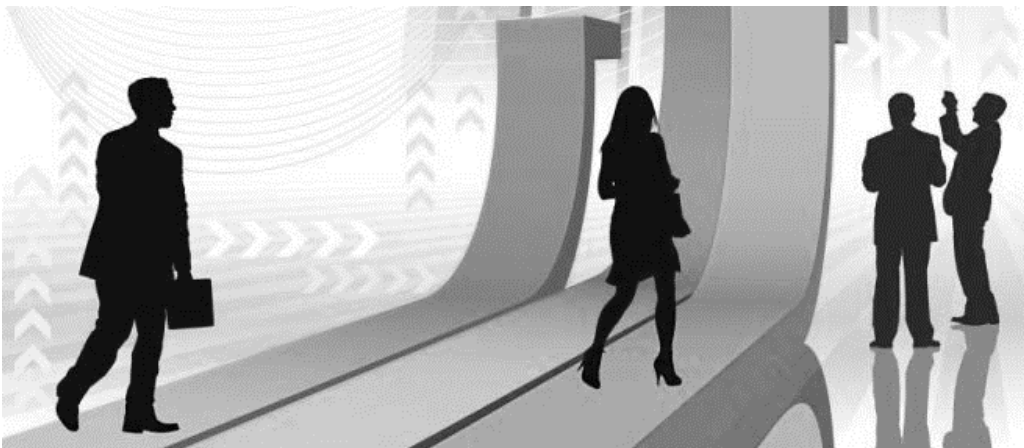
These questions will help you to reflect upon what you do well and where you might need to improve as a communicator. It can also be useful to ask people you know and trust in a work context for their opinion too. The key of course is to actually do something to address any shortcomings identified.



# **Influencing & Persuading**

At times, any leader must impose their will on their employees and when you do so in a firm but non-aggressive manner, that is simply part of being in a leadership position. However, if that's all you ever do, you will find that your employees will disengage, or simply wait to be 'told' what to do. Therefore, modern day leaders need to spend a lot of time influencing and persuading others too. Sometimes, you need to do so in relation to your employees - where you have the position and authority to support you - but you will also have to persuade superiors, customers and other stakeholders where the reality is that the power lies with them, not you.

The term 'influencing' means changing another person's attitudes or actions without having to resort to force or authority. In practical terms, to influence someone else, you have to prove to other people that accepting your proposal helps them to solve their problems or achieve their objectives. There is no magic answer to how to influence others but the best 'influencers' always have a healthy combination of interpersonal, communication, presentation and assertiveness skills. They are good at adapting and modifying their personal style to suit the needs of the situation or the audience, be that one or many.



### Common Mistakes when seeking to influence or persuade:

- Not being really clear on the outcome you want.
- Pushing too hard or not hard enough.
- Believing that because you see the benefits of your ideas that others automatically will too.
- Not 'selling' the ideas in terms that are meaningful to the target audience.
- Focusing on your needs, not theirs.
- Believing that you can treat people badly most of the time and then suddenly win them over when you need to.
- Having a personal style, or an approach to communication that 'rubs' others up the wrong way.

## 2.2.1 The Process of Influencing

It's not necessarily a step-by-step process, but consider the following:

- ✓ **Be very clear on what your objectives are.** Maybe you cannot influence or persuade people to move fully in the direction you want them to go all at once. However, you can get them to take the first step now and then build on that later.
- ✓ **When interacting with people, consider what you can achieve in the time available.** If the meeting only lasts 30 minutes there is only so much you can achieve.
- ✓ **Use emotion to win people over;** be passionate
- ✓ **Learn as much as possible about the people you are trying to influence.** Try to anticipate how they might respond.
- ✓ **Tailor your arguments to address their needs.**
- ✓ **Use hard evidence;** such as facts and figures that can support your argument, or practical, simple, non-technical examples to illustrate your point.
- ✓ **Listen to and address people's concerns.**
- ✓ **Constantly monitor and measure progress.** Are they moving in the direction you want them to go?

“

*if you lack credibility you  
face an uphill task*

”

Influencing others is as much about the person as the process. If people trust and respect you, then you are already in a strong position to influence them on any matter – and in fact the process becomes less important. If you lack credibility in the eyes of those you are trying to influence, then you face an uphill task.

## Activity 2 – Think of a recent situation where you were required to influence and persuade others on an important matter.

### Consider the following questions:

- ✓ How did you handle the situation? Did you achieve the goal of persuading them, or did you have to resort to forcing your opinion on them?
- ✓ How did you feel during the interaction, were you stressed, or did you manage to stay calm and in control?
- ✓ How did you handle any objections that might have arisen to what you were proposing? Did you spend time explaining your position, or did you try to shut down the discussion and move on from the objection raised, without really dealing with it?
- ✓ Do you think that the way you prepared for the interaction made it run more effectively, or did lack of preparation cause you problems? If there were issues with lack of preparation, what were they?
- ✓ Do you think that you made a strong case for what you were proposing? Did you sense that the individual/group were 'onside' with your suggestions? How might you have made a better case if things didn't go as well as you had hoped?
- ✓ Try to really picture yourself in the situation again, but now try look at it through the eyes of the individual/group involved. From their perspective, would they have considered you as being strong and confident in the situation, or would they have felt you were a bit unnerved by it all? How would they have rated your communication skills on a scale from *clear/concise* to *waffling/unclear*? Would they have sensed a real passion from you for what you were proposing, or would they have thought you were just going through the motions?
- ✓ Based on your self-analysis of this scenario what will you do differently the next time you are faced with having to influence and persuade others to get an even better result?

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# 3. Leadership Styles

### 3.1 Situational Leadership Theory

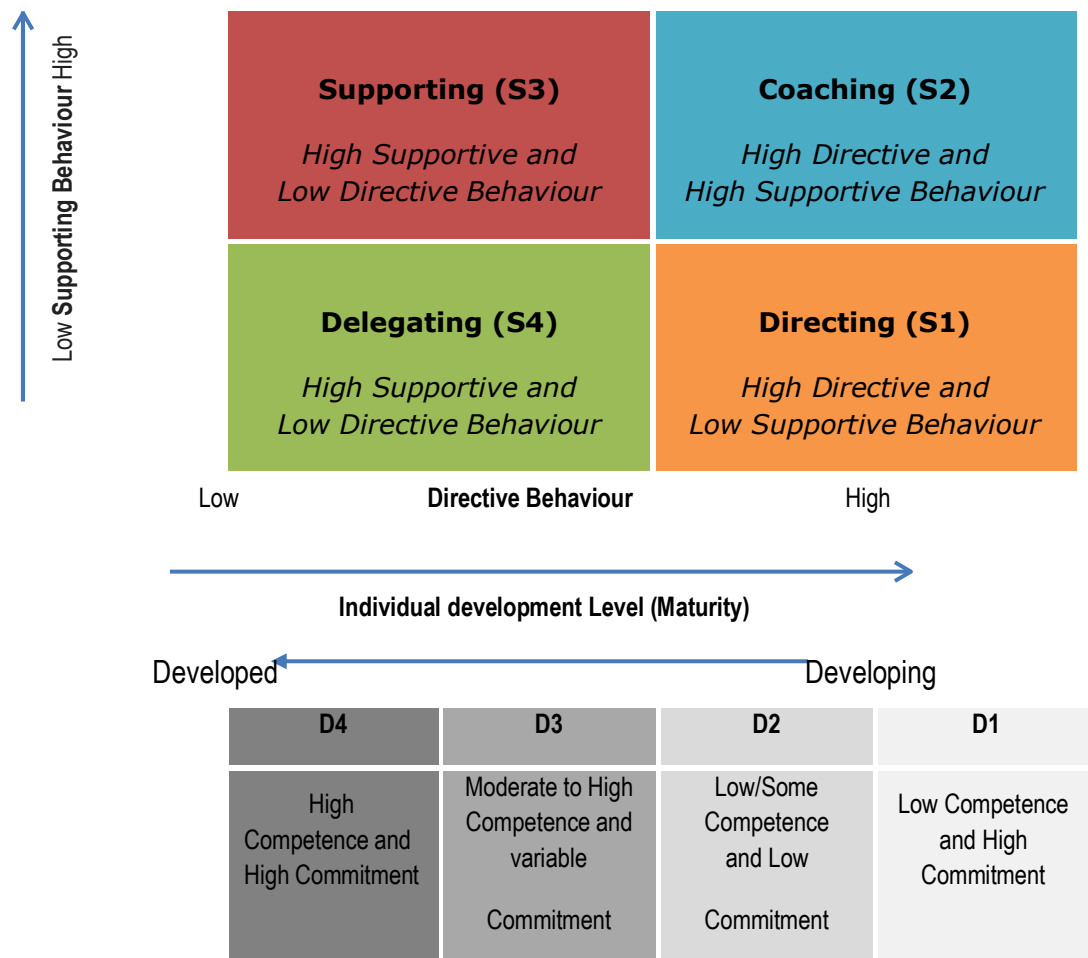
To help you to review the effectiveness of your current leadership style, the Situational Leadership® model is a useful approach to consider. The model was created by Dr Paul Hersey, a professor and author of "The Situational Leader," and Ken Blanchard, author of the best-selling "The One-Minute Manager," among others.



**emphasis on the task: emphasis on relationships**

In essence, their theory states that instead of using just one style, successful leaders should change their leadership styles based on the ‘maturity’ of the people they're leading and the details of the task. Using this theory, leaders should be able to place more or less emphasis on the task, and more or less emphasis on the relationships with the people they're leading, depending on what's needed to get the job done successfully.

The model can be depicted as follows:



According to Hersey and Blanchard, there are four main leadership styles:

**Directing (S1)** – Leaders tell their people exactly what to do, and how to do it.

**Coaching (S2)** – Leaders still provide information and direction, but there's more communication with followers. Leaders "sell" their message to get the team on board.

**Supporting (S3)** – Leaders focus more on the relationship and less on direction. The leader works with the team, and shares decision-making responsibilities.

**Delegating (S4)** – Leaders pass most of the responsibility onto the follower or group. The leaders still monitor progress, but they're less involved in decisions.

As you can see, styles S1 and S2 are focused on getting the task done. Styles S3 and S4 are more concerned with developing employee's abilities to work independently.

### ***Maturity Levels***

According to Hersey and Blanchard, knowing when to use each style is largely dependent on the maturity (competence and commitment) of the person or group you're leading. In this context, they break maturity down into four different levels:

**D1** – People at this level of maturity are at the bottom level of the scale. They lack the knowledge, skills, or confidence to work on their own, and they often need to be pushed to take the task on.

**D2** – At this level, followers might be willing to work on the task, but they still don't have the skills to do it successfully.

**D3** – Here, followers are ready and willing to help with the task. They have more skills than the D2 group, but they're still not confident in their abilities.

**D4** – These followers are able to work on their own. They have high confidence and strong skills, and they're committed to the task.

Based on Situational Leadership, the key issue for any leader is flexibility and effective leaders have the ability to adjust their approach depending upon the situation or the person they are faced with. On any given day, you could in fact use all four styles depending upon what arises and the decision over which style is most appropriate will be influenced by many factors,

such as:

**Team Effectiveness** – when your team is well established and performs well, you are more likely to apply *supporting* or *delegation* styles, because your employees are ready for this. On the other hand, for new teams, or when you take over an existing team for the first time you will have to utilise the *Directing* style initially as you must establish yourself among the team and get them operating to a high level. This requires high levels of direction and control at the initial stages. Over time, as the team develops in the way that you want, you can then move towards supporting or delegation styles.

**Individual performance** – different employees will have different levels of ‘maturity’ (the balance between their levels of competence and commitment) and as a result will perform at varying levels; you must adjust your style for each. This change is subtle, but higher performing employees warrant less direction and control than poor performers and as such require the application of *supporting* or *delegation* styles more frequently. Equally, a new team member who is still learning the ropes will naturally require more direction and control than someone who has been doing the job for a long time and as such will require you to use the *Directing* style.

**Situations** – different situations will always require the application of different styles. For example, when time deadlines are tight you may have to use the *Directing* style to ensure outcomes are met, whereas if there are changes required to work practices this may allow for greater involvement of your team in the decision making process and as such the *Delegating* style would be better.

In light of this, flexibility is the most important word; easier said than done of course, but this is what makes the application of leadership style a skill. Some experienced managers lose sight of the flexibility requirement and end up operating from within very narrow bands with regard to the styles they adopt, and this is extremely limiting in terms of getting the best from employees today.



### Activity 3 – Think about your current leadership style, using the following questions to guide you:

1. Do you believe that your real authority as a leader comes from your title or position, or from how you behave and interact with your employees?
2. Do you continuously think about how you lead others and are you constantly trying to improve your performance, or do you only reflect on this issue when something goes wrong?
3. Do you always try to lead by example, or is it a case of 'do as I say, not as I do'?
4. Do you genuinely treat all your team members equally and fairly, or do you have favourites that you treat differently from others?
5. Are you aggressive in your leadership style, or are you good at staying calm but being firm when need be?
6. Would your employees consider you to be a bully, or at the other end of the scale, a bit of a pushover?
7. Do you have the ability to be flexible in how you apply your leadership style in practice, or is it a case that you have only one style which you slightly tweak from time to time?
8. Can you actively apply different styles to match the requirements of each given situation? Think of a recent example where you did just that?
9. When an individual is not performing to standard, do you deal with them in an effective manner, or do you simply 'haul them over the coals' and expect them to change as a result?
10. Over the past month, how often did you lose your temper with your employees? What was the outcome?
11. When was the last time you managed to bring an underperforming employee back on track? What did you do that turned things around?
12. Do you encourage your employees to be actively involved in decision making, or do you make most of the important decisions for them?
13. Think of two recent examples where you allowed your employees a high degree of autonomy over their work? Do you think you offer too much/too little autonomy to your people?
14. When your employees achieve something, are you good at acknowledging their efforts or do they hear more about the one bad thing than all the good they do?
15. Think of your employees as a unit for a moment: do you think they really feel valued and respected by you? What evidence do you have to support your answer here?
16. Do you provide regular and meaningful opportunities where your employees can develop their skills even further?
17. Are you good at delegating to your employees, or at least to some of them who want to be delegated to?
18. If your employees were asked whether they felt you were a good role model for them in terms of leadership style, what do you think they would say?
19. Over the past month, can you think of three things you consciously did to help build team spirit amongst your employees? If not, why not?

20. How good are you at dealing with conflict within your team of employees? Do you confront it and deal with it proactively, or do you ignore it and hope that it goes away on its own?

These questions should give you an indication of where there might be room for improvement in terms of applying your leadership style.

# 4. Conclusion

The purpose of this guide has been to provide you with an opportunity to reflect on your current skillset, as it applies to your capacity for leadership. Regardless of your level of experience, don't discount the potential for self-improvement - it is possible to teach 'old dogs new tricks' – and the benefits stemming from making that effort to improve are not insignificant. It goes without saying that what you decide to do following your self-analysis is entirely up to yourself, but even small improvements in your ability to relate to others or adjusting your leadership style can lead to significant improvements in employee performance.



## ANNEXURE II

## SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES

Department of Community Medicine

TOPIC: LEADERSHIP QUALITIES

S.NO	REG. NUMBER	NAME OF THE STUDENTS	SIGNATURE
1	U13MB163	ANUPRIYAS.	<i>Anupriya</i>
2	U13MB164	ANUSUYA.V.,	<i>Anusuya</i>
3	U13MB165	ARIKO IMCHEN	<i>Ariko Imchen</i>
4	U13MB166	ARULMOZHI. T.	<i>Arulmozhi. T.</i>
5	U13MB167	ARUN KUMAR. K.	<i>Arun Kumar. K.</i>
6	U13MB170	BALA PRIYADHARSHINI. P	<i>Bala Priyadharshini. P.</i>
7	U13MB168	BALAJI. S.	<i>Balaji. S.</i>
8	U13MB169	BALAKRISHNAN.R.	<i>Balakrishnan. R.</i>
9	U13MB171	BALASUBRAMANIAN.R.	<i>Balasubramanian. R.</i>
10	U13MB172	BENCY.L.	<i>Bency. L.</i>
11	U13MB173	BHARANIDARAN.E.	<i>Bharanidaran. E.</i>
12	U13MB174	BRINDHA.M.	<i>Brindha. M.</i>

## ANNEXURE III



### SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION AND RESEARCH LEADERSHIP QUALITIES

1. A medical audit committee comprises professionals from different departments of a hospital. Which of the following may act only as an observer in committee meetings?
  - (a) Heads of medical departments
  - (b) Nursing superintendents
  - (c) Head of pathology
  - (d) Director of medical services
  - (e) Administrator
  
2. Who of the following is a leading writer on contingency theory of leadership?
  - a) Rosabeth Kanter
  - b) Joan Woodward
  - c) Rensis Likert
  - d) Fred Fiedler
  
3. A hospital requires to check and understand the applicability of the standard clauses for the institution. In India, all the hospitals have been certified for
  - (a) ISO 9000 (b) ISO 9001
  - (c) ISO 9002 (d) ISO 9003
  - (e) ISO 9004
  
4. Harrison suggested different methods of monitoring of medical audit. Which of the following method of monitoring is based on the primary idea of learning from mistakes?
  - (a) Peer review
  - (b) Sentinel cases
  - (c) Criterion-based audit
  - (d) Surveys
  - (e) Comparison of the small groups in the same field
  
5. Each health care organization must anticipate and respond to the community's changing needs and health status by:
  1. reviewing environmental trends
  2. collecting information on the determinants of health

3. reviewing feedback from clients and the community on its services
  4. working with the community to identify priority needs
  - a) all of the above
  - b) 1 and 3
  - c) 1 and 4
  - d) 3 and 4
6. Which of the following statements is the most important consideration in developing an effective media relations program for a health service organization?
- a) identify clear objectives for a media relations program and ensure they are communicated to everyone concerned
  - b) invite the media to an open house at your organization
  - c) maintain regular communication with the media on topical issues
  - d) advise members of the media regarding their role at the organization
7. What does situational theory of leadership emphasise?
- a) Personality traits
  - b) Events
  - c) Environment
  - d) Political situation
8. What are the key characteristics of transactional leaders?
- a) Guiding, mentoring and motivating
  - b) Guiding, commanding and motivating
  - c) Guiding, demonstrating and motivating
  - d) Guiding, mentoring and demonstrating
9. What is the first step in conducting a performance review?
- a. Comparing the employee's skills against the job description.
  - b. Reviewing the performance objectives or expectations for the job.
  - c. Checking the progress of the employee's work.
  - d. Consulting the previous year's performance results.
10. A vision gives an organization:
- a. focus of direction
  - b. mission
  - c. values
  - d. all of the above



**SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH**

**LEADERSHIP QUALITIES**

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- b. mission
- c. values
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**Annexure IV - SAMPLE CERTIFICATE TO BE ATTACHED**

	<b>Sri Lakshmi Narayana Institute of Medical Sciences</b> Affiliated to Bharath Institute of Higher Education & Research (Deemed to be University under section 3 of the UGC Act 1956)	
<b>CERTIFICATE OF MERIT</b>		
<p>This is to certify that <b>BHARANIDARAN.E</b> has actively participated in the Value Added Course on <b>Leadership Skills</b> held during Sept 2017 – Feb 2018 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.</p>		
 <b>DR.C.KAMESHVELL MD, RESOURCE PERSON, ASSOCIATE PROFESSOR</b>	 <b>DR.S.RAJINI MD, COORDINATOR, PROFESSOR &amp; HOD, DEPT OF COMMUNITY MEDICINE</b>	 <b>DR.G. JAYALAKSHMI MD, DEAN, SLIMS</b>

	<b>Sri Lakshmi Narayana Institute of Medical Sciences</b> Affiliated to Bharath Institute of Higher Education & Research (Deemed to be University under section 3 of the UGC Act 1956)	
<b>CERTIFICATE OF MERIT</b>		
<p>This is to certify that <b>ARIKO IMCHEN</b> has actively participated in the Value Added Course on <b>Leadership Skills</b> held during Sept 2017 – Feb 2018 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.</p>		
 <b>DR.C.KAMESHVELL MD, RESOURCE PERSON, ASSOCIATE PROFESSOR</b>	 <b>DR.S.RAJINI MD, COORDINATOR, PROFESSOR &amp; HOD, DEPT OF COMMUNITY MEDICINE</b>	 <b>DR.G. JAYALAKSHMI MD, DEAN, SLIMS</b>

ANNEXURE V

**Student Feedback Form**

Course Name: LEADERSHIP QUALITIES

Subject Code: PSM04

Name of Student: ARUL MOZHIL • T Roll No.: U13MB166

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

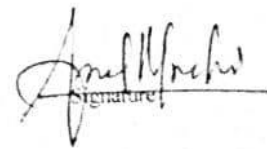
Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear			✓		
2	Course contents met with your expectations				✓	
3	Lecturer sequence was well planned			✓		
4	Lectures were clear and easy to understand					✓
5	Teaching aids were effective				✓	
6	Instructors encourage interaction and were helpful				✓	
7	The level of the course					✓
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

The training was useful.

Date: 22/02/2018

  
Signature

### Student Feedback Form

Course Name: LEADERSHIP QUALITIES

Subject Code: PSM04

Name of Student: BENCY-L Roll No.: \_\_\_\_\_

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear				✓	
2	Course contents met with your expectations					✓
3	Lecturer sequence was well planned				✓	
4	Lectures were clear and easy to understand					✓
5	Teaching aids were effective			✓		
6	Instructors encourage interaction and were helpful					✓
7	The level of the course					✓
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

The programme was good.

Date: 22/02/2018

  
Signature



**Sri Lakshmi Narayana Institute of Medical Sciences**

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY – 605 502

23.02.2018

From  
Dr.S.Rajini  
Professor and Head,  
Department of Community Medicine,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research, Chennai.

Through Proper Channel

To  
The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Completion of value-added course: "Leadership Skills "**

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: **Leadership Skills "** on **Sept 2017 – Feb 2018**. We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards

Dr.S.Rajini

**Encl: Certificates**

**Photographs**

SCANNED PHOTOS





**Sri Lakshmi Narayana Institute of Medical Sciences**

Date: 08.09.2017

From

Dr.JansiRani  
Professor and Head,  
Department of Biochemistry,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

To

The Dean,  
Sri Lakshmi Narayana Institute of Medical College  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Permission to conduct value-added course: The Importance of Pre-analytical phase in laboratory testing and diagnosis**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: The Importance of Pre-analytical phase in laboratory testing and diagnosis in Sep to Oct 2017. We solicit your kind permission for the same.

Kind Regards

Dr.JansiRani

---

**FOR THE USE OF DEANS OFFICE**

Names of Committee members for evaluating the course:

The Dean: *G Jayalakshmi*

The HOD: *Dr. Jansi Rani*

The Expert: *Dr. Santhosakumari*

The committee has discussed about the course and is approved.

Dean

(Sign & Seal)

Subject Expert

(Sign & Seal)

(Sign & Seal)

Dr. G. JAYALAKSHMI, BSC.,MBBS.,DTCD.,M.D.,  
DEAN

Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Ageram Kudapakkam, Post,  
Villanur Commune Puducherry-605 502.

DEPARTMENT OF BIOCHEMISTRY  
Sri Lakshmi Narayana Institute Of Medical Sciences  
PONDICHERRY - 605 502.

PROFESSOR & HOD  
DEPARTMENT OF BIOCHEMISTRY  
Sri Lakshmi Narayana Institute Of Medical Sciences  
PONDICHERRY - 605 502



OFFICE OF THE DEAN

# Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P-II ) dt. 11/07/2011 ]  
[ Affiliated to Bharath University, Chennai - TN ]

## Circular

08.09.2017

**Sub: Organising Value-added Course: The Importance of Pre-analytical phase in laboratory testing and diagnosis . reg**

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research** is organizing **“The Importance of Pre-analytical phase in laboratory testing and diagnosis”**. The course content form is enclosed below.

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before Sep to Oct 2017. Applications received after the mentioned date shall not be entertained under any circumstances.



**Dean**

**Dr. G. JAYALAKSHMI, BSC.,MBBS.,DTCD.,M.D.,**  
DEAN

Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agaram Kudapakkam, Post,  
Villanur Commune Puducherry-605 502.

Encl: Copy of Course content

VALUE ADDED COURSE

**1. Name of the programme & Code**

The Importance of Pre-analytical phase in laboratory testing and diagnosis

**2. Duration & Period**

30 hrs & Sep – Oct 2017

**3. Information Brochure and Course Content of Value Added Courses**

*Enclosed as Annexure- I*

**4. List of students enrolled**

*Enclosed as Annexure- II*

**5. Assessment procedures:**

Assessment - *Enclosed as Annexure- III*

**6. Certificate model**

*Enclosed as Annexure- IV*

**7. No. of times offered during the same year:**

1, Sep – Oct 2017

**8. Year of discontinuation: 2018**

**9. Summary report of each program year-wise**

Value Added Course- September -October 2017					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	BIO-05	The Importance of Pre-analytical phase in laboratory testing and diagnosis	Dr. JansiRani Dr.Santhosakumari	MBBS	20 students ( Sep – Oct 2017)

**10. Course Feed Back**

*Enclosed as Annexure- V*

**RESOURCE PERSON**

1. Dr.JansiRani
2. Dr.Santhosakumari

**COORDINATOR**

Dr.JansiRani

## Course Proposal

Course Title: **The Importance of Pre-analytical phase in laboratory testing and diagnosis**

**Course Objective:**

1. Overview of what is a pre-analytical phase
2. Errors in pre-analytical phase
3. Methods to overcome the errors for better patient care

To sensitise the medical students about the importance and manual mishandling and ignorance of pre-analytical phase of laboratory testing and diagnosis of patients sample.

**Course Outcome: Gained knowledge on pre-analytical errors for the future doctors has possibility of reduced sample rejection in near future.**

**Course Audience: MBBS students of 2017 Batch**

**Course Coordinator: Dr.Jansirani**

**Course Faculties with Qualification and Designation:**

**1.Dr.Jansirani, Professor & HOD**

**2.Dr.Santhosakumari, Assistant Professor**

**Course Curriculum/Topics with schedule (Min of 30 hours)**

SINo	Date	Topic	Time	Hours
1	15.09.2017	Introduction, Background, Objectives	4-6 PM	1
2	16.09.2017	Laboratory errors in toto	2-4 PM	2
3	17.09.2017	Pre-analytical errors	10-12PM	2
4	18.09.2017	Types of collection errors	4-6 PM	2
5	20.09.2017	Patient identification errors with its reasons	4-6 PM	2
6	21.09.2017	Patient complication and variables	4-6 PM	2
7	23.09.2017	Timing of collection and its relation to pre-analytical errors	2-5 PM	3
8	25.09.2017	Preanalytical influence of exercise	4-6 PM	1
9	27.09.2017	Phlebotomy technique errors	4-6 PM	2
10	29.09.2017	Cleaning blood collection site	4-6 PM	2
11	30.09.2017	Specimen handling & processing	2-5 PM	3
12	01.10.2017	Test collection errors	4-6 PM	2
13	02.10.2017	Order of draw with reasons	4-6 PM	2
14	03.10.2017	Hemolysis	4-5 PM	1
15	04.10.2017	Posture changes	4-5 PM	1
16	05.10.2017	Specimen transport errors	4-6 PM	2
17	06.10.2017	Transportation of specimens	4-6 PM	2
18	07.10.2017	Sampling kit components	4-5 PM	1
19	08.10.2017	Error prevention	4-6 PM	2
20	09.10.2017	Posting in sample collection at	9-1 PM	4

		bedside		
	10.10.2017	Posting in sample collection (OP)	9-1 PM	4
		Total		43

**REFERENCE BOOKS:**

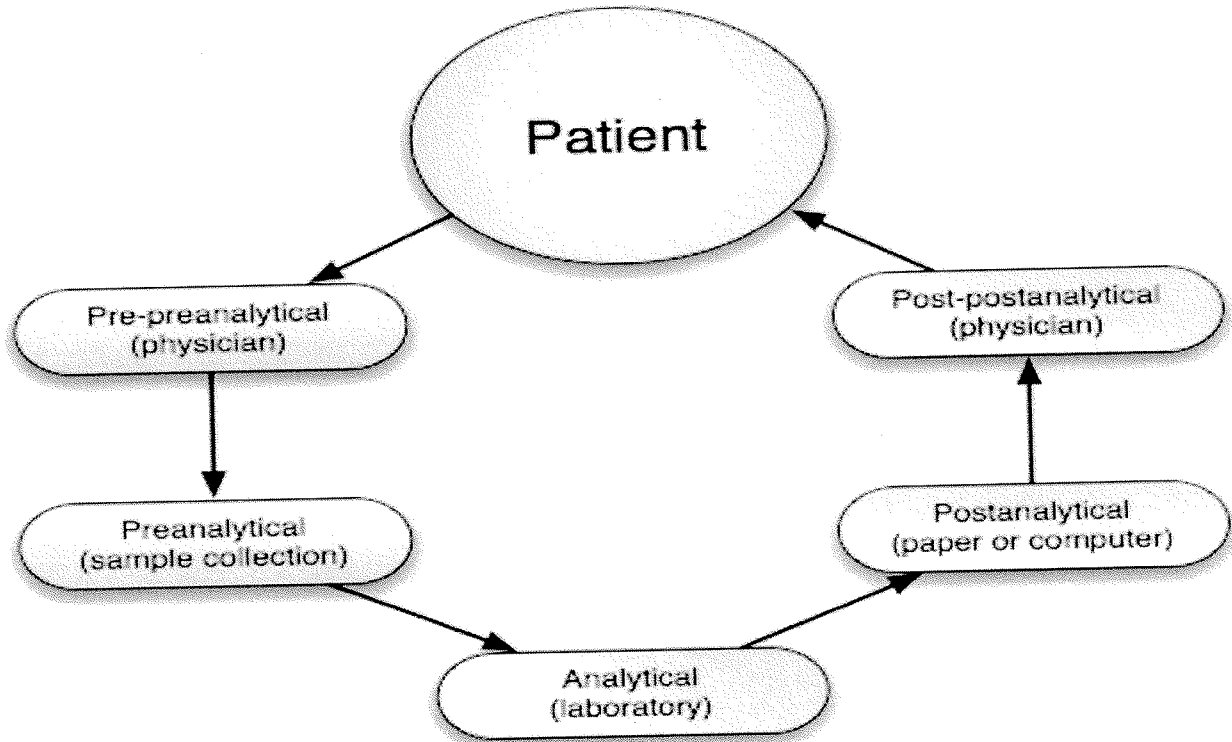
1. Tietz Textbook of Clinical Chemistry and Molecular Diagnostics by Carl A. Burtis, David E Bruns, MD, and Edward R Ashwood, MD
2. Henry's Clinical Diagnosis and Management by Laboratory Methods

Ar

# THE IMPORTANCE OF PRE-ANALYTICAL PHASE IN LABORATORY TESTING AND DIAGNOSIS

## PARTICIPANT HAND BOOK

The total testing process



BIHER

SLIMS

<b>Particulars</b>	<b>Description</b>
Course Title	The Importance of Pre-analytical phase in laboratory testing and diagnosis
Course Code	BIO - 05
Topics and content of the course in the Hand book	<ol style="list-style-type: none"> <li>1. Introduction</li> <li>2. Laboratory errors</li> <li>3. Pre-analytical errors</li> <li>4. Types of collection errors</li> <li>5. Patient identification errors</li> <li>6. Reason for Patient identification errors</li> <li>7. Patient complication and variables</li> <li>8. Timing of collection</li> <li>9. Preanalytical influence of exercise</li> <li>10. Phlebotomy technique errors</li> <li>11. Cleaning blood collection site</li> <li>12. Specimen handling &amp; processing</li> <li>13. Test collection errors</li> <li>14. Order of draw with reasons</li> <li>15. Hemolysis</li> <li>16. Posture changes</li> <li>17. Specimen transport errors</li> <li>18. Transportation of specimens</li> <li>19. Sampling kit components</li> <li>20. Error prevention</li> <li>21. Summary &amp; conclusion</li> </ol>
Advantages of learning and evaluation	<ul style="list-style-type: none"> <li>• Proper Implementation of pre-analytical phase of sample collection</li> <li>• Guidance by paramedical personnel</li> <li>• Better sample withdrawal at patient bedside</li> <li>• Reduces sample rejection rate</li> </ul>
Further learning	<ol style="list-style-type: none"> <li>1. Competency based assessment can be done.</li> </ol>

Opportunities	<ol style="list-style-type: none"> <li>2. Boost the self confidence of the students.</li> <li>3. As they are the lifelong learner, the foundation will be laid strong.</li> <li>4. As a responsible person committed to the society they know their roll and contribute to the society.</li> <li>5. Can be included in the university examination for testing KH, SH, P and ethical issues.</li> <li>6. Self satisfaction for the student as their performance is evaluated in a transparent method.</li> <li>7. Should be made a must know competency in CRR I period.</li> </ol>
Key Competencies	<ul style="list-style-type: none"> <li>• Evaluation by practical performance right from the second year can be beneficial both to the patients and the student.</li> </ul>
Target Student	I MBBS
Duration	30hrs ,May– June 2017 & Sep – Oct 2017
Theory Session	20hrs
Practical Session	10hrs
Assessment Procedure	Assessment Evaluation by MCQ

## **THE IMPORTANCE OF PRE-ANALYTICAL PHASE IN LABORATORY TESTING AND DIAGNOSIS**

### Introduction

Three phases of laboratory testing:

pre-analytical, analytical and post-analytical

1. Pre-analytical—specimen collection, transport and processing
2. Analytical—testing
3. Post-analytical—testing results transmission, interpretation, follow-up, retesting

### Laboratory testing errors

There is a heterogeneity of available data and a lack of definition of laboratory error:

1. pre-analytical 46%
2. analytical 7%
3. post-analytical 47%

Advances in instrument technology and automation have simplified tasks in lab diagnosis and improved quality of test results.

Meanwhile, errors occurring during the pre-analytical (from the time the test is ordered by the physician until the sample is ready for analysis) can account for up to 93% of the errors currently encountered during the total diagnostic process

### Pre-analytical errors

1. Most errors affecting laboratory test occur in the pre-analytical phase
2. Errors at any stage of the collection, testing and reporting process can potentially lead to a serious patient misdiagnosis

### Types of Collection Errors

1. Patient Identification and Preparation
2. Selecting the site and site preparation for Phlebotomy Technique
3. Test Collection Procedures (proper venipuncture technique, order of draw, proper tube mixing, correct specimen volume)
4. Specimen Handling and Processing
5. Specimen Transport

### Patient Identification Errors

Errors in correctly identifying the patient are indefensible

## Annexure I

### Reasons for patient identification errors

Proper positive patient identification procedures not followed

1. Patient identification from identification bracelet (inpatients)
2. Patient identification by asking patients to state or spell their full name (inpatients/outpatients)
3. Patient identification by staff or family member if patient unable to identify him/herself

### Patient Identification Errors

Specimen tubes unlabeled

- a. Requisition or collection tube labels not or wrongly affixed to tubes
- b. Requisition or collection tube labels in bag containing collection tubes
  - a. Requisition or collection tube labels rubberbanded to tubes
  - b. Collection tube labels not affixed to all tubes
  - c. Specimen collection tubes labeled insufficiently with at minimum patient's full name, date/time of collection, phlebotomist's initials

Collection tubes labeled with the wrong patient

Wrong computerized labels/barcodes affixed to collection tubes at bedside

Collection tubes not labeled at the time of collection

Collection tubes incorrectly labeled by someone other than the phlebotomist who collects the specimen

### Patient Complications and Variables

Some patient variables that affect blood specimens

Diet

Fasting

Exercise

Obesity

Allergies to alcohol or iodine used to clean venipuncture site

### Timing of collections

Humans: biorhythmic changes occur during a 24h period. Fluctuations occur in the blood analyte levels due to the biorhythmic changes

Most blood normal values have been determined at :

**BIHER**

**SLIMS**

## Annexure I

BASAL STATE( early morning, 8-12h after last ingestion of food; not more>14h)

FASTING restrictions (abstinence from food, not from water!!!)

NO SMOKING OR DRINKING COFFEE OR TEA

AVOID DIAGNOSTIC OR TREATMENT REGIMENS-interferences

### The pre-analytical influence of exercise

Moderate to strenuous exercise can change the laboratory test results

CK, UA, LDH, cortisol,ACTH,creatinine will change in blood levels due to physical exercise

e.g. bike race 50 miles/jogging prior to blood collection will most likely alter the lab test (false results)

### Phlebotomy Technique Errors

Phlebotomy technique is important

Ensures test result validity

Minimizes trauma to patient

Minimizes potential for phlebotomist injury

Reduces recollections

Vein selection essential for successful

venipuncture

Venous Access Difficulties

Obstructed, hardened, scarred veins

Veins difficult to locate

Use of Alternative sites

Top of hand/Side of wrist

Areas to avoid

Vein Collapse

Use of appropriate needle size

Smaller evacuated collection tube

**BIHER**

**SLIMS**

## Annexure I

### Tourniquet Application

Tourniquet tied too close to the venipuncture site can cause hematoma

Veins may not become prominent if tourniquet is tied too high (more than 6-8 cm above venipuncture site)

Tourniquet left on longer than one minute can result in hemoconcentration, affecting some test results

Tourniquet should be released as soon as needle is in the lumen of the vein and blood flow established

Large molecular compounds and compounds bound to protein and blood cells (chol, triglycerides, albumin, Hb) cannot move through the capillary walls and their blood vessels level increase as the tourniquet remains on the arm-false results

### Cleansing the blood collection site

Sterile swab with 70% isopropyl alcohol

30-60 seconds to dry and to create a barrier to bacterial contamination

Allow alcohol to dry completely to avoid stinging sensation upon needle entry and hemolysis of sample

The alcohol can interfere in test results

If using iodine as cleansing agent for skin puncture, this antiseptic can lead to erroneous laboratory test results (elevate potassium, uric acid, phosphate)

Samples such as blood cultures should be collected using iodine to cleanse site to ensure sterility of sample

### Specimen handling and processing

#### Test Collection Errors

#### Hemolysis

Blood collected insufficient to amount of additive in tube,

Traumatic venipuncture

Blood collected from area with hematoma

Vigorous shaking of tubes after collection

Blood collected using a small diameter needle.

#### Order of Draw

## Annexure I

Order of draw affects the quality of the sample and can lead to erroneous test results due to contamination with the additive from the previous blood collection tube

CLSI (former NCCLS) recently revised the specific order for collection of tubes and recommends this order:

Culture tubes (yellow top) or culture Non-additive or serum tubes (red top)

Citrate tubes (light top)

Gel separator tubes and clot activator tubes (incolor top)

Heparin tubes (green top)

EDTA tubes (lavender top)

Other additive (color depends on manufacturer)

### -reasons for that

1. Blood culture tubes first-decrease possibility of bacterial contamination
2. Heparin (green top) tube for K measurement must be collected before EDTA (lavender top) because if this orders is switched, K is falsely elevated since the blood rupture release K into plasma
3. EDTA is usually bound to K as EDTA K 3 or to sodium as EDTA Na 2 and it is important to collect electrolytes (K and Na) before collecting blood with EDTA tube to avoid falsely elevated results
4. Citrate (light blue top) tube for coagulation must be collected before the heparin (green top) tube to avoid erroneous coagulation results
5. If numerous blood collection tubes are to be collected, the tube with an additive should be collected LAST so it can mixed as soon after collection as possible

### Posture changes

Preanalytical errors can also result if the blood collectors are not aware of the standardized posture guidelines

Sometimes these guidelines do not exist and need to be implemented

Sitting versus lying can vary lab test results of some chemical constituents(cholesterol, aldosterone)

### Specimen Transport Errors

Transport of blood specimens in the proper manner after collection ensures the quality of the sample

Timing

BIHER

SLIMS

## Annexure I

Some specimens must be transported immediately after collection, for example Arterial Blood Gases.

Specimens for serum or plasma chemistry testing should be centrifuged and separated within two hours

### Transport Errors

#### Temperature

Specimens must be transported at the appropriate temperature for the required test

On ice- Ammonia

Warmed - cryoglobulins

Avoid temperature extremes if transported from via vehicle from other collection site

#### Transport Container

Some samples need to be protected from light, for example, bilirubin

Transport in leak-proof plastic bags in lockable rigid containers

### Transportation of the Specimens

All specimens must be handled according to the Standard/Universal Precautions written by Centers for Disease Control and Prevention (CDC) :

1. Be transported vertically in leak proof plastic bags and/or in lockable rigid containers with a biohazard sign on the outside
2. Have lockable rigid containers that contain "dry ice" for specimens to be maintained on ice and cold packs to keep other specimens from becoming hot during transport in the warmer months
3. The specimens must be delivered to the laboratory within 45 minutes of collection in order to ensure the centrifugation and separation of the specimen within 1hour(CLSI/NCCLS set the maximum time limits for separating serum or plasma from the blood cells at 2hours from time of collection

If more time is needed, separator tubes for collection should be used!

### Sampling kits

#### Sampling kit components

Materials Provided

to the sites in CT

- Visual of kits and components

BIHER

SLIMS

## Annexure I

- Study specific kit types
- Extra supply “kit”
- Additional supplies shipped

### Error Prevention

#### Phlebotomy Education

Phlebotomists should have completed a standard academic course in phlebotomy and undergo thorough on-the-job training under the supervision of a senior phlebotomist

#### Continuing Education

Phlebotomists should participate in regular educational competency assessments (written and observational) Professional Licensure

#### Phlebotomy Staffing

Adequate staffing to maintain collection standards

#### Technology

Use of barcode scanners for patient identification

### CONCLUSIONS

- a. There is a need for better definition of laboratory errors and their causes
- b. There is a distinction between 1) errors exclusively inside the lab and 2) lab errors caused by organizational problems outside the lab
- c. The quantitatively largest reduction in lab errors are likely to result from inter-departmental cooperation designed to improve the quality of specimen collection and data dissemination
- d. Clinical audit-increasingly recognized
- e. It is impossible in medicine, as in any other human activity, to completely eliminate errors, but it is possible to reduce them
- f. Educational programs and introduction of automation technology
- g. To create a culture in which the existence of risk is acknowledged and injury prevention is recognized as everyone's responsibility

TRAINING, EDUCATION AND CULTURE!

## DEPARTMENT OF BIOCHEMISTRY

## STUDENT LIST

S.No	Reg No	Name	Signature
1	U17MB370	SHABAN OS	Shaban
2	U17MB371	SHACHI SHASTRI	Shachi
3	U17MB372	SHATAVISHA MUKHERJEE	Shata mukherjee
4	U17MB373	SHEDAM OMKAR MAHADEV	Shedam omkar
5	U17MB374	SHIVA VEERANNA HOUSR	Shiva Veeranna
6	U17MB378	SHUBHAM KAMDE	Shubham
7	U17MB379	SOTALA MANULIKHA CHOWDARI	Sotala
8	U17MB380	SOUNDHARYA.K	Soundharya
9	U17MB381	SOURABH DAS	Sourabh das
10	U17MB395	VISHALS	Vishals
11	U17MB396	VISHNU .K	Vishnu
12	U17MB397	VIVEK AMAN SINGH	Vivek aman
13	U17MB398	YASHWANT RATHORE	Yashwant
14	U17MB399	YAZHINI MURUGAN	Yazhini
15	U17MB387	SURVE BHUSHAN SUNIL	Surve
16	U17MB388	SURVESH PODDAR	Survesh
17	U17MB389	SURYAWANSHI SIDDHANT AJAY	Suryawanshi
18	U17MB390	SYAMA SHAJEEV	Syama
19	U17MB391	THIRUKKUMARAN J.T	Thirukkumaran
20	U17MB392	TWINKLE JAISWAL	Twinkled

**1. The Laboratory Testing Cycle consists of :**

- A. Pre-analytic and post-analytic phase
- B. Analytic and post-analytic phase
- C. Pre-analytic and post-analytic phase
- D. Pre-analytic, analytic and post-analytic phase

**2. Causes of pre-analytical errors are :**

- A. Patient ID error
- B. Specimen collection tube not filled properly
- C. Result reported on the wrong patient
- D. Incorrect interpretation
- E. A and B
- F. C and D

**3. Post-analytical errors include :**

- A. Test request error
- B. Empty collection tube
- C. Result reported on the wrong patient
- D. Using the wrong value and/or the wrong units
- E. A and B
- F. C and D

**4. Vacuum collection tube with additive/anticoagulant EDTA is used for:**

- A. Coagulation studies
- B. Hematology studies
- C. Serology tests

**5. Which of the following specimen types causes prolonged delay in pre-analytical specimen processing? :**

- A. Whole blood
- B. Citrate plasma
- C. Serum with silica activator
- D. EDTA plasma

**6. Serum and plasma differ by:**

- A. Content of carbohydrates
- B. Content of lipids
- C. Content of electrolytes
- D. Content of proteins

**7. Reasons for ordering a laboratory test:**

- A. Diagnosis
- B. Monitoring
- C. Screening
- D. Research
- E. All of the above

**8. Analytical errors are of 2 types :**

- A. Random and systematic
- B. Random and common
- C. Systematic and common

**9. Vacuum collection tube with additive/anticoagulant Sodium Citrate is used for:**

- A. Coagulation studies
- B. Hematology studies
- C. Serology tests

**10. Vacuum collection tube with serum separated material (silicone/gel) is used for:**

- A. Clinical chemistry studies
- B. Hematology studies
- C. Coagulation studies

**11. Which are the most frequent errors in laboratory testing?:**

- A. Pre-analytical errors
- B. Analytical errors
- C. Post- analytical errors

**12. Factors affecting reference ranges are:**

- A. Age, sex
- B. Physical activity, diet
- C. Pregnancy
- D. All of the above

**13. The laboratory result is:**

- A. Precise and accurate
- C. Imprecise and accurate

- B. Precise and inaccurate
- D. Only precise

**14. Which is not true?:**

- A. During blood collection needle cannot be in vein more than 1 minute
- B. Release the tourniquet as the last tube is filling
- C. Release the tourniquet before ending draw

**15. Microsampling on a newborn infant is usually taken from:**

- A. Heel
- B. Toe
- C. Finger
- D. Ear

**16. Venipuncture is usually performed on the:**

- A. Median cubital
- B. Cephalic
- C. Jugular
- D. Median antibrachial

**17. The buffy coat is composed of:**

- A. Fat and white cells
- B. White cells and red cells
- C. White cells and plasma
- D. White cells and platelets

**18. EDTA inhibits blood from clotting by:**

- A. Binding chloride
- B. Binding calcium
- C. Binding plasma
- D. Binding red blood cells

**19. Which cells are present in a normal blood specimen?:**

- a) RBC, PLT, neutrophils, blasts and monocytes
- b) RBC, PLT, WBC
- c) RBC, PLT, megakaryocytes, promyelocytes, reactive lymphocytes
- d) RBC, NRBC, blasts, monocytes and WBC

**20. Vacuum collection tube with additive/anticoagulant heparin is used for:**

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**1. The Laboratory Testing Cycle consists of :**

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- C. White cells and plasma
- D. White cells and platelets

**18. EDTA inhibits blood from clotting by:**

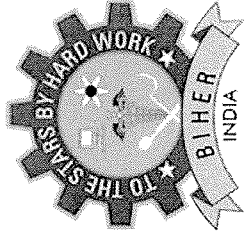
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- d) RBC, NRBC, blasts, monocytes and WBC

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- ~~A. Coagulation studies~~
- B. Hematology studies
- C. Serology tests



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research

(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that **SHABAN OS** has actively participated in the Value Added

Course on **The importance of pre-analytical phase in laboratory testing and**

**diagnosis** held during Sep 2017 – Oct 2017 Organized by Sri Lakshmi Narayana Institute

of Medical Sciences, Pondicherry- 605 502, India.

**Dr. Santhosakumari**

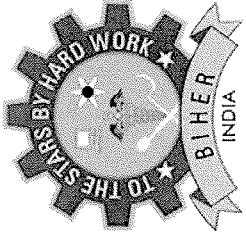
**RESOURCE PERSON**  
**DEPARTMENT OF BIOCHEMISTRY**

Sri Lakshmi Narayana Institute Of Medical Sciences  
**PONDICHERRY - 605 502**

**Dr. Jansirani**

**COORDINATOR**

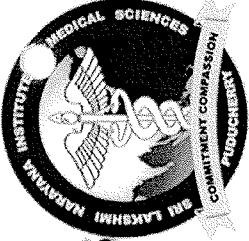
DEPARTMENT OF BIOCHEMISTRY  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
PONDICHERRY - 605 502



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research

(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that **THIRUKKUMARAN J.T** has actively participated in the Value Added Course on **The importance of pre-analytical phase in laboratory testing and diagnosis** held during Sep 2017 – Oct 2017 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr. Santhosakumari

**RESOURCE PERSON**  
Sri Lakshmi Narayana Institute Of Medical Sciences  
PONDICHERRY - 605 502.

Dr. Jansirani

**COORDINATOR**

DEPARTMENT OF BIOCHEMISTRY  
Sri Lakshmi Narayana Institute of Medical Sciences  
PONDICHERRY - 605 502

## Course feedback form

Course title:

Date: 28/9/17

Course code: BIO - 01

Department: Biochemistry

S.no	Design of the course	1	2	3	4	5
1	The objective of the course clear to you					/
2	The course contents met with your expectations					/
3	The lecture sequence were well planned					/
4	The lectures were clear and easy to understand					/
5	The audiovisual teaching aids were effectively used					/
6	The instructor's encouraged interaction and was it helpful					/
7	The contents were illustrated with examples					/
8	Overall Rating of the course					/

\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

*Twinkle*  
Signature

## Course feedback form

Course title:

Date : 28.9.2017

Course code: BIO - 01

Department: Biochemistry

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2	The course contents met with your expectations					
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4	The lectures were clear and easy to understand					
5	The audiovisual teaching aids were effectively used					
6	The instructor's encouraged interaction and was it helpful					
7	The contents were illustrated with examples					
8	Overall Rating of the course					

\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

*yashme*  
Signature

Date: 30.10.2017

From

Dr.Jansirani  
Professor and Head,  
Department of Biochemistry,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

Through Proper Channel

To

The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Completion of value-added course: The Importance of Pre-analytical phase in laboratory testing and diagnosis**

Dear Sir,

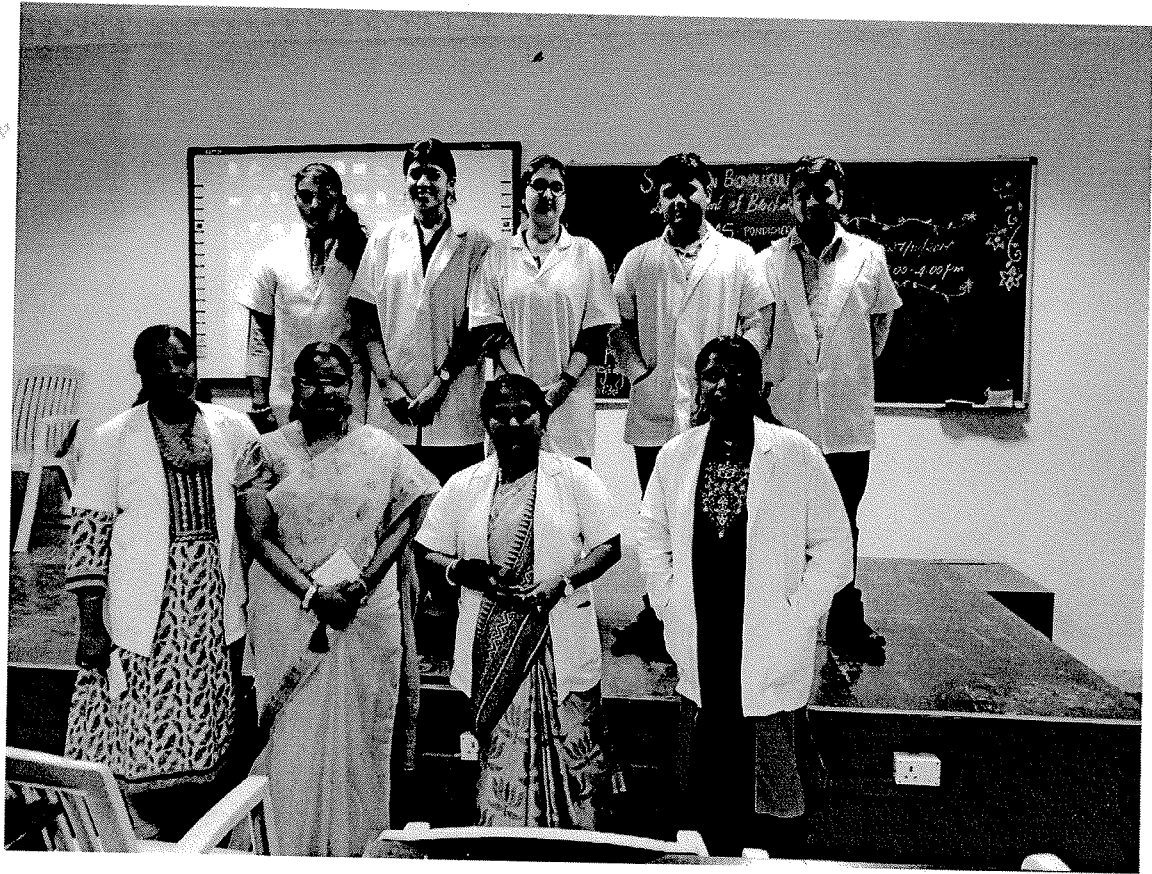
With reference to the subject mentioned above, the department has conducted the value-added course titled: The Importance of Pre-analytical phase in laboratory testing and diagnosis from Sep to Oct 2017 for 20 students. We solicit your kind action to send certificates for the participants that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards,

Dr.Jansirani

**Encl: Certificates**

**Photographs**



# SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES



Date: 04/09/2017

From  
Dr. Aravind. C  
Professor and Head,  
Department of General Medicine  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research  
Chennai

To  
The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research  
Chennai

**Sub: Permission to conduct value-added course: Substance abuse among medicos**

Respected Madam,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: SUBSTANCE ABUSE AMONG MEDICOS on 06/10/2017. We solicit your kind permission for the same.

Kind Regards

*Dr. Aravind, MD.,*  
Reg.No:68432  
Professor & Head, General Medicine  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502.

## FOR THE USE OF DEAN' S OFFICE

Names of Committee members for evaluating the course:

The Dean: Dr. Jayalakshmi *[Signature]*

The HOD: Dr. Aravind. C *[Signature]*

The Expert: Dr. Chellapandian *[Signature]*

The committee has discussed about the course and is approved.

*[Signature]*  
Dean

Dr. G. JAYALAKSHMI, BSC.,MBBS.,DTCD.,M.D.  
DEAN  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Ageram Kudapakkam, Post,  
Villanur Commune Puducherry 605 502.

*[Signature]*  
Subject Expert  
SRI LAKSHMI NARAYANA  
INSTITUTE OF MEDICAL SCIENCES  
OSUDU, PONDICHERY  
*[Signature]*  
HOD  
Dr. ARAVIND, MD.,  
Reg.No:68432  
Professor & HOD, General Medicine  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502.

ALABAMA  
STATE DEPARTMENT OF REVENUE  
MONTGOMERY, ALABAMA  
OFFICE OF THE COMMISSIONER  
1900 W. WALKER AVENUE  
MONTGOMERY, ALABAMA 36103

ALABAMA  
STATE DEPARTMENT OF REVENUE  
MONTGOMERY, ALABAMA  
OFFICE OF THE COMMISSIONER  
1900 W. WALKER AVENUE  
MONTGOMERY, ALABAMA 36103



OFFICE OF THE DEAN

## Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P -II ) dt. 11/07/2011 ]  
[ Affiliated to Bharath University, Chennai - TN ]

### Circular

11/09/2017

#### **Sub: Organising Value-added Course: SUBSTANCE ABUSE AMONG MEDICOS reg**

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research**, is organising a Value added course, titled, "SUBSTANCE ABUSE AMONG MEDICOS". The course content is enclosed below.

The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before 29/09/2017. Applications received after the mentioned date shall not be entertained under any circumstances.



Dean

**Dr. G. JAYALAKSHMI**, BSC., MBBS., DTCD., M.D.,  
DEAN

Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Ageram Kudapakkam, Post,  
Villanur Commune Puducherry-605 502.

Encl: Copy of Course content



## COURSE PROPOSAL

**Course Title:** SUBSTANCE ABUSE AMONG MEDICOS

**Course Objective:** To create an awareness among students of the 2<sup>nd</sup> year M.B.B.S about the vice of substance abuse among medicos

**Course Outcome:** Awareness on substance abuse among medicos has been imparted to the group of 25 students from 2<sup>nd</sup> year MBBS

**Course Audience:** A batch of 25 students belonging to the Second year of M.B.B.S

**Course Coordinator:** Dr. C. Aravind

### **Course Faculties with Qualification and Designation:**

1. Dr. Chellapandian  
Professor  
Department of General Medicine
2. Dr. Muthukumarasamy. B  
Professor  
Department of General Medicine
3. Dr. Arul Murugan  
Associate Professor  
Department of General Medicine

### Course Curriculum/Topics with schedule

SlNo	Date	Topic	Time	Hours	Name of the faculty
1.	06/10/2017	What is substance abuse?	5 pm to 7 pm	2 hours	Dr. Arul Murugan
2.	09/10/2017	Prevalence of substance abuse among medical students	4: 30 pm to 6: 30 pm	2 hours	Dr. Chellapandian
3.	13/10/2017	Risk factors for substance abuse	5 pm to 7 pm	2 hours	Dr. Arul Murugan
4.	16/10/2017	Why are medicos more prone for stress, depression and addictions?	5 pm to 7 pm	2 hours	Dr. Arul Murugan
5.	20/10/2017	Harmful effects of substance abuse	5 pm to 7 pm	2 hours	Dr. Chellapandian
6.	23/10/2017	The negative effects of social and visual media	4: 30 pm to	2 hours	Dr. Muthukumarasamy. B

			6: 30 pm		
7.	03/11/2017	Alcohol consumption among medicos	5 pm to 7 pm	2 hours	Dr. Chellapandian
8.	06/11/2017	Narcotic substance abuse	5 pm to 7 pm	2 hours	Dr. Muthukumarasamy. B
9.	10/11/2017	Physical and psychological dependence	4 pm to 6 pm	2 hours	Dr. Muthukumarasamy. B
10.	13/11/2017	De addiction programmes	4 pm to 6 pm	2 hours	Dr. Arul Murugan
11.	17/11/2017	Stress coping mechanisms	4 pm to 6 pm	2 hours	Dr. Arul Murugan
12.	20/11/2017	Prevention is better than cure	4 pm to 6 pm	2 hours	Dr. C. Aravind
13.	24/11/2017	Psychiatric assistance; role of faculty – student and parent – student relationship	4 pm to 7 pm	3 hours	Dr. Chellapandian
14.	01/12/2017	SUMMARY – of plans and methods to tackle the menace of substance abuse	4 pm to 7 pm	3 hours	Dr. C. Aravind
			Total Hours	30	

**REFERENCE BOOKS:**

- 1. HARRISON'S PRINCIPLES OF INTERNAL MEDICINE; 18<sup>th</sup> EDITION**
- 2. NEW OXFORD TEXTBOOK ON PSYCHIATRY**

## VALUE ADDED COURSE

1. Name of the programme and code  
Substance abuse among medicos; IM07
2. Duration & period  
30 hrs; between October 2017 to December 2017
3. Information Brochure and course content of value-added courses  
Enclosed as Annexure – I
4. List of students enrolled  
Enclosed as Annexure – II
5. Assessment procedures:  
Short notes – Enclosed as Annexure – III
6. Certificate model  
Enclosed as Annexure – IV
7. No. of times offered during the same year  
1; October 2017 to December 2017
8. Year of discontinuation  
2018
9. Summary report of each program year wise:

VALUE ADDED COURSE: October 2017 – December 2017					
Sl. No.	Course code	Course name	Resource persons	Target Students	Strength and year
1	IM07	Substance abuse among medicos	Dr. Chellapandian Dr. Arul Murugan Dr. Muthukumarasamy. B	2 <sup>nd</sup> year MBBS	25 (October 2017-December 2017)

10. Course feedback  
Enclosed as Annexure V

RESOURCE PERSON – Dr. Chellapandian *Chellapandian*

COORDINATOR – Dr. C. Aravind  
**DR. C. ARAVIND, MD.,**  
Reg. No: 6842  
Professor & HOD, General Medicine  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kuduvaikam, Puducherry-605 502.



ANNEXURE - I

PARTICIPANT HANDBOOK

SUBSTANCE ABUSE AMONG MEDICAL STUDENTS



## VALUE ADDED COURSE (OCTOBER 2017 TO DECEMBER 2017)

### COURSE DETAILS

PARTICULARS	DESCRIPTION
Course title	SUBSTANCE ABUSE AMONG MEDICAL STUDENTS
Course code	IM07
Objective	<ol style="list-style-type: none"><li>1. What is substance abuse?</li><li>2. Prevalence of substance abuse among medical students</li><li>3. Risk factors for substance abuse</li><li>4. Why are medicos more prone for stress, depression and addictions?</li><li>5. Harmful effects of substance abuse</li><li>6. The negative effects of social and visual media</li><li>7. Alcohol consumption among medicos</li><li>8. Narcotic substance abuse</li><li>9. Physical and psychological dependence</li><li>10. De addiction programmes</li><li>11. Stress coping mechanisms</li><li>12. Prevention is better than cure</li><li>13. Psychiatric assistance; role of faculty – student and parent – student relationship</li><li>14. SUMMARY – of plans and methods to tackle the menace of substance abuse</li></ol>
Key competencies	On successful completion of the course, the students will have a better awareness about substance abuse among medical students
Target students	Second year MBBS
Duration	30 hours; between October 2017 and December 2017
Assessment procedure	Short notes

## SUBSTANCE ABUSE AMONG MEDICAL STUDENTS AND GRADUATES

Substance abuse, also known as drug abuse, is use of a drug in amounts or by methods which are harmful to the individual or others. It is a form of substance-related disorder. Differing definitions of drug abuse are used in public health, medical and criminal justice contexts. In some cases, criminal or anti-social behaviour occurs when the person is under the influence of a drug, and long-term personality changes in individuals may occur as well. In addition to possible physical, social, and psychological harm, use of some drugs may also lead to criminal penalties, although these vary widely depending on the local jurisdiction.

Drug addiction, also called substance use disorder, is a disease that affects a person's brain and behavior and leads to an inability to control the use of a legal or illegal drug or medication. Substances such as alcohol, marijuana and nicotine also are considered drugs. When you're addicted, you may continue using the drug despite the harm it causes.

Drug addiction can start with experimental use of a recreational drug in social situations, and, for some people, the drug use becomes more frequent. For others, particularly with opioids, drug addiction begins with exposure to prescribed medications, or receiving medications from a friend or relative who has been prescribed the medication.

The risk of addiction and how fast you become addicted varies by drug. Some drugs, such as opioid painkillers, have a higher risk and cause addiction more quickly than others.

As time passes, you may need larger doses of the drug to get high. Soon you may need the drug just to feel good. As your drug use increases, you may find that it's increasingly difficult to go without the drug. Attempts to stop drug use may cause intense cravings and make you feel physically ill (withdrawal symptoms).

Drugs most often associated with this term include: alcohol, amphetamines, barbiturates, benzodiazepines, cannabis, cocaine, hallucinogens, methaqualone, and opioids. The exact cause of substance abuse is not clear, with the two predominant theories being: either a

genetic disposition which is learned from others, or a habit which if addiction develops, manifests itself as a chronic debilitating disease.

In 2010 about 5% of people (230 million) used an illicit substance. Of these 27 million have high-risk drug use otherwise known as recurrent drug use causing harm to their health, psychological problems, or social problems that put them at risk of those dangers. In 2015 substance use disorders resulted in 307,400 deaths, up from 165,000 deaths in 1990. Of these, the highest numbers are from alcohol use disorders at 137,500, opioid use disorders at 122,100 deaths, amphetamine use disorders at 12,200 deaths, and cocaine use disorders at 11,100.

### **DRUG MISUSE**

Drug misuse is a term used commonly when prescription medication with sedative, anxiolytic, analgesic, or stimulant properties are used for mood alteration or intoxication ignoring the fact that overdose of such medicines can sometimes have serious adverse effects. It sometimes involves drug diversion from the individual for whom it was prescribed.

Prescription misuse has been defined differently and rather inconsistently based on status of drug prescription, the uses without a prescription, intentional use to achieve intoxicating effects, route of administration, co-ingestion with alcohol, and the presence or absence of dependence symptoms. Chronic use of certain substances leads to a change in the central nervous system known as a 'tolerance' to the medicine such that more of the substance is needed in order to produce desired effects. With some substances, stopping or reducing use can cause withdrawal symptoms to occur, but this is highly dependent on the specific substance in question.

The rate of prescription drug use is fast overtaking illegal drug use in the United States. According to the National Institute of Drug Abuse, 7 million people were taking prescription drugs for nonmedical use in 2010. Among 12th graders, nonmedical prescription drug use is

now second only to cannabis. In 2011, "Nearly 1 in 12 high school seniors reported nonmedical use of Vicodin; 1 in 20 reported such use of OxyContin." Both of these drugs contain opioids. A 2017 survey of 12th graders in the United States, found misuse of OxyContin of 2.7 percent, compared to 5.5 percent at its peak in 2005. Misuse of the combination hydrocodone/paracetamol was at its lowest since a peak of 10.5 percent in 2003. This decrease may be related to public health initiatives and decreased availability.

Avenues of obtaining prescription drugs for misuse are varied: sharing between family and friends, illegally buying medications at school or work, and often "doctor shopping" to find multiple physicians to prescribe the same medication, without knowledge of other prescribers.

Increasingly, law enforcement is holding physicians responsible for prescribing controlled substances without fully establishing patient controls, such as a patient "drug contract". Concerned physicians are educating themselves on how to identify medication-seeking behavior in their patients, and are becoming familiar with "red flags" that would alert them to potential prescription drug abuse.

### **SUBSTANCE ABUSE AMONG MEDICOS**

Medical students, as future doctors, hold a unique place in society and earn privileges and responsibilities different from those of other students. Different standards of professional behaviour are hence expected from them. Substance use by medical students poses risks and can also have serious consequences on their effectiveness and fitness to practice as tomorrow's doctors. It is believed that substance use among physician starts early in their careers and the importance of studying the lifestyles of medical students to detect substance abuse is well recognized.

The probable adverse effects of these psychoactive substances have caused international concern over many years and international legislations have been enacted at various times to control their circulation and use. Various studies have reported an increasing trend in the prevalence of substance abuse, particularly among the youth, and its seriousness as a public

health hazard. A greater cause for concern is the finding of a similarity between urban and rural trends in drug use.

Substance use among doctors is a personal health risk and could lead to serious professional consequences including negligent behaviour, impaired fitness to practise and even serious harm to patients. Physicians who misuse addictive substances may also fail to take the issue seriously when confronted by such problems in their patients.

A study from a medical school in Pakistan reported peer pressure, academic stress and curiosity to be the commonest reasons attributed to substance use by medical students. Moral unacceptability, religious barriers, harmful effects of drugs and fear of being caught were reasons cited for not using drugs. Moore et al. identified several medical school precursors of physician drug abuse including lack of religious affiliation, smoking a pack of cigarettes a day, regular use of alcohol, anxiety or anger as a response to stress, and frequent use of alcohol in non-social settings. Idealistic behaviours, high academic rank in class, perfectionist behaviour—traits that are likely to predict success in medical school—have been described as risk factors for substance use.

Medical students, being young adults, are inherently at risk. Medical schools and councils in western countries have drafted explicit guidelines about dealing with substance use among medical students and have developed programmes for the rehabilitation of affected students and physicians. In the UK, the Medical Schools Council (MSC) and the General Medical Council (GMC) have overseen the development of guidance for medical students with a substance use problem, which aims to balance a positive approach to the professional behaviour of medical students. It also provides specific advice for medical schools on how to develop consistent fitness-to-practise procedures. Impaired physician programmes and physician health committees in the USA provide confidential services to educate, treat, support, rehabilitate and monitor impaired medical students and physicians, and to protect the public from harm. Baldisserri describes the set up of such committees and interventions in detail and observes that, compared with other groups, recovery rates of impaired physicians are higher, independent of provider, location or treatment model.

Unfortunately, there is still no clear provision in the Indian medical school system to positively rehabilitate impaired medical students or indeed, physicians, and interventions, if applied, are likely to be punitive in nature.

The Medical Council of India does not seem to have any clear reference to substance use by doctors or guidance against self-prescriptions in its Code of Ethics. Medical schools could lay more emphasis on stress management techniques, encourage medical students to identify their own substance use habits, and provide relevant health education and support as early as possible.

With India's massive economic growth, lifestyles are changing and affordability is rapidly rising, and since our data collection in 2003, there have been reports in the national media of a greater use of recreational drugs such as ecstasy, cocaine and LSD. Pragmatically, recreational and experimental use of substances is often considered to be a determinant of, and on the same continuum with, future harmful or dependent use.

Trends in the West have shown a general increase in alcohol and illicit substance use by medical students, especially women. However, the rates of nicotine use have been decreasing progressively, which is likely to be a result of the powerful preventative nature of public health programmes against smoking in general. Lessons need to be learnt from the West regarding successful reduction of tobacco use, and medical schools and councils in India need to develop guidelines and rehabilitation programmes that are non-punitive, supportive and ensure confidentiality for those talented but vulnerable medical students who enter and get lost in the whirlpool of substance use.

After all, they are the doctors of tomorrow and some, like the legendary William S. Halstead (a man trapped for years by cocaine addiction but more famously known as the father of modern surgery), with adequate support, have the potential to go on to do great things for mankind and medicine.






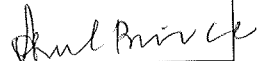



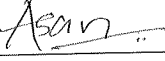

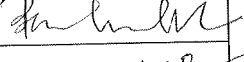
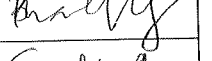
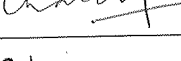
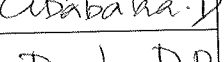
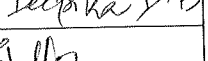
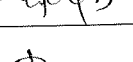
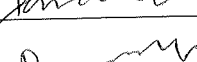
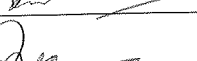
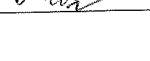
**Annexure II**

**Bharath Institute of Higher Education and Research**

Sri Lakshmi Narayana Institute of Medical Sciences

Participant list with signatures

Value added course: **SUBSTANCE ABUSE AMONG MEDICAL STUDENTS (dated 06/10/2017)**

Sl.No	Reg.No	Name of the candidate	Signature
1.	U15MB260	ARCHITH VIGNESH .B	
2.	U15MB261	ARJUNBALAJI .A	
3.	U15MB262	ARUL NIVETHINI V.A	
4.	U15MB263	ARUL PRINCE. E	
5.	U15MB265	ARUN PRASAD. K	
6.	U15MB266	ARUNA .S	
7.	U15MB264	ARUNKUMAR .S	
8.	U15MB267	ASAN THASTHAGIR. M	
9.	U15MB268	ASWIN. B	
10.	U15MB269	BALAMANI KANDAN. S	
11.	U15MB270	BHALA KUMARAN .S	
12.	U15MB271	CHELLAMARIAPPAN. S	
13.	U15MB272	CIBIBALAA. D	
14.	U15MB273	DEEPIKA DIVYA KUMARI. B	
15.	U15MB274	DEEPIKA PRIYADHARSHINI. B	
16.	U15MB275	DEVANAND .M	
17.	U15MB276	DEVANATHAN. R	
18.	U15MB277	DHANA PRIYA .P	



19.	U15MB278	DHANALAKSHMI. M	Dhan M.
20.	U15MB279	DHANUSH .R	Dhanush
21.	U15MB280	DHANUSH KODALI	Dhan
22.	U15MB281	DHIVYA KUMARI .P	Dhivya
23.	U15MB282	DIVYA .S	Divya
24.	U15MB283	DIVYA DHARSHINI .N	Divya Dharshini N
25.	U15MB284	EVANGELINE PRETTY .G	Evangeline



**ANNEXURE- III**



**SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL  
SCIENCES**

**SUBSTANCE ABUSE AMONG MEDICOS**

**SHORT NOTES**

**Course Code: IM07**

**WRITE SHORT NOTES ON THE FOLLOWING:**

1. What is substance abuse?
2. Risk factors for substance abuse among medicos
3. Physical and mental ill- effects of substance abuse
4. How to tackle the menace of substance abuse among medicos?





SUBSTANCE ABUSE AMONG MEDICOS

SHORT NOTES

Student Name:

ARJUN BALAJI . A

Course Code: IM07

WRITE SHORT NOTES ON THE FOLLOWING:

1. What is substance abuse?
2. Risk factors for substance abuse among medicos
3. Physical and mental ill- effects of substance abuse
4. How to tackle the menace of substance abuse among medicos?

10  
10  
Addiction

- 1) Excessive use of psychoactive drugs, such as alcohol, pain medication or illegal drugs. It can lead to physical, social or emotional harm.
- 2) The doctors are vulnerable to substance abuse/addiction
- Ready accessibility to the substance of abuse
  - Majority of them prescribe drugs to themselves.
  - Stress, (Situational, personal, professional)
- medical student abuse, family +/o alcoholism.
- 3) Physical effects of substance abuse:
- Changes in appetite
  - Sleeplessness or insomnia
  - Increased heart rate
  - Blurred speech - temporary sense of euphoria, loss of co-ordination.
- Substance abuse. Mental effects
- Inability to cease using a drug
  - Relationship problem.

- poor work or academic performance
- loss of interest in formerly enjoyable activities
- Depression, anxiety, paranoia, hallucination, pain disorders.

4) 1. Behavioral therapy

2. Group therapy - people to change of acknowledge, share, work.

3. Medication to withdrawal of symptoms.



SUBSTANCE ABUSE AMONG MEDICOS

SHORT NOTES

Student Name:

BHALA KUMARAN.S

Course Code: IM07

WRITE SHORT NOTES ON THE FOLLOWING:

1. What is substance abuse?
2. Risk factors for substance abuse among medicos
3. Physical and mental ill-effects of substance abuse
4. How to tackle the menace of substance abuse among medicos?

8  
10  
Arun  
i-Arun

- ① Excessive use of psychoactive drugs such as alcohol, pain medications or illegal drugs can lead to physical, social or emotional harm.
- ② The doctors are vulnerable to substance abuse addiction due to their ready accessibility to substance abuse. There is ↑ frequency of use of alcohol among medical students. Majority of substance abuser doctors are graduates.

③ - Depends on type of the drug that person using and their health history.

- Exact Effect vary among individuals drugs, dosage and delivery method.

✓ - Nicotine from cigarette product raises BP + ↑ alertness.

④ - \* Behavioural counselling.

\* Medication.

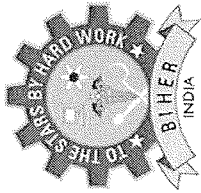
\* Orientation classes for the Study Plan to

relieve stress.

✓ \* Because stress is the main cause for substance abuse in the medicos.

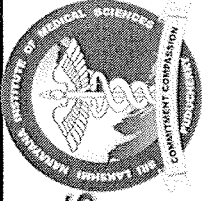
\* Good and stress free teaching should be undergone

\* Medical Advice should be given by the professors



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



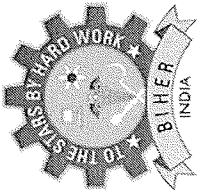
## CERTIFICATE OF MERIT

This is to certify that ARUNA.S has actively participated in the Value Added Course on “Substance abuse among medicos” conducted between October 2017 – December 2017 by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

*Dr. Chellapandian*  
Dr. Chellapandian  
RESOURCE PERSON

*Dr. C. Aravind*  
Dr. Aravind. C  
COORDINATOR

м.п. ГУМАНИТАРНОГО УНИВЕРСИТЕТА



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research

(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that BHALA KUMARAN .S has actively participated in the Value Added Course on “Substance abuse among medicos” between October 2017 – December 2017 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr. Chellapandian

RESOURCE PERSON

Dr. Aravind.C

COORDINATOR



ANNEXURE - V  
**Student Feedback Form**

Course Name: **SUBSTANCE ABUSE AMONG MEDICAL STUDENTS**

Subject Code: **IM07**

Name of Student: Arun Kumar - S Roll No.: 015113264

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear				/	
2	Course contents met with your expectations				/	
3	Lecturer sequence was well planned				/	
4	Lectures were clear and easy to understand					/
5	Teaching aids were effective				/	
6	Instructors encourage interaction and were helpful				/	
7	The level of the course					/
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Date: 01/12/2017

Srean  
Signature



ANNEXURE - V  
**Student Feedback Form**

Course Name: **SUBSTANCE ABUSE AMONG MEDICAL STUDENTS**

Subject Code: **IM07**

Name of Student: Arundha S Roll No.: V15 MB266

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear				✓	
2	Course contents met with your expectations				✓	
3	Lecturer sequence was well planned				✓	
4	Lectures were clear and easy to understand				✓	
5	Teaching aids were effective				✓	
6	Instructors encourage interaction and were helpful				✓	
7	The level of the course				✓	
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Date: 01/12/2017

Arundha S  
Signature



Date: 04/12/2017

From  
Dr. Aravind. C  
Professor and Head  
Department of General Medicine  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research  
Chennai

Through Proper Channel

To  
The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research  
Chennai

**Sub: Completion of value-added course: Substance abuse among medicos**

Respected Madam,

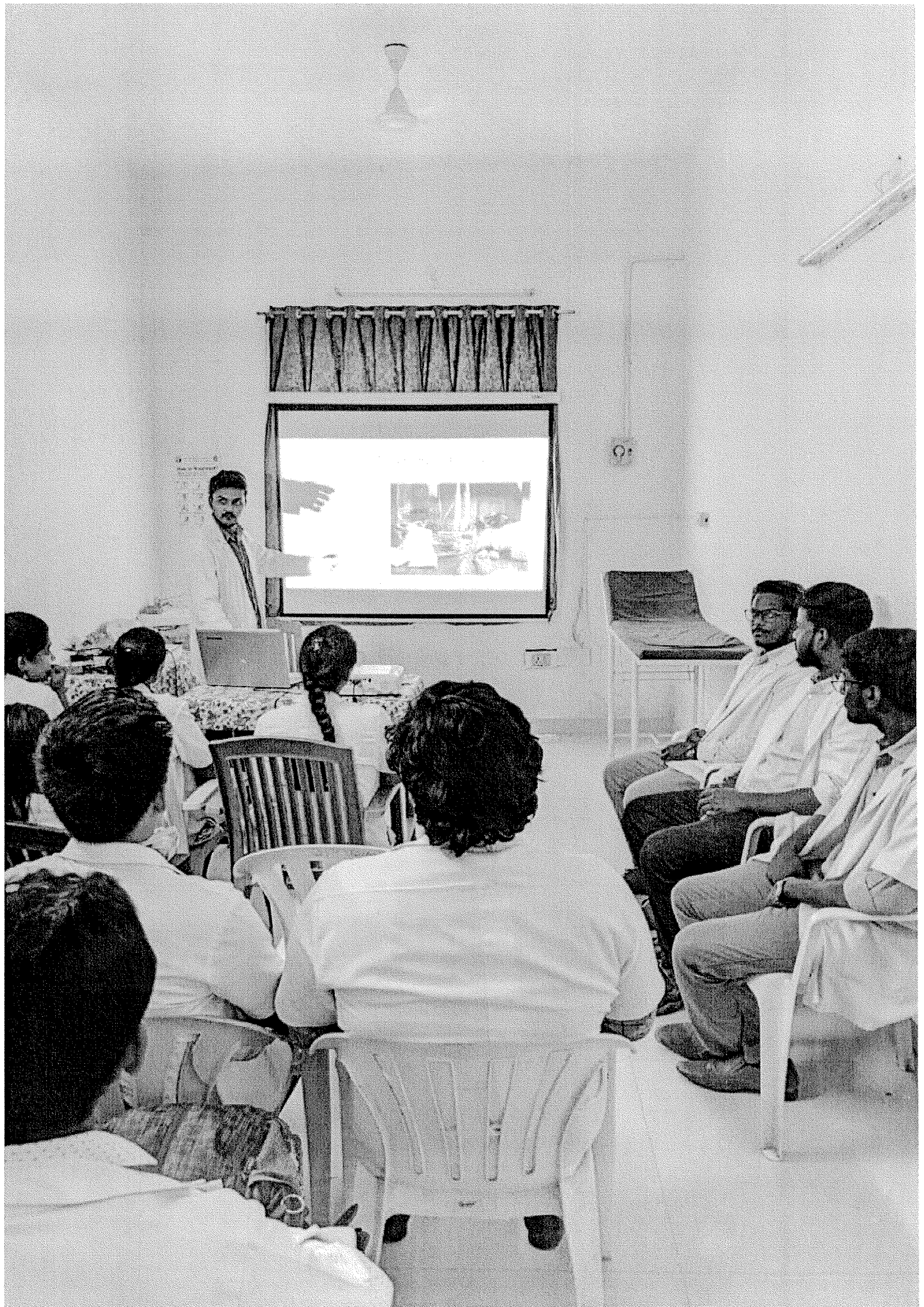
With reference to the subject mentioned above, the department has conducted the value-added course titled: "**Substance abuse among medicos**" on 01/12/2017. We solicit your kind action to send certificates for the participants. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards,

Dr. C. Aravind, MD.,  
Rel. No: 68432  
Dr. Aravind. C  
Professor of General Medicine  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502.

**Encl: Photographs**









## Sri Lakshmi Narayana Institute of Medical Sciences

From

Dr. Vijay Kumar,  
Assistant Professor and Head,  
Department of TB & Chest,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

6.09.2017

To

The Dean,  
Sri Lakshmi Narayana Institute of Medical College  
Bharath Institute of Higher Education and Research,  
Chennai.

### **Sub: Permission to conduct value-added course: Basics about Smoking Cessation**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: **Basics about Smoking Cessation** during October to November 2017. We solicit your kind permission for the same.

Kind Regards

Dr. Vijay Kumar

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### **FOR THE USE OF DEANS OFFICE**

Names of Committee members for evaluating the course:

The Dean: **Dr. Jaya lakshmi**

The HOD: **Dr. Vijay Kumar**


The Expert: **Dr. Prakash Rao Balan**

The committee has discussed about the course and is approved.



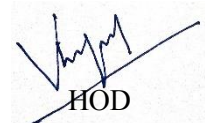
Dean

**Dr. G. JAYALAKSHMI, BSC., MBBS., DTCO., M.D.,**  
**DEAN**  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agaram, Kudapakkam Post,  
Villanur Commune, Pudukkottai - 605502.



BR. Prakash Rao Balan  
Subject Expert

Dr Prakash Rao Balan



HOD

Dr. Vijay Kumar



OFFICE OF THE DEAN

## **Sri Lakshmi Narayana Institute of Medical Sciences**

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P -II ) dt. 11/07/2011 ]

[ Affiliated to Bharath University, Chennai - TN ]

### **Circular**

15.09.2017

**Sub: Organising Value-added Course: Basics about smoking cessation.**

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research** is organizing “**Basics about Smoking Cessation** . The course content is enclosed below.”

he application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before 30.09.2017. Applications received after the mentioned date shall not be entertained under any circumstances.

**Dean**

**Dr. G. JAYALAKSHMI, BSC., MBBS., DTCD., M.D.,**  
**DEAN**  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agaram, Kudapakkam Post,  
Villanur Commune, Puducherry - 605502.

Encl: Copy of Course content

## Course Proposal

**Course Title: Basics about Smoking Cessation**

**Course Objective: To know about the basics of smoking cessation**

**Course Outcome: Management of nicotine addiction**

**Course Audience: Medical Interns of 2017 Batch**

**Course Coordinator: Dr.vijay kumar**

**Course Faculties with Qualification and Designation:**

**1.Dr.Vijay kumar,Assistant Professor & HOD**

**2.Dr. Prakash rao balan,Senior resident**

**Course Curriculum/Topics with schedule (Min of 30 hours)**

<b>SlNo</b>	<b>Date</b>	<b>Topic</b>	<b>Resource faculty</b>	<b>Time</b>	<b>Hours</b>
1.	7.10.17	Introduction	Dr. Vijay kumar	2-6p.m	4
2.	14.10.17	Health hazards of smoking	Dr.Prakash rao balan	2-6p.m	4
3.	21.10.17	Smoking and cancer risk	Dr. Vijay kumar	2-6p.m	4
4.	28.10.17	Cigarette smoking and infection	Dr.Prakash rao balan	2-6p.m	4
5.	4.11.17	Effects of nicotine	Dr. Vijay kumar	2-6p.m	4
6.	11.11.17	Fagerstorm criteria for nicotine dependance	DrPprakash rao balan	2-6p.m	4
7.	18.11.17	Algothrim for treating tobacco use	Dr.Vijay kumar	2-6 P.M	4
8.	25.11.17	Stratergies to help the patient willing to quit tobacco use	Dr.Prakash rao balan	2-6p.m	4

9.	29.11.17	Multiple choice questions and discussion	Dr. Vijay kumar	4-6p.m	2
			<b>Total</b>		34 hrs

### REFERENCE BOOKS:

1. Bai JW, et al. (2017). Smoking cessation affects the natural history of COPD. *Int J Chron Obstruct Pulmon Dis*; 12: 3323–3328.
2. Behrakis PK, et al. (2017). Tobacco cessation guidelines for high-risk populations (TOB.g). <http://tob-g.eu/wp-content/uploads/TOB-G-BOOK-DIGITAL-VERSION.pdf>
3. Cahill K, et al. (2013). Pharmacological interventions for smoking cessation: an overview and network meta-analysis. *Cochrane Database Syst Rev*; 5: CD009329.
4. European Network for Smoking and Tobacco Prevention (2012). *ENSP Guidelines for Treating Tobacco Dependence*. Brussels, ENSP.
5. Lai DT, et al. (2010). Motivational interviewing for smoking cessation. *Cochrane Database Syst Rev*; 1: CD006936.
6. Livingstone-Banks J, et al. (2019). Relapse prevention interventions for smoking cessation. *Cochrane Database Syst Rev*; 2: CD003999

## VALUE ADDED COURSE

### 1. Name of the programme & Code

Basics about Smoking Cessation CT05

### 2. Duration & Period

34 hrs & October– November 2017

### 3. Information Brochure and Course Content of Value Added Courses

*Enclosed as Annexure- I*

### 4. List of students enrolled

*Enclosed as Annexure- II*

### 5. Assessment procedures:

Assessment Evolution by DOPS method - *Enclosed as Annexure- III*

### 6. Certificate model

*Enclosed as Annexure- IV*

### 7. No. of times offered during the same year:

1 time October – November 2017

### 8. Year of discontinuation: 2018

### 9. Summary report of each program year-wise

Value Added Course- October – November 2017					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	CT05	Basics about Smoking cessation	Dr. Vijay kumar Dr.Prakash rao balan	CRRI Interns	8 students OCT – NOV2017

### 10. Course Feed Back

*Enclosed as Annexure- V*

*Dr. Prakash*

**RESOURCE PERSON**  
1. Dr.Prakash rao balan

*Vijay*

**COORDINATOR**  
Dr.Vijay Kumar

# **SMOKING CESSATION**



**PARTICIPANT HAND BOOK**

## COURSE DETAILS

<b>Particulars</b>	<b>Description</b>
Course Title	Diagnosis and management of smoking cessation
Course Code	CT05
Objective	1. INTRODUCTION: 2. HEALTH HAZARDS OF SMOKING: 3. CIGARETTE SMOKING AND CANCER RISK: 4. CIGARETTE SMOKING AND INFECTION 5. EFFECTS OF NICOTINE 6. FAGERSTORM CRITERIA FOR NICOTINE DEPENDANCE: 7. ALGOTHRIM FOR TREATING TOBACCO USE: 8. STRATERGIES TO HELP THE PATIENT WILLING TO QUIT TOBACCO USE: 9. CLINICAL GUIDELINES FOR PRESCRIBING PHARMACOTHERAPY IN TOBACCO CESSATION : 10. CLINICAL USE OF PHARMACOTHERAPY IN TOBACCO CESSATION:
Further learning opportunities	Nicotine dependence treatment
Key Competencies	On successful completion of the course the students will have skill in nicotine dependence treatment
Target Student	Interns of 2017 batch
Duration	34hrs Every October-November 2017
Theory Session	32 hrs +2hrs
Assessment Procedure	Multiple choice questions

## 1.INTRODUCTION:

Smoking should be regarded as a primary addictive disorder.

Cigarette smoking remains the leading cause of preventable premature morbidity and mortality in the United States and in many countries around the world.

An average of 443,000 people in the United States die prematurely from tobacco-related disease in a year, which includes one of every three cancers and one in five overall deaths.

Smoking, the largest preventable cause of cancer, is responsible for about 30% of cancer deaths.

## 2.HEALTH HAZARDS OF SMOKING:

Health hazards due to second hand smoke in non smokers:

<b>Children</b>	<b>Adults</b>
Hospitalization for respiratory tract infection in first year of life	Lung cancer
Wheezing	Myocardial infarction
Middle ear effusion	Reduced pulmonary function
Asthma	Irritation of eyes, nasal congestion, headache
Sudden infant death syndrome	Cough

Health hazards in smokers:

**CANCER (See Table 46-2)****CARDIOVASCULAR DISEASE**

Sudden death  
Acute myocardial infarction  
Unstable angina  
Stroke  
Peripheral arterial occlusive disease (including thromboangiitis obliterans)  
Aortic aneurysm

**PULMONARY DISEASE**

Lung cancer  
Chronic bronchitis  
Emphysema  
Asthma  
Increased susceptibility to pneumonia and to pulmonary tuberculosis  
Increased susceptibility to desquamative interstitial pneumonitis  
Increased morbidity from viral respiratory infection

**GASTROINTESTINAL DISEASE**

Peptic ulcer  
Esophageal reflux

**REPRODUCTIVE DISTURBANCES**

Reduced fertility  
Premature birth  
Lower birth weight  
Spontaneous abortion  
Abruptio placentae  
Premature rupture of membranes  
Increased perinatal mortality

**ORAL DISEASE (SMOKELESS TOBACCO)**

Oral cancer  
Leukoplakia  
Gingivitis  
Gingival recession  
Tooth staining

**OTHER**

Non-insulin-dependent diabetes mellitus  
Earlier menopause  
Osteoporosis  
Cataract  
Tobacco amblyopia (loss of vision)  
Age-related macular degeneration  
Premature skin wrinkling  
Aggravation of hypothyroidism  
Altered drug metabolism or effects

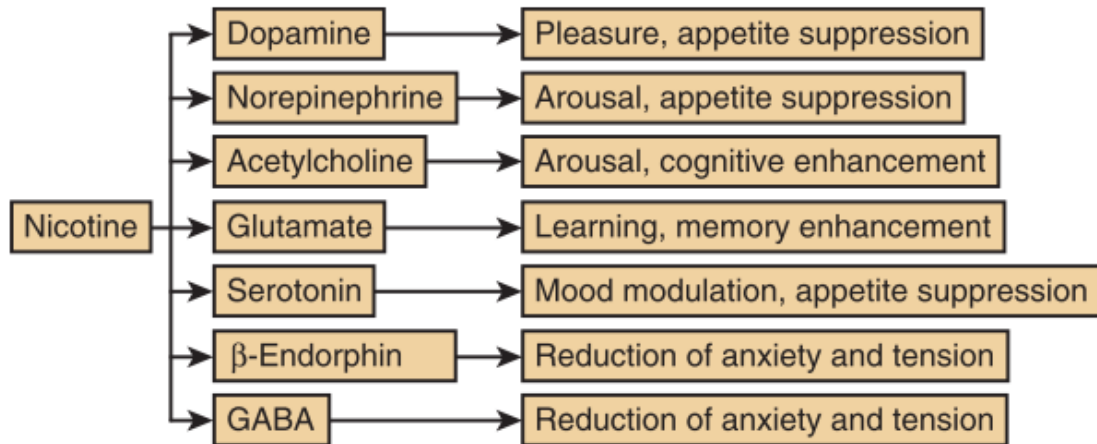
### 3.CIGARETTE SMOKING AND CANCER RISK:

Cancer Site	Average Relative Risk
Lung	15.0–30.0
Larynx	10.0*
Oral cavity	4.0–5.0
Oropharynx and hypopharynx	4.0–5.0*
Esophagus	1.5–5.0*
Pancreas	2.0–4.0
Urinary tract	3.0
Nasal cavity, sinuses, nasopharynx	1.5–2.5
Stomach	1.5–2.0
Liver	1.5–2.5
Kidney	1.5–2.0
Uterine cervix	1.5–2.5
Myeloid leukemia	1.5–2.0

### 4.CIGARETTE SMOKING AND INFECTION:

Tuberculosis
Legionnaires' disease
HIV infection
Periodontal disease
Pneumococcal pneumonia
Meningococcal disease
Influenza
<i>Helicobacter pylori</i>
Common cold

## 5.EFFECTS OF NICOTINE:



## 6.FAGERSTORM CRITERIA FOR NICOTINE DEPENDANCE:

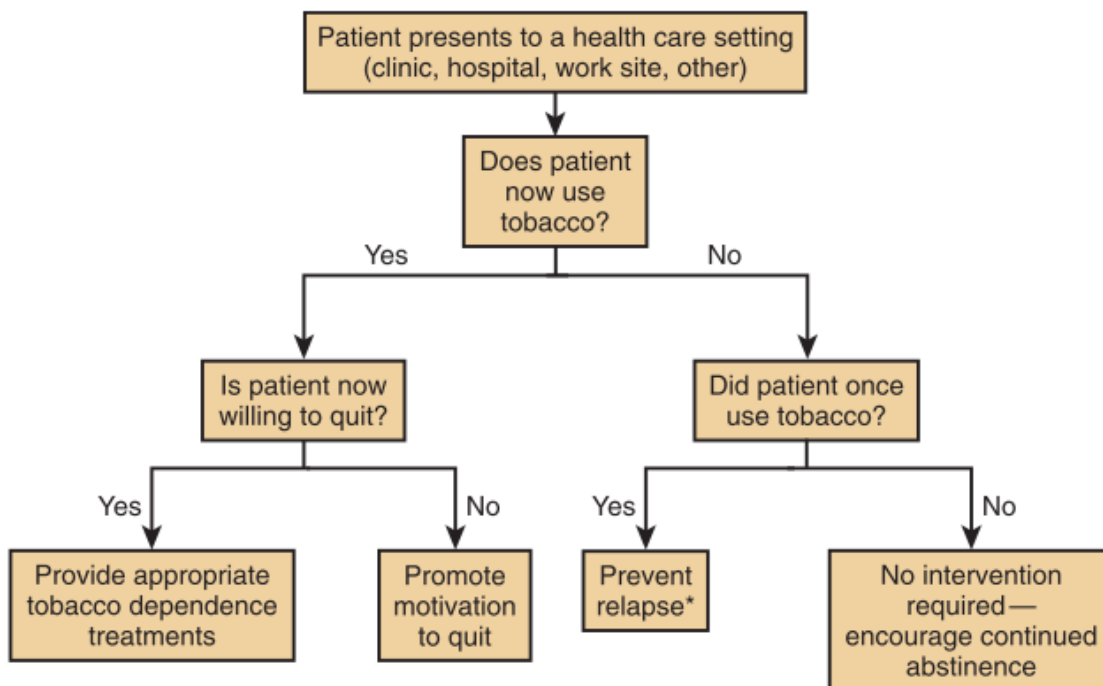
Questions	Answers	Points
1. How soon after you wake up do you smoke your first cigarette?	Within 5 min	3
	6–30 min	2
	31–60 min	1
	After 60 min	0
2. Do you find it difficult to refrain from smoking in places where it is forbidden, e.g., in church, at the library, in cinema, etc.?	Yes	1
	No	0
3. Which cigarette would you hate most to give up?	The first one in the morning	1
	All others	0
4. How many cigarettes/day do you smoke?	10 or less	0
	11–20	1
	21–30	2
	31 or more	3
5. Do you smoke more frequently during the first hours after waking than during the rest of the day?	Yes	1
	No	0
6. Do you smoke if you are so ill that you are in bed most of the day?	Yes	1
	No	0

The most important question is time to first cigarette, and smokers who smoke within 30 minutes of awakening are usually heavily addicted to nicotine.

These patients and those with Fagerstrom scores  $\geq 7$  comprise a group of individuals likely to benefit from nicotine replacement therapy (NRT) or varenicline.

In contrast, patients with low Fagerstrom scores who are able to cope with smoke-free environments for an extended time period ( $>4$  hours) without developing discomforting withdrawal symptoms, may not require NRT.

## 7. ALGORITHM FOR TREATING TOBACCO USE:



\*Relapse prevention interventions are not necessary in the case of the adult who has not used tobacco for many years.

## 8. STRATEGIES TO HELP THE PATIENT WILLING TO QUIT TOBACCO USE:

Strategies for Implementation	Action
Ask—Systematically identify all tobacco users at every visit.	Implement an office-wide system that ensures that, for every patient at every clinic visit, tobacco-use status is queried and documented.
Advise—Strongly urge all tobacco users to quit.	In a clear, strong, and personalized manner, urge every tobacco user to quit.
Assess—Determine willingness to make a quit attempt.	Ask every tobacco user if he or she is willing to make a quit attempt at this time (e.g., within the next 30 days).
Assist—Aid the patient in quitting.	Help the patient with a quit plan. Provide practical counseling (problem solving/skills training). Provide intra-treatment social support. Help patient obtain extra-treatment social support. Recommend the use of approved pharmacotherapy except in special circumstances.
Arrange—Schedule follow-up contact.	Schedule follow-up contact, either in person or via telephone.

## 9. CLINICAL GUIDELINES FOR PRESCRIBING PHARMACOTHERAPY IN TOBACCO CESSATION :

- In general, all smokers trying to quit smoking should be offered pharmacotherapy.
- There are seven first-line smoking cessation medications—five types of nicotine replacement therapy, sustained-release bupropion, and varenicline. Varenicline or the combination of nicotine patch plus ad libitum short-acting nicotine products appears to be most effective. However, the choice of first-line therapy should be governed by patient preference, familiarity of the clinician with the medication, contraindications for specific patients, and prior experience of the patient with specific pharmacotherapies.
- Second-line therapies include clonidine and nortriptyline. These should be reserved for individuals with contraindications to/or failure of response to first-line medications.

- Bupropion and nicotine replacement therapies may delay but not prevent weight gain after smoking cessation. It is recommended that patients start or increase physical activity, but strict dieting is discouraged because this appears to increase the likelihood of relapse to smoking. Patients should be reassured that weight gain after quitting is self-limited and poses much less of a risk to health than smoking.
- Transdermal nicotine (patches), nicotine gum, and bupropion appear to be safe for patients with chronic cardiovascular disease. Other medications are likely to be much safer than smoking in the presence of medical disease but need further evaluation.
- In smokers with prolonged withdrawal symptoms or in those who cannot resist smoking without medication, long-term therapy with nicotine replacement medication, bupropion, or varenicline appears to be safe and effective therapy.
- Recent research suggests that combining bupropion with nicotine patches or combining nicotine patches with ad libitum use of nicotine gum or nicotine nasal spray increases abstinence rates compared to the rates produced by a single form of therapy.

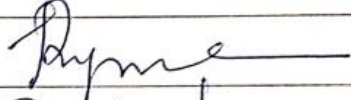
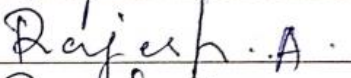
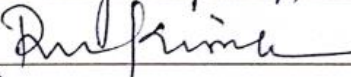
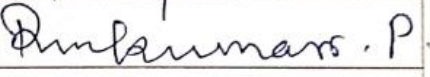
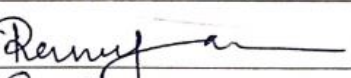
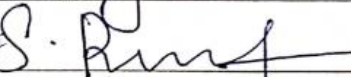
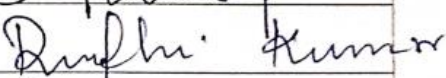
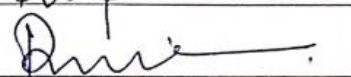
## 10. CLINICAL USE OF PHARMACOTHERAPY IN TOBACCO CESSATION:

Pharmacotherapy	Precautions/ Contraindications	Adverse Effects	Dosage	Duration	Availability
<b>FIRST-LINE</b>					
Bupropion hydrochloride, sustained release	History of seizure History of eating disorders	Insomnia Dry mouth	150 mg every morning for 3 days then 150 mg twice daily (begin treatment 1–2 wk prequit)	7–12 wk maintenance up to 6 mo	Prescription only
Nicotine gum	Temporomandibular joint disorder	Mouth soreness Dyspepsia	If 1–24 cigarettes/day, 2 mg gum ( $\leq 24$ pieces/day) If $\geq 25$ cigarettes/day, 4 mg gum ( $\leq 24$ pieces/day)	Up to 12 wk	OTC only
Nicotine inhaler		Local irritation of mouth and throat	6–16 cartridges/day	Up to 6 mo	Prescription only
Nicotine nasal spray	Chronic nasal disorders, including rhinitis, polyps, and sinusitis	Nasal irritation Throat burning	8–40 doses/day	3–6 mo	Prescription only
Nicotine patch	Skin diseases, such as atopic or eczematous dermatitis	Local skin reaction Insomnia	21 mg/24 hr 14 mg/24 hr 7 mg/24 hr 15 mg/16 hr	4 wk then 2 wk then 2 wk 8 wk	Prescription and OTC
Nicotine lozenge	None	Nausea, hiccups, heartburn	If time to first cigarette $>30$ min, 2 mg; if time to first cigarette $<30$ min, 4 mg, up to 20 per day	12 weeks	OTC only
Varenicline	Significant kidney disease Patients on dialysis	Nausea Abnormal or vivid strange dreams Depressed mood and other psychiatric symptoms Trouble sleeping	0.5 mg/day for 3 days, 0.5 mg twice /day for 4 days, then 1 mg twice/day (begin treatment 1 wk prequit)	3–6 mo	Prescription only
<b>SECOND-LINE</b>					
Clonidine	Rebound hypertension	Dry mouth Drowsiness Dizziness Sedation	Initial 0.10 mg twice daily, titrate to 0.15–0.75 mg/day	3–10 wk	Prescription only (oral formulation) Prescription only (patch)
Nortriptyline	Risk for arrhythmias	Sedation Dry mouth	Initial 25 mg/day, titrate to 75–100 mg/day	3–6 mo	Prescription only

VALUE ADDED COURSE

Basics about Smoking Cessation CT05

4. List of Students Enrolled OCT 2017-NOV2017

1 <sup>st</sup> Year MBBS Student			SIGNATURE
Sl. No	Name of the Student	Roll No	
1	RAJESH. V.	U13MB242	
2	RAJESH.A.	U13MB241	
3	RAJKIRAN.M.	U13MB243	
4	RAMKUMAR.P.	U13MB244	
5	RAMYA.K	U13MB245	
6	RAMYA.S	U13MB246	
7	Ranjith Kumar. S	U13MB247	
8	RAVI KRISHNAN.R	U13MB248	

  
RESOURCE PERSON

  
COORDINATOR



SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH

Annexure - III

BASICS ABOUT SMOKING CESSATION  
MULTIPLE CHOICE QUESTIONS

*Sri Lakshmi Narayana Institute of Medical Sciences, Puducherry*



CANDIDATE AND ASSESSOR INFORMATION

Course code: CT05

Candidate Name Sri Kowshik M. B.

Assessor Name Dr VITAY KUMAR

Date of Assessment 9.11.17.

Assessor Position ASSISTANT PROFESSOR

**Questions and Answers:**

1. What is the average weight gain for those who quit smoking?

- A Less than 10 pounds
- B 10-15 pounds
- C 15-30 pounds
- D More than 30 pounds

2. Signs of cigarette addiction do NOT include which one of the following:

- A Smoking within 30 minutes of awakening in the morning
- B Smoking more than three cigarettes per day



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AND RESEARCH

- C Smoking even when sick and in bed
- D Difficulty eliminating the first cigarette in the morning

3. Other healthy habits may make up for smoking.

- A True
- B False

4. What kinds of substances are contained in a cigarette?

- A Chemicals used in wood varnish
- B Chemicals found in nail polish remover
- C Chemicals found in rat poison
- D All of the above

5. Which symptom is most likely to be associated with smoking cessation?

- A Blurred vision
- B Dry mouth
- C Anxiety
- D Stomach pain

6. Smoking and \_\_\_\_\_ are risk factors for heart disease.

- A High cholesterol
- B Human papillomavirus (HPV)



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AND RESEARCH

- C Blood infections
- D None of the above

7. Of the options below, the best advice for quitting smoking is:

- A Don't go cold turkey
- B Don't set a quit date
- C Don't tell anyone
- D Don't exercise right away at first

8. Addiction to nicotine is the same as addiction to cocaine or heroin.

- A True
- B False

9. It is best to clean house during the smoking cessation phase.

- A True
- B False

10. Which of these statements is FALSE?

- A Chemicals in cigarettes can reach breast milk
- B Cotinine is the breakdown product of nicotine
- C At least 250 chemicals have been found in secondhand smoke



**SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH**

D Smoking increases pain perception



SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH

Annexure - III

BASICS ABOUT SMOKING CESSATION  
MULTIPLE CHOICE QUESTIONS

*Sri Lakshmi Narayana Institute of Medical Sciences, Puducherry*



CANDIDATE AND ASSESSOR INFORMATION

Course code: CT05

Candidate Name

RAMYA . S

Assessor Name

D. VISAY KUMAR

Date of Assessment

9.11.2017.

Assessor Position

ASSISTANT  
PROFESSOR.

**Questions and Answers:**

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SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH

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**SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH**

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Sri Lakshmi Narayana Institute of Medical Sciences



CERTIFICATE OF MERIT

This is to certify that \_\_Ramkumar.P(U13MB244)\_ has actively participated in the Value Added Course on **BASICS ABOUT SMOKING CESSATION** held during **October - November 2017** Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

*Dr. Prakash Rao Balan*

Dr.Prakash Rao Balan

RESOURCE PERSON

*Dr. Vijay Kumar*

Dr. Vijay Kumar

COORDINATOR



## Sri Lakshmi Narayana Institute of Medical Sciences



### CERTIFICATE OF MERIT

This is to certify that \_\_\_\_\_Rajesh.A(U13MB241))\_ has actively participated in the Value Added Course on **BASICS ABOUT SMOKING CESSATION** held during **October - November 2017** Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

  
Dr. Prakash Rao Balan

RESOURCE PERSON



Dr. Vijay Kumar

COORDINATOR

### Student Feedback Form

Course Name: BASICS ABOUT SMOKING CESSATION

Subject Code: CT 05

Name of Student: SAI KOWSHIK · M · B Roll No.: U13MB249

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					✓
2	Course contents met with your expectations				✓	
3	Lecturer sequence was well planned					✓
4	Lectures were clear and easy to understand					✓
5	Teaching aids were effective					✓
6	Instructors encourage interaction and were helpful					✓
7	The level of the course					✓
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

useful course.

Date: 9.11.2017

Sai Kowshik  
Signature

### Student Feedback Form

Course Name: BASICS ABOUT SMOKING CESSATION

Subject Code: CT 05

Name of Student: RAMVA . S Roll No.: U13MB246

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					✓
2	Course contents met with your expectations					✓
3	Lecturer sequence was well planned				✓	
4	Lectures were clear and easy to understand					✓
5	Teaching aids were effective					✓
6	Instructors encourage interaction and were helpful				✓	
7	The level of the course					✓
8	Overall rating of the course	1	2	3	4	✓5

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Good .

  
Signature

Date: 9.11.2017

From

29.11.2017

Dr. Vijay Kumar  
Assistant Professor and Head,  
Department of TB& Chest,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

Through Proper Channel

To

The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Completion of value-added course: Basics about Smoking Cessation**

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: : **Basics about Smoking Cessation** October to November 2017 for 8 interns . We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards,

Dr. Vijay Kumar

**Encl: Certificates**

**Photographs**





**Sri Lakshmi Narayana Institute of Medical Sciences**



Date-20-10-2017

From  
Dr. K. Harsha Vardhan  
Professor and Head,  
Department of Dermatology,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

To  
The Dean  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Permission to conduct value-added course: Acne vulgaris**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: **Acne vulgaris** on 20-11-2017. We solicit your kind permission for the same.

Kind Regards

Dr. K. Harsha Vardhan

---

**FOR THE USE OF DEANS OFFICE**

Names of Committee members for evaluating the course:

The Dean: Dr. Jayalakshmi

The HOD: Dr. K. Harsha Vardhan

The Expert: Dr. A. Buvanaratchagan

The committee has discussed about the course and is approved.

**Dr. G. JAYALAKSHMI, BSC., MBBS., DTC.D., M.D.,**  
**DEAN**  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agaram, Kudapakkam Post,  
Villanur Commune, Puducherry - 605502.

Subject Expert

HOD

Sri Lakshmi Narayana Institute of Medical Sciences



Date-20-10-2017

From  
Dr. K. Harsha Vardhan  
Professor and Head,  
Department of Dermatology,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

To  
The Dean  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

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Dr. K. Harsha Vardhan

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The Expert: Dr. A. Buvanaratchagan

The committee has discussed about the course and is approved.

Dr. G. JAYALAKSHMI, BSC., MBBS., DTCO., M.D.,  
Dean  
DEAN  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agaram, Kudapakkam Post,  
Villianur Commune, Puducherry - 605502.

Dr. A. BUVANARATCHAGAN, MD.,  
Reg. No: 37150  
Asso. Professor, Dermatology  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry - 605 502.

Subject Expert

PROFESSOR & HEAD  
DEPT. OF DERMATOLOGY,  
SRI LAKSHMI NARAYANA INSTITUTE OF  
MEDICAL SCIENCES  
OSUDU, PUDUCHERRY.

HOD



OFFICE OF THE DEAN

# Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P -II ) dt. 11/07/2011 ]  
[ Affiliated to Bharath University, Chennai - TN ]

## Circular

27.10.2017

**Sub: Organising Value-added Course: Acne Vulgaris (Nov 2017 to Feb 2018)**

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research** is organizing "Acne Vulgaris". The course content is enclosed below."

The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before 13-11-2017. Applications received after the mentioned date shall not be entertained under any circumstances.

**Dr. G. JAYALAKSHMI, BSC., MBBS., DTCD., M.D.,**  
**DEAN**  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agaram, Kudapakkam Post,  
Villanur Commune, Puducherry - 605502.

Encl: Copy of Course content

# COURSE PROPOSAL

**Course Title:** Acne vulgaris

**Course Objective:** to review the pathogenesis and current treatment modalities of acne to second year mbbs students

**Course Outcome:** Completed

**Course Audience:** second year mbbs students

**Course Coordinator:** Dr. K. Harsha Vardhan

**Course Faculties with Qualification and Designation:**

- 1. Dr. K. Harsha Vardhan**  
Professor, Department of dermatology
- 2. Dr. Buvanaratchagan**  
Associate professor, Dept of Dermatology

**Course Curriculum/Topics with schedule (Min of 30 hours)**

SlNo	Date	Topic	Time	Hours	Lecture taken by
1	20-11-17	Introduction to acne	5 to 7 pm	2 hours	Dr.K.HarshaVardhan
2	24-11-17	Skin microbiome	4 :30 to 6:30 pm	2 hours	Dr. Buvanaratchagan
3	28-11-17	Predisposing factors	5 to 7 pm	2 hours	Dr. K. Harsha Vardhan
4	4-12-17	Pathogenesis	4:30 to 6 30 pm	2 hours	Dr. Buvanaratchagan
5	8-12-17	Complications	4 to 6 pm	2 hours	Dr. K. Harsha Vardhan
6	12-12-17	General measures in management	4 :30 to 6:30 pm	2 hours	Dr. Buvanaratchagan
7	18-12-17	Grading of acne	5 to 7 pm	2 hours	Dr. K. Harsha Vardhan
8	25-12-17	Topical therapy	4 to 6 pm	2 hours	Dr. Buvanaratchagan
9	29-12-17	Systemic therapy	4 :30 to 6:30 pm	2 hours	Dr. K. Harsha Vardhan
10	2-1-18	Daily care for acne	5 to 7 pm	2 hours	Dr. K. Harsha Vardhan
11	5-1-18	How to choose products in acne prone skin	4 to 6 pm	2 hours	Dr. Buvanaratchagan
12	9-1-18	Caution in comedogenic skin	4 :30 to 6:30 pm	2 hours	Dr. K. Harsha Vardhan
13	15-1-18	Case discussion: different scenarios	5 to 7 pm	2 hours	Dr. Buvanaratchagan
14	19-1-18	Future modalities of treatment	4 to 6 pm	2 hours	Dr. K. Harsha Vardhan
15	24-1-18	Q&A, mcq	5 to 7 pm	2 hours	Dr. Buvanaratchagan
			Total Hours	30	

**REFERENCE BOOKS:** 1. Rooks Textbook of dermatology  
2. Fitzpatrick's dermatology in general medicine

## ABSTRACT-VALUE ADDED COURSE

**1. Name of the programme & code**

Acne vulgaris and DR06

**2. Duration & Period**

30 hrs & Nov 2017 to Feb 2018

**3. Information Brochure and Course Content of Value Added Courses**

*Enclosed as Annexure- I*

**4. List of students enrolled**

*Enclosed as Annexure- II*

**5. Assessment procedures:**

Multiple choice questions- *Enclosed as Annexure- III*

**6. Course Feed Back**

*Enclosed as Annexure- IV*

**7. No. of times offered during the same**

Nov 2017 to Feb 2018

**8. Year of discontinuation: 2018**

**9. Summary report of each program year-wise**

Value Added Course- Nov 2017 to Feb 2018					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	DR06	Acne vulgaris	Dr. Buvanaratchagan	2nd yr MBBS	15 (Nov 2017– feb 18)

**10. Certificate model**

*Enclosed as Annexure- V*

Dr. Buvanaratchagan

**RESOURCE PERSON**

Dr. K. Harsha Vardhan

**COORDINATOR**

ABSTRACT-VALUE ADDED COURSE

**1. Name of the programme & code**

Acne vulgaris and DR06

**2. Duration & Period**

30 hrs & Nov 2017 to Feb 2018

**3. Information Brochure and Course Content of Value Added Courses**

*Enclosed as Annexure- I*

**4. List of students enrolled**

*Enclosed as Annexure- II*

**5. Assessment procedures:**

Multiple choice questions- *Enclosed as Annexure- III*

**6. Course Feed Back**

*Enclosed as Annexure- IV*

**7. No. of times offered during the same**

Nov 2017 to Feb 2018

**8. Year of discontinuation: 2018**

**9. Summary report of each program year-wise**

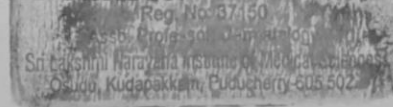
Value Added Course- Nov 2017 to Feb 2018					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	DR06	Acne vulgaris	Dr. Buvanaratchagan	2nd yr MBBS	15 (Nov 2017- feb 18)

**10. Certificate model**

*Enclosed as Annexure- V*

Dr. Buvanaratchagan

**RESOURCE PERSON** RATCHAGAN, MD.



*Vardhan H*  
Dr. K. Harsha Vardhan  
**COORDINATOR**  
HEAD  
DEPT. OF DERMATOLOGY  
SRI LAKSHMI NARAYANA INSTITUTE OF  
MEDICAL SCIENCES  
OSLO, PUDUKKOTTAI



## **ANNEXURE 1**

### **ACNE VULGARIS-AN OVERVIEW**



# PARTICIPANT HANDBOOK

## COURSE DETAILS

<i>Particulars</i>	<i>Description</i>
<i>Course Title</i>	<i>Acne vulgaris – An overview</i>
<i>Course Code</i>	<i>DR06</i>
<i>Objective</i>	<ol style="list-style-type: none"><li><i>1. To learn about the clinical features</i></li><li><i>2. To learn about the diagnosis</i></li><li><i>3. To learn about the treatment</i></li></ol>
<i>Further learning opportunities</i>	<i>Recent advances in management</i>
<i>Key Competencies</i>	<i>To make a diagnosis and provide adequate treatment</i>
<i>Target Student</i>	<i>2nd MBBS Students</i>
<i>Duration</i>	<i>30hrs Nov 2017 to Feb 2018</i>
<i>Theory Session</i>	<i>10hrs</i>
<i>Practical Session</i>	<i>20hrs</i>
<i>Assessment Procedure</i>	<i>Multiple choice questions</i>

### Introduction

Acne vulgaris (commonly called acne) is a common, chronic skin disease that arises in the hair follicle and often involves inflammation. Approximately 85% of adolescents and young adults are affected by the disease,[1] while moderate and severe acne accounts for 15–20% of cases.[2] Based on the data from the Global Burden of Disease study in 2013, acne accounted for 0.29% of all skin conditions, which contributed 1.79% to the global burden of disease. Acne ranks second among the most common dermatological conditions after dermatitis.[3]

Four factors have been thought to contribute to acne: hyper-secretion of sebum, abnormal proliferation and differentiation of keratinocytes in the hair follicle, bacterial colonization, and host inflammatory response.[4] Among these factors, the skin commensal *Propionibacterium acnes* is thought to trigger an inflammatory response and lead to subclinical and inflammatory acne lesions.[5]

Skin is colonized by hundreds of microorganisms, which occupy different cutaneous environmental niches and form various communities.[6] When the normal flora is disturbed or the host immune defence is weakened, opportunistic microorganisms may trigger or aggravate certain skin diseases.[7] The relationship between skin microorganisms and acne has long been implicated but not fully elucidated. With the rise of the microbiome field in recent years, new findings from studies of the skin microbiome have provided improved understanding of the role of skin microorganisms in health and acne.[8–12]

Antibiotics have been an effective and widely used treatment for acne in the past four decades. However, worldwide increase of antibiotic resistance due to frequent and long-term use of antibiotics raises significant concern regarding how the commensal skin microbiome and its protective role for the skin are affected. A better understanding of the relationship among acne, the skin microbiome, and antibiotic treatment may provide new insight on the treatment of the disease while restoring a healthy microbiome.

## **THE SKIN MICROBIOME AND ACNE**

The skin is the largest organ in the body, with an average area in adults of 1.8–2 m<sup>2</sup>. If considering hair follicles, sweat gland ducts, and other skin appendages, the body surface area can reach up to 30 m<sup>2</sup> according to Meisel et al. Various heterogeneous communities of microorganisms, including bacteria, viruses, fungi, and mites, occupy different skin environmental niches and appendages.[6,14]

Bacteria are the most dominant and best studied members of the skin microbiome. More than 40 bacterial genera have been identified on human skin, mainly belonging to four phyla: Actinobacteria, Firmicutes, Proteobacteria, and Bacteroidetes.[8–10] The proportions of these bacteria in each community vary depending on individuals, body sites, as well as skin micro-environments.[9,11,15] Propionibacteria, Staphylococcus and Corynebacteria, and Gram-negative bacteria are predominant in the sebaceous area, moist skin, and dry skin, respectively. Skin bacteria are not only diverse in taxonomy, but also vary in quantities. Culture based methods suggest that the total colony-forming units per cm<sup>2</sup> skin varies from  $3.7 \times 10^4$  to  $1.2 \times 10^6$ . [16] It has been estimated that  $10^6$  aerobic bacteria are present per cm<sup>2</sup> of moist skin, whereas less than  $10^2$  aerobic bacteria and up to  $10^6$  anaerobes are present per cm<sup>2</sup> of dry skin.[17] The balance of the skin microbiome and its interaction with the host affect the states of skin health and disease.

Propionibacterium Acnes and Acne

*P. acnes* was first observed by Unna[18] in 1896 and later isolated by Sabouraud[19] from acne lesions in 1897, which led to speculation regarding its involvement in acne pathogenesis. *P. acnes* was initially named *Bacillus acnes*, which was then changed to *Corynebacterium acnes* as it is morphologically similar

to *Corynebacteria*. The name was changed again in the 1940s to *P. acnes* due to its production of propionic acid.[20] With the identification of distinct phylogenetic groups based on multi-locus sequence typing (MLST) and whole-genome sequencing, it was proposed in 2015 to name the three major types as three subspecies known as *P. acnes* subsp. *acnes*, *P. acnes* subsp. *defendens*, and *P. acnes* subsp. *elongatum*. [21] In 2016, a new genus, *Cutibacterium*, was proposed for cutaneous propionibacteria [22] and, as such, *P. acnes* was renamed again to *Cutibacterium acnes*, although the name *P. acnes* continues to be used in the field in an effort to reduce the confusion between *Cutibacterium* and *Corynebacterium*. [23]

In the pilosebaceous unit, where acne arises, *P. acnes* is the most prevalent and abundant species, accounting for ~ 90% of the microbiome. [10,12] The scalp and facial skin harbour the highest density of *P. acnes* (~ 105–106/cm<sup>2</sup>), followed by the upper limbs and torso, and the lower limbs have the lowest density of *P. acnes* (~ 10<sup>2</sup>/cm<sup>2</sup>). [24] The abundance of *P. acnes* also varies with age. It is low on the skin of children before puberty, but gradually increases with age, starting from adolescence to adulthood, and then decreases in older persons of age above 50 years. [24–26]

Several mechanisms of acne pathogenesis involving *P. acnes* have been proposed, including changes in sebaceous gland activity, comedone formation, and host inflammation.

- **Increasing sebum secretion:** the colony-forming units of *P. acnes* in the pilosebaceous unit are correlated with the total amount and composition of the lipids on the skin. The secreted sebum is used by *P. acnes* as metabolic substrates to promote its growth. [24,27] *P. acnes* further enhances sebum secretion by increasing the activity of diacylglycerol acyltransferase, and exacerbates pre-existing androgen-related seborrhoea. [28]
- **Promoting comedone formation:** *P. acnes* breaks down triglycerides secreted from sebaceous glands and releases free fatty acids. Porphyrins secreted by *P. acnes* are catalytic factors for the oxidation of squalene, a main component of sebum. Free fatty acids and oxidized squalene promote comedogenesis. [29] Comedones form due to retention of hyper-proliferating keratinocytes/corneocytes in the follicular duct. Studies have shown that *P. acnes* not only forms a biofilm to increase keratinocyte adhesion, [30,31] but also activates the insulin-like growth factor 1 (IGF-1)/IGF-1 receptor signaling pathway to up-regulate filaggrin expression. The up-regulation of filaggrin expression leads to increased levels of integrin- $\alpha$ 3, -6 s, and -v $\beta$ 6, and thereby affects keratinocyte proliferation and differentiation [32,33] and comedone formation.
- **Inducing/aggravating inflammation:** upon binding to Toll-like receptor (TLR)-2 and -4 on the surface of keratinocytes, *P. acnes* induces monocytes and other cells to produce interleukin (IL)-1 $\alpha$ , IL1- $\beta$ , IL-6, IL-8, IL-12, tumour necrosis factor (TNF)- $\alpha$ , interferon, chemotactic factors,  $\beta$ -defensin, and other cytokines and polypeptides, thereby triggering and/or aggravating inflammatory responses. [34–37] *P. acnes* also activates the classical and alternative complement pathways to form C3a and C5a, which increase the vascular permeability and the involvement of chemotactic leukocytes in inflammatory responses. [38,39] Furthermore, *P. acnes* stimulates sebocytes and promotes the conversion of naïve T cells into T helper (Th) 17 cells by secreting transforming growth factor- $\beta$ , IL-1 $\beta$ , and IL-6. *P. acnes* can

also activate the NLRP3 inflammasome to induce the release of IL-1 $\beta$ , IL-8, and TNF- $\alpha$  from sebocytes.[40] *P. acnes* produces lipases, proteases, hyaluronidases, and phosphatases, and induces multiple cells to produce matrix metalloproteinases, thus directly impairing hair follicles, sebaceous glands, and dermal extracellular matrix, and ultimately aggravating inflammation.[41–43]

While a causal role of *P. acnes* in acne pathogenesis remains to be proven, *P. acnes* is also considered an important commensal for skin health. It releases free fatty acids through triglyceride hydrolysis to maintain low skin pH and inhibits the colonization of pathogenic bacteria, such as *Staphylococcus aureus* and *Streptococcus*. [44–46] *P. acnes* typing and genome sequencing efforts suggest that *P. acnes* can function as a commensal or an opportunistic pathogen depending on the strains and the disease. [10,47,48] *P. acnes* was previously classified into two types, I and II, based on serum lectin response, cell wall sugar content, and susceptibility to phages. [49] Later, an additional phylotype, type III, was defined. [50] Within type I, *P. acnes* can be further separated into clades IA1, IA2, IB, and IC based on the Belfast MLST scheme [51] or I-1a, I-1b, and I-2 based on the Aarhus MLST scheme. [52] With the whole-genome sequencing effort of a large number of *P. acnes* isolates, [48] higher resolution of the phylogeny became available. Based on the single nucleotide polymorphisms (SNPs) identified throughout the core genome regions, *P. acnes* can be classified into phylogenetic clades IA-1, IA-2, IB-1, IB-2, IB-3, IC, II, and III. [10,48] Table 1 summarizes the corresponding nomenclatures of the phylogenetic clades based on the whole-genome sequences and different MLST schemes. [48,51,52] Additionally, based on the 16S ribosomal RNA (rRNA) sequences, *P. acnes* can be classified into multiple ribotypes (RTs) with RTs 1–10 being the most common RTs found in the population. [10] These classifications are useful in understanding the associations between *P. acnes* strains and disease or healthy skin (Table 1). Strains from clades IA-2, (mainly RT4 and RT5), IB-1 (RT8), and IC (RT5) are strongly associated with acne. Type II strains, including RT2 and RT6, are associated with healthy non-acne skin. Strains from clades IA-1, IB-2, and IB-3 have been found in both healthy individuals and acne patients. [10,48,53] Type III strains are rarely found on the facial skin, but are abundant on the back and have been linked to the skin condition progressive macular hypomelanosis. [54,55]

Recent studies of *P. acnes* and the skin microbiome have shed new light on the strain-level differences in the roles of *P. acnes* in health and acne. Fitz-Gibbon et al. [10] revealed that certain *P. acnes* strains were enriched in acne patients, while some other strains were mostly found in healthy individuals. Tomida et al. [48] further compared the genomes of *P. acnes* strains isolated from healthy individuals and patients with acne, and identified that the non-core genomic regions of *P. acnes* strains associated with acne contain extra virulence-related genes when compared with other strains. Johnson et al. [56] showed that acne-associated strains produce more porphyrins, which are a group of pro-inflammatory molecules inducing inflammation in keratinocytes and aggravating tissue damage by producing reactive oxygen species. Kang et al. [57] further demonstrated that vitamin B12 supplementation alters the

transcriptional activities and increases porphyrin production in acne-associated *P. acnes* strains, while health-associated *P. acnes* strains do not respond to vitamin B12 supplementation. Furthermore, several recent studies have shown that acne-associated *P. acnes* strains induce significant inflammatory responses in keratinocytes, sebocytes, and peripheral blood mononuclear cells, while health-associated strains do not.[58–61] These studies suggest that different strains of *P. acnes* may play different roles in skin health and acne pathogenesis.

Multiple other skin bacteria colonize the external surface of the skin, some of which may play a role in maintaining skin health or exacerbating diseases. *Staphylococcus epidermidis*, *Staphylococcus hominis*, and other coagulase negative staphylococcal species can be found on the skin of healthy and acne individuals.[62] In acne skin, the relative abundance of *S. epidermidis* increases at the expense of *P. acnes*.[49] Several studies suggest that *P. acnes* can be inhibited by *S. epidermidis*. Wang et al.[63] showed that *S. epidermidis* strains could produce succinic acid, which has anti-*P. acnes* activity. The study by Christensen et al.[64] suggested that *S. epidermidis* possesses a functional ESAT-6 (early secreted antigenic target of 6 kDa) secretion system, which could inhibit *P. acnes* growth through polymorphic toxins that are antibacterial. Additionally, it was shown that *S. epidermidis* secretes staphylococcal lipoteichoic acid, which could reduce *P. acnes*-associated inflammation by inducing expression of miR-143 and inhibiting TLR-2 expression in keratinocytes.[65] These studies suggest that *Staphylococci*, especially *S. epidermidis*, may protect skin against acne. However, this hypothesis requires further examination.

#### Malassezia and Acne

*Malassezia* has been thought to induce acne.[66] *Malassezia* is the most abundant fungal organism on the skin, co-existing with *P. acnes* and other bacterial species. In a study by Hu et al.,[67] acne lesions were significantly reduced after administration of antifungal drugs. The authors suggested that *Malassezia*, not *P. acnes*, was potentially the cause of refractory acne.[67] The findings from several other studies are in support of this hypothesis. Song et al.[68] and Numata et al.[69] reported that *Malassezia restricta* and *Malassezia globosa* can be isolated from young acne patients. Akaza et al.[70] showed that the lipase activity of *Malassezia* is ~ 100 times higher than that of *P. acnes*. *Malassezia* can also hydrolyze triglycerides in the sebum to produce free fatty acids, which may affect the abnormal keratinization of hair follicular ducts, chemotize polymorphonuclear neutrophils,[71,72] and promote secretion of pro-inflammatory cytokines from keratinocytes and monocytes.[73,74] The role of *Malassezia* in acne pathogenesis remains to be further investigated.

## ANTIBIOTICS IN ACNE TREATMENT

Bacterial factors and inflammation are both thought to contribute to acne pathogenesis. Although acne is not a typical infectious disease, the use of antibiotics has been the mainstay in acne treatment for over 40 years. Topical antibiotics are largely used for their bactericidal effects against *P. acnes*. Oral antibiotics have anti-inflammatory effects in addition to antimicrobial effects, which target both *P. acnes* and host immune response.[4,75,76]

Based on several treatment guidelines and expert consensus documents, macrolides, clindamycin, and tetracyclines are recommended as the first-line therapy in the acute inflammatory phase of acne.[77–82] Erythromycin, clarithromycin, roxithromycin, and azithromycin are macrolides. Clindamycin belongs to lincosamides. Tetracyclines for acne treatment mainly include tetracycline, doxycycline, and minocycline. The effects of macrolides, clindamycin, and tetracyclines on the skin microbiome, including the target bacterium *P. acnes* and other non-target bacteria, and the associated issue of antibiotic resistance are discussed in Sects. 3.1–3.3. Several other antibiotics, such as trimethoprim–sulfamethoxazole, levofloxacin, rifampin, dapsone, and metronidazole, may also be used in acne treatment. However, current data on the effects of these antibiotics are limited in scope and quality. Additional studies are needed to address multiple knowledge gaps regarding these antibiotics.

Influence of Antibiotic use on *P. acnes*

Effect of Macrolides and Clindamycin.

Erythromycin and clindamycin have been widely used in the last 40 years in acne treatment, and are still frequently prescribed by physicians. Long-term use of oral macrolides for acne treatment facilitates the increase of macrolide-resistant *P. acnes* strains.[83] In recent years, increasing levels of resistance of *P. acnes* to macrolides and clindamycin have been reported in several regions of the world.[83] In some countries, the resistance of *P. acnes* to erythromycin is over 50%,[83,84] and the resistance to azithromycin reaches 82–100%.[85,86] Similarly, the resistance of *P. acnes* to clindamycin increased from 4% in 1999 to 90.4% in 2016.[85,87] There was a high proportion (52%) of acne patients who carried at least one *P. acnes* strain resistant to clindamycin.[88] When topical clindamycin was administered for 16 weeks for acne treatment, the amount of resistant *P. acnes* was increased by 16 times from the baseline.[89] After antibiotic treatment is ended, tolerant *P. acnes* strains may remain on the skin for a considerably long period of time, and the presence of resistant *P. acnes* strains manifests as a re-occurrence of acne.[4] Furthermore, when patients are treated again with antibiotics, the efficacy of such drugs is reduced or voided.[4,90]

Different *P. acnes* strains exhibit a varying degree of antibiotic resistance. Based on multiple recent studies of *P. acnes* isolates collected from different geographic areas including Italy, Sweden, UK, Australia, USA,[10,47,51,91]Denmark,[88] and Greece,[92] RT4 and RT5 strains, which are mostly clonal complex 3 (CC3) strains and some CC18 strains based on MLST,[51,88]accounted for 85–95% of the antibiotic-resistant strains.[47,51,91,92] The underlying molecular mechanisms for resistance include point mutations G2057A, A2058G, and A2059G in the domain V of 23S rRNA, as well as the presence of erm(X) gene.[92–96] It is common that resistance to erythromycin correlates with resistance to clindamycin.[93] Cross-resistance to erythromycin and clindamycin of *P. acnes* isolates from acne patients varies from 11.6 to 100%, as reported in different studies.[51,97–100]

To reduce the emergence of antibiotic resistance, it is currently recommended that topical antibiotics be used in combination with benzoyl peroxide (BPO) or retinoid in acne treatment.[83] Studies have shown that combining clindamycin with BPO or retinoid for topical application not only significantly reduced the total number of *P. acnes* on the skin, but also lowered antibiotic resistance of *P. acnes* to erythromycin and clindamycin.[101]

### **Effect of Tetracyclines.**

Tetracyclines are another class of antibiotics frequently used for treating moderate to severe acne. Although this group of antibiotics is still largely active against the majority of *P. acnes* isolates, antibiotic resistance is rising and needs the attention of the medical field. The rate of resistance to tetracycline differed from 2 to 30% in studies from different geographic regions in recent years.[86,97,99,101] In parallel, resistance to doxycycline among isolated *P. acnes* strains varied between 2 and 44.2%.[85,86,97,101] The combined resistance to tetracycline and doxycycline ranged from 1.2 to 100% in different groups of patients.[99,102] In contrast to this high resistance rate to tetracycline and doxycycline, a lower resistance rate to minocycline (< 2%) was observed in Europe, Latin America, Northern America, and parts of Asia. This makes minocycline the most effective agent in the tetracycline class for acne treatment.[85,92,97] The resistance mechanism against tetracyclines is a G1058C mutation in *P. acnes*16S rRNA gene.[96] Additionally, an amino acid substitution in the ribosomal S10 protein contributes to reduced doxycycline susceptibility.[103]

## Influence of Antibiotic Use on Other Skin Bacteria

### Effect of Macrolides and Clindamycin.

The use of macrolides and clindamycin in acne treatment results in resistance in other skin bacteria in addition to *P. acnes*. At least 30% of *S. epidermidis* isolates from acne patients were resistant to erythromycin, roxithromycin, and clindamycin.[104] Harkaway et al.[105] reported that after 12-week treatment with topical erythromycin alone, erythromycin-tolerant *S. epidermidis* became predominant on the skin surface, and the relative abundance of *S. aureus* at nostrils rose from 15 to 40%. Similarly, Mills et al.[106] reported that in acne treatment with topical erythromycin, the proportion of patients with erythromycin-tolerant staphylococci on the face was 87% at baseline, and increased to 98% at week 12 of treatment. Furthermore, the proportion of patients with resistant staphylococci was only slightly reduced 12 weeks after drug withdrawal. The average density of tolerant bacteria at non-treated sites, such as the back, increased at the end of the treatment. Transmission of such bacteria to different sites may cause serious consequences.[106] Like macrolides, clindamycin exerts selection pressure on both *P. acnes* and staphylococci. The study by Nakase et al.,[95] which analyzed the correlation of antimicrobial resistance between *P. acnes* and *S. epidermidis*, reported that clindamycin-resistant *S. epidermidis* strains were isolated from more than 80% of the patients who also carried clindamycin-resistant *P. acnes*.

### Effect of Tetracyclines.

There are few established data on the effect of tetracyclines on the skin bacteria besides *P. acnes*. Doxycycline 40 mg modified release has been used for the treatment of inflammatory lesions in moderate and severe acne. Limited evidence suggested that this dose showed no effect on the normal skin flora as well as the rate of antibiotic resistance while being effective in reducing acne lesions.[76,107]

Lymecyclin and sarecycline are new members of tetracyclines in acne therapy. A recent study based on 16S rRNA sequencing demonstrated that at 6 weeks after lymecyclin treatment, the relative abundance of *Propionibacterium* on the cheeks of patients decreased, but the relative abundances of *Streptococcus*, *Staphylococcus*, *Micrococcus*, and *Corynebacterium* increased. Changes in this microbial community after drug withdrawal were not investigated.[108] Sarecycline (two phase III clinical trials completed in 2017) has a narrow antibacterial spectrum relative to other tetracyclines. It might have less selective pressure on enteric Gram-negative bacteria, but there are no data available on its influence on the skin microbiome.[109]

## Applications of Antibiotics in Acne Treatment

The growing prevalence of antibiotic resistance in *P. acnes* and other skin commensal bacteria is becoming increasingly alarming. For mild-to-moderate acne, topical antibiotic monotherapy is not recommended. Topical retinoid, BPO, or a combination therapy (topical retinoid + BPO, topical antibiotic + BPO, topical retinoid + topical antibiotic + BPO) is recommended.[110] For moderate-to-severe acne, the recommended first-line treatment is oral antibiotics combined with BPO and/or a topical retinoid. Oral antibiotic monotherapy is not recommended.[111] To reduce antibiotic-resistant microorganisms on the skin, as alternative treatments, BPO can be used for at least 5–7 days between antibiotic courses.[5] Oral contraceptives or anti-androgens may be another alternative for some female patients. To obtain better clinical efficacy and reduce antibiotic resistance, information on past exposure to macrolides or clindamycin should suggest avoidance of prescription of these antibiotics. Given that some acne patients are colonized by antibiotic-resistant *P. acnes* strains, Sinnott et al.[112]recommended that swabbing, culturing, and testing for resistant strains may be one way to help avoid long-term use of ineffective antibiotics.

The recommended minimum course of acne treatment with oral antibiotics is 6–8 weeks. Oral antibiotics may continue to be used after taking effect, but should not be used for longer than 12 weeks.[83,113] However, it is reported that in practice, 17.5% of antibiotic treatment courses last  $\geq 6$  months and 7% of the treatments last over 9 months, with an average treatment time of 125–129 days.[114,115] The long-term use of antibiotics may significantly alter the skin microbiome and increase drug resistance. Future longitudinal studies of long-term use of antibiotics may shed light on its effect on the composition and dynamics of the microbiome.[83]

## CONCLUSION

Although the pathogenesis mechanisms of acne have not yet been fully elucidated, it is recognized that *P. acnes* and inflammatory response play important roles in the development of the disease. The use of bactericidal and anti-inflammatory antibiotics remains an important strategy for treating acne. Thus, rational selection of antibiotics according to the classification of *P. acnes* strains and corresponding drug susceptibility is preferred. However, this recommendation has not yet gained sufficient attention in clinical practice.

Given the rapid emergence of antibiotic resistance on the global scale and considering the effects of antibiotic use on the human microbiome, alternative clinical practice to antibiotic prescription in treating microbe-related diseases has become critical. A recently published study suggested a potential vaccination approach against acne by targeting Christie–Atkins–Munch–Petersen (CAMP) factor as an antigen.[116] Meanwhile, other studies showed promise in microbiome-based therapies, which may shift the balance among the microbial members, influence the function of immune cells, and prevent diseases while restoring a healthy microbiome.[117–119] In one such study, Nakatsuji et al.[119] showed that reintroduction of coagulase-negative Staphylococcus (CoNS) strains, which produce antimicrobial peptides, to patients with atopic dermatitis decreased *S. aureus* colonization on the skin. The study demonstrated how commensal skin bacteria can defend against pathogens and suggested that correcting microbiome dysbiosis may potentially be used to treat or improve certain conditions. Future studies on how to effectively reduce the load of pathogenic microorganisms and inflammation while preserving the balance of the commensal microflora may lead to potential new therapies.

## ANNEXURE-2

**Bharath Institute of Higher Education and Research**

Sri Lakshmi Narayana Institute of Medical Sciences

Participant list of Value-added course: **ACNE VULGARIS - DR06**  
(Nov 2017– Feb- 2018)

2 <sup>nd</sup> Year MBBS Student			
Sl. No	Name of the Student	Reg No	Signature
1	SRIRAM .S	U16MB381	<i>Sriram</i>
2	SUBALAKSHMI .D	U16MB382	<i>Subalakshmi</i>
3	SUNITHA .A	U16MB383	<i>Sunitha Raj</i>
4	SURENDAR RAJ .S	U16MB384	<i>Surenndar</i>
5	SUSMITHA .V	U16MB385	<i>Susmitha</i>
6	SWATI GUPTA	U16MB386	<i>Swathigupta</i>
7	SWATI KUMARI	U16MB387	<i>Swathikumari</i>
8	THAMARAİK KANNAN	U16MB388	<i>Thammarai</i>
9	THEEPHI .T	U16MB389	<i>Theephi</i>
10	UDDIP DATTA RAY	U16MB390	<i>Uddip</i>
11	SANDHYA	U16MB371	<i>Sandhya</i>
12	SARA R	U16MB372	<i>Sara</i>
13	SARASWATHI N	U16MB372	<i>Saraswati</i>
14	SHIKHA SONI	U16MB376	<i>Shikha</i>
15	SNEHA	U16MB379	<i>Sneha</i>

*Buyanaratchagan*  
**Dr. A. BUVANARATCHAGAN, MD.**  
Dr. Buyanaratchagan  
Asso. Professor, Dermatology  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudalakkam, Puducherry-605 002

**RESOURCE PERSON**

**PROFESSOR & HEAD**  
**DEPT. OF DERMATOLOGY**  
*Dr. K. Marsha Vardhan*  
**SR. LAKSHMI NARAYANA INSTITUTE OF**  
**MEDICAL SCIENCES**  
**OSUDU, PUDUCHERRY.**  
**COORDINATOR**

ANNEXURE-3



# SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES

## ACNE VULGARIS

Annexure- III

### MULTIPLE CHOICE QUESTIONS

COURSE CODE:DR06

#### ANSWER ALL QUESTIONS

1. What is the most common causative agent of Acne Vulgaris?
  - A. Herpes simplex
  - B. Propionibacterium acnes
  - C. Staphylococcus aureus
  - D. Trichophyton rubrum
2. The pathological process that leads to Acne Vulgaris is:
  - A. Alteration of follicular keratinization
  - B. Follicular colonization
  - C. Increased and altered sebum production
  - D. All of the above
3. The most common manifestation of hyperandrogenism
  - A. Acne
  - B. Hirsutism
  - C. Amenorrhea
  - D. Infertility
4. Which part of skin does acne affect?
  - A. Epidermis
  - B. Dermis
  - C. Hair follicles
  - D. Hair shaft

5. Which of these hormones trigger acne in adolescents?
  - A. Androgen
  - B. Estrogen
  - C. Endorphin
  - D. Norepinephrine
  
6. Acne can be treated with which of these?
  - A. Skin cleansers
  - B. Oral antibiotics
  - C. Oral Vitamin A medicines
  - D. All of the above
  
7. Comedones are seen in
  - A. Acne vulgaris
  - B. Lichen planus
  - C. Adenoma sebaceum
  - D. Pityriasis
  
8. A patient is presenting with nodulocystic acne on the face. The drug of choice is:
  - A. Retinoids
  - B. Antibiotics
  - C. Steroids
  - D. UV Light
  
9. Antibiotics useful in acne include all, except:
  - A. Topical clindamycin
  - B. Topical framycetin
  - C. Topical erythromycin
  - D. Minocycline
  
10. Acne vulgaris is due to involvement of?
  - A. Sebaceous gland
  - B. Pilosebaceous gland
  - C. Eccrine gland
  - D. Apocrine gland

ANNEXURE-3



SRI LAKSHMI NARAYANA INSTITUTE OF  
MEDICAL SCIENCES

*Swathi gupta*

**ACNE VULGARIS**

Annexure- III

MULTIPLE CHOICE QUESTIONS

COURSE CODE:DR06

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A. Epidermis  
B. Dermis  
 C. Hair follicles  
D. Hair shaft

10  
10  
Vandhanika  
20/1/18

5. Which of these hormones trigger acne in adolescents?
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ANNEXURE-3



# SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES

Sriram - S

## ACNE VULGARIS

Annexure- III

### MULTIPLE CHOICE QUESTIONS

COURSE CODE:DR06

ANSWER ALL QUESTIONS

1. What is the most common causative agent of Acne Vulgaris?  
A. Herpes simplex  
 B. Propionibacterium acnes  
C. Staphylococcus aureus ✓  
D. Trichophyton rubrum
2. The pathological process that leads to Acne Vulgaris is:  
A. Alteration of follicular keratinization  
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C. Increased and altered sebum production ✓  
 D. All of the above
3. The most common manifestation of hyperandrogenism  
 A. Acne  
B. Hirsutism  
C. Amenorrhea ✓  
D. Infertility
4. Which part of skin does acne affect?  
A. Epidermis  
B. Dermis  
 C. Hair follicles ✓  
D. Hair shaft

10  
10

Vardhan K.A.  
26/1/18

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 C. Endorphin  
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6. Acne can be treated with which of these?  
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 D. UV Light
9. Antibiotics useful in acne include all, except:  
 A. Topical clindamycin  
 B. Topical framycetin  
 C. Topical erythromycin  
 D. Minocycline
10. Acne vulgaris is due to involvement of?  
 A. Sebaceous gland  
 B. Pilosebaceous gland  
 C. Eccrine gland  
 D. Apocrine gland

## ANNEXURE-IV

### Student Feedback Form

Course Name: **ACNE VULGARIS**

Subject Code: **DR06**

Name of Student: \_\_\_\_\_ Roll No.: \_\_\_\_\_

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

SI. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					
2	Course contents met with your expectations					
3	Lecturer sequence was well planned					
4	Lectures were clear and easy to understand					
5	Teaching aids were effective					
6	Instructors encourage interaction and were helpful					
7	The level of the course					
8	Overall rating of the course	1	2	3	4	5

*\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory*

Suggestions if any:

Date:24-01-2018

Signature

**ANNEXURE-IV**  
**Student Feedback Form**

Course Name: **ACNE VULGARIS**

Subject Code: **DR06**

Name of Student: Sriram S Roll No.: U16MB381

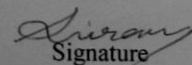
We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear				✓	
2	Course contents met with your expectations					✓
3	Lecturer sequence was well planned				✓	
4	Lectures were clear and easy to understand			✓		
5	Teaching aids were effective				✓	
6	Instructors encourage interaction and were helpful		✓			
7	The level of the course					✓
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Date: 24-01-2018

  
Signature

## ANNEXURE-IV

### Student Feedback Form

Course Name: **ACNE VULGARIS**

Subject Code: **DR06**

Name of Student: Swathigustha Roll No.: U16MB296

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear				✓	
2	Course contents met with your expectations					✓
3	Lecturer sequence was well planned				✓	
4	Lectures were clear and easy to understand					✓
5	Teaching aids were effective			✓		
6	Instructors encourage interaction and were helpful					✓
7	The level of the course				✓	
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Date: 24-01-2018

Swathigustha  
Signature

Annexure-5



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)

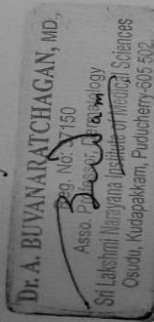


## CERTIFICATE OF MERIT

This is to certify that *Priramed* has actively participated in the

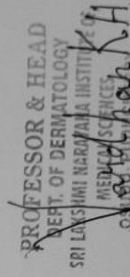
Value Added Course on Acne Vulgaris held during Nov 2017– Feb 2018 organized by Sri

Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.



Dr. Buvanaratchagan

RESOURCE PERSON



Dr. K. Harsha Vardhan

COORDINATOR





# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)

## CERTIFICATE OF MERIT

This is to certify that *Swathi Gytha* has actively participated in the

Value Added Course on Acne Vulgaris held during Nov 2017- Feb 2018 organized by Sri

Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr. A. BUVANARATCHAGAN, MD.  
Reg. No. 37150  
Asso. Professor, Dermatology  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kattappalam, Pondicherry-605 502

Dr. Buvanaratchagan

RESOURCE PERSON

PROFESSOR & HEAD  
DEPT OF DERMATOLOGY  
SRI LAKSHMI NARAYANA INSTITUTE OF  
MEDICAL SCIENCES  
OSUDU, PONDICHERY

Dr. K. Harsha Vardhan

COORDINATOR

**Course completion letter**

Date 27-01-2018

From  
Dr. K. Harsha Vardhan  
Department of Dermatology  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

Through Proper Channel

To  
The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Completion of value-added course: acne vulgaris**

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: **acne vulgaris** on 20-11-17. We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards

Dr. K. Harsha Vardhan

<HOD Sign and Seal>

**Encl: Certificates**

**Photographs**

Course completion letter

Date 27-01-2018

From  
Dr. K. Harsha Vardhan  
Department of Dermatology  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

Through Proper Channel


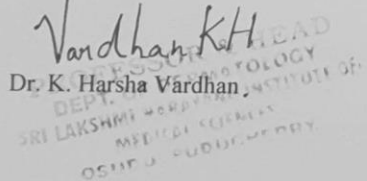
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Dr. K. Harsha Vardhan  


<HOD Sign and Seal>

**Encl: Certificates**

**Photographs**





**SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES**  
**OSSUDU AGARAM VILLAGE; KUDAPAKKAM POST, PONDICHERRY - 605003**

From  
Dr. PAMMY SINHA  
Professor and HOD  
Department of Pathology  
Sri Lakshmi Narayana Institute of Medical Sciences, Puducherry  
Bharath Institute of Higher Education and Research,  
Chennai.

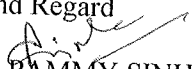
Date 1.10.2017

To  
The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences, Puducherry  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Permission to conduct value-added course: RATIONALE USE OF BLOOD COMPONENTS**

Dear Madam,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: RATIONALE USE OF BLOOD COMPONENTS on Nov 2017. We solicit your kind permission for the same.

Kind Regard  
  
Dr. PAMMY SINHA

**FOR THE USE OF DEANS OFFICE**


Names of Committee members for evaluating the course:


The Dean: Dr. G. JAYALAKSHMI

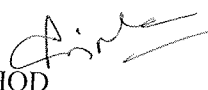
The HOD: Dr. PAMMY SINHA

The Expert: Dr. J. PRIYADHARISINI

The committee has discussed about the course and is approved.

Dean  
  
(Sign & Seal)

Subject Expert  
  
(Sign & Seal)

HOD  
  
(Sign & Seal)

Dr. G. JAYALAKSHMI, BSC, MBBS, DTCD, M.D.  
DEAN  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Ageram Kudapakkam, Post,  
Villanur Commune Puducherry - 605003.

DEPARTMENT OF PATHOLOGY  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
KUDAPAKKAM POST, OSSUDU AGARAM  
PONDICHERRY - 605003

DEPARTMENT OF PATHOLOGY  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
KUDAPAKKAM POST, OSSUDU AGARAM  
PONDICHERRY - 605003



**SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES**  
**OSSUDU AGARAM VILLAGE; KUDAPAKKAM POST, PONDICHERY - 605003**

**Circular**

9.10.17

**Sub: Organising Value-added Course: RATIONALE USE OF BLOOD COMPONENTS**

With reference to the above mentioned subject, it is to bring to your notice that **SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES Bharath Institute of Higher Education and Research**, is organizing "RATIONALE USE OF BLOOD COMPONENTS" from November 2017. The course content is enclosed below."

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before 31.10.2017. Applications received after the mentioned date shall not be entertained under any circumstances.

Encl: Copy of Course content

Dean

Dr. G. JAYALAKSHMI, BSc, MEd, DEd, MEd,  
DEAN

Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Ageram Kudapakkam, Post,  
Villanur Commune Puducherry-605 502.

# Course Proposal

**Course Title:** Rationale use of blood components

**Course Objective:**

1. To know about the blood component separation and its clinical significance
2. Should know in detail about blood components each
3. Should be able to describe the quality control and indications of blood component transfusion

**Course Outcome:** Better understanding and knowledge about the rationale use of blood components

**Course Audience:** IInd year MBBS

**Course Coordinator:** Dr. J.Priyadharisini

**Course Faculties with Qualification and Designation:**

**Dr. J.Priyadharisini, Assistant professor, Pathology**

**Dr. Sivaganesh @ Porko.G, Assistant professor, Pathology**

**Dr. A.Manoharan, Assistant professor, Pathology**

**Course Curriculum/Topics with schedule**

SINo	Date	Topic	Time	Faculty	Hours
1.	4.11.2017	Introduction	1.30-4 pm	<b>Dr.J.Priyadharisini</b>	2.5 hrs
2.	11.11.2017	Whole blood processing and storage	1.30-4 pm	<b>Dr. Sivaganesh @ Porko.G</b>	2.5 hrs
3.	18.11.2017	Blood component separation	1.30-4 pm	<b>Dr. A.Manoharan</b>	2.5 hrs
4.	25.11.2017	Blood components- Packed red cells- constituents, storage and shelf life	1.30-4 pm	<b>Dr.J.Priyadharisini</b>	2.5 hrs
5.	2.12.2017	Blood components- Fresh frozen plasma- constituents, storage and shelf life	1.30-4 pm	<b>Dr. Sivaganesh @ Porko.G</b>	2.5 hrs

6.	9.12.2017	Blood components- cryoprecipitate - constituents, storage and shelf life	1.30- 4 pm	Dr. A.Manoharan	2.5 hrs
7.	16.12.2017	Blood components -platelet concentrates - constituents, storage and shelf life	1.30- 4 pm	Dr.J.Priyadharisini	2.5 hrs
8.	23.12.2017	Blood products	1.30- 4 pm	Dr. Sivaganesh @ Porko.G	2.5 hrs
		<b>Practical Class</b>			
9.	30.12.2017	Component separation 1	1.30- 4 pm	Dr. A.Manoharan	2.5 hrs
10.	6.1.2018	Component separation 2	1.30- 4 pm	Dr.J.Priyadharisini	2.5 hrs
11.	13.1.2018	Component separation 3	1.30- 4 pm	Dr. Sivaganesh @ Porko.G	2.5 hrs
12	20.1.2018	Assessment and feedback	1.30- 4 pm	Dr. A.Manoharan	2.5 hrs
		<b>Total</b>			30 hrs

#### REFERENCE BOOKS:

1. Medical laboratory technology, Methods and interpretations, by Ramnik Sood, Fifth edition
2. Atlas and textbook of hematology by Dr.Tejindar singh

## VALUE ADDED COURSE

**1. Name of the programme & Code**

RATIONALE USE OF BLOOD COMPONENTS & PA06

**2. Duration & Period**

30 hrs , Nov 2017- Jan 2018

**3. Information Brochure and Course Content of Value Added Courses**

*Enclosed as Annexure- I*

**4. List of students enrolled**

*Enclosed as Annexure- II*

**5. Assessment procedures:**

Short answer questions- Enclosed as Annexure- III

**6. Certificate model**

*Enclosed as Annexure- IV*

**7. No. of times offered during the same year:**

1

**8. Year of discontinuation: 2019**

**9. Summary report of each program year-wise**

Value Added Course- Nov 2017- Jan 2018					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	PA06	Rationale use of blood components	Dr. J.Priyadharisini	II year MBBS	Nov 2017- Jan 2018

**10. Course Feed Back**

*Enclosed as Annexure- V*

**RESOURCE PERSON**

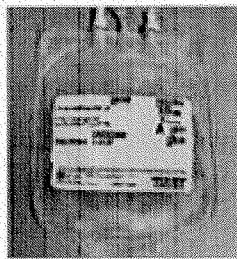
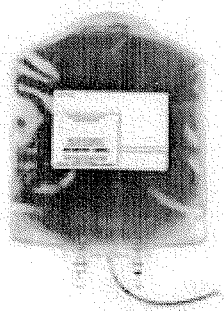
DEPARTMENT OF  
SRI LAKSHMI  
PULMONARY MEDICINE

**COORDINATOR**

PROFESSOR  
SRI LAKSHMI  
INSTITUTE OF  
PULMONARY MEDICINE,  
PULMONARY MEDICINE

## RATIONALE USE OF BLOOD COMPONENTS

# Blood Components



**PARTICIPANT HAND BOOK**

## COURSE DETAILS

Particulars	Description
Course Title	Rationale use of blood components
Course Code	PA06
Objective	<ol style="list-style-type: none"> <li>1. Introduction</li> <li>2. whole blood</li> <li>3. Component separation</li> <li>4. Blood components</li> <li>5. Storage and shelf life</li> <li>6. Packed red blood cells</li> <li>7. Fresh frozen plasma</li> <li>8. Cryoprecipitate</li> <li>9. Platelet concentrates</li> <li>10. Rational use</li> </ol>
Key Competencies	On successful completion of the course the students will have knowledge regarding Rational use of blood components
Target Student	2 <sup>nd</sup> MBBS Students
Duration	30hrs Nov 2017- Jan 2018
Theory Session	20hrs
Practical Session	10hrs
Assessment Procedure	Written assessment

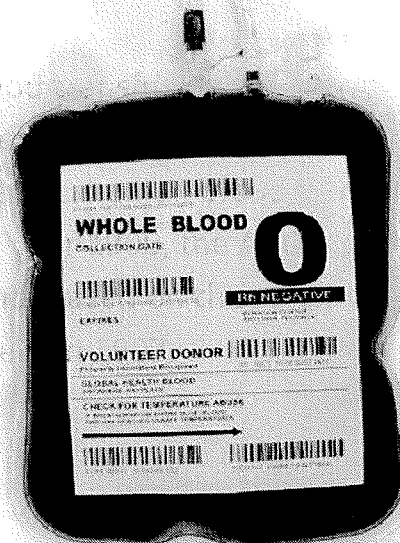
Blood transfusion (hemotherapy) is a therapeutic intervention and an important part of modern healthcare. According to the World Health Organization (WHO), transfusion is the process of transferring blood or blood products derived from a donor into the vasculature and subsequently the circulating blood of the recipient, carried out by inserting an intravenous needle or catheter in the patient and followed by administration of blood or blood products. Blood transfusion is considered to be the first successful organ transplant. Blood is a "fluid tissue" consisting of plasma and cellular components (red blood cells, white blood cells, platelets) that circulates through the vascular system throughout the body.

## History

The first documented animal-to-animal (dog) blood transfusion was performed at Oxford in 1665 by Richard Lower, followed by the first animal-to-human blood transfusion in 1667 by Jean Denis. The first human-to-human blood transfusion was performed by James Blundell in 1818. In the year 1900, the ABO blood grouping system was classified by Landsteiner and, based on this, the first pretransfusion cross-match was done by Ottenberg in 1907.

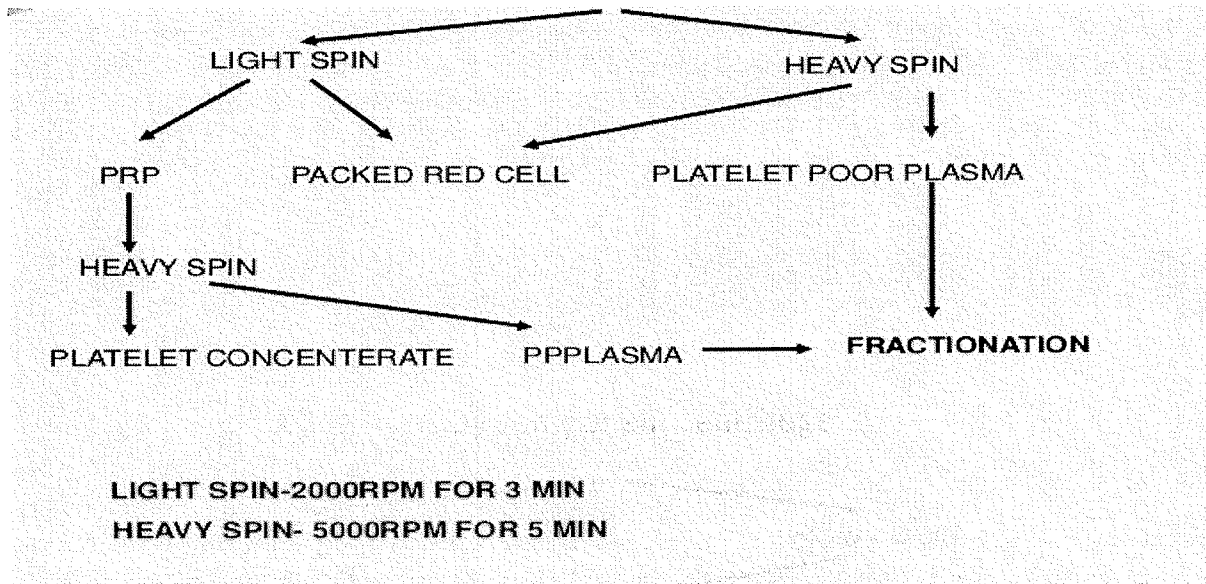
## Whole blood

- Blood collected in to CPDA-1 anticoagulant containing bags
- Contains 450ml (+/-10%) of donor blood (blood cells and plasma)
- 63ml of and anticoagulant such as CPD (Citrate, Phosphate, Dextrose)
- Hct 35-45%
- Stored at 2-6 °C
- Shelf life – with CPD 21 days, with CPDA-1 (Adenine) - 35days



## Blood components;

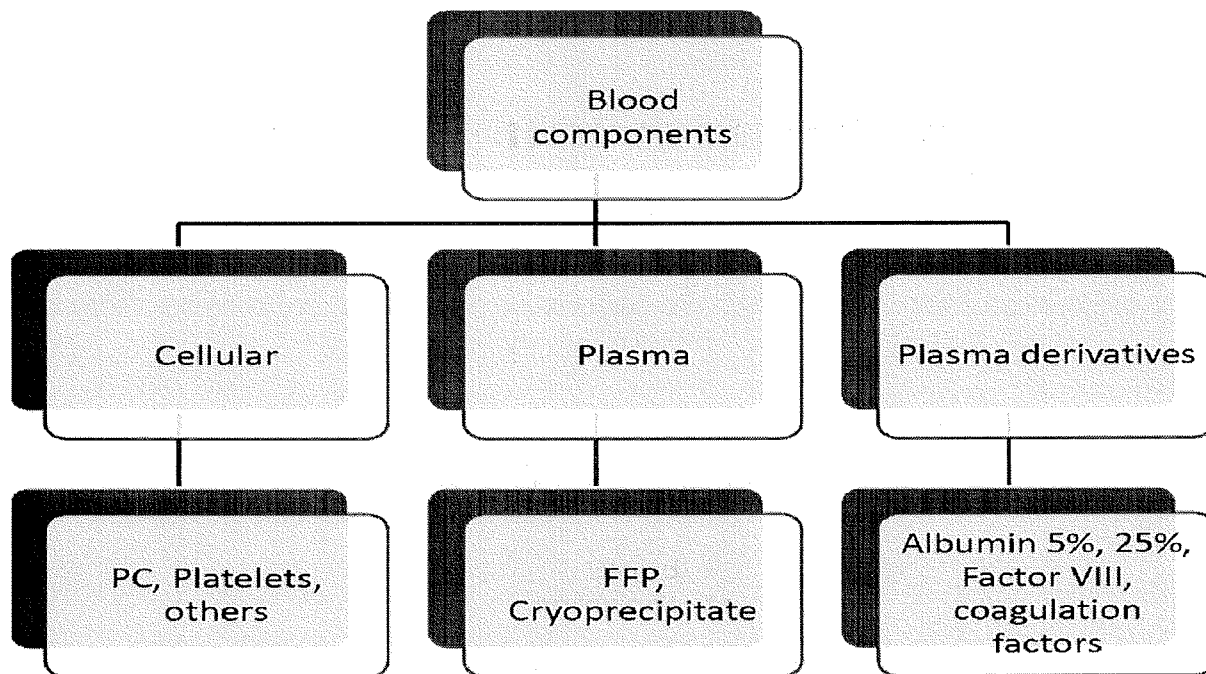
Component separation done by component centrifuge



Need for the separation of the components includes

- One whole blood saves the life of many people
- For optimal survival of various blood components

Blood components include



The rational use of blood and its components is essential, due to the frequent undesirable reactions, to the increasing demand of blood products and the cost of the process.

### **Packed Red blood cell -pRBC**

The objective of RBC transfusion is to improve oxygen delivery to the tissues. Following are the red cells and their different components for transfusion:

#### *Packed red cells*

The red cells from a donor unit are concentrated to a hematocrit of about 75%, and the volume is made to 200 ml. Storing red cells (just above freezing) allows survival for 42 days but, unfortunately, decreases the 2,3-DPG and ruins the platelets and neutrophils. Giving packed red cells is the fastest way to increase the oxygen-delivering capacity of the blood. A unit of whole blood or packed red cells will raise the hematocrit by 3% and the haemoglobin by 1 gm/dl.

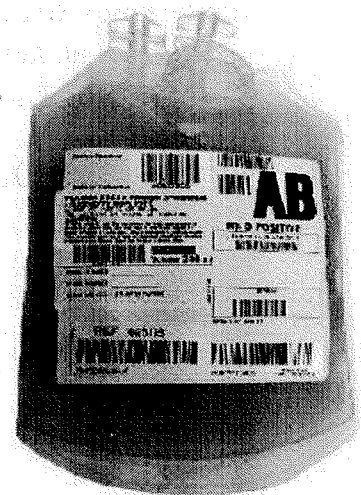
**Dose** – Assume an increment of 10g/L per unit for a 70kg adult.

#### INDICATIONS

- R1 Acute Bleeding Once normovolaemia achieved, frequent measurement of Hb (including by near patient testing) should be used – see suggested thresholds below.
- R2 Hb  $\leq 70$ g/L if stable acute anaemia. Use a target Hb of 70–90g/L. Follow local protocols for post cardiac surgery, traumatic brain injury, acute cerebral ischaemia.
- R3 Hb  $\leq 80$ g/L if cardiovascular disease Use a target Hb of 80–100g/L.
- R4 Chronic transfusion dependent anaemia Maintain an Hb which prevents symptoms. Suggest an initial threshold of 80g/L then adjust as required. Haemoglobinopathy patients require individualised Hb thresholds.
- R5 Radiotherapy Limited data for maintaining Hb of  $\geq 110$ g/L.
- R6 Exchange transfusion.

## Fresh Frozen Plasma (FFP)

- Plasma removed from RBC within 6-8 hrs of collection is rapidly frozen to below  $-30^{\circ}\text{C}$  temperature. Before transfusion is necessary to thaw at  $37^{\circ}\text{C}$
- Once thawed, there is rapid deterioration of clotting factor, therefore it is very important to use the immediately after thawing
- Dose – 10-12ml by weight
- Shelf life – 12 months
- Stored at  $< -30^{\circ}\text{C}$



**Dose** – 15ml/kg body weight, often equivalent to 4 units.

### INDICATIONS;

- F1 Major haemorrhage Early use in trauma – 1 unit FFP: 1 unit red cells. Other settings at least 1 unit FFP: 2 units red cells. Once bleeding controlled use thresholds below.

- F2 PT Ratio/INR >1.5 with bleeding without major haemorrhage. Keep PT/APTT ratio of <1.5.
- F3 PT Ratio/INR >1.5 and pre-procedure e.g. disseminated intravascular coagulation (DIC) with risk of significant bleeding.
- F4 Liver disease with PT Ratio/INR >2 and pre-procedure. Not usually required if no bleeding or before invasive procedure if PT ratio/INR is <2.
- F5 TTP/plasma exchange.
- F6 Replacement of single coagulation factor.

### **Cryoprecipitate**

**Dose** – 2 pooled units will increase fibrinogen by approximately 1g/L.

Cryoprecipitate is usually used with FFP unless there is an isolated fibrinogen deficiency.

#### **INDICATIONS;**

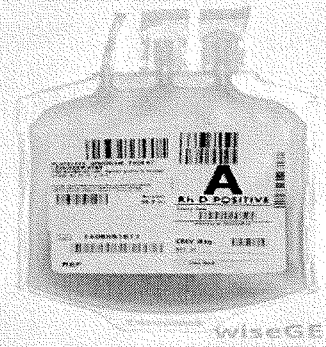
- C1 Clinically significant bleeding and fibrinogen <1.5g/L (2g/L in obstetric bleeding)
- C2 Fibrinogen <1g/L and pre procedure
- C3 Bleeding associated with thrombolytic therapy
- C4 Inherited hypofibrinogenaemia, fibrinogen concentrate not available.

### **Platelet concentrates**

Platelet concentrates (PCs) can be obtained either from whole blood or by apheresis from healthy donors. Two preparations are available. Depending on the number of platelet units used (from 4–6 donors), pooled PCs generally contain  $240\text{--}360 \times 10^9$  platelets suspended in 200–350 ml plasma or a substitute plasma solution. Apheresis PCs generally contain  $200\text{--}400 \times 10^9$  platelets in 200–300 ml plasma from a single donor.

## Platelet Rich Plasma

- Gentle centrifugation of whole blood
- Supernatant transferred to the 2nd bag



## Platelet concentrate

- Prepared from PRP by 2nd centrifugation
- Removal of all but 50ml of plasma
- Contain approximately  $\geq 55 \times 10^9$  platelets
- 60-80% platelets present in whole blood unit
- Volume - 300ml
- Stored at 20-24°C
- Shelf life - 5 days

**Dose** – for prophylaxis, 1 adult therapeutic dose. Prior to invasive procedure/to treat bleeding, consider patient size, previous increments and target count.  
Prophylactic platelet transfusion

### Prophylactic transfusion indications

Platelet count ( $\times 10^3$  per  $\mu\text{L}$ )

Major surgery or invasive procedure, no active **bleeding**

$\leq 50$

Ocular surgery or neurosurgery, no active **bleeding**

$\leq 100$

Surgery with active **bleeding**

$< 50$  (usually)

$> 100$  (rarely)

WHO recommends for the safe and rational use of blood to reduce unnecessary and unsafe transfusions and to improve patient outcomes and safety, thus minimizing the risk of adverse events including errors, transfusion reactions and transmission of infections.

These strategies should include:

- Prevention, early diagnosis and effective treatment of conditions that could result in the need for transfusion (through health promotion, disease control and screening for early detection);
- Optimal patient management and rational use of blood products (evidence-based use of transfusion for the treatment of conditions that could not be managed by alternative treatment modalities to blood transfusion including the use of pharmaceuticals, medical devices, good surgical and anaesthetic techniques);
- Safe clinical transfusion processes for ensuring patient safety.

WHO has produced a series of recommendations, guidance documents and learning materials and conducted several global, regional and national meetings and skill building workshops to support countries in the development of systems for safe and appropriate use of blood.

#### **Assessment Procedure**

Written assessment

**VALUE ADDED COURSE**  
**Rationale use of blood components and PA06**

**List of Students Enrolled Nov 2017- Jan 2018**

2 <sup>ND</sup> Year MBBS Student			
Sl. No	Registration Number	NAME OF THE STUDENT	Signature
1	U16MB291	GOKUL SRIRAM .D	<i>Gokul Sriram .D</i>
2	U16MB292	GOLLA SRUTHI	<i>Golla Sruthi</i>
3	U16MB293	GOMATHI .M	<i>Gomathi .M</i>
4	U16MB294	GRACELIN RINI .J	<i>Gracelin Rini .J</i>
5	U16MB295	GUNASUNDARI .M	<i>Gun Sundari .M</i>
6	U16MB296	GUNTI YAGNA NARAYAN	<i>Gunti Yagna Narayan</i>
7	U16MB297	HANEESHA PALETI	<i>Haneesha Paleti</i>
8	U16MB298	HARIHARAN .J.K	<i>J.K. Hariharan</i>
9	U16MB299	HARIPRIYA .T	<i>To Haripriya</i>
10	U16MB300	HARISHKA.S	<i>Harishka</i>
11	U16MB301	HARITHA SHREE .K	<i>Haritha Shree .K</i>
12	U16MB302	HARSHITHA CHOWDARY .P	<i>Harshitha Chowdary .P</i>
13	U16MB303	HEMAPRIYA .G	<i>Hema Priya .G</i>
14	U16MB304	JADHAV MAHESH MOHANRAO	<i>Moharao</i>
15	U16MB305	JAGAIPRIYA .M	<i>M. Jagai Priya</i>
16	U16MB306	JAYASRI .J	<i>Jaya Sri .J</i>
17	U16MB307	JESTIN K.J	<i>Jestin .K.J</i>
18	U16MB308	JEYACHANDRAN .S	<i>Jeyachandran .S</i>
19	U16MB309	JINCY J MANU	<i>Jincy J Manu</i>
20	U16MB310	KARTHIK .K	<i>Karthik .K</i>

**RESOURCE PERSON**

**COORDINATOR**

PROFESSOR OF  
 Sr. Lecturer in  
 VLS  
 303 302.



**SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH**

**RATIONALE USE OF BLOOD COMPONENTS**

**Course Code: PA06**

**4x5=20**

**I. ANSWER ALL THE QUESTIONS**

1. Define Blood components
2. Discuss mechanism of component separation
3. Storage of various blood components
4. Indications of FFP(Fresh frozen plasma)

### 3. Storage of Blood Components :-

Red cells :- Temperature :-  $2-6^{\circ}\text{C}$

Shelf life :- 35 days

Fresh Frozen Plasma :- Temperature :-  $-30^{\circ}\text{C}$

Thawed before storage (30 minutes)

infused within 24 hrs if kept at  $4^{\circ}\text{C}$

Cryoprecipitate

freezers at less than  $-30^{\circ}\text{C}$

thawed before use (20 mins)

Platelets :-

shelf life only 5 days

Human Albumin solution

Available as 4.5% (500mls) or 20% (50/100ml)

Stored at room temperature.  $\times$  in dark.

each transfusion must be completed within 3hrs

4. FFP contains normal levels of stable clotting factors, albumin and immunoglobulins. 70% coagulant factor VIII

ongoing bleeding in patients with liver disease

prevention of bleeding in case of surgery or

invasive procedures in patients liver disease.

patients with DIC and active bleeding

18/20 ✓

Define Blood Components :

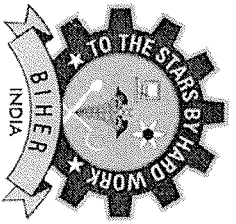
Blood is a specialized blood fluid  
It has four main components.

- Plasma
- platelets
- Red blood cells
- white blood cells

Functions of blood

- i) Transports oxygen and nutrients to the lungs and tissue
- ii) Carrying cells and antibody that fight infection
- iii) Bringing waste products to kidney & liver, which filter & clean the blood.
- iv) Forming blood clots that prevent excess blood loss
- v) Regulate body temperature

In, Total body weight blood is about 7 to 8 percent on weight.



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that Harishrka S has

actively participated in the Value Added Course on *Rationale use of blood components* held during Nov 2017- Jan 2018 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr. J. Priyadharsini

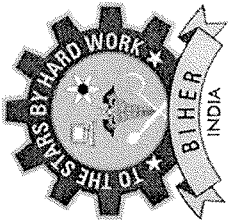
RESOURCE PERSON

DEPARTMENT OF  
BIOCHEMISTRY  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
PONDICHERRY - 605 502

Dr. Pammy Sinha

COORDINATOR

PROGRAMME COORDINATOR  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
PONDICHERRY - 605 502



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research

(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that GOKUL SRIRAM.D has

actively participated in the Value Added Course on *Rationale use of blood components* held during Nov 2017- Jan 2018 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr. J. Priyadharsini

RESOURCE PERSON

2017-18  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
PONDICHERRY-605 502

Dr. Pammy Sinha

COORDINATOR

DEPARTMENT OF PATHOLOGY  
SRI LAKSHMI NARAYANA INSTITUTE OF  
MEDICAL SCIENCES  
PONDICHERRY-605 502

## Student Feedback Form

Course Name: RATIONALE USE OF BLOOD COMPONENTS

Subject Code: PA06

Name of Student: Harishka.S Roll No.: U16MB300

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear			✓		
2	Course contents met with your expectations				✓	
3	Lecturer sequence was well planned			✓		
4	Lectures were clear and easy to understand				✓	
5	Teaching aids were effective				✓	
6	Instructors encourage interaction and were helpful			✓		
7	The level of the course				✓	
8	Overall rating of the course	1	2	3	✓4	5

\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Date:

Signature

## Student Feedback Form

Course Name: RATIONALE USE OF BLOOD COMPONENTS

Subject Code: PA06

Name of Student: Cookul giram.D Roll No.: U16MB291

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear			✓		
2	Course contents met with your expectations				✓	
3	Lecturer sequence was well planned				✓	
4	Lectures were clear and easy to understand				✓	
5	Teaching aids were effective			✓		
6	Instructors encourage interaction and were helpful				✓	
7	The level of the course					✓
8	Overall rating of the course	1	2	3	✓ 4	5

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

N/

Date:

Signature

Date: 20.1.2018

From

Dr.J.Priyadharisini  
Assistant Professor  
Department of pathology  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

Through Proper Channel

To

The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.


**Sub: Completion of value-added course: Rationale Use of blood components**

Dear Madam,

With reference to the subject mentioned above, the department has conducted the value-added course titled: : Rationale Use of blood components for IIInd MBBS during 2017 Nov-Jan 2018 for 20 students . We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards,

Dr. J.Priyadharisini

  
Dr. J. Priyadharisini  
Assistant Professor  
Department of Pathology  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

**Encl: Certificates**

**Photographs**





**Sri Lakshmi Narayana Institute of Medical Sciences**  
**Osudu, Puducherry-605502**

Date:02/05/17

From  
V.Senthil kumar  
Professor and Head,  
Dept.of physiology  
SLIMS,  
Bharath Institute of Higher Education and Research,  
Chennai.

To  
The Dean,  
SLIMS  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Permission to conduct value-added course:** Basic course in Research-an integral part of medical education

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: Basic course in Research-an integral part of medical education on Nov 2017– Jan 2018. We solicit your kind permission for the same.


Kind Regards

DR.V.Senthil kumar

---

**FOR THE USE OF DEANS OFFICE**

Names of Committee members for evaluating the course:

The Dean: DR.Jeyalakshmi 


The HOD: DR.V.Senthil kumar

The Expert: DR.S.Latha

The committee has discussed about the course and is approved.

Dean 

**DEAN**

  
Subject Expert

  
HOD

SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
OSUDU, AGARAM VILLAGE,  
KODAPAKKAM POST,  
PUDUCHERRY - 605 502

PROFESSOR & HOD  
DEPARTMENT OF PHYSIOLOGY  
Sri Lakshmi Narayana Institute Of Medical Sciences  
PONDICHERRY - 605 502.





OFFICE OF THE DEAN

# Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P -II ) dt. 11/07/2011 ]  
[ Affiliated to Bharath University, Chennai - TN ]

## Circular

10/10/17

**Sub: Organising Value-added Course:** Basic course in Research-an integral part of medical education - reg

With reference to the above mentioned subject, it is to bring to your notice that **SLIMS, Bharath Institute of Higher Education and Research**, is organizing "Basic course in Research-an integral part of medical education". The course content and registration form is enclosed below."

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before Oct 2017. Applications received after the mentioned date shall not be entertained under any circumstances.

Dean

**DEAN**

**SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES**  
OSUDU, AGARAM VILLAGE,  
KODAPAKKAM POST,  
PUDUCHERRY - 605 502

Encl: Copy of Course content and Registration form.



## VALUE ADDED COURSE

### 1. Name of the programme & Code

Basic course in Research-an integral part of medical education PHYC05

### 2. Duration & Period

30 hrs & Nov 2017– Jan 2018

### 3. Information Brochure and Course Content of Value Added Courses

*Enclosed as Annexure- I*

### 4. List of students enrolled

*Enclosed as Annexure- II*

### 5. Assessment procedures:

Descriptive questions- *Enclosed as Annexure- III*

### 6. Certificate model

*Enclosed as Annexure- IV*

### 7. No. of times offered during the same year:

1 Nov 2017– Jan 2018

### 8. Year of discontinuation: 2018

### 9. Summary report of each program year-wise

Value Added Course- Nov 2017– Jan 2018					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	PHYC 05	Basic course in Research-an integral part of medical education	Dr. S.Latha	1 <sup>st</sup> MBBS	20 (Nov 2017– Jan 2018 )

### 10. Course Feed Back

*Enclosed as Annexure- V*



RESOURCE PERSON



COORDINATOR

PROFESSOR & HOD  
DEPARTMENT OF PHYSIOLOGY  
Sri Lakshmi Narayana Institute Of Medical Sciences  
PONDICHERRY - 605 502.



Annexure -I

**COURSE PROPOSAL**

**Course Title:** Basic course in Research-an integral part of medical education

**Course Objective:** The main objectives of this course are to make understand the ug students about research, and their importance in in medical education and how to design and collect data etc

**Course Outcome:** On successful completion of the course the students will acquire adequate knowledge on research and its importance in medical education

**Course Audience:** Ist MBBS students

**Course Coordinator:** DR.R.Vijayakumar

**Course Faculties with Qualification and Designation:**

1. DR.S.Latha, Ph.D, Asst. Professor
2. DR.Anebaracy, MD, Assistant professor
3. DR.B.Deivanayagame, MD, Assistant professor

**Course Curriculum/Topics with schedule (Min of 30 hours)**

S. No	Date	Topic	Time	Hours
1.	11/11/17	Introduction of Research	2-4pm	2
2	18/11/17	Different types of research	2-4pm	2
3	25/11/17	Value of health research	2-4pm	2
4	02/12/17	Importance of research in Ug level	2-4pm	2
5	09/12/17	Research registries	2-5pm	3
6	16/12/17	How to design a research	2-5pm	3
7	23/12/17	Where to get ethical permission	2-4pm	2
8	30/12/17	Literature collection	2-5pm	3
9	06/01/18	Methodology and collection of the sample	2-5pm	3



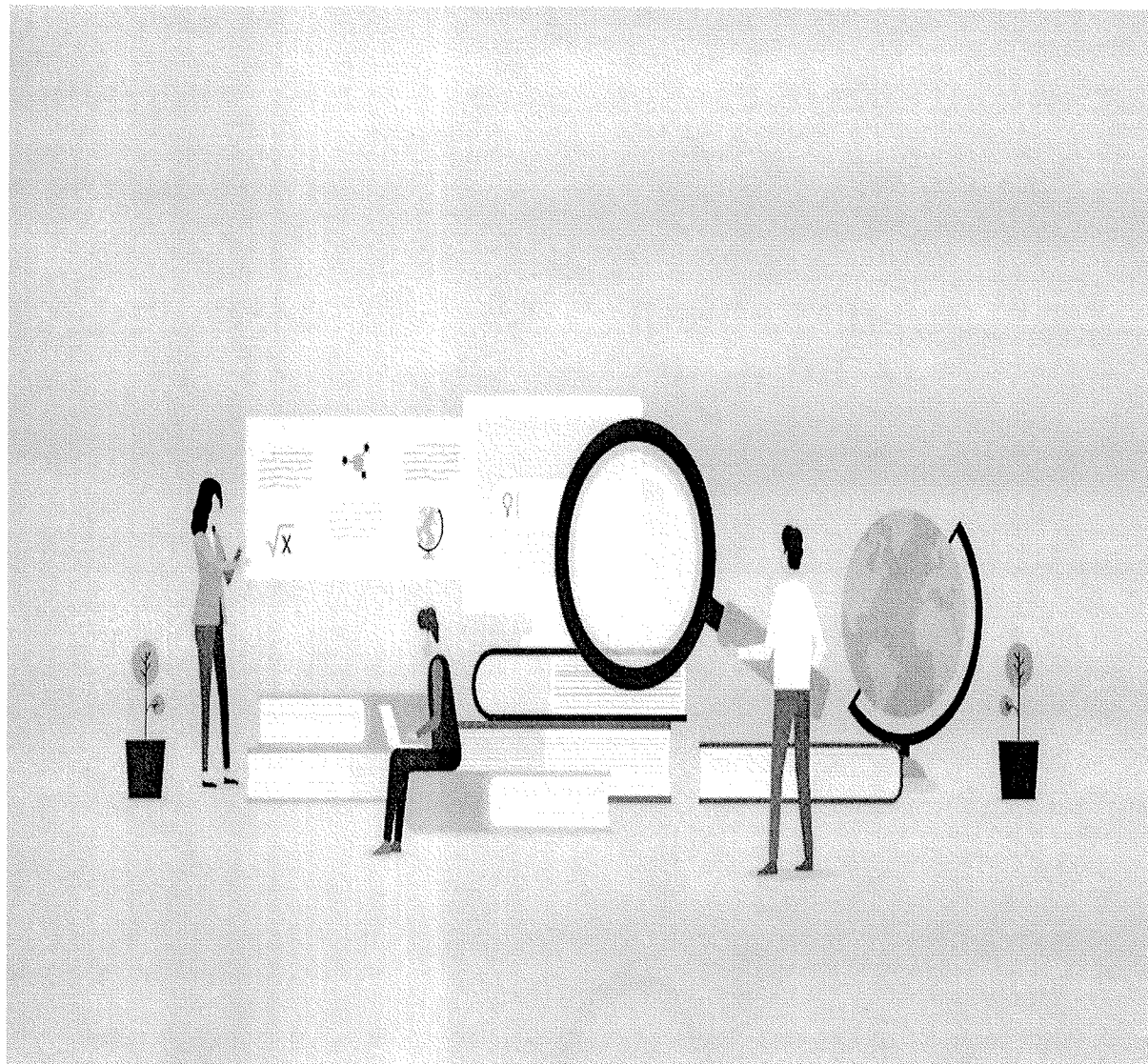
10	13/01/18	Sample analysis	2-4pm	2
11	20/01/18	Statistical analysis	2-5pm	3
10	27/01/18	Assessment	2-5pm	3
			Total Hours	30

**REFERENCE BOOKS:**

1. Research Methodology: A Step-by-Step Guide for Beginners -Dr. Ranjit Kumar
2. Research Methods: A Practical Guide For Students And Researchers-Willie Tan



# BASIC COURSE IN RESEARCH-AN INTEGRAL PART OF MEDICAL EDUCATION



**PARTICIPANT HAND BOOK**



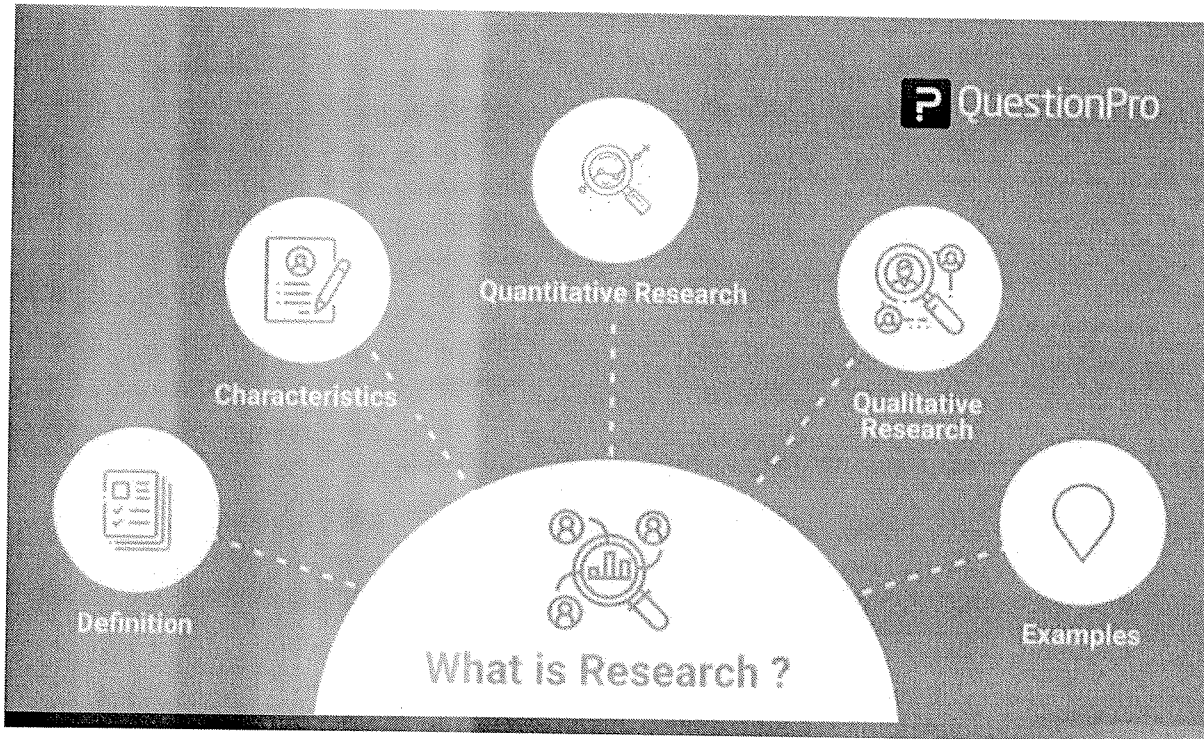
## COURSE DETAILS

<b>Particulars</b>	<b>Description</b>
Course Title	Basic course in Research-an integral part of medical education
Course Code	PHYC05
Objectives	The main objectives of this course are to make understand the ug students about research, and their importance in in medical education and how to design and collect data etc.
Target students	1st MBBS Students
Key competencies	<ol style="list-style-type: none"><li>1. What is research</li><li>2. Different types of research</li><li>3. Value of health research</li><li>4. Importance of research in ug level</li><li>5. Research registries</li><li>5. How to design a research</li><li>6. Where to get ethical permission</li><li>7. Literature collection</li><li>8. Methodology and collection of the sample</li><li>9. Sample analysis</li><li>10. Statistical analysis</li></ol>
Duration	30hrs , Nov 2017– Jan 2018
Assessment Procedure	Descriptive questions based assessment



## What is research:

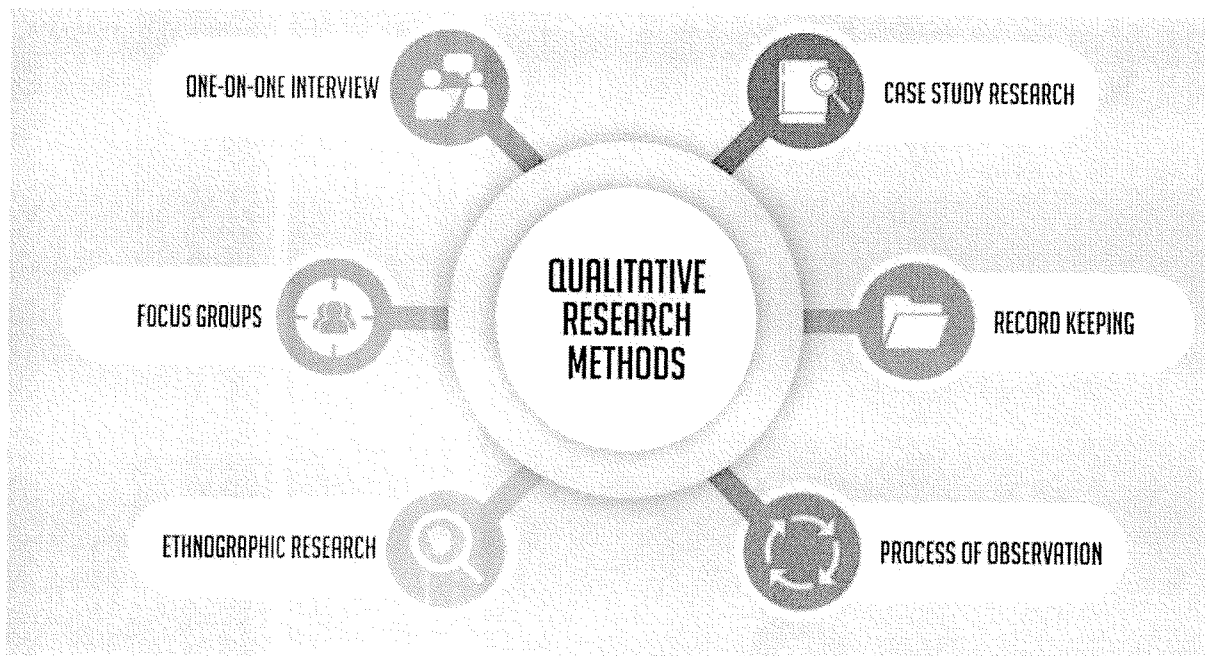
Research is "creative and systematic work undertaken to increase the stock of knowledge". It involves the collection, organization, and analysis of information to increase understanding of a topic or issue. A research project may be an expansion on past work in the field.



The primary purposes of basic research (as opposed to applied research) are documentation, discovery, interpretation, and the research and development (R&D) of methods and systems for the advancement of human knowledge. Approaches to research depend on epistemologies, which vary considerably both within and between humanities and sciences. There are several forms of research: scientific, humanities, artistic, economic, social, business, marketing, practitioner research, life, technological, etc. The scientific study of research practices is known as meta-research.



## Different types of research



## Forms of research

Original research, also called primary research, is research that is not exclusively based on a summary, review, or synthesis of earlier publications on the subject of research. This material is of a primary-source character. The purpose of the original research is to produce new knowledge, rather than to present the existing knowledge in a new form (e.g., summarized or classified). Original research can take a number of forms, depending on the discipline it pertains to. In experimental work, it typically involves direct or indirect observation of the researched subject(s), e.g., in the laboratory or in the field, documents the methodology, results, and conclusions of an experiment or set of experiments, or offers a novel interpretation of previous results. In analytical work, there are typically some new (for example) mathematical results produced, or a new way of approaching an existing problem. In some subjects which do not typically carry out experimentation or analysis of this kind, the originality is in the particular way existing understanding is changed or re-interpreted based on the outcome of the work of the researcher.

The degree of originality of the research is among major criteria for articles to be published in academic journals and usually established by means of peer review. Graduate students are commonly required to perform original research as part of a dissertation.



Scientific research is a systematic way of gathering data and harnessing curiosity. This research provides scientific information and theories for the explanation of the nature and the properties of the world. It makes practical applications possible. Scientific research is funded by public authorities, by charitable organizations and by private groups, including many companies. Scientific research can be subdivided into different classifications according to their academic and application disciplines. Scientific research is a widely used criterion for judging the standing of an academic institution, but some argue that such is an inaccurate assessment of the institution, because the quality of research does not tell about the quality of teaching (these do not necessarily correlate).

Research in the humanities involves different methods such as for example hermeneutics and semiotics. Humanities scholars usually do not search for the ultimate correct answer to a question, but instead, explore the issues and details that surround it. Context is always important, and context can be social, historical, political, cultural, or ethnic. An example of research in the humanities is historical research, which is embodied in historical method. Historians use primary sources and other evidence to systematically investigate a topic, and then to write histories in the form of accounts of the past. Other studies aim to merely examine the occurrence of behaviours in societies and communities, without particularly looking for reasons or motivations to explain these. These studies may be qualitative or quantitative, and can use a variety of approaches, such as queer theory or feminist theory.

Artistic research, also seen as 'practice-based research', can take form when creative works are considered both the research and the object of research itself. It is the debatable body of thought which offers an alternative to purely scientific methods in research in its search for knowledge and truth.

### **Importance of health research**

health research has high value to society. It can provide important information about disease trends and risk factors, outcomes of treatment or public health interventions, functional abilities, patterns of care, and health care costs and use. The different approaches to research provide complementary insights. Clinical trials can provide important information about the efficacy and adverse effects of medical interventions by controlling the variables that could impact the



results of the study, but feedback from real-world clinical experience is also crucial for comparing and improving the use of drugs, vaccines, medical devices, and diagnostics. For example, Food and Drug Administration (FDA) approval of a drug for a particular indication is based on a series of controlled clinical trials, often with a few hundred to a few thousand patients, but after approval it may be used by millions of people in many different contexts. Therefore, tracking clinical experience with the drug is important for identifying relatively rare adverse effects and for determining the effectiveness in different populations or in various circumstances. It is also vital to record and assess experience in clinical practice in order to develop guidelines for best practices and to ensure high-quality patient care. Collectively, these forms of health research have led to significant discoveries, the development of new therapies, and a remarkable improvement in health care and public health.<sup>4</sup> Economists have found that medical research can have an enormous impact on human health and longevity, and that the resulting increased productivity of the population contributes greatly to the national economy in addition to the individual benefits of improved health. If the research enterprise is impeded, or if it is less robust, important societal interests are affected.

## **RESEARCH FOR MEDICAL STUDENTS**

Many medical students do not see themselves having a career that emphasizes research. The question is should students be consumers of the products of scientific research only or should they be conducting their own research? Medical students are already busy as it is. Should they burden themselves with doing research as well? The answer is yes, medical students should and must engage in research as part of their studies and here are some of the reasons why:

1. Research experience in medical school is increasingly becoming an important factor when it comes to obtaining training positions post-graduate. Competition for such training positions are very fierce and having research experience is a distinct advantage.
2. Research training could also be the first time that students get to write what they think and do so in a coherent and concise manner. This contributes to the development of habits that are crucial in a medical career.



3. Doing research while in medical school can also encourage the production of papers and research later on. This can help in boosting careers.
4. It also appears that research-active physicians provide better care to patients.
5. Medical doctors must understand and appreciate the research process. They must be able to critically appraise the literature. This is very important today, since patients get all kinds of information through the Internet and when there are so many articles out there, and the majority of them are published without checking for quality and legitimacy, just for money. Doctors must know what is legitimate and what is not, because the patient will ask about things he read in the newspapers, or in journals, or found on the Internet. Given all these benefits, it really is obvious that research is very important for medical students.

### **Research Registries**

One way to make information about research studies more broadly available to the public is through registration of trials and other studies in public databases. HHS should encourage such registration of trials and other studies, particularly when research is conducted with an IRB/Privacy Board approved waiver of consent or authorization. Numerous clinical trial registries already exist, and registration has increased in recent years. In 2000, the National Library of Medicine established a clinical trials registry, which has expanded to include information from several other trial registries and to serve as the FDA-required site for submissions about clinical trials subject to the FDA databank requirement. The FDA Amendments Act of 2007 expanded the scope of required registrations at ClinicalTrials.gov and provided the first federally funded trials results database. It mandates registrations of controlled clinical investigations, except for Phase I trials, of drugs, biologics, and devices subject to FDA regulation. A policy of the International Committee of Medical Journal Editors (ICMJE), adopted in fall 2005, also requires prospective trial registration as a precondition for publication. This policy led to a 73 percent increase in trial registrations of all intervention types from around the world. Nearly 45,000 trials had been registered by fall 2007. However, although the development of such registries is an important first step toward providing high-quality clinical trial information to the public, no centralized system currently exists to disseminate



information about clinical trials of drugs or other interventions, making it difficult for consumers and their health care providers to identify ongoing studies. The current statutory requirements for registration and data reporting in the United States are not as broad as the transnational policies of the ICMJE or the World Health Organization, which call for the registration of all interventional studies in human beings regardless of intervention type. Moreover, noninterventional studies, such as observational studies that play an increasingly critical role in biomedical research, are not generally included in these databases. Because many noninterventional studies are conducted with an IRB/Privacy Board approved waiver of consent or authorization, including those studies in a registry could be an important method for increasing public knowledge of such studies.

### **Statistical analysis:**

Statistical analysis is the process of collecting and analyzing samples of data to uncover patterns and trends and predict what could happen next to make better and more scientific decisions.

### **The 5 methods for performing statistical analysis**

#### **1. Mean**

The first method that's used to perform the statistical analysis is mean, which is more commonly referred to as the average. When you're looking to calculate the mean, you add up a list of numbers and then divide that number by the items on the list.

When this method is used it allows for determining the overall trend of a data set, as well as the ability to obtain a fast and concise view of the data. Users of this method also benefit from the simplistic and quick calculation.

The statistical mean is coming up with the central point of the data that's being processed. The result is referred to as the mean of the data provided. In real life, people typically use mean to in regards to research, academics, and sports. Think of how many times a player's batting average is discussed in baseball; that's their mean.

#### **How to find the mean**

To find the mean of your data, you would first add the numbers together, and then divide the sum by how many numbers are within the dataset or list.



As an example, to find the mean of 6, 18, and 24, you would first add them together.

$$6 + 18 + 24 = 48$$

Then, divide by how many numbers in the list (3).

$$48 / 3 = 16$$

The mean is 16.

### **Disadvantages**

When using mean is great, it's not recommended as a standalone statistical analysis method. This is because doing so can potentially ruin the complete efforts behind the calculation, seeing as it is also related to the mode (the value that occurs most often) and median (the middle) in some data sets. When you're dealing with a large number of data points with either a high number of outliers (a data point that differs significantly from others) or an inaccurate distribution of data, the mean doesn't give the most accurate results in statistical analytics for a specific decision.

### **2. Standard deviation**

Standard deviation is a method of statistical analysis that measures the spread of data around the mean.

When you're dealing with a high standard deviation, this points to data that's spread widely from the mean. Similarly, a low deviation shows that most data is in line with the mean and can also be called the expected value of a set.

Standard deviation is mainly used when you need to determine the dispersion of data points (whether or not they're clustered).

If a low standard deviation occurs, it would show that the answers can be projected to a larger group of customers.

### **How to find the standard deviation**

The formula to calculate the standard deviation is:



$$\sigma^2 = \frac{\sum(x - \mu)^2}{n}$$

In this formula:

- The symbol for standard deviation is  $\sigma$
- $\Sigma$  stands for the sum of the data
- $x$  stands for the value of the dataset
- $\mu$  stands for the mean of the data
- $\sigma^2$  stands for the variance
- $n$  stands for the number of data points in the population

To find the standard deviation:

1. Find the mean of the numbers within the data set
2. For each number within the data set, subtract the mean and square the result (which is this part of the formula  $(x - \mu)^2$ ).
3. Find the mean of those squared differences
4. Take the square root of the final answer

If you used the same three numbers in our mean example, 6, 18, and 24, the standard deviation, or  $\sigma$ , would be 7.4833147735479.

### **Disadvantages:**

On a similar note to the downside of using mean, the standard deviation can be misleading when used as the only method in your statistical analysis.

As an example, if the data you're working with has too many outliers or a strange pattern like a non-normal curve, then standard deviation won't provide the necessary information to make an informed decision.

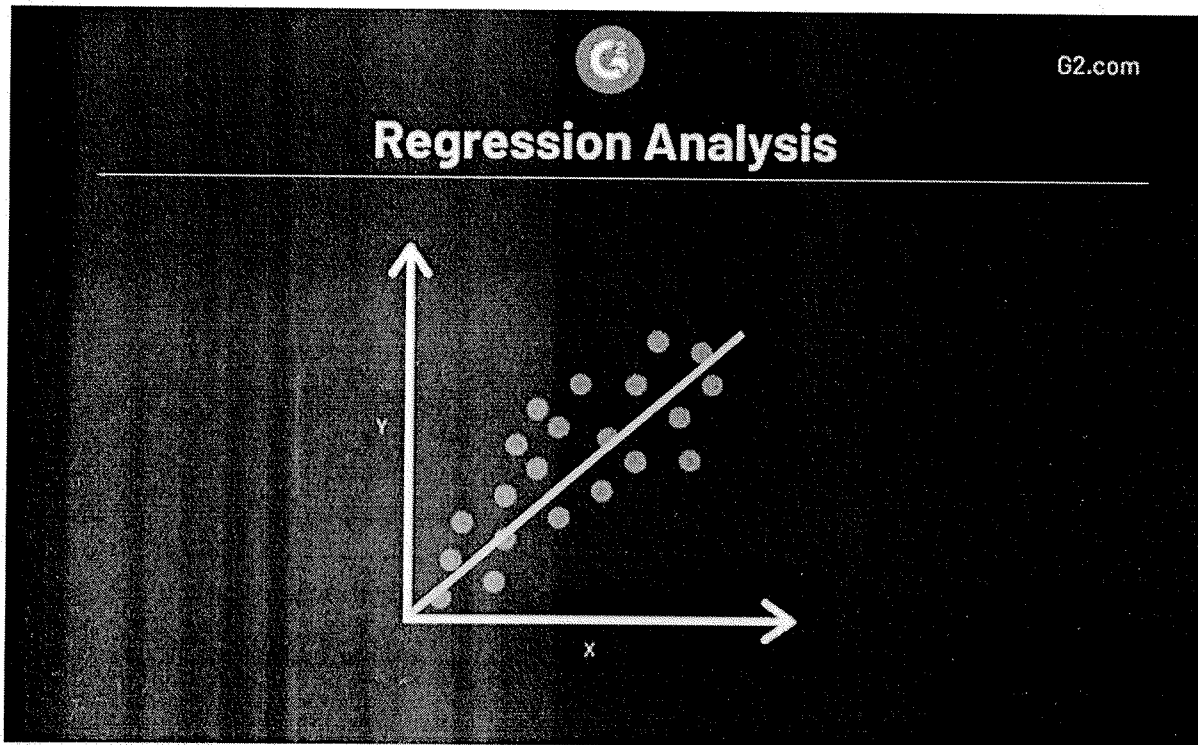
### **3. Regression**

When it comes to statistics, **regression** is the relationship between a dependent variable (the data you're looking to measure) and an independent variable (the data used to predict the dependent variable).

It can also be explained by how one variable affects another, or changes in a variable that trigger changes in another, essentially cause and effect. It implies that the outcome is dependent on one or more variables.



The line used in regression analysis graphs and charts signify whether the relationships between the variables are strong or weak, in addition to showing trends over a specific amount of time.



These studies are used in statistical analysis to make predictions and **forecast trends**. For example, you may use regression to predict how a specific product or service may sell to your customers. Or, here at G2, we use regression to predict how our organic traffic will look 6 months from now.

### Regression formula

The regression formula that's used to see how data could look in the future is:

$$Y = a + b(x)$$

In this formula:

- A refers to the y-intercept, the value of y when  $x = 0$
- X is the dependent variable
- Y is the independent variable
- B refers to the slope, or rise over run

### Disadvantages

One disadvantage of using regression as part of your statistical analysis is that regression isn't very distinctive, meaning that although the outliers on a scatter plot (or regression analysis



graph) are important, so are the reasons as to why they're outliers. This reason could be anything from an error in analysis to data being inappropriately scaled.

A data point that is marked as an outlier can represent many things, such as your highest selling product. The regression line entices you to ignore these outliers and only see the trends in data.

#### **4. Hypothesis testing**

In statistical analysis, hypothesis testing, also known as "T Testing", is a key to testing the two sets of random variables within the data set.

This method is all about testing if a certain argument or conclusion is true for the data set. It allows for comparing the data against various hypotheses and assumptions. It can also assist in forecasting how decisions made could affect the business.

In statistics, a hypothesis test determines some quantity under a given assumption. The result of the test interprets whether the assumption holds or whether the assumption has been violated.

This assumption is referred to as the *null hypothesis*, or hypothesis 0. Any other hypothesis that would be in violation of hypothesis 0 is called the first hypothesis, or hypothesis 1.

When you conduct hypothesis testing, the results of the test are significant to statistics if the results are proof that it couldn't have happened by a random occurrence or chance.

As an example, you may make the assumption that the longer it takes to develop a product, the more successful it will be, resulting in higher sales than ever before. Before implementing longer work hours to develop a product, hypothesis testing ensures there's an actual connection between the two.

#### **Hypothesis testing formula**

The results of a statistical hypothesis test need to be interpreted to make a specific claim, which is referred to as the p-value.

Let's say what you're looking to determine has a 50% chance of being correct.

The formula for this hypothesis test is:

$$H_0: P = 0.5$$

$$H_1: P \neq 0.5$$

#### **Disadvantages**



Hypothesis testing can sometimes be clouded and skewed by common errors, like the placebo effect. This occurs when statistical analysts conducting the test falsely expect a certain result and then see that result, no matter the circumstances.

There's also the likelihood of being skewed by the Hawthorne effect, otherwise known as the observer effect. This happens when participants being analyzed skew the results because they know they're being studied.

## **5. Sample size determination**

When it comes to analyzing data for statistical analysis, sometimes the dataset is simply too large, making it difficult to collect accurate data for each element of the dataset. When this is the case, most go the route of analyzing a sample size, or smaller size, of data, which is called sample size determination.

To do this correctly, you'll need to determine the right size of the sample to be accurate. If the sample size is too small, you won't have valid results at the end of your analysis.

To come to this conclusion, you'll use one of the many **data sampling** methods. You could do this by sending out a survey to your customers, and then use the simple random sampling method to choose the customer data to be analyzed at random.

On the other hand, a sample size that is too large can result in wasted time and money. To determine the sample size, you may examine aspects like cost, time, or the convenience of collecting data.

### **Finding a sample size**

Unlike the other four statistical analysis methods, there isn't one hard-and-fast formula to use to find the sample size.

However, there are some general tips to keep in mind when determining a sample size:

1. When considering a smaller sample size, conduct a census
2. Use a sample size from a study similar to your own. For this, you may want to consider taking a look at academic databases to search for a similar study
3. If you're conducting a generic study, there may be a table that already exists that you can use to your advantage
4. Use a **sample size calculator**



5. Just because there isn't *one* specific formula doesn't mean you won't be able to find a formula that works. There are many you could use, and it depends on what you know or don't know about the purposed sample. Some that you may consider using are **Slovin's formula** and Cochran's formula

### **The downside**

As you analyze a new and untested variable of data within this method, you'll need to rely on certain assumptions. Doing so could result in a completely inaccurate assumption. If this error occurs during this statistical analysis method, it can negatively affect the rest of your data analysis.

These errors are called sampling errors and are measured by a confidence interval. For instance, if you state that your results are at a 90% confidence level, it means if you were to perform the same analysis again and again, 90% of the time your results will be the same.

### Ethical Issues in Research

There are many organizations, like the Committee on Publication Ethics, dedicated to promoting ethics in scientific research. These organizations agree that ethics is not an afterthought or side note to the research study. It is an integral aspect of research that needs to remain at the forefront of our work.

- Validity

The research design must address specific research questions. Hence, the conclusions of the study must correlate to the questions posed and the results. Also, research ethics demands that the methods used must relate specifically to the research questions.

- Voluntary Participation and Consent

An individual should at no point feel any coercion to participate in a study. This includes any type of persuasion or deception in attempting to gain an individual's trust.

Informed consent states that an individual must give their explicit consent to participate in the study. You can think of consent form as an agreement of trust between the researcher and the participants.

- Sampling

Sampling is the first step in research design. You will need to explain why you want a particular group of participants. You will have to explain why you left out certain people or groups. In



addition, if your sample includes children or special needs individuals, you will have additional requirements to address like parental permission.

- Confidentiality

The third ethics principle of the Economic and Social Research Council (ESRC) states that: “The confidentiality of the information supplied by research subjects and the anonymity of respondents must be respected.” However, sometimes confidentiality is limited. For example, if a participant is at risk of harm, we must protect them. This might require releasing confidential information.

- Risk of Harm

We should do everything in our power to protect study participants. For this, we should focus on the risk to benefit ratio. If possible risks outweigh the benefits, then we should abandon or redesign the study. Risk of harm also requires us to measure the risk to benefit ratio as the study progresses.

- Research Methods

We know there are numerous research methods. However, when it comes to ethical considerations, some key questions can help us find the right approach for our studies.

- i. Which methods most effectively fit the aims of your research?
- ii. What are the strengths and restrictions of a particular method?
- iii. Are there potential risks when using a particular research method?

For more guidance, you can refer to the ESRC Framework for Research Ethics.

### Institutional Review Boards

The importance of ethics in research cannot be understated. Following ethical guidelines will ensure your study’s validity and promote its contribution to scientific study. On a personal level, you will strengthen your research and increase your opportunities to gain funding.

To address the need for ethical considerations, most institutions have their own Institutional Review Board (IRB). An IRB secures the safety of human participants and prevents violation of human rights. It reviews the research aims and methodologies to ensure ethical practices are followed. If a research design does not follow the set ethical guidelines, then the researcher will have to amend their study.

### Applying for Ethical Approval



Applications for ethical approval will differ across institutions. Regardless, they focus on the benefits of your research and the risk to benefit ratio concerning participants. Therefore, you need to effectively address both in order to get ethical clearance.

- Participants

It is vital that you make it clear that individuals are provided with sufficient information in order to make an informed decision on their participation. In addition, you need to demonstrate that the ethical issues of consent, risk of harm, and confidentiality are clearly defined.

- Benefits of the Study

You need to prove to the panel that your work is essential and will yield results that contribute to the scientific community. For this, you should demonstrate the following:

- i. The conduct of research guarantees the quality and integrity of results.
- ii. The research will be properly distributed.
- iii. The aims of the research are clear and the methodology is appropriate.

- Integrity

Integrity and transparency are vital in the research. Ethics committees expect you to share any actual or potential conflicts of interest that could affect your work. In addition, you have to be honest and transparent throughout the approval process and the research process.

### The Dangers of Unethical Practices

There is a reason to follow ethical guidelines. Without these guidelines, our research will suffer. Moreover, more importantly, people could suffer.

The following are just two examples of infamous cases of unethical research practices that demonstrate the importance of adhering to ethical standards:

- The Stanford Prison Experiment (1971) aimed to investigate the psychological effects of power using the relationship between prisoners and prison officers. Those assigned the role of “prison officers” embraced measures that exposed “prisoners” to psychological and physical harm. In this case, there was voluntary participation. However, there was disregard for welfare of the participants.
- Recently, Chinese scientist He Jiankui announced his work on genetically edited babies. Over 100 Chinese scientists denounced this research, calling it “crazy” and “shocking and unacceptable.” This research shows a troubling attitude of “do first, debate later” and



a disregard for the ethical concerns of manipulating the human body Wang Yuedan, a professor of immunology at Peking University, calls this “an ethics disaster for the world” and demands strict punishments for this type of ethics violation.

What are your experiences with research ethics? How have you developed an ethical approach to research design? Please share your thoughts with us in the comments section below.

### **Assessment Procedure**

Descriptive questions-based assessment after successful completion of theory session





**SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH**

**Annexure -III**

**Basic course in Research-an integral part of medical education PHYC05**

**DESCRIPTIVE QUESTIONS**

**Course Code: PHYC 05**

**I. ANSWER ALL THE QUESTIONS** 5 x 10 = 50

1. What is research and write Different types of research
2. Write the Importance of research
3. Write about Research registries
4. Where to get ethical permission
5. Give in detail about statistical analysis



**Bharath Institute of Higher Education and Research**

**Annexure -II**

SLIMS Participant list of Value-added course: Basic course in Research-an integral part of medical education

Nov 2017- Jan 2018

Sl.No	Reg.No	Name of the candidate	Signature
1	U17MB291	DISHAL K P	K.P. Dalg
2	U17MB292	DIVYA PRIYA K	Divya priya
3	U17MB293	DIVYANSHI SINGH	Divyanshi Singh
4	U17MB294	ELAKIYA BALA	E. Lakshmi Bala
5	U17MB295	FEMI SREE.R.A.	Femi Sree R.A.
6	U17MB296	GANJI KARTHIK	Ganji Karthik
7	U17MB297	GAUTHAMAN.M	Gauthaman
8	U17MB298	GOKULAVAANI G K	Gokulavaani
9	U17MB299	GOWTHAM BJ	Gowtham
10	U17MB300	GRANDHI KARISHMA	Grandhi
11	U17MB301	GREESHMA SHAJI .K	Greeshma
12	U17MB302	GUDDATI KOTA SATYA SAI NAGA S RAMESH	Gudhati Kota Satya Sai Naga S Ramesh
13	U17MB303	GURUNATHAN S	Gurunathan
14	U17MB304	HARSH BHARTI	Harsh Bharti
15	U17MB305	HENRITTA.I	Henritta
16	U17MB306	HIYA SAIKIA	Hiya Saikia
17	U17MB307	HRITHICK MANICKAM R	Hrithick
18	U17MB308	JAYASHREE SAIKIA	Jayashree
19	U17MB309	JITHU MOHAN	Jithu Mohan
20	U17MB310	KAILA PRASANTH KUMAR	Kaila Prasanth Kumar



**Annexure -V**

**Course/Training Feedback Form**

**Course:** Basic course in Research-an integral part of medical education

**Date:** Nov 2017 -Jan 2018

**Name:** Ganji Karthik

**Reg NO.** UVTMB296

**Department:** Physiology

**Q 1:** Please rate your overall satisfaction with the format of the course:

- a. Excellent    b.  Very Good    c. Satisfactory    d. unsatisfactory

**Q 2:** Please rate course notes:

- a. Excellent    b.  Very Good    c. Satisfactory    d. unsatisfactory

**Q 3:** The lecture sequence was well planned

- a.  Excellent    b. Very Good    c. Satisfactory    d. unsatisfactory

**Q 4:** The lectures were clear and easy to understand

- a. Excellent    b.  Very Good    c. Satisfactory    d. unsatisfactory

**Q 5:** Please rate the quality of pre-course administration and information:

- a.  Excellent    b. Very Good    c. Satisfactory    d. unsatisfactory

**Q 6:** Any other suggestions:

**Comments:**

**Thank you for taking the time to complete this survey, your comments are much appreciated.**

**OPTIONAL Section:** Name \_\_\_\_\_

Signature Ganji Karthik

Date \_\_\_\_\_



Date:30.1.18

From  
DR.V.Senthil kumar  
Dept.of physiology  
SLIMS  
Bharath Institute of Higher Education and Research,  
Chennai.

Through Proper Channel

To  
The Dean,  
SLIMS  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Completion of value-added course: Basic course in Research-an integral part of medical education**

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: Basic course in Research-an integral part of medical education on Nov2017– Jan 2018. We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards



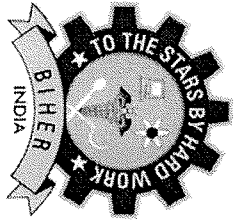
DR.V.Senthil kumar

PROFESSOR & HOD  
DEPARTMENT OF PHYSIOLOGY  
HOD Sign and Seal  
Sri Lakshmi Narayana Institute of Medical Sciences  
PONDICHERRY - 605 002.

**Encl: Certificates**

**Photographs**





# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that GANJI KARTHIK has actively participated in the Value Added Course on Basic course in Research-an integral part of medical education held during Nov 2017– Jan 2018 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr. S. Latha

RESOURCE PERSON

Dr. R. Vijaya Kumar

COORDINATOR



**Course:** Basic course in Research-an integral part of medical education

**Code:** PHYC05





D. NO.

FOR OFFICE USE ONLY

Total Number of pages written including additional sheets

# BHARATH UNIVERSITY

(Declared under Section 3 of the UGC Act 1956)

CHENNAI - 600 073

## MAIN ANSWER BOOK

DEPARTMENT OF PHYSIOLOGY  
Sri Lakshmi Narayana Institute of Health Sciences  
PONDICHERRY - 605 017

NAME OF THE EXAMINATION : *Value Added courses*

SUBJECT OF THE EXAMINATION: *Vac. Physiology*

SECTION / code : *PHYC 05*

DATE OF THE EXAMINATION : *27.1.18*

### QUESTION NUMBERS / MARKS

Section	1	2				Sub Total
A	1	2				
B	a	b	c	d	e	
	<i>9</i>	<i>8</i>	<i>8</i>	<i>8</i>	<i>NA</i>	<i>33</i>
	f	g	h	i	j	
C	a	b	c	d	e	
	f	g	h	i	j	
<b>TOTAL</b>						<i>32</i>

*66/100*  
*P. Sathya*

Total Marks in words *Sixty six*

OFFICE USE  
  
BUNDLE No.

Signature of the Examiner *[Signature]*

### CANDIDATES TO FILL THIS COLUMN CAREFULLY

REG NO. *U17MB296*

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D. NO.



1. What is Research.

Research is creative and systematic work undertaken to increase the stock of knowledge. It involves collection, organization and analysis of information to increase understanding of topic.

A research project is an expansion on past work in the field.

The primary purpose of basic research are documentation, discovery, interpretation and the research and development of methods and systems for the advancement of human knowledge.

There are several forms of research — scientific, humanities, artistic, economic, social, business, marketing, practitioners research, life technological etc.

## Different Types of Research.

→ One on one interview

→ Case study research

→ Record keeping

→ Process of observation

→ Ethnographic research

→ focus groups

Primary or Original Research

The purpose of original research

is to produce new knowledge rather than

to present the existing knowledge in

a new form.

In the experimental work it

involves direct or indirect observation

of researched subject.

Research in human involves

different methods such as for

## Different Types of Research.

- One on one interview
- Case study research
- Record keeping
- process of observation
- Ethnographic research
- focus groups.

## Primary or Original Research

The purpose of original research is to produce new knowledge rather than to present the existing knowledge in a new form.

In the experimental work, it involves direct or indirect observation of researched subject.

Research in human involves different methods such as for



interventional studies in human beings regardless of intervention type.

IRB / privacy board approved waivers of consent or authorization including those studies in a registry could be an important method for increasing public knowledge of such studies.

## 2. Ethical permission

### Importance of Research:

Health research has high value to society. It can provide important information about disease trends and risk factors, outcomes of treatment or public health intervention, functional abilities, patterns of care and health care costs and use.

The FDA Amendment Act of 2007 expanded the scope required registration at ClinicalTrials.gov and provided the first federally funded trials results database.

A policy of International Committee of Medical Journal Editors (ICMJE), adopted in fall 2005, also requires prospective trial registration as a precondition for publication. This policy led to a 73% rise in trial registration of all intervention types from around the world.

World Health Organization which call for the registration of all

Example chemeneitics and semiotics.

Historians use primary sources and other evidence to systematically investigate a topic and then to write histories in the form of accounts of the past.

Artistic also seen as practice based research can take form when creative works are considered both the research and the object of research itself. It is the debatable body of thought which offers an alternative to purely scientific methods in research in its search for knowledge and truth.

## 2. Research Registries :

One way to make information about research studies more broadly available to the public is through registration of trials and other studies in public databases.

HHS should encourage such registration of trials and other studies, particularly when research is conducted with an IRB / privacy board approved waiver of consent or authorization. Numerous clinical trial registries already exist, and registration has increased in recent years.

The National Library of Medicine established a clinical trials registry

The different approaches to research provide complementary insights. Clinical trials can provide important information about the efficacy and adverse effects of medical interventions by controlling the variable that could impact the result of study. But feedback from the real-world clinical experience is also crucial for comparing and improving the use of drugs, vaccines, medical devices and diagnostics.

Tracking clinical experience with the drug is important for identifying relatively rare adverse effects and for determining the effectiveness in different populations.

## Q7 Statistical analysis 5 methods

### 1. mean

Commonly known as average.

When this method is used, it allows for determining the overall trend of a data set as well as the ability to obtain a fast and concise view of the data.

To find the mean, we have to add the numbers together and then divide the sum by how many numbers are within data set or list.

### 2. Standard deviation;

Standard deviation mainly used when you need to determine the dispersion of data points.

Formula to calculate the standard deviation is

$$\frac{\sum (x-u)^2}{n}$$

### 3) Regression

It is the relationship between a dependent variable and an independent variable.

Regression formula

$$Y = a + b(x)$$

A = Y intercept

B = Slope.

X is dependent variable

Y  $\rightarrow$  independent variable

### 4) Hypothesis testing

It is also known as T-Testing.

In statistics hypothesis test determines some quantity under a given assumption.

The result of the test interprets, whether the assumption holds or whether the assumption has been violated. This assumption is referred to as null hypothesis.

Hypothesis testing formula

$$P = 0.5$$

$$P \neq 0.5$$

5) Sample size determination  
of  $\rho$  determined by using  
sample size calculator.



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## Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P -II ) dt. 11/07/2011 ]  
[ Affiliated to Bharath University, Chennai - TN ]

Date 16.10.17

From  
DR. Vijayaragavan  
Associate professor and Head,  
Department of Orthopaedics,  
SLIMS,  
Bharath Institute of Higher Education and Research,  
Pondicherry.

To  
The Dean,  
SLIMS  
Bharath Institute of Higher Education and Research,  
Pondicherry.

### Sub: Permission to conduct value-added course: Disaster Management

Respected Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: **\_DISASTER MANAGEMENT\_** on **\_\_01.11.2017\_\_**. We solicit your kind permission for the same.

Kind Regards

Dr. R. VIJAYA RAGAVAN, DNB.,  
Reg No 68472  
Asso Professor Orthopaedics  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502

DR.vijayaragavan

### FOR THE USE OF DEANS OFFICE

Names of Committee members for evaluating the course:

The Dean: DR.A.Sugumaran

The HOD : dr.vijayaragavan

The Expert: Dr.Boblee james

The committee has discussed about the course and is approved.

Dean

Subject Expert

HOD

DEAN

Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Ageram Kudapakkam, Post,  
Villanur Commune Puducherry-605 502.

Department of Orthopaedics  
Sri Lakshmi Narayana Institute of Medical Sciences  
Pondicherry - 605 502.

Dr. R. VIJAYA RAGAVAN, DNB.,  
Reg No 68472  
Asso Professor Orthopaedics  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502



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[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P -II ) dt. 11/07/2011 ]  
[ Affiliated to Bharath University, Chennai - TN ]

### Circular

07.06.2020

**Sub: Organising Value-added Course: DISASTER MANAGEMENT**

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research** is organizing **DISASTER MANAGEMENT. 30 hrs & NOVEMBER 2017– JANUARY 2018**

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before NOV 2017- JAN 2018. Applications received after the mentioned date shall not be entertained under any circumstances.

**Dean**

DEAN  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agaram Kudapakkam, Post,  
Villanur Commune Puducherry-605 502.



OFFICE OF THE DEAN

## Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P -II ) dt. 11/07/2011 ]  
[ Affiliated to Bharath University, Chennai - TN ]

**Course Title: Disaster management**

**Course Objective: All about disaster management**

**Course Outcome:**

**Course Audience: 20**

**Course Coordinator: DR.sugumaran**

**Course Faculties with Qualification and Designation:**

1. **DR.Vijayaragavan DnB ORTHO**

**Course Curriculum/Topics with schedule (Min of 30 hours)**

SINo	Date	Topic	Time	Hours
1	1.11.2017	DEFINITION	4-5pm	1hr
2	9.11.2017	DISASTER NURSING	4-5pm	1hr
3	15.11.2017	TYPES OF DISASTER	4-6pm	2hrs
4	29.11.2017	CHARACTERISTICS OF DISASTER	4-6pm	2hrs
5	5.12.2017	PHASES OF DISASTER	4-6pm	2hrs
6	13.12.2017	MANAGEMENT	4-6pm	2hrs
		PRACTICAL:		
1	20.12.2017	PRACTICAL SESSION:	4-7PM	3HRS
2	27.12.2017	PRACTICAL SESSION	4-8PM	4HRS
3	02.01.2018	PRACTICAL SESSION	4-7PM	3HRS
4	10.01.2018	PRACTICAL SESSION	4-7PM	3HRS
5	17.01.2018	PRACTICAL SESSION	4-7PM	3HRS
6	24.01.2018	PRACTICAL SESSION	4-8PM	4HRS
			Total Hours	30

**REFERENCE BOOKS:**

1)DISASTER MANAGEMENT  
2)INTRODUCTION TO INTERNATIONAL  
DISASTER MANAGEMENT

M.M.SULPHEY  
DAMON .P.COPPOLA



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## **Sri Lakshmi Narayana Institute of Medical Sciences**

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P-II ) dt. 11/07/2011 ]  
[ Affiliated to Bharath University, Chennai - TN ]

### **VALUE ADDED COURSE**

**1. Name of the programme & Code :**

Disaster management – OR05

**2. Duration & Period**

30 hrs & NOVEMBER 2017– JANUARY 2018

**3. Information Brochure and Course Content of Value Added Courses**

*Enclosed as Annexure- I*

**4. List of students enrolled**

*Enclosed as Annexure- II*

**5. Assessment procedures:**

Short notes- *Enclosed as Annexure- III*

**6. Certificate model**

*Enclosed as Annexure- IV*

**7. No. of times offered during the same year:**

1 NOVEMBER 2017– JANUARY 2018

**8. Year of discontinuation: 2019**

**9. Summary report of each program year-wise**

Value Added Course- NOV17-JAN 18					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	OR05	Disaster management	Dr. Vijayaragavan	THIRD YEAR MBBS	20 (NOV17– Jan 18)

**10. Course Feed Back**

*Enclosed as Annexure- V*



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**RESOURCE PERSON**

**DR.VIJAYA RAGHAVAN**

**Dr. R. VIJAYA RAGAVAN, DNB.,** |  
Reg No 68472  
Asso Professor Orthopaedics  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502

**COORDINATOR**

**DR.A.SUGUMARAN**

DEAN  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agaram Kudapakkam, Post,  
Villanur Commune Puducherry-605 502.





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# **DISASTER MANAGEMENT**

## **1/11/2017**

### **DISASTER MANAGEMENT**

<b>Particulars</b>	<b>Description</b>
Course Title	<b>DISASTER MANAGEMENT</b>
Course Code	OR05
Objective	1. DEFINITION 2. DISASTER NURSING 3. TYPES OF DISASTER 4. CHARACTERISTICS OF DISASTER 5. PHASES OF DISASTER 6. MANAGEMENT
Further learning opportunities	<b>To assess the disaster management</b>
Key Competencies	On successful completion of the course the students will have the skill to evaluate and manage the DISASTER
Target Student	Pre final Students
Duration	30hrs NOV 17– January 2018



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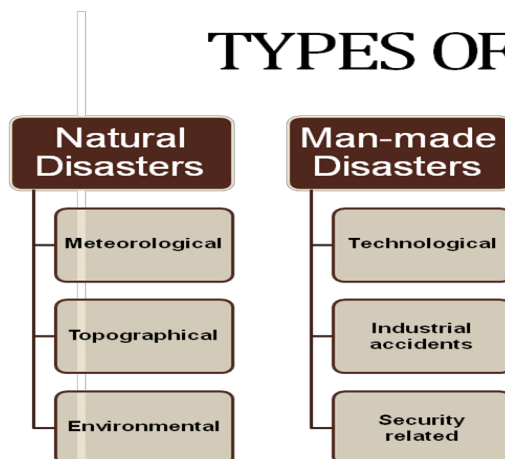
Theory Session	10hrs
Practical Session	20hrs
Assessment Procedure	Short notes

### DISASTER MANAGEMENT:

#### DEFINITION OF DISASTER :

- — “A disaster can be defined as any occurrence that cause damage, ecological disruption, loss of human life,
- deterioration of health and health services on a scale,
- sufficient to warrant an extraordinary response from outside the affected community or area”.
- **(W.H.O.)**
- — “A disaster can be defined as an occurrence either nature or manmade that causes human suffering and creates human needs that victims cannot alleviate
- without assistance”.
- **American Red Cross (ARC)**

## TYPES OF DISASTER





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Characteristics of disaster :

- Predictability
- Controllability
- Speed of onset
- Length of forewarning
- Duration of impact
- Scope and intensity of impact

Phases of disaster :

Pre impact

Impact

Post impact

What is disaster management :

— **Disaster management, which is also known as emergency management, can be defined as dealing with and avoiding both natural and man made disasters. Disaster management involves preparedness before disaster, rebuilding and supporting society after natural disasters such as, earthquakes, drought, tsunami etc. In India, there are many areas, which are often affected with natural calamity or man made disasters. They have become top priority for the Ministry of Human Resource Development, Government of India.**

Principle of disaster management :



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- **Disaster management is the responsibility of all spheres of government**
- **Disaster management should use resources that exist for a day-to-day purpose.**
- **Organizations should function as an extension of their core business**
- **Individuals are responsible for their own safety.**
- **Disaster management planning should**

**focus on large-scale events.**

- **Disaster management planning should recognize the difference between incidents and disasters.**
- **Disaster management operational arrangements are additional to and do not replace incident management operational arrangements**
- **Disaster management planning must take account of the type of physical environment and the structure of the population.**
- **Disaster management arrangements must recognise the**

**involvement and potential role of non- government agencies**

Disaster preparedness:

Preparedness should be in the form of money, manpower and materials

- Evaluation from past experiences about risk
- Location of disaster prone areas
- Organization of communication, information and warning system
- Ensuring co-ordination and response mechanisms
- Development of public education programme



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- Co-ordination with media
- National & international relations
- Keeping stock of foods, drug and other essential commodities.

**E.g.: Indian Meteorological department (IMD)** plays a key role in forewarning the disaster of cyclone-storms by detection tracing. It has 5 centres in Kolkata, Bhubaneswar, Vishakapatnam, Chennai & Mumbai. In addition there are 31 special observation posts setup a long the east coast of India.

**The International Agencies** which provides humanitarian assistance to the disaster strike areas are United Nation agencies.

- Office for the co-ordination of Humanitarian Affair (OCHA)
- World Health Organization (WHO)
- UNICEF
- World Food Programme (WFP)
- Food & Agricultural Organisation (FAD)

### **E.g.: Non Governmental Organizations**

- Co-Operative American Relief Every where (CARE)
- International committee of Red cross
- International committee of Red cross



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Disaster impact :

Triage :

- Golden hour
- Immediate or high priority:
- Delayed or medium priority:

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—

Minor or minimal or ambulatory patients:

— Expectant or least priority:

— Colour code:

Disaster response :

— Epidemiologic surveillance and disease control

— Vaccination

— Nutrition

Rehabilitationphase :

Water supply

— Food safety

— Basic sanitation and personal hygiene

— Housing

Disaster mitigation :

— This involves lessening the likely effects of emergencies. These include depending upon the disaster, protection of vulnerable population and structure.

— For examples, improving structural qualities of schools, houses and such other buildings so that medical casualties can be minimized. Similarly ensuring the safety of health facilities and public health services including water supply and sewerage system to reduce the cost of rehabilitation and reconstruction. This mitigation compliments the disaster preparedness and disaster response activities.



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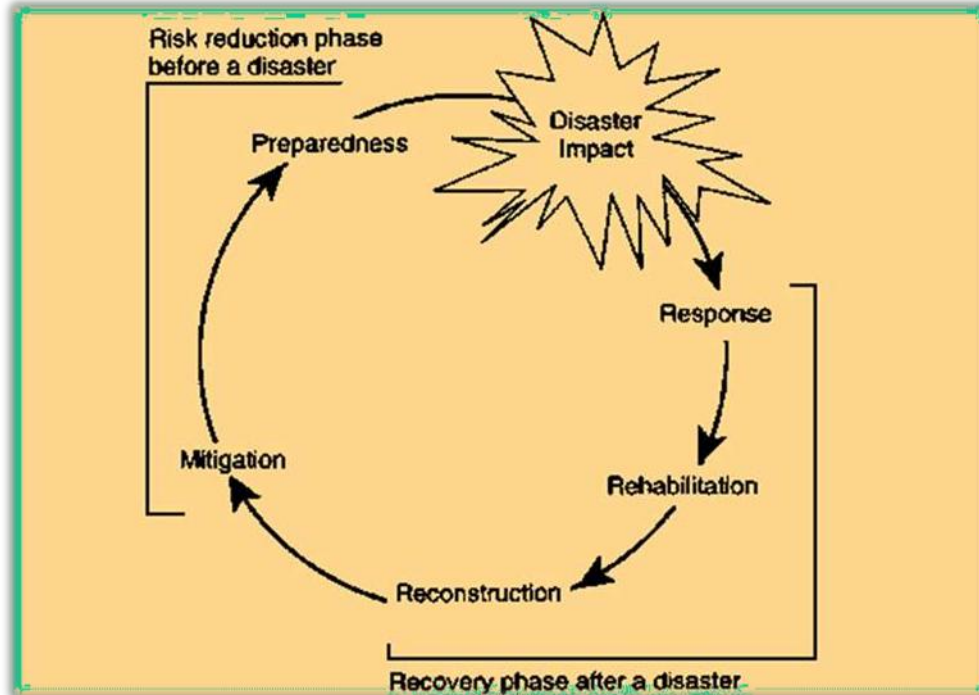
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# DISASTER MANAGEMENT CYCLE



Disaster effect :

- Deaths
- Disability
- Increase in communicable disease
- Psychological problems
- Food shortage
- Socioeconomic losses
- Shortage of drugs and medical supplies.



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— Environmental disruption

Disaster drill :

- A disaster drill is an exercise in which people simulate the circumstances of a disaster so that they have an opportunity to practice their responses.



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### VALUE ADDED COURSE

#### DISASTER MANAGEMENT

OR05

#### 4. List of Students Enrolled NOV 17 – Jan- 2018

Pre final year students			
Sl no.	Roll no	Name of the student	signature
1	U15MB250	AARTHI .H	<i>Aarthi</i>
2	U15MB251	ABARNA. M	<i>abarna.M</i>
3	U15MB252	ABINAYA.J	<i>Abinaya</i>
4	U15MB253	ADARSH .S	<i>Adarsh</i>
5	U15MB254	AGILAN .A	<i>Agilan</i>
6	U15MB255	AKSHAYA .S	<i>akshaya.S</i>
7	U15MB256	AKSSHAYA .M.R	<i>AKR.A</i>
8	U15MB257	AMARNATH. S	<i>Amarnath</i>
9	U15MB258	AMUDHESAR .K.M	<i>.k.mudh</i>
10	U15MB259	ANANDH.S	<i>Anand</i>
11	U15MB260	ARCHITH VIGNESH .B	<i>BVA</i>
12	U15MB261	ARJUNBALAJI .A	<i>Arjunbalaji</i>
13	U15MB262	ARUL NIVETHINI V.A	<i>Nivethini.V.</i>
14	U15MB263	ARUL PRINCE. E	<i>APR</i>
15	U15MB265	ARUN PRASAD. K	<i>Arunprasad</i>
16	U15MB266	ARUNA .S	<i>aruna</i>
17	U15MB264	ARUNKUMAR .S	<i>kumar.S.</i>
18	U15MB267	ASAN THASTHAGIR. M	<i>asan.M</i>
19	U15MB268	ASWIN. B	<i>aswin</i>
20	U15MB269	BALAMANI KANDAN. S	<i>Bala.S</i>

COORDINATOR



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### Course/Training Feedback Form

Course: DISASTER MANAGEMENT.  
Date: 24/1/18  
Name: ARUNA .S  
Reg NO.  
Department: ORTHO

Q 1: Please rate your overall satisfaction with the format of the course:

- a.  Excellent b.  Very Good c.  Satisfactory d.  unsatisfactory

Q 2: Please rate course notes:

- a.  Excellent b.  Very Good c.  Satisfactory d.  unsatisfactory

Q 3: The lecture sequence was well planned

- a.  Excellent b.  Very Good c.  Satisfactory d.  unsatisfactory

Q 4: The lectures were clear and easy to understand

- a.  Excellent b.  Very Good c.  Satisfactory d.  unsatisfactory

Q 5: Please rate the quality of pre-course administration and information:

- a.  Excellent b.  Very Good c.  Satisfactory d.  unsatisfactory

Q 6: Any other suggestions:

Comments:

Thank you for taking the time to complete this survey, your comments are much appreciated.

OPTIONAL Section: Name \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_



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Management of disaster is demonstrated by cycle:-

```
graph TD; A[Prevention and Mitigation] --> B[Disaster Preparedness]; B --> C[Disaster]; C --> D[Disaster Response]; D --> E[Rehabilitation and Recovery]; E --> A;
```

Disaster Preparedness.

Disaster

Disaster Response.

Rehabilitation and Recovery

Prevention and Mitigation

Disaster management cycle

The best practices for managing a disaster are :-

- Go have an updated disaster recovery plan with very specific instructions.
- Regularly testing disaster recovery plan.
- Including business operations in disaster recovery plan.
- Checking people first.
- Having proper communications plan.



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- 1) Safety precautions that we can take during disaster.
- 2) Management of disaster.

1) The safety precautions that we can take during disaster are :-

- 1) Alerting the command.
- 2) Establishing disaster status
- 3) Setting up triage, command and communication centers.
- 4) Treating patients
- 5) Coordinating with Government sources.
- 6) Evaluating emergency responses and initiating corresponding actions.



Along with this, the following measures can be taken :-

- 1) Decision to evacuate.
- 2) Warning the public about the consequences.
- 3) Withdrawal where the exposed people are moved from dangerous area to safer areas.
- 4) Giving shelter to the needy public in safer areas and providing with basic amenities.
- 5) Once the disaster area is averted and managed, with a planned return of evacuees.



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Disaster Risk Management for health is multisectorial & refers to systemic analysis & management of health risks, posed by emergencies & disasters through a combination of :-

(i) Hazard & vulnerability reduction to prevent & mitigate risks.

(ii) Response and.

(iii) Recovery measures.

Q2) what are types of Disaster?

→ Natural, Biological, Technological & Societal hazards.

• Natural → Earthquake, landslides, tsunami, cyclones, flood.

• Biological → Epidemic Disease, infestation of pests.

• Technological → Chemical substance, Radiological agents, transport crashes.

• Societal → Conflicts, Stampedes, Act of Terrorism.





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## Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



### CERTIFICATE OF MERIT

This is to certify that \_ARUNA.S\_ has actively participated in the Value Added Course on DISASTER MANAGEMNT held during NOV 2017 – Jan 2018 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr.  
VIJAYARAGHAVAN  
RESOURCE PERSON

Dr.A. SUGUMARAN  
COORDINATOR



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### Student Feedback Form

Course Name: **DISASTER MANAGEMENT**

Subject Code: OR05

Name of Student: Aruna S Roll No.: V15MB 266

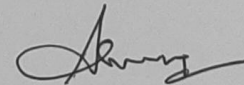
We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					/
2	Course contents met with your expectations					/
3	Lecturer sequence was well planned					/
4	Lectures were clear and easy to understand					/
5	Teaching aids were effective					/
6	Instructors encourage interaction and were helpful					/
7	The level of the course					/
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Date: 24/1/18

  
Signature



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[ Affiliated to Bharath University, Chennai - TN ]

Date : 24.1.2018

From  
DR.Vijayaragavan,  
Department of orthopaedics,  
SLIMS,  
Bharath Institute of Higher Education and Research,  
Pondicherry.

Through Proper Channel

To  
The Dean,  
SLIMS,  
Bharath Institute of Higher Education and Research,  
Pondicherry.

**Sub: Completion of value-added course: Disaster Management.**

RESPECTED Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: **Disaster Management** on 24.1.18. We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards

Dr.Vijayaragavan

**Dr. R. VIJAYA RAGAVAN, DNB.**  
Reg. No 68472  
Asso Professor Orthopaedics  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502

**Encl: Certificates**

**Photographs**



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## Sri Lakshmi Narayana Institute of Medical Sciences

Date: 02.11.2017

From

Dr.JansiRani  
Professor and Head,  
Department of Biochemistry,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

To

The Dean,  
Sri Lakshmi Narayana Institute of Medical College  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Permission to conduct value-added course: Sample collection, preservation and its testing**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: **Sample collection, preservation and its testing** in Nov to Dec 2017. We solicit your kind permission for the same.

Kind Regards

Dr.JansiRani

---

### FOR THE USE OF DEANS OFFICE

Names of Committee members for evaluating the course:

The Dean: *[Signature]* Dr. Jayalakehmi

The HOD: Dr. Jansi Rani

The Expert: Dr. Santhosakumari

The committee has discussed about the course and is approved.

Dean

(Sign & Seal)

*[Signature]*  
Dr. G. JAYALAKSHMI, BSC, MBBS, DTCO, M.D.  
DEAN

Sri Lakshmi Narayana Institute of Medical Sciences

Osudu, Ageram Kudapakkam, Post,  
Pondicherry-605 502.

*[Signature]*  
Subject Expert

(Sign & Seal)

DEPARTMENT OF BIOCHEMISTRY  
Sri Lakshmi Narayana Institute of Medical Sciences  
PONDICHERRY - 605 502.

*[Signature]*  
HOD

(Sign & Seal)

PROFESSOR & HOD  
DEPARTMENT OF BIOCHEMISTRY  
Sri Lakshmi Narayana Institute of Medical Sciences  
PONDICHERRY 605 502



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## Circular

03.11.2017

**Sub: Organising Value-added Course: Sample collection, preservation and its testing**  
reg

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research** is organizing "**Sample collection, preservation and its testing**". The course content form is enclosed below.

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution on or before Nov to Dec 2017. Applications received after the mentioned date shall not be entertained under any circumstances.

  
**Dean**

Dr. G. JAYALAKSHMI, BSC, (ABD), DRCB, M.D.,  
DEAN  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agaram Kudapakkam Post,  
Villanur Commune Pudukkottai - 605 502.

Encl: Copy of Course content

## VALUE ADDED COURSE

### 1. Name of the programme & Code

Sample collection, preservation and its testing

### 2. Duration & Period

30 hrs & Nov to Dec 2017

### 3. Information Brochure and Course Content of Value Added Courses

*Enclosed as Annexure- I*

### 4. List of students enrolled

*Enclosed as Annexure- II*

### 5. Assessment procedures:

Assessment - *Enclosed as Annexure- III*

### 6. Certificate model

*Enclosed as Annexure- IV*

### 7. No. of times offered during the same year:

1, Nov to Dec 2017

### 8. Year of discontinuation: 2018

### 9. Summary report of each program year-wise

Value Added Course- November to December 2017					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	BIO-06	Sample collection, preservation and its testing	Dr. JansiRani Dr.Santhosakumari	MBBS	20 students ( Nov to Dec 2017)

### 10. Course Feed Back

*Enclosed as Annexure- V*

#### RESOURCE PERSON

1. Dr.JansiRani
2. Dr.Santhosakumari

#### COORDINATOR

Dr.JansiRani

## Course Proposal

Course Title: **Sample collection, preservation and its testing**

**Course Objective:**

1. Overview of sample collection
2. How the samples are to be preserved
3. Methods to overcome the errors for better patient care

To sensitise the medical students about the importance and manual mishandling and ignorance of sample collection at a patient's bedside for a laboratory testing and its influence on reduction of sample reduction.

**Course Outcome: Gained knowledge on proper sample collection and preservation for the future doctors has possibility of reduced sample rejection in near future.**

**Course Audience: MBBS students of 2017 Batch**

**Course Coordinator: Dr.Jansirani**

**Course Faculties with Qualification and Designation:**

**1.Dr.Jansirani, Professor & HOD**

**2.Dr.Santhosakumari, Assistant Professor**

**Course Curriculum/Topics with schedule (Min of 30 hours)**

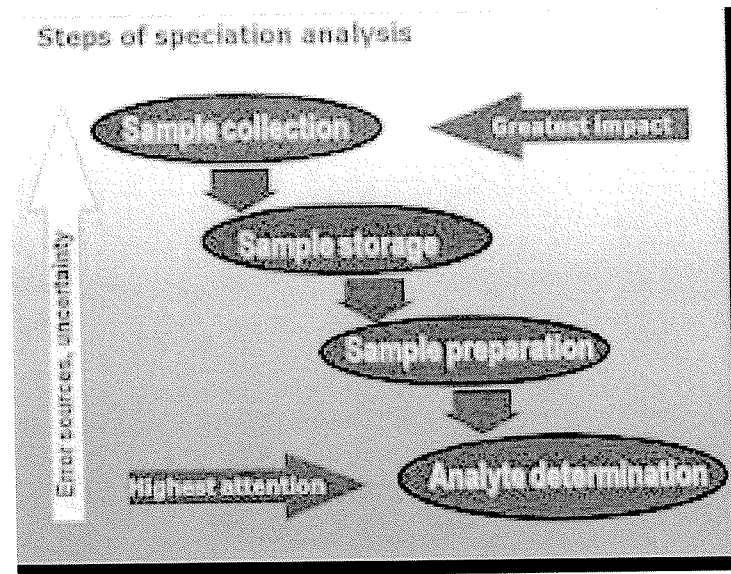
SINo	Date	Topic	Time	Hours
1	10.11.2017	Introduction, Background, Objectives	4- 5 PM	1
2	11.11.2017	Sources of biological sample	4- 5 PM	1
3	12.11.2017	Modes of blood sample collection	4- 6 PM	2
4	13.11.2017	Types of blood sample	4- 5 PM	1
5	14.11.2017	Blood collection tubes with its colour coding and order of draw	4- 5 PM	1
6	15.11.2017	Additives used in sample tubes with its action and purpose	4- 6 PM	2
7	16.11.2017	Tests run on different types of blood sample	4- 6 PM	2
8	17.11.2017	Urine sample collection and preservation	4- 6 PM	2
9	18.11.2017	Tissue(Hair & Nail) sample collection and preservation	4- 6 PM	2
10	19.11.2017	Tissue(buccal cells,exhaled air,adipose tissue) sample collection and preservation	4- 6 PM	2
11	23.11.2017	DNA extraction from blood cells, processing and its storage	1-6 PM	6
12	24.11.2017	Saliva sample collection and storage	4- 6 PM	2

13	25.11.2017	Faeces and semen sample collection and storage	4- 5PM	1
14	26.11.2017	Precautionary measures to be taken during delay in sample processing	4- 6 PM	2
15	27.11.2017	Precautionary measures to be taken during shipping of sample collected	4- 6 PM	2
16	28.11.2017	Practical session on sample collection, processing and storage - blood	7 – 10 AM	4
17	29.11.2017	Practical session on sample collection, processing and storage - blood	7 – 10 AM	4
18	30.11.2017	Practical session on sample collection, processing and storage - urine	7- 9AM	2
19	1.12.2017	Practical session on sample collection, processing and storage - urine	7-9AM	2
		Total		41

#### REFERENCE BOOKS:

1. Laboratory practical for practical biochemistry – 2nd edition – Shivaraja Shankara YM
2. Practical Haematology by Dacie, Lewis
3. Textbook Of Microbiology- Ananthanarayan And Paniker's (8th Edition)
4. Textbook Of Medical Biochemistry – 8th edition - Chatterjee
5. Internet

# SAMPLE COLLECTION PRESERVATION AND IT'S TESTING



**PARTICIPANT HAND BOOK**

<b>Particulars</b>	<b>Description</b>
Course Title	Sample collection, preservation and its testing
Course Code	BIO - 06
Topics and content of the course in the Hand book	<ol style="list-style-type: none"> <li>1. Introduction</li> <li>2. Objective</li> <li>3. Aim</li> <li>4. Example of biological sample</li> <li>5. Blood sample collection</li> <li>6. DNA extraction</li> <li>7. Urine collection</li> <li>8. Tissue collections</li> <li>9. Adipose tissue</li> <li>10. Exhaled air</li> <li>11. Hair nail clippings</li> <li>12. Buccal cells</li> <li>13. Saliva</li> <li>14. Feaces</li> <li>15. Semen reference</li> <li>16. Summary &amp; conclusion</li> </ol>
Advantages of learning and evaluation	<ul style="list-style-type: none"> <li>• Proper Implementation of sample collection, preservation and its estimation</li> <li>• Guidance by paramedical personnel</li> <li>• Better sample withdrawal at patient bedside</li> <li>• Reduces sample rejection rate, sample mishandling and sample loss</li> </ul>
Further learning Opportunities	<ol style="list-style-type: none"> <li>1. Competency based assessment can be done.</li> <li>2. Boost the self confidence of the students.</li> <li>3. As they are the lifelong learner, the foundation will be laid strong.</li> </ol>

## Annexure I

	<ol style="list-style-type: none"> <li>4. As a responsible person committed to the society they know their roll and contribute to the society.</li> <li>5. Can be included in the university examination for testing KH, SH, P and ethical issues.</li> <li>6. Self satisfaction for the student as their performance is evaluated in a transparent method.</li> <li>7. Should be made a must know competency in CRR I period.</li> </ol>
Key Competencies	<ul style="list-style-type: none"> <li>• Evaluation by practical performance right from the second year can be beneficial both to the patients and the student.</li> </ul>
Target Student	I MBBS
Duration	41 hrs ,Nov - Dec 2017
Theory Session	31 hrs
Practical Session	10 hrs
Assessment Procedure	Assessment Evaluation by MCQ

## **SAMPLE COLLECTION, PRESERVATION AND ITS TESTING**

### CONTENTS

INTRODUCTION

OBJECTIVE

AIM

EXAMPLE OF BIOLOGICAL SAMPLE

BLOOD SAMPLE COLLECTION

DNA EXTRACTION

URINE COLLECTION

TISSUE COLLECTIONS

ADIPOSE TISSUE

EXHALED AIR

HAIR NAIL CLIPPINGS

BUCCAL CELLS

SALIVA

FEACES

SEMEN REFERENCE

### INTRODUCTION

☐ Quality laboratory results begin with correct and complete sample collection.

BIHER

SLIMS

☐ Examples include : blood, sputum, urine, feces, Saliva, Solid tissues and other body

### BROAD OBJECTIVE

☐ To be able to correctly collect specimen, put the specimen in the right container and transport specimen to the laboratory correctly and at the right time .

### AIM OF SAMPLE COLLECTION

☐ Accuracy -To ensure that analytical results obtained are representative of actual analyte conc. in patient and, thus of his/her physiological/pathological state.

☐ Safety

☐ Minimize patient discomfort and complications

☐ Avoid recollection

### EXAMPLE OF BIOLOGICAL SAMPLE

☐ Blood- venous/ arterial/ capillary- whole blood, serum, plasma

☐ Urine

☐ Faeces

☐ Saliva

☐ Solid tissues

☐ Amniotic fluid

☐ Cerebrospinal fluid

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- ☐ Synovial fluid
- ☐ Peritoneal fluid
- ☐ Pleural fluid
- ☐ Pericardial fluid

### BLOOD SAMPLE COLLECTION

☐ When a large amount of blood sample needed, an evacuated tube system with interchangeable glass tubes can be used to avoid multiple venepunctures.

☐ Evacuated tubes are commercially prepared with or without additives and with sufficient vacuum to - Sterile needles, Sterile Syringes/Plain Vacutainer, Blood Tubes, Alcohol Pads and Tourniquet.

### TYPE OF BLOOD COLLECTION

☐ Capillary blood: It is most frequently obtained from a finger or thumb.

☐ Venous blood: It is most often collected. A vein on the front of elbow or forearm is universally

☐ Arterial blood: It is most commonly obtained by inserting a needle into the radial, brachial or femoral artery. Arterial blood is less frequently examined. It can be taken for blood gas determinations.

☐ Note: Capillary blood is similar in composition to arterial blood.

### ANTICOAGULANTS

☐ If plasma/whole blood is required, blood has to be collected into a vial containing anticoagulant. It prevents the coagulation of blood.  
Anticoagulant...

Heparin:

☐ Most satisfactory anticoagulant inhibits the formation of thrombin from prothrombin.

☐ It does not produce a change in red cell volume or interfere with subsequent determination.

☐ Quantity is 2 mg/10 mL of blood

Ethylenediaminetetraacetic acid (EDTA):

☐ EDTA has chelating action on calcium ion and prevents coagulation.

☐ Quantity is 20 mg/10 mL blood

☐ It is well suited to DNA-based assays.

☐ But has problems for cytogenetic assays

Oxalates (potassium oxalate):

☐ It act by precipitating calcium ion.

☐ Potassium oxalate has been the most commonly used oxalate since it is most soluble.

☐ Quantity is 30 mg/10 mL

Sodiumcitrate:

☒ This does not precipitate the calcium, but converts it into a non-ionized form.

☒ Quantity used is 30 mg/ 10 mL blood.

☒ Note: Citrated plasma is not satisfactory in estimation of calcium.

### Sodiumfluoride:

☒ Usually used as a preservative in blood glucose estimation.

☒ It inhibits red cell metabolism (i.e. glycolysis) as well has antibacterial action.

☒ Sodium fluoride also acts as an anticoagulant, but larger amounts are required (10 mg/1 ml. blood).

☒ Fluoride + oxalate mixture (3:1) is used, while collecting blood for glucose estimation.

### Blood Collection: Color-code Tubes

☒ Red-top tubes contain no additives. These tubes are used for tests performed on serum samples and DNA.

☒ When you use the red-top tubes, the sample can be placed for 1-2 hours so that the serum and blood clots will be separated. Blood clots can be

☒ Lavender-top tubes contain EDTA, commonly used clinically for complete blood cell counts. This is the way to obtain :

☒ lymphocytes for DNA extraction

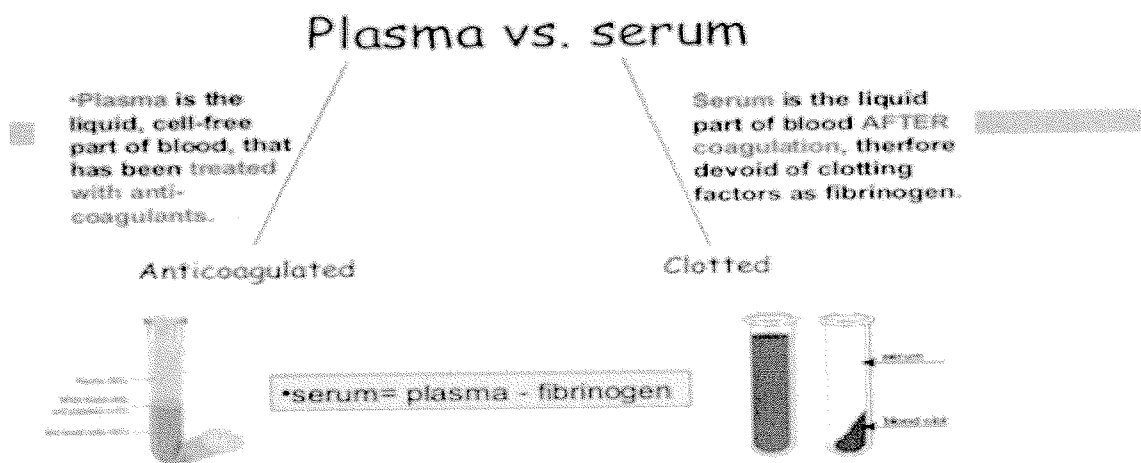
☒ plasma for nutritional analysis

- ☐ red blood cells for other assays.
- ☐ Green-top tubes contain heparin.
- ☐ Blue-top tubes contain sodium citrate and citric acid.
- ☐ Black-top tubes contain sodium oxalate.
- ☐ Yellow-top tubes contain acid-citrate-dextrose (ACD) solution.
- ☐ Grey-top tubes contain a glycolytic inhibitor.

### Blood Components

From 10 ml of blood:

- ☐ Plasma or serum 6-7 ml
- ☐ Lymphocytes and mononuclear cells  $10-20 \times 10^6$  Cells/ml
- ☐ Erythrocyte (red blood cells) and other cells –  $5 \times 10^6$  cells/ml;
- ☐ 10-15 mg HB



- ☐ Both can be used to measure microanalytes, diet components, vitamins, xenobiotic (synthetic chemical) exposures and so on.

☒ Serum is better for antibody measurements, nutrients, etc.

#### Changes in Blood on Keeping

☒ Loss of carbon dioxide.

☒ Conversion of glucose to lactate (glycolysis).

☒ Increase in plasma inorganic phosphate level due to formation of ester phosphate present in the cells.

☒ Formation of ammonia from nitrogenous substances.

☒ Conversion of pyruvate into lactate.

#### Types of Blood to be Used

##### Wholeblood:

☒ Used for—ammonia, hemo-globin, lactate and pH measurement.

##### Plasma:

☒ Obtained after mixing the blood with anticoagulants, precipitating and separating the cells RBC and WBC.

☒ The plasma is used for the estimation of ascorbic acid, bicarbonate, glucose, chloride

##### Serum:

☒ The liquid portion, which is left over after blood is allowed to coagulate without adding anticoagulant is called serum.

☒ The serum lacks in coagulation factors including prothrombin and fibrinogen.

☐ Serum is used for estimation of many parameters like total protein, albumin, bilirubin, cholesterol,

### DNA Extraction

DNA can be extracted from

- ☐ RBC
- ☐ Leukocytes
- ☐ Serum
- ☐ Plasma
- ☐ Blood clot

### Processing

☐ Serum fatty acids should be measured within 2 weeks at 4 degree C, within a few months at –20 degree C, and within a year at –80 degree C

### Storage

- It is critical to maintain careful records of the identity and location of all materials, with particular attention to storage history, occurrence of temperature fluctuation and monitoring of stored control specimen in order to check the effects of storage duration.
- Samples stored on the top of the freezer may be exposed to more extreme temperature fluctuation than those stored at the bottom.

### Timing

☐ For studies of hormones, which have hourly, daily and monthly cycles, timing of sample collection is critical.

☐ It is critical to obtain information at the time of specimen collection, e.g., time and date of draw, volumes and type of specimen, medical illness, medication use, menstrual period, cigarette and alcohol consumption

### Urine Collection

☐ Urine is an ultrafiltrate of the plasma. It can be used to evaluate and monitor body metabolic disease process, exposure to xenobiotic agents, mutagenicity, exfoliated cells, DNA adducts, etc.

☐ Urine collection is non invasive and readily obtainable. However, it is more inconvenient than blood collection.

☐ The type of urine selected and the collection procedure used to depend on the tests to be performed.

☐ First morning ☐ Random ☐ Fractional ☐ Timed

☐ Morning Urine.

To collect a first morning specimen, the subject voids before going to sleep and immediately upon rising, collects a urine specimen.

☐ The specimen must be preserved if not delivered within 2 hours of collection

☐ Random Urine can be collected at any time.

These specimens are usually satisfactory for routine screening and for cytology studies.

☐ If a large amount of urine is needed, subject will be asked to drink a lot of water 2 hour before collection

### Fractional Collection

☐ The first morning urine (containing solutes and metabolites from evening meal) is discarded, but the second urine excreted (fasting urine specimen) is collected.

☐ Use to compare the concentration of an analyte in urine with its concentration in the blood.

Timed collection usually done over 12-24 hour period, this method allow day-to-day comparison.

☐ Clean and dry plastic or glass containers (50-3000 ml capacity)

☐ A preservative may be needed depending on the proposed assay ☐ Total volume must be recorded

☐ The specimen well mixed to ensure homogeneity ☐ Aliquots (small samples) for different specific assays

### Tissue Collections

☐ Confirming clinical diagnosis by histological analysis

☐ Examining tumor characteristics at chromosome and molecular level

☐ It requires to collect more materials than it is necessary for pathological evaluation

☐ When possible, the tissue sample should contain both tumor and normal tissues to permit to study different characteristics of

### Tissue Storage

☐ Formalin-fixed paraffin-embedded tissue specimens

☐ Frozen tissues (-70 degree C). The tissue is embedded in frozen section support media

### Adipose Tissue

☐ Quite feasible and involve low risk.

☐ The tissue offers a relatively stable deposit of triglyceride and fat-soluble substances such as fat-soluble vitamins (vitamins A and D)

☐ It represents the greatest reservoir of carotenoids and reflect long-term dietary intake of essential fatty acids.

### Exhaled Air

☐ To evaluate exposure to different substances, particularly solvents such as benzene and styrene.

☐ To be used as a source of exposure and susceptibility markers (caffeine breath test)

☐ Breath urea (presence of urease positive organisms such as H. pylori)

### Hair

☐ Easy available biological tissue whose typical morphology may reflect disease conditions within the body

☒ Provides permanent record of trace elements associated with normal and abnormal metabolism

☒ A source for occupational and environmental

☒ Good marker for environment tobacco smoke (ETS) exposure in children.

☒ The hair nicotine levels were shown to be well correlated with cotinine creatinine ratios in urine from the same individual.

☒ Hair analysis provides long-term information from months to years, concerning both the severity and pattern of drug use.

☒ Hair roots can be optimal source of DNA for PCR analysis and permit easy collection, transportation and low overall costs.

### Nail Clippings

☒ Toenail or fingernail clippings are obtained in a very easy and comfortable way.

☒ They do not require processing, storage and shipping condition and thus suitable for large epidemiological studies

☒ Trace elements

☒ Selenium levels

☒ Arsenic levels

☒ Less likely to be contaminated by environmental factors

☒ Involves more complicated processing

### Buccal cells

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## Annexure I

☐ No invasive

☐ Good for PCR-analysis

☐ Can measure both germline and somatic mutations

### Saliva

☐ It is an efficient, painless and relatively inexpensive source of biological materials for certain assays

☐ It provides a useful tool for measuring endogenous and xenobiotic compounds

☐ Saliva is a viscous, colorless fluid with pH ranging from 6.5 to 7.2

☐ The saliva contains both organic and inorganic constituents.

☐ Mucin and amylase are the main organic constituents

☐ Proteins, urea and lactic acid are the minor organic constituents.

☐ The inorganic constituents include sodium ion ( $\text{Na}^+$ ), potassium ion ( $\text{K}^+$ ), calcium ion ( $\text{Ca}^{2+}$ ), chloride ion ( $\text{Cl}^-$ ), bicarbonate ion ( $\text{HCO}_3^-$ ) and monohydrogen phosphate ion ( $\text{HPO}_4^{2-}$ ).

☐ Average output of saliva per day, varies in the range of 1 to 2 liters.

### Collection of Saliva

☐ Wash and rinse the mouth to get rid off any remaining food particles.

☐ Take 10 mL of warm water into the mouth and gargle for at least 2 minutes.

## Annexure I

☐ Collect the saliva in a clean beaker and with this, perform the following tests.

### Measurements

☐ Corticosteroids

☐ Antibodies to HIV-1 ☐ Cotinine (an alkaloid found in tobacco) level

☐ Easiest way to collect largest amount of DNA

### Feaces

☐ Certain cells of interest

☐ Infectious markers

☐ Oncogenes

### Semen

☐ Evaluate the effects of exposures on endocrine and reproductive factors.

☐ Sexual abstinence for at least 2 days but not exceeding 7 days.

☐ Should reach the lab within one hour.

### Temperature

☐ Specimen collection requires storage system that capable of maintaining the optimal temperature for the diverse type of specimens:

☐ -20 degree C, certain items stable, i.e., urine

☐ -70 degree C, DNA, Serum, Hormone, vitamins

☒ -120 degree C, hormones, carotenoids, other nutrients

### Storage

☒ Freezers may fail, leading to the necessity for 24 hour monitoring for the facility through a computerized alarm system to alert personnel and activate backup equipment.

☒ Monitoring fire, power loss, leakage, etc.

### Shipping

☒ Sample shipping requirements depends on the time, distance, climate, season, method of transport, applicable regulations, type of specimen and markers to be assayed.

☒ Polyurethane boxes containing dry ice or liquid nitrogen container are used to ship and transport samples that require low temperature.

☒ The quantity of dry ice should be carefully calculated, based on estimated time of trip.

**Reference** ☒ Laboratory practical for practical biochemistry – 2nd edition – Shivaraja Shankara YM

☒ Practical Haematology by Dacie, Lewis

☒ Textbook Of Microbiology- Ananthanarayan And Paniker's (8th Edition)

☒ Textbook Of Medical Biochemistry – 8th edition - Chatterjee

☒ Internet

## ANNEXURE II

## STUDENT LIST

S.No	Reg No	Name	Signature
1	U17MB357	RINI DAS	Rini Das
2	U17MB358	RISHABH SUMAN	Rishabh Suman
3	U17MB359	RISHIKA	Rishika
4	U17MB360	RISHIRAAJ KAR	Rishiraj Kar
5	U17MB346	PRASANNA.B	Prasanna
6	U17MB347	PRAVEEN.V	Praveen
7	U17MB348	PRITAM SAHOO	Pritam Sahoo
8	U17MB349	PRIYA SAXENA	Priya
9	U17MB350	PRIYADARSHINI MAITHY	Priyadarshini
10	U17MB371	SHACHI SHASTRI	Shachi
11	U17MB372	SHATAVISHA MUKHERJEE	Shatavisha
12	U17MB373	SHEDAM OMKAR MAHADEV	Shedam
13	U17MB361	RIYA M.A	Riya
14	U17MB362	ROFIQUL ISLAM	Rofiqul Islam
15	U17MB363	ROHAN DAS	Rohan Das
16	U17MB331	MUSALE VENUGOPAL RAO	M. V. Rao
17	U17MB332	NAMITA THARANI	Namita
18	U17MB333	NAYANA NANDANAN M	Nayana M
19	U17MB334	NEHA KUMARI	Neha
20	U17MB340	NISHANT BHUSAN	Nishant Bhusan

## ANNEXURE III

1. Blood for an RBC count must be prepared from:

- a. EDTA blood
- b. citrated blood
- c. heparinized blood
- d. oxalated blood
- e. clotted blood



2. Which reagent is not routinely used to preserve tissue in a life-like manner:

- a. formic acid
- b. zenkersfluid
- c. 40% formaldehyde dissolved in water
- d. bouin's fluid
- e. 10% formalin

3. The liquid portion of blood remaining after a clot has formed is called:

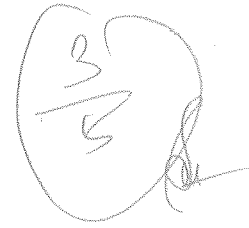
- a. the buffy coat
- b. serum
- c. plasma
- d. lymph
- e. tissue fluid

4. Which test cannot be performed on a serum sample?

- a. Iron
- b. Vitamin B12
- c. Total lipids
- d. Clotting factors

5. A routine specimen should be collected:

- A. At 7 a.m.
- B. First thing when the client awakens
- C. Before a meal
- D. Anytime



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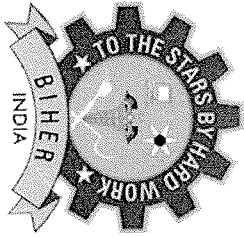
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# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that **RIYA M.A** has actively participated in the Value Added Course on **Sample collection, preservation and its testing** held during Nov 2017 – Dec 2017 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr. Santhosakumari

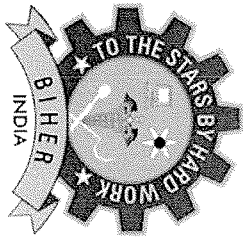
RESOURCE PERSON

DEPARTMENT OF BIOCHEMISTRY  
Sri Lakshmi Narayana Institute of Medical Sciences  
PONDICHERRY - 605 502

Dr. Jansirani

COORDINATOR

PROFESSOR & HOD  
DEPARTMENT OF BIOCHEMISTRY  
Sri Lakshmi Narayana Institute of Medical Sciences  
PONDICHERRY - 605 502



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that **PRIVADARSHINI MAITHY** has actively participated in the Value Added Course on **Sample collection, preservation and its testing** held during Nov 2017 – Dec 2017 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr. Santhosakumari

RESOURCE PERSON

DEPARTMENT OF BIOCHEMISTRY  
Sri Lakshmi Narayana Institute of Medical Sciences  
PONDICHERRY 605 502

Dr. Jansirani

COORDINATOR & HOD

DEPARTMENT OF BIOCHEMISTRY  
Sri Lakshmi Narayana Institute of Medical Sciences  
PONDICHERRY 605 502

### Course feedback form

Course title: *Sample collection, preservation and its testing* Date: *1.12.2017*

Course code: BIO - 06

Department: Biochemistry

S.no	Design of the course	1	2	3	4	5
1	The objective of the course clear to you				/	
2	The course contents met with your expectations				/	
3	The lecture sequence were well planned				/	
4	The lectures were clear and easy to understand			/		
5	The audiovisual teaching aids were effectively used			/		
6	The instructor's encouraged interaction and was it helpful			/		
7	The contents were illustrated with examples				/	
8	Overall Rating of the course				/	

\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

<i>Excellent</i>
------------------

*Poigandanthini*  
Signature

### Course feedback form

Course title: *Sample collection, Preservation and its testing* Date: *1.12.2017*

Course code: BIO - 06

Department: Biochemistry

S.no	Design of the course	1	2	3	4	5
1	The objective of the course clear to you				✓	
2	The course contents met with your expectations				✓	
3	The lecture sequence were well planned				✓	
4	The lectures were clear and easy to understand					✓
5	The audiovisual teaching aids were effectively used					✓
6	The instructor's encouraged interaction and was it helpful					✓
7	The contents were illustrated with examples				✓	
8	Overall Rating of the course				✓	

\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

*good*

*Drija*  
Signature

Date: 30.12.2017

From

Dr.Jansirani  
Professor and Head,  
Department of Biochemistry,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

Through Proper Channel

To

The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Completion of value-added course: Sample collection, preservation and its testing**

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: Sample collection, preservation and its testing from Nov to Dec 2017 for 20 students. We solicit your kind action to send certificates for the participants that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards,

Dr.Jansirani

**Encl: Certificates**

**Photographs**





## Sri Lakshmi Narayana Institute of Medical Sciences

Date: 05/11/2017

From

Dr. Vijay Kumar  
Assistant Professor and Head,  
Department of TB & Chest,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

To

The Dean,  
Sri Lakshmi Narayana Institute of Medical College  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Permission to conduct value-added course: Diagnosis and Management of Pulmonary embolism**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: **Diagnosis and Management of Pulmonary embolism** . We solicit your kind permission for the same.

Kind Regards

Dr. Vijay Kumar

---

### FOR THE USE OF DEANS OFFICE

Names of Committee members for evaluating the course:

The Dean: **Dr. Jaya lakshmi**

The HOD: **Dr. Vijay Kumar**

The Expert: **Dr. Prakash Rao Balan**

The committee has discussed about the course and is approved.

Dr. G. JAYALAKSHMI, M.B.B.S., M.D.,  
DEAN  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agaram, Kudapakkam Post,  
Villanur Commune, Pudukkottai - 605502.

Dr Prakash Rao Balan

Dr Vijay kumar



OFFICE OF THE DEAN

## **Sri Lakshmi Narayana Institute of Medical Sciences**

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P -II ) dt. 11/07/2011 ]  
[ Affiliated to Bharath University, Chennai - TN ]

### **Circular**

15.11.2017

#### **Sub: Organising Value-added Course Diagnosis and Treatment of Pulmonary embolism**

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research** is organizing “**Diagnosis and Treatment of Pulmonary embolism**”. The course content is enclosed below.”

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before 30<sup>th</sup> November 2017. Applications received after the mentioned date shall not be entertained under any circumstances.

**Dean**

**Dr. G. JAYALAKSHMI, BSC., MBBS., DTCD., M.D.,**

**DEAN**

Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agaram, Kudapakkam Post,  
Villanur Commune, Puducherry - 605502.

## Course Proposal

Course Title: **Diagnosis and Management of Pulmonary Embolism**

**Course Objective:** To diagnose and treat Pulmonary embolism patients

**Course Outcome: Improvement in management of Pulmonary embolism patients among interns**

**Course Audience: Medical Interns of 2017 Batch**

**Course Coordinator: Dr.Vijay Kumar**

**Course Faculties with Qualification and Designation:**

**1.Dr. Vijay kumar Assistant Professor & HOD**

**2.Dr. Prakash rao balan ,Senior resident**

**Course Curriculum/Topics with schedule (Min of 30 hours)**

<b>SIN o</b>	<b>Date</b>	<b>Topic</b>	<b>Resource faculty</b>	<b>Time</b>	<b>Hou rs</b>
1.	2.12.2017	Introduction	Dr..Vijay kumar	2-6 p.m	4
2.	9.12.17	Predisposing factors	Dr.Prakash rao balan	2-6 p.m	4
3.	16.12.17	General rules for diagnosis:	Dr.Vijay kumar	2-6 p.m	4
4.	23..12.17	Revised geneva clinical prediction rule for risk assessment:	Dr.Prakash rao balan	2-6p.m	4
5.	30.12.17	Imaging tests for diagnosis fo pulmonary embolism	Dr.Vijay kumar	2-6p.m	4
6.	6.01.2018	Adjusted management stratergies	Dr.Prakash rao balan	2-6 p.m	4
7.	13.01.2018	Drugs used in the management of pulmonary embolism:	Dr.Vijay kumar	2-6 pm	4
8.	20.01.2018	Recent advances in pulmonary embolism	Dr.Prakash rao balan	2-6 p.m	4

9.	27.01.2018	Multiple choice questions and discussion	Dr.iVjay kumar	2-4 p.m	2	
			<b>Total</b>			34 hrs

### REFERENCE BOOKS:

1. Mazzolai L, Aboyans V, Ageno W, Agnelli G, Alatri A, Bauersachs R, Brekelmans MPA, Buller HR, Elias A, Farge D, Konstantinides S, Palareti G, Prandoni P, Righini M, Torbicki A, Vlachopoulos C, Brodmann M. Diagnosis and management of acute deep vein thrombosis: a joint consensus document from the European Society of Cardiology working groups of aorta and peripheral vascular diseases and pulmonary circulation and right ventricular function. *Eur Heart J* 2018;39:42084218.
2. Raskob GE, Angchaisuksiri P, Blanco AN, Buller H, Gallus A, Hunt BJ, Hylek EM, Kakkar A, Konstantinides SV, McCumber M, Ozaki Y, Wendelboe A, Weitz JI. Thrombosis: a major contributor to global disease burden. *Arterioscler Thromb Vasc Biol* 2014;34:23632371.
3. Wendelboe AM, Raskob GE. Global burden of thrombosis: epidemiologic aspects. *Circ Res* 2016;118:13401347.
4. Keller K, Hobohm L, Ebner M, Kresoja KP, Munzel T, Konstantinides SV, Lankeit M. Trends in thrombolytic treatment and outcomes of acute pulmonary embolism in Germany. *Eur Heart J* 2020;41:522529.
5. de Miguel-Diez J, Jimenez-Garcia R, Jimenez D, Monreal M, Guijarro R, Otero R, Hernandez-Barrera V, Trujillo-Santos J, Lopez de Andres A, Carrasco-Garrido P. Trends in hospital admissions for pulmonary embolism in Spain from 2002 to 2011. *Eur Respir J* 2014;44:942950.

## VALUE ADDED COURSE

### 1. Name of the programme & Code

**Diagnosis and Management of Pulmonary embolism CT06**

### 2. Duration & Period

34 hrs & December 2017-January 2018.

### 3. Information Brochure and Course Content of Value Added Courses

*Enclosed as Annexure- I*

### 4. List of students enrolled

*Enclosed as Annexure- II*

### 5. Assessment procedures:

Assessment Evolution by DOPS method - *Enclosed as Annexure- III*

### 6. Certificate model

*Enclosed as Annexure- IV*

### 7. No. of times offered during the same year:

1 time December 2017- January 2018

### 8. Year of discontinuation: 2018

### 9. Summary report of each program year-wise

Value Added Course- December 2017-January 2018					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	CT06	<b>Diagnosis and Management of Pulmonary embolisim</b>	Dr. Vijay kumar Dr. Prakash rao balan	CRRRI Interns	8 students DEC 2017 – JAN 2018

### 10. Course Feed Back

*Enclosed as Annexure- V*

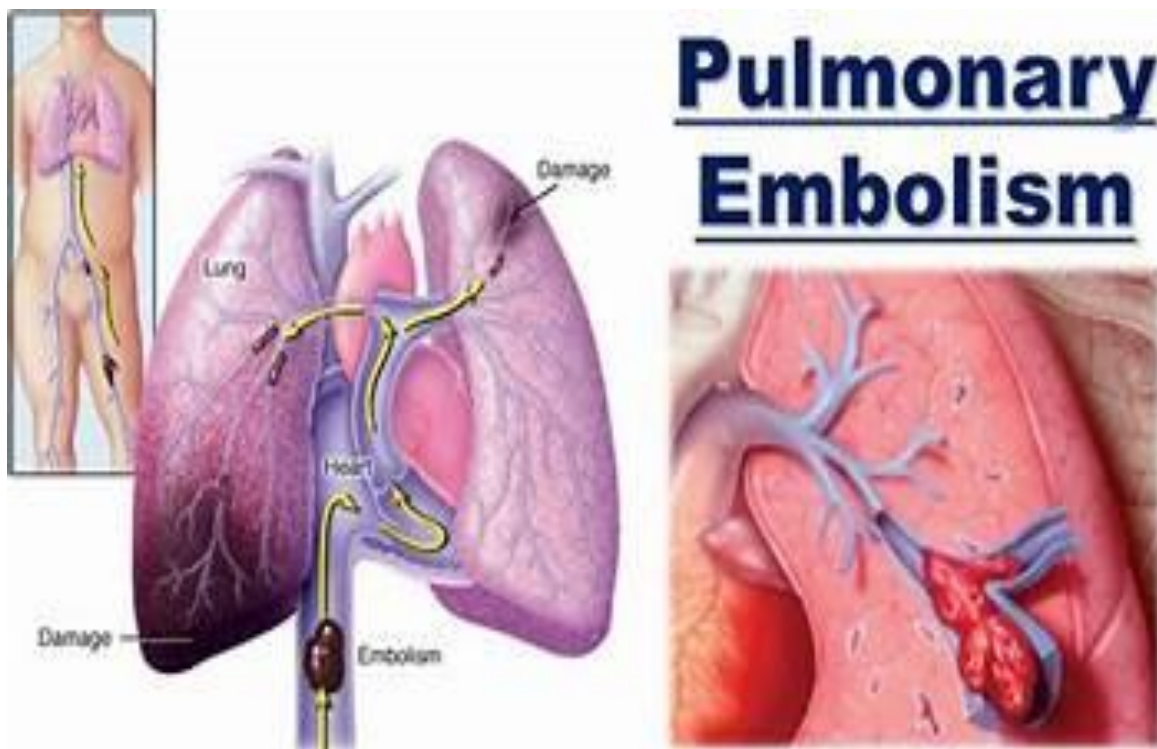
*BR. Prakash Rao*

**RESOURCE PERSON**  
**Dr.Prakash Rao Balan**

*Vijay Kumar*

**COORDINATOR**  
**Dr .Vijay kumar**

## DIAGNOSIS AND TREATMENT OF PULMONARY EMBOLISM



**PARTICIPANT HAND BOOK**

## COURSE DETAILS

<b>Particulars</b>	<b>Description</b>
Course Title	DIAGNOSIS AND TREATMENT OF PULMONARY EMBOLISM
Course Code	CT06
Objective	<ol style="list-style-type: none"> <li>1.Introduction</li> <li>2.Predisposing factors</li> <li>3.General rules for Diagnosis:</li> <li>4.Revised Geneva Clinical Prediction rule for risk assessment:</li> <li>5.Imaging tests for Diagnosis for Pulmonary Embolism</li> <li>5.Risk adjusted management strategies</li> <li>6.Drugs used in the management of Pulmonary Embolism</li> <li>7.Recent updates in Pulmonary Embolism</li> </ol>
Key Competencies	On successful completion of the course the students will have skill in managing a pulmonary embolism patient
Target Student	Interns
Duration	34hrs Every December 2017 – January 2018
Theory Session	32hrs + 2 hours of Multiple choice questions
Assessment Procedure	Multiple choice questions

## 1.INTRODUCTION :

Venous thromboembolism (VTE), clinically presenting as DVT or PE, is globally the third most frequent acute cardiovascular syndrome behind myocardial infarction and stroke.

In epidemiological studies, annual incidence rates for PE range from 39-115 per 100 000 population; for DVT, incidence rates range from 53-162 per 100 000 population.

Cross-sectional data show that the incidence of VTE is almost eight times higher in individuals aged  $>_{80}$  years than in the fifth decade of life.

In parallel, longitudinal studies have revealed a rising tendency in annual PE incidence rates 4-7 over time.

Together with the substantial hospital associated, preventable, and indirect annual expenditures for VTE (an estimated total of up to e8.5 billion in the European Union), these data demonstrate the importance of PE and DVT in ageing populations in Europe and other areas of the world.

They further suggest that VTE will increasingly pose a burden on health systems worldwide in the years to come.

## 2.PREDISPOSING FACTORS:

<b>Strong risk factors (OR &gt; 10)</b>
Fracture of lower limb
Hospitalization for heart failure or atrial fibrillation/flutter (within previous 3 months)
Hip or knee replacement
Major trauma
Myocardial infarction (within previous 3 months)
Previous VTE
Spinal cord injury

**Moderate risk factors (OR 2 – 9)**

Arthroscopic knee surgery  
 Autoimmune diseases  
 Blood transfusion  
 Central venous lines  
 Intravenous catheters and leads  
 Chemotherapy  
 Congestive heart failure or respiratory failure  
 Erythropoiesis-stimulating agents  
 Hormone replacement therapy (depends on formulation)  
*In vitro* fertilization  
 Oral contraceptive therapy  
 Post-partum period  
 Infection (specifically pneumonia, urinary tract infection, and HIV)  
 Inflammatory bowel disease  
 Cancer (highest risk in metastatic disease)  
 Paralytic stroke  
 Superficial vein thrombosis  
 Thrombophilia

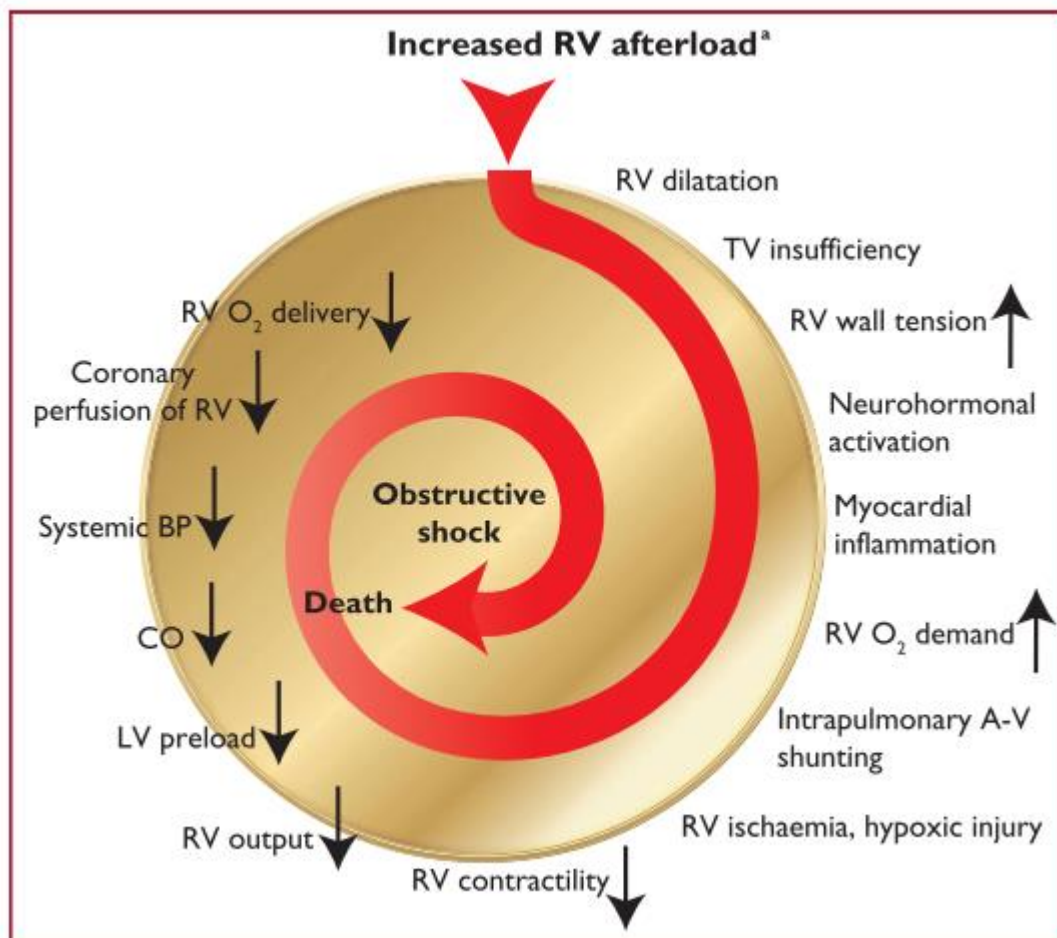
**Weak risk factors (OR < 2)**

Bed rest >3 days  
 Diabetes mellitus  
 Arterial hypertension  
 Immobility due to sitting (e.g. prolonged car or air travel)  
 Increasing age  
 Laparoscopic surgery (e.g. cholecystectomy)  
 Obesity  
 Pregnancy  
 Varicose veins

**HEMODYNAMIC COLLAPSE IN PULMONARY EMBOLISM:**

(1) Cardiac arrest	(2) Obstructive shock <sup>68-70</sup>	(3) Persistent hypotension
Need for cardiopulmonary resuscitation	Systolic BP < 90 mmHg or vasopressors required to achieve a BP $\geq$ 90 mmHg despite adequate filling status	Systolic BP < 90 mmHg or systolic BP drop $\geq$ 40 mmHg, lasting longer than 15 min and not caused by new-onset arrhythmia, hypovolaemia, or sepsis
	<i>And</i>	
	End-organ hypoperfusion (altered mental status; cold, clammy skin; oliguria/anuria; increased serum lactate)	

BP = blood pressure.



### 3. GENERAL RULES FOR DIAGNOSIS:

Pre-test clinical probability of PE should be objectively assessed in each patient  
 D-dimer should be determined if pre-test probability of PE is low or intermediate  
 Diagnostic imaging of the chest should be used to assess post-test probability of PE in most patients; further testing is necessary when post-test probability of PE is neither sufficiently low nor sufficiently high to permit therapeutic decisions  
 Diagnostic strategies for PE could differ significantly in different clinical contexts and special conditions

### 4. REVISED GENEVA CLINICAL PREDICTION RULE FOR RISK ASSESSMENT:

Items	Clinical decision rule points	
	Original version <sup>91</sup>	Simplified version <sup>87</sup>
Previous PE or DVT	3	1
Heart rate		
75–94 b.p.m.	3	1
≥95 b.p.m.	5	2
Surgery or fracture within the past month	2	1
Haemoptysis	2	1
Active cancer	2	1
Unilateral lower-limb pain	3	1
Pain on lower-limb deep venous palpation and unilateral oedema	4	1
Age >65 years	1	1
<b>Clinical probability</b>		
<i>Three-level score</i>		
Low	0–3	0–1
Intermediate	4–10	2–4
High	≥11	≥5
<i>Two-level score</i>		
PE-unlikely	0–5	0–2
PE-likely	≥6	≥3

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Items	Clinical decision rule points	
	Original version <sup>91</sup>	Simplified version <sup>87</sup>
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Unilateral lower-limb pain	3	1
Pain on lower-limb deep venous palpation and unilateral oedema	4	1
Age >65 years	1	1
<b>Clinical probability</b>		
<i>Three-level score</i>		
Low	0–3	0–1
Intermediate	4–10	2–4
High	≥11	≥5
<i>Two-level score</i>		
PE-unlikely	0–5	0–2
PE-likely	≥6	≥3

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## 5. PULMONARY EMBOLISM SEVERITY INDEX:

Parameter	Original version <sup>126</sup>	Simplified version <sup>219</sup>
Age	Age in years	1 point (if age >80 years)
Male sex	+10 points	—
Cancer	+30 points	1 point
Chronic heart failure	+10 points	1 point
Chronic pulmonary disease	+10 points	
Pulse rate $\geq 110$ b.p.m.	+20 points	1 point
Systolic BP <100 mmHg	+30 points	1 point
Respiratory rate >30 breaths per min	+20 points	—
Temperature <36°C	+20 points	—
Altered mental status	+60 points	—
Arterial oxyhaemoglobin saturation <90%	+20 points	1 point
<b>Risk strata<sup>a</sup></b>		
	<b>Class I: <math>\leq 65</math> points</b> very low 30 day mortality risk (0–1.6%) <b>Class II: 66–85 points</b> low mortality risk (1.7–3.5%)	<b>0 points = 30 day mortality risk 1.0%</b> (95% CI 0.0–2.1%)
	<b>Class III: 86–105 points</b> moderate mortality risk (3.2–7.1%) <b>Class IV: 106–125 points</b> high mortality risk (4.0–11.4%) <b>Class V: &gt;125 points</b> very high mortality risk (10.0–24.5%)	<b><math>\geq 1</math> point(s) = 30 day mortality risk 10.9%</b> (95% CI 8.5–13.2%)

## 6. RECOMMENDATIONS FOR DIAGNOSIS OF PULMONARY EMBOLISM:

<b>Suspected PE with haemodynamic instability</b>
In suspected high-risk PE, as indicated by the presence of haemodynamic instability, bedside echocardiography or emergency CTPA (depending on availability and clinical circumstances) is recommended for diagnosis. <sup>169</sup>
It is recommended that i.v. anticoagulation with UFH, including a weight-adjusted bolus injection, be initiated without delay in patients with suspected high-risk PE.
<b>Suspected PE without haemodynamic instability</b>
The use of validated criteria for diagnosing PE is recommended. <sup>12</sup>
Initiation of anticoagulation is recommended without delay in patients with high or intermediate clinical probability of PE while diagnostic workup is in progress.

### **Suspected PE with haemodynamic instability**

In suspected high-risk PE, as indicated by the presence of haemodynamic instability, bedside echocardiography or emergency CTPA (depending on availability and clinical circumstances) is recommended for diagnosis.<sup>169</sup>

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### **Suspected PE without haemodynamic instability**

The use of validated criteria for diagnosing PE is recommended.<sup>12</sup>

Initiation of anticoagulation is recommended without delay in patients with high or intermediate clinical probability of PE while diagnostic workup is in progress.

### **Clinical evaluation**

It is recommended that the diagnostic strategy be based on clinical probability, assessed either by clinical judgement or by a validated prediction rule.<sup>89,91,92,103,134,170–172</sup>

### **D-dimer**

Plasma D-dimer measurement, preferably using a highly sensitive assay, is recommended in outpatients/emergency department patients with low or intermediate clinical probability, or those that are PE-unlikely, to reduce the need for unnecessary imaging and irradiation.<sup>101–103,122,164,171,173,174</sup>

As an alternative to the fixed D-dimer cut-off, a negative D-dimer test using an age-adjusted cut-off (age  $\times$  10  $\mu$ g/L, in patients aged  $>$ 50 years) should be considered for excluding PE in patients with low or intermediate clinical probability, or those that are PE-unlikely.<sup>106</sup>

As an alternative to the fixed or age-adjusted D-dimer cut-off, D-dimer levels adapted to clinical probability<sup>c</sup> should be considered to exclude PE.<sup>107</sup>

D-dimer measurement is not recommended in patients with high clinical probability, as a normal result does not safely exclude PE, even when using a highly sensitive assay.<sup>175,176</sup>

### **CTPA**

It is recommended to reject the diagnosis of PE (without further testing) if CTPA is normal in a patient with low or intermediate clinical probability, or who is PE-unlikely.<sup>101,122,164,171</sup>

It is recommended to accept the diagnosis of PE (without further testing) if CTPA shows a segmental or more proximal filling defect in a patient with intermediate or high clinical probability.<sup>115</sup>

It should be considered to reject the diagnosis of PE (without further testing) if CTPA is normal in a patient with high clinical probability or who is PE-likely.<sup>171</sup>

Further imaging tests to confirm PE may be considered in cases of isolated subsegmental filling defects.<sup>115</sup>

CT venography is not recommended as an adjunct to CTPA.<sup>115,164</sup>

### **V/Q scintigraphy**

It is recommended to reject the diagnosis of PE (without further testing) if the perfusion lung scan is normal.<sup>75,122,134,174</sup>

It should be considered to accept that the diagnosis of PE (without further testing) if the V/Q scan yields high probability for PE.<sup>134</sup>

### **V/Q SPECT**

V/Q SPECT may be considered for PE diagnosis.<sup>121,126–128</sup>

### **Lower-limb CUS**

It is recommended to accept the diagnosis of VTE (and PE) if a CUS shows a proximal DVT in a patient with clinical suspicion of PE.<sup>164,165</sup>

If CUS shows only a distal DVT, further testing should be considered to confirm PE.<sup>177</sup>

If a positive proximal CUS is used to confirm PE, assessment of PE severity should be considered to permit risk-adjusted management.<sup>178,179</sup>

### **MRA**

MRA is not recommended for ruling out PE.<sup>139,140</sup>

## Recommendations

Initial risk stratification of suspected or confirmed PE, based on the presence of haemodynamic instability, is recommended to identify patients at high risk of early mortality.<sup>218,219,235</sup>

In patients without haemodynamic instability, further stratification of patients with acute PE into intermediate- and low-risk categories is recommended.<sup>179,218,219,235</sup>

In patients without haemodynamic instability, use of clinical prediction rules integrating PE severity and comorbidity, preferably the PESI or sPESI, should be considered for risk assessment in the acute phase of PE.<sup>178,226,229</sup>

Assessment of the RV by imaging methods<sup>c</sup> or laboratory biomarkers<sup>d</sup> should be considered, even in the presence of a low PESI or a negative sPESI.<sup>234</sup>

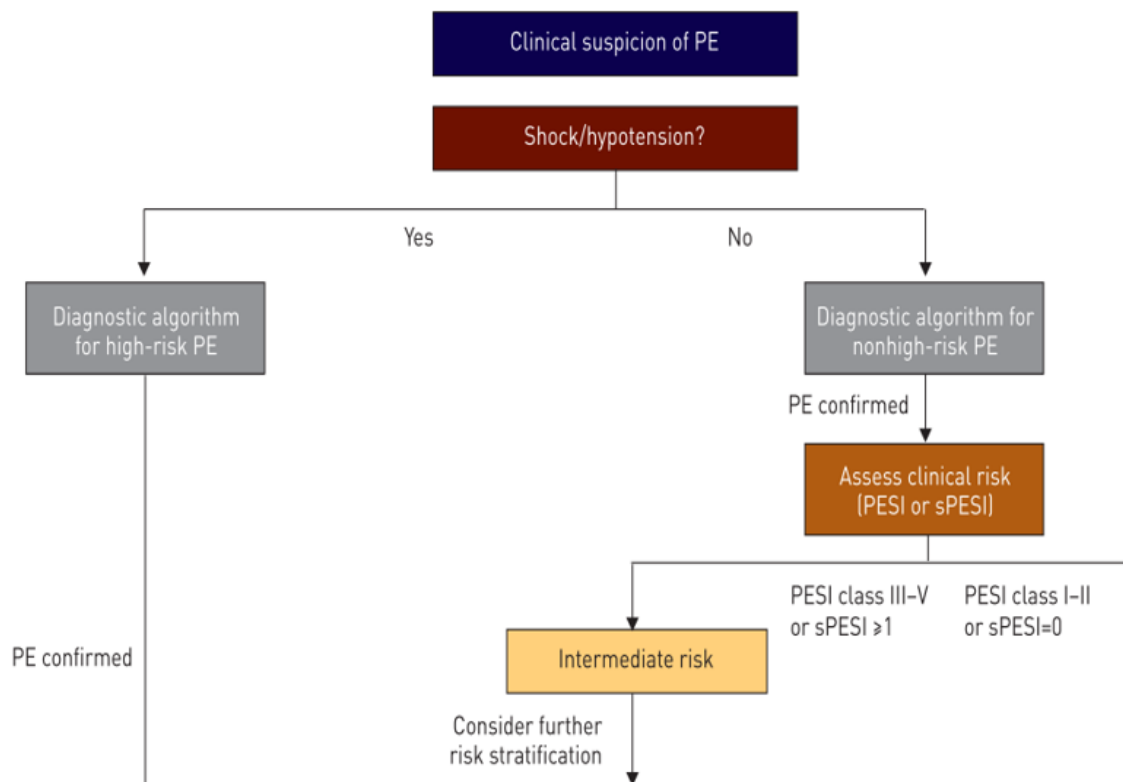
In patients without haemodynamic instability, use of validated scores combining clinical, imaging, and laboratory PE-related prognostic factors may be considered to further stratify the severity of the acute PE episode.<sup>218–223</sup>

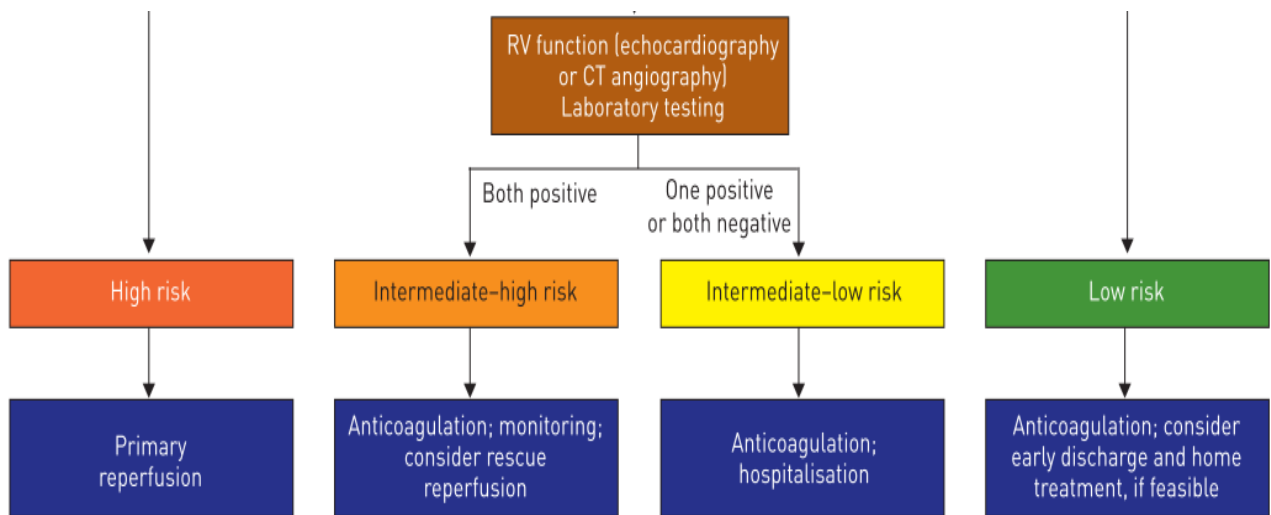
## 7..IMAGING TESTS FOR DIAGNOSIS OF PULMONARY EMBOLISM:

	Strengths	Weaknesses/limitations	Radiation issues <sup>a</sup>
<b>CTPA</b>	<ul style="list-style-type: none"> <li>● Readily available around the clock in most centres</li> <li>● Excellent accuracy</li> <li>● Strong validation in prospective management outcome studies</li> <li>● Low rate of inconclusive results (3–5%)</li> <li>● May provide alternative diagnosis if PE excluded</li> <li>● Short acquisition time</li> </ul>	<ul style="list-style-type: none"> <li>● Radiation exposure</li> <li>● Exposure to iodine contrast: <ul style="list-style-type: none"> <li>○ limited use in iodine allergy and hyperthyroidism</li> <li>○ risks in pregnant and breastfeeding women</li> <li>○ contraindicated in severe renal failure</li> </ul> </li> <li>● Tendency to overuse because of easy accessibility</li> <li>● Clinical relevance of CTPA diagnosis of subsegmental PE unknown</li> </ul>	<ul style="list-style-type: none"> <li>● Radiation effective dose 3–10 mSv<sup>b</sup></li> <li>● Significant radiation exposure to young female breast tissue</li> </ul>
<b>Planar V/Q scan</b>	<ul style="list-style-type: none"> <li>● Almost no contraindications</li> <li>● Relatively inexpensive</li> <li>● Strong validation in prospective management outcome studies</li> </ul>	<ul style="list-style-type: none"> <li>● Not readily available in all centres</li> <li>● Interobserver variability in interpretation</li> <li>● Results reported as likelihood ratios</li> <li>● Inconclusive in 50% of cases</li> <li>● Cannot provide alternative diagnosis if PE excluded</li> </ul>	<ul style="list-style-type: none"> <li>● Lower radiation than CTPA, effective dose ~2 mSv<sup>b</sup></li> </ul>

<b>V/Q SPECT</b>	<ul style="list-style-type: none"> <li>● Almost no contraindications</li> <li>● Lowest rate of non-diagnostic tests (&lt;3%)</li> <li>● High accuracy according to available data</li> <li>● Binary interpretation ('PE' vs. 'no PE')</li> </ul>	<ul style="list-style-type: none"> <li>● Variability of techniques</li> <li>● Variability of diagnostic criteria</li> <li>● Cannot provide alternative diagnosis if PE excluded</li> <li>● No validation in prospective management outcome studies</li> </ul>	<ul style="list-style-type: none"> <li>● Lower radiation than CTPA, effective dose <math>\sim 2</math> mSv<sup>b</sup></li> </ul>
<b>Pulmonary angiography</b>	<ul style="list-style-type: none"> <li>● Historical gold standard</li> </ul>	<ul style="list-style-type: none"> <li>● Invasive procedure</li> <li>● Not readily available in all centres</li> </ul>	<ul style="list-style-type: none"> <li>● Highest radiation, effective dose 10–20 mSv<sup>b</sup></li> </ul>

## 8. RISK ADJUSTED MANAGEMENT STRATEGIES:





It is recommended that anticoagulation with UFH, including a weight-adjusted bolus injection, be initiated without delay in patients with high-risk PE.

Systemic thrombolytic therapy is recommended for high-risk PE. <sup>282</sup>

Surgical pulmonary embolectomy is recommended for patients with high-risk PE, in whom thrombolysis is contraindicated or has failed.<sup>d</sup> <sup>281</sup>

Percutaneous catheter-directed treatment should be considered for patients with high-risk PE, in whom thrombolysis is contraindicated or has failed.<sup>d</sup>

Norepinephrine and/or dobutamine should be considered in patients with high-risk PE.

ECMO may be considered, in combination with surgical embolectomy or catheter-directed treatment, in patients with PE and refractory circulatory collapse or cardiac arrest.<sup>d</sup> <sup>252</sup>

## 9.DRUGS USED IN THE MANAGEMENT OF PULMONARY EMBOLISM:

Molecule	Regimen	Contraindications to fibrinolysis
rtPA	100 mg over 2 h	<b>Absolute</b> History of haemorrhagic stroke or stroke of unknown origin Ischaemic stroke in previous 6 months Central nervous system neoplasm Major trauma, surgery, or head injury in previous 3 weeks Bleeding diathesis Active bleeding <b>Relative</b> Transient ischaemic attack in previous 6 months Oral anticoagulation Pregnancy or first post-partum week Non-compressible puncture sites Traumatic resuscitation Refractory hypertension (systolic BP >180 mmHg) Advanced liver disease Infective endocarditis Active peptic ulcer
	0.6 mg/kg over 15 min (maximum dose 50 mg) <sup>a</sup>	
Streptokinase	250 000 IU as a loading dose over 30 min, followed by 100 000 IU/h over 12–24 h	
	Accelerated regimen: 1.5 million IU over 2 h	
Urokinase	4400 IU/kg as a loading dose over 10 min, followed by 4400 IU/kg/h over 12–24 h	
	Accelerated regimen: 3 million IU over 2 h	

## 10. NEW CONCEPTS IN PULMONARY EMBOLISM:

### Diagnosis

D-dimer cut-off values adjusted for age or clinical probability can be used as an alternative to the fixed cut-off value.

Updated information is provided on the radiation dosage when using CTPA and a lung scan to diagnose PE (Table 6).

### **Risk assessment**

A clear definition of haemodynamic instability and high-risk PE is provided (*Table 4*).

Assessment of PE severity and early PE-related risk is recommended, in addition to comorbidity/aggravating conditions and overall death risk.

A clear word of caution that RV dysfunction may be present, and affect early outcomes, in patients at 'low risk' based on clinical risk scores.

### **Treatment in the acute phase**

Thoroughly revised section on haemodynamic and respiratory support for high-risk PE (*Section 6.1*).

A dedicated management algorithm is proposed for high-risk PE (*Supplementary Figure 1*).

NOACs are recommended as the first choice for anticoagulation treatment in a patient eligible for NOACs; VKAs are an alternative to NOACs.

The risk-adjusted management algorithm (*Figure 6*) was revised to take into consideration clinical PE severity, aggravating conditions/comorbidity, and the presence of RV dysfunction.

### **Chronic treatment after the first 3 months**

Risk factors for VTE recurrence have been classified according to high, intermediate, or low recurrence risk (*Table 11*).

Potential indications for extended anticoagulation are discussed, including the presence of a minor transient or reversible risk factor for the index PE, any persisting risk factor, or no identifiable risk factor.

Terminology such as 'provoked' vs. 'unprovoked' PE/VTE is no longer supported by the Guidelines, as it is potentially misleading and not helpful for decision-making regarding the duration of anticoagulation.

VTE recurrence scores are presented and discussed in parallel with bleeding scores for patients on anticoagulation treatment (Supplementary Tables 13 and 14 respectively).

A reduced dose of apixaban or rivaroxaban for extended anticoagulation should be considered after the first 6 months of treatment.

### **PE in cancer**

Edoxaban or rivaroxaban should be considered as an alternative to LMWH, with a word of caution for patients with gastrointestinal cancer due to the increased bleeding risk with NOACs.

### **PE in pregnancy**

A dedicated diagnostic algorithm is proposed for suspected PE in pregnancy (Figure 7).

Updated information is provided on radiation absorption related to procedures used for diagnosing PE in pregnancy (Table 12).

### **Long-term sequelae**

An integrated model of patient care after PE is proposed to ensure optimal transition from hospital to community care.

Recommendations on patient care have been extended to the entire spectrum of post-PE symptoms and functional limitation, not only CTEPH.

A new comprehensive algorithm is proposed for patient follow-up after acute PE (Figure 8).

**DIAGNOSIS AND TREATMENT OF PULMONARY EMBOLISM &  
CT06**

List of Students Enrolled DEC 2017- JAN 2018

1 <sup>st</sup> Year MBBS Student		SIGNATURE
Sl No	Name of the Student	Roll No
1	SAI KOWSHIK.M.B.	U13MB248
2	SAINI. S.A.	U13MB249
3	SAKTHI.S	U13MB250
4	SANGAVI. I	U13MB251
5	SANKARANANTH. M.	U13MB252
6	SANTHOSH KUMARA	U13MB253
7	SARUMATHY. K	U13MB254
8	SATHEESH.S	U13MB255

  
RESOURCE PERSON

  
COORDINATOR



SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH

Annexure - III

DIAGNOSIS AND TREATMENT OF PULMONARY EMBOLISM  
MULTIPLE CHOICE QUESTIONS

*Sri Lakshmi Narayana Institute of Medical Sciences, Puducherry*



CANDIDATE AND ASSESSOR INFORMATION

Course code: CT 06

Candidate Name	Srikanthya Sathyana	Assessor Name	Dr. VIJAY KUMAR
Date of Assessment	21.07.2018	Assessor Position	ASSISTANT PROFESSOR

1) A 25 year old woman complains of shortness of breath after 10 hours of travel by air. In the Emergency Ward her respiratory rate is 25/min. BP 110/70. P = 90. Pulmonary embolism is suspected. Her D-Dimer is 200 mg/ml fibrinogen units. What is the next step:

- A. Start anticoagulation
- B. Order a V/Q scan
- C. Order a pulmonary angiogram
- D. Offer reassurance and discharge

2) In diagnosing pulmonary embolism which of the following signs is most reliable:

- A. Pulse rate
- B. Respiratory rate
- C. Blood pressure



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AND RESEARCH

D. Nail bed cyanosis

3) Lytic therapy is recommended in acute pulmonary embolism when:

- A. Patient complains of shortness of breath
- B. Patient complains of chest pain
- C. BP is 60/40
- D. Venogram is positive
- E. There is blood-tinged sputum

4) Pulmonary Embolism is a life threatening condition commonly seen in the ICU setting. Which of the following is not a feature of Echocardiography in patients with pulmonary embolism

- A) Right ventricular dilatation with increased RV/LV diameter
- B) Mitral Regurgitation
- C) Bowing of interventricular septum
- D) Pulmonary artery dilatation

5) Which of the following is accurate about the etiology of pulmonary emboli?

A) Most pulmonary emboli originate in the pelvic, renal, or upper extremity veins

B) Small thrombi typically travel less distally and are less likely to produce pleuritic chest pain

C) Most pulmonary emboli are single

D) The lower lobes of the lung are more commonly involved with emboli than the upper lobes



SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH

6) Of the following, which is considered the more significant risk factor for pulmonary embolism?

- A) Hypercystinuria
- B) Mild bradycardia
- C) Hemolytic anemia
- D) Hypolipidemia

7) Which of the following statements is accurate about physical examination findings in patients with pulmonary emboli?

- A) Temperature in excess of 103° F is common in patients with pulmonary emboli
- B) Tachypnea is among the most common physical signs of pulmonary emboli
- C) Chest wall tenderness as the sole physical finding indicates a cause other than pulmonary embolism
- D) Patients with massive pulmonary embolism display signs of systemic hypertension

8) Which of the following tests is generally the next step after clinical prediction rule results indicate that a patient has a low or moderate pretest probability of pulmonary embolism?

- A) D-dimer measurement
- B) Troponin level measurement
- C) Brain natriuretic peptide (BNP) measurement
- D) Activated partial thromboplastin time (aPTT) measurement



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AND RESEARCH

9) Which of the following is accurate about the treatment of pulmonary embolism?

A) Thrombolytics are the treatment of choice in most children with pulmonary emboli

B) When possible, thrombolytic therapy should be used in patients with acute pulmonary embolism associated with hypotension

C) Most patients with acute pulmonary embolism should receive IV unfractionated heparin (UFH) instead of low-molecular-weight heparin (LMWH)

D) Subcutaneous (SC) UFH is preferred to fondaparinux in patients with acute pulmonary embolism

10) A 54 year old female smoker was admitted with gradually worsening breathlessness over the last 10 days. She reported a cough but no obvious fever or discoloured sputum. Her past medical history included an unprovoked DVT 5 years previously. She was not taking any regular medication. There were no findings on review of systems and nothing abnormal on clinical examination apart from breathlessness. Her blood results and chest X-ray were normal. A subsequent CT pulmonary angiogram was performed and showed bilateral proximal pulmonary emboli with no evidence of right heart strain. She was started on low molecular weight heparin and Warfarin. For how long should she be anticoagulated?

A) 3 months

B) 6 months

C) 12 months

D) Depends on her DASH Score

E) Indefinitely



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Annexure - III

DIAGNOSIS AND TREATMENT OF PULMONARY EMBOLISM

MULTIPLE CHOICE QUESTIONS

*Sri Lakshmi Narayana Institute of Medical Sciences, Puducherry*



CANDIDATE AND ASSESSOR INFORMATION

Course code: CT 06

Candidate Name Saini S.A.

Assessor Name

Dr. VIJAY KUMAR

Date of Assessment 29.01.2018

Assessor Position

ASSISTANT PROFESSOR

1) A 25 year old woman complains of shortness of breath after 10 hours of travel by air. In the Emergency Ward her respiratory rate is 25/min. BP 110/70. P = 90. Pulmonary embolism is suspected. Her D-Dimer is 200 mg/ml fibrinogen units. What is the next step:

- A Start anticoagulation
- B. Order a V/Q scan
- ✓ C. Order a pulmonary angiogram
- D. Offer reassurance and discharge

2) In diagnosing pulmonary embolism which of the following signs is most reliable:

- ✓ A. Pulse rate
- B. Respiratory rate
- C. Blood pressure



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D. Nail bed cyanosis

3) Lytic therapy is recommended in acute pulmonary embolism when:

- A. Patient complains of shortness of breath
- B. Patient complains of chest pain
- C. BP is 60/40
- D. Venogram is positive
- E. There is blood-tinged sputum

4) Pulmonary Embolism is a life threatening condition commonly seen in the ICU setting. Which of the following is not a feature of Echocardiography in patients with pulmonary embolism

- A) Right ventricular dilatation with increased RV/LV diameter
- B) Mitral Regurgitation
- C) Bowing of interventricular septum
- D) Pulmonary artery dilatation

5) Which of the following is accurate about the etiology of pulmonary emboli?

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B) Small thrombi typically travel less distally and are less likely to produce pleuritic chest pain

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SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH

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SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH

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A) 3 months

B) 6 months

C) 12 month

D) Depends on her DASH Score

E) Indefinitely



Sri Lakshmi Narayana Institute of Medical Sciences



SEMINAR OF MEDIC

This is to certify that \_\_\_ Sangavi (U13MB251)\_ has actively participated in the

Value Added Course on **DIAGNOSIS AND TREATMENT OF PULMONARY EMBOLISM** held during December 2017 - January 2018 Organized by Sri Lakshmi

Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr. Prakash Rao Balan

RESOURCE PERSON

Dr. Vijay Kumar

COORDINATOR



Sri Lakshmi Narayana Institute of Medical Sciences



CERTIFICATE OF MERIT

This is to certify that \_\_ Sai Kowshik(U13MB248)\_ has actively participated in  
the Value Added Course on **DIAGNOSIS AND TREATMENT OF PULMONARY  
EMBOLISM** held during December 2017 - January 2018 Organized by Sri Lakshmi  
Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.



Dr. Prakash Rao Balan

RESOURCE PERSON



Dr. Vijay Kumar

COORDINATOR

### Student Feedback Form

Course Name: DIAGNOSIS AND TREATMENT OF PULMONARY EMBOLISM

Subject Code: CT 06

Name of Student: SHANMUGA SATHYANAR.S Roll No.: U13MB260

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					✓
2	Course contents met with your expectations				✓	
3	Lecturer sequence was well planned					✓
4	Lectures were clear and easy to understand					✓
5	Teaching aids were effective					✓
6	Instructors encourage interaction and were helpful				✓	
7	The level of the course					✓
8	Overall rating of the course	1	2	3	4	5 ✓

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

VERY INFORMATIVE

*Shanmuga Sathyanar.S*  
Signature

Date: 21.01.2018

### Student Feedback Form

Course Name: DIAGNOSIS AND TREATMENT OF PULMONARY EMBOLISM

Subject Code: CT 06

Name of Student: SAINI · S · A Roll No.: U13MB260

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear				✓	
2	Course contents met with your expectations					✓
3	Lecturer sequence was well planned					✓
4	Lectures were clear and easy to understand				✓	
5	Teaching aids were effective					✓
6	Instructors encourage interaction and were helpful					✓
7	The level of the course					✓
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

EXCELLENT

*Saini S*  
Signature

Date: 21.01.2018

Date: 27.01.2018

From

Dr. Vijay Kumar  
Assistant Professor and Head,  
Department of TB & chest,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

Through Proper Channel

To

The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Completion of value-added course: Diagnosis and Management of Pulmonary embolism & CT06**

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: : Diagnosis and Management of Pulmonary embolism & CT06 Dec 2017- Jan 2018 for 8 interns . We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards,

Dr. Vijay Kumar

**Encl: Certificates**

**Photographs**





**Sri Lakshmi Narayana Institute of Medical Sciences**

Date: 04.05.2017

From  
Dr. Nithianandam  
Professor and Head,  
Department of Anaesthesia  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research  
Puducherry

To  
The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Puducherry

**Sub: Request for Permission to conduct value-added course: HOSPITAL INFECTION CONTROL**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: Hospital infection control for undergraduates from Jan -Jun 2018. We solicit your kind permission for the same.

Kind Regards

Dr. NITHIANANDAM. S

---

**FOR THE USE OF DEANS OFFICE**

Names of Committee members for evaluating the course:

The Dean: Dr JAYALAKSHMI

The HOD: Dr.NITHIANANDAM. S

The Expert: Dr JALAKANDAN

The committee has discussed about the course and is approved.

Dean

Dr. G. JAYALAKSHMI /BSC.,MBBS.,DTCD.,M.D.,  
DEAN

Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agraram Kudapakkam, Post,  
Villanur Gram-mune Puducherry-605 502.

Subject Expert

HOD

Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry - 605 502



OFFICE OF THE DEAN

## Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P-II ) dt. 11/07/2011 ]

[ Affiliated to Bharath University, Chennai - TN ]


### Circular

06.06.2017

**Sub: Organizing Value-added Courses: HOSPITAL INFECTION CONTROL- reg**

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research**, is organizing “**HOSPITAL INFECTION CONTROL**” course. The course content is enclosed below.”

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before 15/06/2017. Applications received after the mentioned date shall not be entertained under any circumstances.



**Dean**

**Dr. G. JAYALAKSHMI, BSC., MBBS., DTCO., M.D.,**  
DEAN

Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Ageram Kudapakkam, Post,  
Villanur Commune Puducherry-605 502.

Encl: Copy of Course content.

# **COURSE PROPOSAL**

**Course Title: HOSPITAL INFECTION CONTROL**

**Course Objective:**

1. To enable the students to learn about causes and modes of acquiring infection in the hospital and to familiarize them with sanitation measures and others practices to achieve infection control.
2. To be acquainted with hospital infection control strategies and follow the guidelines associated with it.

**Course Outcome:**

On successful completion of the course the students be well versed with the infection control policies of the hospital and know the correct way of hand washing which is the cornerstone of infection control for a medical professional

**Course Audience: II year MBBS students**

**Course Coordinator:** Dr S NITHIANANDAM

**Course Faculties with Qualification and Designation:**

1. Dr S Nithianandam-Professor and HOD
2. Dr. Jalakandan-Associate

**Course Curriculum/Topics with schedule (Min of 30 hours)**

S.No	Date	Topic	Time	Hours	Faculty
1	06.01.2018	Introduction	2-4PM	2	Dr Nithianandam
2	20.01.2017	Concepts of infection control	2-4PM	2	Dr. Jalakandan
3	27.01.2018	Nosocomial infections	2-4PM	2	Dr Nithianandam
4	03.02.2018	Impact of nosocomial infections	2-4PM	2	Dr. Jalakandan
5	10.02.2018	Microbial agents	2-4PM	2	Dr Nithianandam
6	17.02.2018	Patient and environmental factors	2-4PM	2	Dr. Jalakandan
7	24.02.2018	Transmission of infection	2-4PM	2	Dr Nithianandam
8	03.03.2018	Basics of infection control program	2-4PM	2	Dr. Jalakandan
9	10.03.2018	Infection control team and responsibility	2-4PM	2	Dr Nithianandam
10	17.03.2018	Group discussion	2-4PM	2	Dr. Jalakandan
11	24.03.2018	Hand washing	2-4PM	2	Dr Nithianandam
12	31.03.2018	Aseptic techniques	2-4PM	2	Dr. Jalakandan
13	07.04.2018	Handling of contaminated material	2-4PM	2	Dr Nithianandam
14	21.04.2018	sterilization	2-4PM	2	Dr. Jalakandan
15	28.04.2018	Final assessment	2-4PM	2	Dr Nithianandam

**REFERENCES**

1) Hospital epidemiology and infection control ,  
CGlenMayhall,LippincottWilliams&Wilkins,2012

2) Hospital epidemiology and infection control in acute-care settings ,  
EmilyRMSydnor,TrishMPerl,Clinicalmicrobiologyreviews24(1),141-173,2011.

3)Under resourced hospital infection control and prevention programs  
:pennywise,poundfoolish?,DeverickJAnderson,KathrynBKirkland,KeithSKaye,PaulAThackerII,  
ZeinaAKanafani,GraceAuten,DanielJSexton,InfectionControlandHospitalEpidemiology28(7),76  
7-773,2007.

## VALUE ADDED COURSE

### 1. Name of the program & Code

HOSPITAL INFECTION CONTROL, ANAES 06

### 2. Duration & Period

30 hrs: January 2018- June 2018

### 3. Information Brochure and Course Content of Value Added Courses

*Enclosed as Annexure- I*

### 4. List of students enrolled:

*Enclosed as Annexure- II*

### 5. Assessment procedures:

Multiple choice questions- *Enclosed as Annexure- III*

### 6. Certificate of Participation:

*Enclosed as Annexure- IV*

### 7. No. of times offered during the same year:

1 Time JAN 2018-JUNE 2018

### 8. Year of discontinuation: 2018

### 9. Summary report of each program year-wise

Value Added Course- JAN 2018-JUNE 2018					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	ANAES 06	HOSPITAL INFECTION CONTROL	DR JALAKANDAN	II MBBS	20

### 10. Course Feed Back

*Enclosed as Annexure- V*

**RESOURCE PERSON**

**DR JALAKANDAN**

**COORDINATOR**

**Dr S NITHIANANDAM**

DEPARTMENT OF ANAESTHESIOLOGY  
SRI LAKSHMI NARAYANA INSTITUTE  
OF MEDICAL SCIENCES  
OSUDU, KUDLAPAKKAM, PUDUCHERRY-605 502

Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudlapakkam, Puducherry-605 502

## ANNEXURE I

# HOSPITAL INFECTION CONTROL

### TOPICS:

<b>Introduction</b>
<b>Concepts of infection control</b>
<b>Nosocomial infections</b>
<b>Impact of nosocomial infections</b>
<b>Microbial agents</b>
<b>Patient and environmental factors</b>
<b>Transmission of infection</b>
<b>Basics of infection control program</b>
<b>Infection control team and responsibility</b>
<b>Group discussion</b>
<b>Hand washing</b>
<b>Aseptic techniques</b>
<b>Handling of contaminated material</b>
<b>sterilization</b>
<b>Final assessment</b>

## **INTRODUCTION:**

### **Hospital infection:**

Hospital acquired infection is also known as Nosocomial infection. The English word Nosocomial is derived from the Greek NOSOKOMEION meaning “hospital”. Nosocomial infection is that which develops in the patients after more than 48 hours of hospitalization. In India Hospital infection estimates vary from 10 to 30 percent, the least being about 3 percent in the best of hospitals.

### **Hospital Infection Control Program:**

The main aim of the infection control program is to reduce the risk of hospital acquired infection and faster patient relief

The three main areas for the infection control programme are as follows: (goals and objectives):

Development of **surveillance system**. Surveillance implies that the observed data are regularly analyzed and reported to those who are in position to take appropriate actions.

Development of **Antibiotic policy**. This policy will be useful in decreasing the risk of Hospital infection.

**Continuing medical programme:** The medical and paramedical staffs are enrolled in the CME for the updated knowledge in Hospital infection.

Basic elements of the infection control programme:

Providing a system of identification and reporting of infection.

Providing a system for keeping records of infection in patients and personnel.

Providing for good hygiene, aseptic techniques and sterilization and disinfection practices.

Providing the staff, orientation and CME in infection prevention and control.

Providing for coordination with all departments and with medical audit committee in quality assurance.

### **Hospital Infection Control Team & Committee:**

#### **Hospital Infection Control Team:**

The infection control team will have **the responsibility** of monitoring the occurrence of Hospital infection and recommending corrective action.

The Infection Control Team consists of:

Infection Control Nurses

Infection Control Nursing Tutors

Infection Control Officer – Microbiologist.

**Hospital Infection Control Committee:**

The Infection control committee is a management committee appointed to direct, monitor, and support the hospital's infection control programme.

It is made up of the representatives of various clinical and other disciplines.

It is important for the members to devote enough time for the programme.

The Infection Control Committee consists of:

Medical Director

Nursing Superintendent

Infection Control Nurses

Infection Control Officer – Microbiologist

Manager ( Accreditation Co-ordinator)

The Invited Members are:

Intensivists.

Members of supporting departments

**SCOPE:**

Hospital – wide.

**ABBREVIATIONS:**

**HIC** : Hospital Infection Control

**DEFINITIONS:**

**Outbreak:** Occurrence of a disease or any health related event in excess of the expected number of cases for a given time or place. Cases may be related to an apparent common source or sometimes to a specific setting or institution. This also includes appropriate action on infectious diseases informed by local public health agency.

**Surveillance:** It is defined as the counting scrutiny of all aspects of occurrence and spread of diseases that are pertinent to effective control. Surveillance means to watch over with great attention, authority and often with suspicion.

**Biomedical Waste:** it means any waste which is generated during the diagnosis, treatment or immunization of human beings or from research activities pertaining there to or in production or testing or biological preparations from organism or microorganism or product of metabolism and bio chemical reaction intended for use in diagnosis, immunization or treatment.

**Cleaning:** It is the removal of contaminant, e.g., soil, organic matter, and large number of microorganisms. Cleaning is a useful and essential prerequisite to any sterilization or disinfection procedure.

**Decontamination:** The removal of pathogenic microorganisms from objects so that they are safe to handle.

**Disinfection:** It is the destruction of most forms of microorganisms but not usually of bacterial spores, thus reducing them to a level that is not harmful to health.

**Germicide:** Anything that destroys microorganisms, particularly pathogenic organisms. Usually refers to chemicals that will destroy pathogens but not necessarily spores. Germicides apply to compounds used on both living tissue and inanimate objects while disinfectants are applied only to inanimate objects.

**Hand Hygiene:** Hand hygiene refers to any action of hand cleansing with a view to reduce hospital acquired infections. The main medical purpose of washing hands is to cleanse the hands of pathogens (including bacteria or viruses) and chemicals which can cause personal harm or disease. It is well-documented that one of the most important measures for preventing the spread of pathogens is effective hand washing. Antiseptic Hands wash, Antiseptic Hand Rub and Surgical Hand Wash are three methods commonly used in an HCO for this purpose.

**Hospital Acquired Infection:** Hospital Acquired Infections are those that were neither present nor incubating at the time the patient was admitted to the health care facility. The majority of these infections become evident within 48 -72 hours of admission.

**Standard Precautions:** The measures designed to reduce the risk of transmission of blood borne pathogens and other microorganisms from both recognized and unrecognized sources of infection.

**Sterilization:** Sterilization is the total destruction or removal of all living organisms including bacterial spores.

**Surgical Site Infections:** Infection in the surgical site that occurs within 30 days of the surgical procedure or within one year if there is an implant or foreign body such as prosthetic heart valve or joint prosthesis.

**Ventilator Associated Pneumonia:** Ventilator Associated Pneumonia is defined as pneumonia in a patient on mechanical ventilator support

**Antimicrobial agent/Antimicrobial (Antibiotic):** Any agent, which has a potential for or is used with an intention of affecting microbial growth inside or on the human body. This includes antibacterial, antifungal, antiviral & antiparasitic agents.

**Prophylaxis/Prophylactic antimicrobial agents/Antibiotic prophylaxis:** *Administration* of an antibiotic or antimicrobial agent prior to the onset of symptoms in order to prevent clinical infection.

**Empiric antibiotic/antimicrobial therapy:** This is an early institution of antimicrobial therapy pending the results of culture and / or other relevant investigation & clinical response, in patients who have an illness and in whom there is an expectation of an infectious cause, the treatment being directed against the most likely microbial agent(s) in that particular episode.

**Organism directed antimicrobial Therapy:** Usage of antimicrobial agent against infection by specific microorganisms.

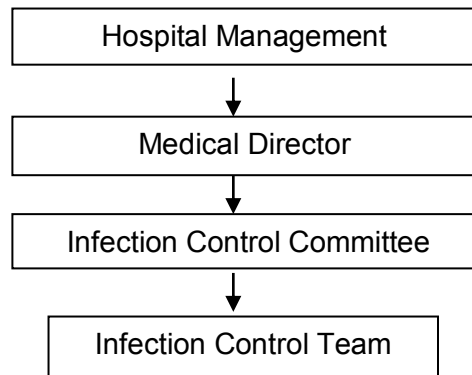
**Standard Universal Precaution:** They are a set of precautions designed to protect health care workers from exposure to blood borne pathogens. Since the majority of patients infected with HIV/HBsAg/ HCV are asymptomatic at the time of presentation all patients are approached as having potentially infectious blood and body fluids. Precautions may vary based on anticipated exposure.

## **RESPONSIBILITY:**

Infection Control Team

Infection Control Committee

## **DEPARTMENTAL HIERARCHY:**



## **ROLES AND RESPONSIBILITIES:**

### **Hospital Management:**

It is the responsibility of the management to make available resources required for ICP. The management will regularly earmark adequate funds from its annual budget to enforce implementation of the hospital's ICP. In addition it will encourage continued education starting from pre-induction training to additional in-service training.

### **Medical Superintendent:**

The Medical Superintendent is the ultimate authority who will ensure implementation of the ICP and will also monitor the efficacy of the programme and report to the higher authorities. He will also ensure that whole hearted support is given to the ICC and ICT in their day to day activities.

### **Infection control officer:**

Detection of incidence of hospital acquired infection.  
Investigation to trace out the source of infection.  
Identification of cause of infection.  
Finding out the mode of transmission.  
Instituting the effective measure to check the infection.  
Surveillance program.  
Antibiotic policy formulation.

**Infection Control Nurse (ICN):**

The duties of the ICN are primarily associated with ensuring the practice of infection control measures by nursing and housekeeping staff.

Thus the ICN is the link between the HICC and the wards/ICUs etc. in identifying problems and implementing solutions.

In addition the ICN conducts Infection control rounds and maintains the registers.

The ICN is also involved in education of paramedical staff including nurses and housekeeping staff.

The ICN also collects data from wards and ICUs for assessing the rate of HAI with the help of ICI.

**Infection Control team:**

The infection control team meets once in 15 days and otherwise as necessary. Documentation of meetings and recommendations are kept by the Deputy Medical Superintendent (NABH coordinator) and Infection control Incharge.

This team will work under the guidance of infection control committee.

Ensure that correct hand hygiene techniques are followed.

Collection of data from wards.

Periodic analysis of data to detect the incidence of HAI and recognition of any outbreak of infection.

Microbiological sampling of affected areas e.g. wards, OT, ICU, CCU, Transplant.

Determine the factors involved in the occurrence and spread of infection.

Random quality control sampling for bacteriological investigations by swabs taken from sterile instruments, linen etc in O.T, CSSD, labour room.

Education of hospital staff about hospital infection.

Infection control tutors are particularly responsible for education of hospital staff regarding the various aspects of hospital infection control practices.

The education schedule is as follows:

Infection control tutors:

Educating the HCWs on the spot in their particular departments for implementing the infection control policies.

Training of the new staff for implementing the new techniques.

5 min orientation by the incharge nurses with their subordinates daily for monitoring and collecting data for surveillance.

Infection control nurse:

Take lectures for in-charge nurses once a week regarding making them aware of implementing infection control protocols.

They will monitor implementation of antibiotic policy.

They will ensure information in the relevant format is sent to appropriate authorities regarding notifiable diseases.

They will be monitoring all patients for signs of infection and when needed will give guidance on patient isolation.

They will monitor all patients with indwelling catheters and devices and generate the data needed for analysis.

They will monitor for onset of outbreaks of infection and handle such infections and take appropriate corrective action to prevent recurrence.

They will be responsible for developing a staff health program and will particularly look after pre and post exposure prophylaxis.

They will monitor effectiveness of:

Sterilization activities.

Housekeeping services including biomedical waste management.

Kitchen sanitation and food handling issues.

Mortuary practices and

Laundry and linen management.

They will interact with maintenance and biomedical engineering department to ensure all engineering controls to prevent or establish in place.

They will develop educational content suitable for all hospital employees on this topic and ensure ongoing pre-induction training and re-enforcement training.

Education of the housekeeping staff and the nursing staff is done by the Rare Hospitality supervisors and the infection control nurses respectively regarding the handling of BMW which includes the following protocol:

Collection.

Segregation according to the color coding.

Storage in the wards.

Treatment of the sharps and plastic tubing's before disposal.

Transport of the waste to the main storage area.

Final disposal

### **Infection Control Committee:**

To minimize the risk of infection to patients, staff and visitors.

To determine method of surveillance (both active and passive) and reporting.

Determine the criteria for reporting of HAI (Hospital Associated infections).

Review occurrence of clusters of infections (outbreaks).

Review of records of all infected patients.

Review with the medical audit committee the use of antibiotics and antiinfective.(Antibiotic policy).

Recommendation in relation to selection of equipment used for sterilization.

Development of forms or data sheets used for collecting and reporting of data for the infection control programme.

Prepare and update procedure manuals of aseptic techniques used in the hospital.

Determine the policy on screening and immunization of hospital staff.

Determine the content and methodology of training programme for hospital staff in prevention and control of Hospital infection.

### **Hand Hygiene:**

ICT will ensure in that all health care workers are aware of the need for following hand hygiene principles.

The infection control team will also ensure that all health care workers are educated in this regard.

The infection control team will also ensure that all health care workers are educated in this regard.

### **Surveillance:**

The hospital areas are identified and classified for surveillance activities.

The following areas have been identified as high risk areas:

Operation Theatres.

Intensive care units.

Laboratory.

CSSD.

Casualty.

Biomedical waste.

Gluteraldehyde chambers

The following areas have been identified as moderate risk areas:

Post operative wards.

Dressing room.

Laundry.

The following areas have been identified as low risk areas:

General Wards

OPD

Surveillance for infection can be either active or passive.

Passive Surveillance:

Clinicians suspecting occurrence of Hospital Associated Infections (HAI) report this to the Chairperson Infection Control Committee.

All details regarding the patient, procedures, medication etc. are made available.

The microbiology department shall be responsible for reporting any information about infections suspected to be hospital acquired.

Active Surveillance:

Active surveillance is done of all the identified risk areas of the hospital as mentioned below:

**Operation Theatres:**

Culture swabs and air sampling plates are sent from Operation Theatres after fumigation **once weekly**.

Monitoring of working OT:

Air sampling of a working OT is done **once a month**.

Sampling of in use disinfectants: 1ml of samples of in-use disinfectants, hand wash agents are sent to the microbiology laboratory in a sterile container **once a month**.

Records are kept with OT in charge.

In case of unacceptable results decision on corrective measures are taken by HICC.

**Intensive care units:**

Surveillance samples.

Central line tips / other intra-vascular devices.

Water samples from humidifiers.

ET tube secretions. Urine samples from catheterized patients.

Surveillance samples are sent to microbiology lab.

Data is also sent to microbiologist in the prescribed format.

Samples of disinfectant in use: random two samples of 1 ml of disinfectant per ICU are sent in a sterile container **once a month**.

**Swabs may be sent after cleaning.**

Analysis of data is presented at the subsequent Infection Control Committee meeting.

Records are maintained by microbiologist.

Records are maintained by respective ICUs.

**Phlebotomy units:**

Sampling of in use disinfectants: 1ml of samples of in-use disinfectants, hand wash agents are sent to the microbiology laboratory in a sterile container **once a month**.

Swabs are sent from the working areas, three samples from each such unit, **once in a month**.

Register is maintained by the concerned phlebotomy unit.

**Transfusion services unit:**

Cleaning of transfusion unit storage areas is done and swabs are sent for culture once a month.

**Wards:**

Swabs are sent from wards, five samples from each ward, even without fumigation once in a month.

Samples of disinfectant in use: random two samples of 1 ml of disinfectant in use are sent in a sterile container once a month to check for sterility.

Register is maintained by ward.

**Glutaraldehyde Monitoring:**

In use Glutaraldehyde may be sent for sterility check:

1 ml of in use Glutaraldehyde is sent in a sterile container to the microbiology laboratory fortnightly from: Operation Theatre, procedure rooms and ICUs.

Records to be maintained by the concerned Department.

**Drinking Water:**

Bacteriological surveillance is checked **once a month** in the microbiology laboratory and **once in six months in an outside laboratory**.

Records maintained by dietary department.

**CSSD:**

Swabs are sent for sterility check after cleaning **weekly**.

Biological indicators of sterilization are sent from steam autoclaves and ETO machine weekly.

Records kept by CSSD.

**Toilets and Bathrooms:**

Swabs are sent from the taps, wash basins, cistern handles for culture once a month.

Records are kept by the In Charge house-keeping services

**Mandatory Monitoring:**

Encourage the staff to report all suspected cases of surgical site, Urinary tract, vascular device related blood stream infections, Ventilator Associated pneumonia and others to the ICN on daily basis. Others include MRSA and Multi Drug Resistant Organisms such as Pseudomonas aeruginosa, Candida albicans etc.

Enter details of all patients with invasive lines on the infection control checklist and update findings during daily rounds.

Collect and analyze data to determine the rates of HAI.

The HAI rates recorded at NHV are:

Urinary Tract Infections (UTI)

Surgical Site Infections (SSI)

Ventilator Associated Pneumonia (VAP)

Catheter Related Blood stream Infections (CRBSI)

**Antibiotic Policy:**

Antibiotic policy formulation is done on the basis of the monthly data which includes the following information:

Common organisms responsible for causing UTI, SSI, BSI, RTI.

Common antibiotics showing susceptibility to the organisms responsible for causing above infections which are divided according to the wards i.e ICU, WARDS and OPD.

The form showing the above details is attached.

Regulation of antibiotic usage in the hospital is necessary for three reasons:

To ensure an antibiotic is available to overcome infections caused by any pathogen.

Higher antibiotic should therefore be kept in reserve.

To curtail the emergence of resistant strains of microorganisms. To reduce the cost of treatment.

### **Notification of Notifiable Diseases:**

Infectious diseases still occur frequently throughout India and constant vigilance is required to prevent the reappearance of diseases thought to have been conquered. Changes in lifestyle have also led to the emergence of new threats to public health from infections. Health authorities depend on medical practitioners for information on the incidence of infectious diseases and notification is vital in efforts to prevent or control the spread of infection.

The policy on notifiable infectious diseases at AVMCH ensures that information on all such diseases is sent in the relevant format to the appropriate authorities.

AVMCH has the policy to report communicable diseases to the local health authorities i.e IMC.

All AVMCH medical and nursing personnel are educated and trained for this activity and the AVMCH administration provides investigating such suspected cases and provides forms and system for such notifications.

### **Isolation:**

Isolation practices are meant to prevent transmission of pathogenic microorganisms within a hospital requires three elements: A source of infecting microorganism, A susceptible host and A means of transmission for the Organism.

Universal precautions are to be followed for almost all patients admitted to the hospital irrespective of their diagnosis. Special transmission based precautions i.e blood borne pathogen isolation (BBP), airborne isolation (AI), droplet isolation and (DI) and contact isolation (CI) have to be followed for patients having specific diseases.

**Air borne isolation:** Place the patient in a single/private room with closed doors. Patients with same illness (but no other infection). Can be cohorted in one room. For patients with chicken pox, measles only immunized staff to provide care. For patients with open tuberculosis, wear mask before entering the room. Limit patients movement, place a surgical mask if patient is to be transported outside.

**Contact isolation:** Private room preferred else cohort patients of similar pure illness. Wear gloves prior any patient contact. Wear clean non sterile gown if any contact with body fluids, infectious materials or spillage is anticipated. Remove the gloves and gown before leaving the room/patient care area. Do not touch environmental surfaces, fomites after removing the gloves/gown.

**Droplet isolation:** Private room preferred/else cohort patients with same pure illness/else ensure 3 feet spatial separation between Patients. Wear a mask at all times when delivering care or when within 3 feet space around the patient. Limit transportation/if unavoidable ensure that patient wears a mask during transportation.

**Blood borne pathogen isolation:** Hand washing before and after patient contact/wearing gloves. Wear gloves if contact with blood, body fluids, secretions, excretions and contaminated items is anticipated. Wear mask, eye protection and gown before activities likely to generate splashes and sprays. Take utmost care to prevent needle-stick injury, use safety cannulas. Handle all patients care items properly, dispose appropriately waste and sharps.

**Isolation policy for special group of organisms:**

**Methicillin Resistant Staphylococcus aureus (MRSA):**

Screening:

Screen all patients with any of the following risk factors for MRSA:

Inter hospital transfer.

Admission with outside central vascular access.

Admission with outside

Foley's catheter.

Immuno-compromised patient.

Previous hospitalization or surgery during past 12 months.

Isolation precautions:

Place the patient under contact isolation till reports of MRSA status received.

Standard contact precautions.

Assign designated staff.

Room surfaces to be disinfected thoroughly with disinfectants.

Utensils or patient care items to be separated and disinfected prior reuse for other patients.

Soiled linen should be soaked in 7% Lysol for 1 hour before being sent to laundry.

**MRSA clearance:** An infected/colonized patient to be screened weekly and 3 negativescreening indicates clearance. Health care personnel to be screened in cases of epidemic. Nasal carriers can rejoin after 24 hours of starting Mupirocin (Intranasal).

Treatment of carriers: -Nasal carriage- 1% Chlorhexidine aste (hexigel ipca) thrice daily for 15 days or mupirocin (bactroban) in a paraffin base thrice daily for 5 days. Skin carriage-4%

Chlorhexidine (Microshield-4) solution for daily bath for 1 week.

### **Pulmonary tuberculosis:**

Respiratory precautions should be taken for smear positive tuberculosis patients.

A separate room is recommended for patients with sputum positive pulmonary T.B.

Inform all the health care workers about isolation of the patient.

Provide mask to the patients.

Do not permit the patient to move around in the corridor.

Provide mask to all visitors.

Discharge the patient at the earliest.

### **Usage of Personal protective equipment:**

In SLIMS the PPE has been kept in the entrance of all the wards, ICU's and theaters as well as provided for use to all other hospital personnel.

It contains minimum of 3 disposal of all PPE, which is used in case of emergency entry.

The reusable PPE was also kept for regular use for hospitals workers and for the patient attendars.

In SLIMS, the reusable PPE are washed in alternate night times.

And it can be reused for six months.

Using personal protective equipment provides a physical barrier between micro-organisms and the wearer.

It offers protection by helping to prevent micro-organisms from:

Contaminating hands, eyes, clothing, hair and shoes;

Being transmitted to other patients and staff.

Personal protective equipment includes:

Gloves;

Protective eye wear (goggles);

Mask;

Apron; Gown;

Slippers/boots/shoe covers; and

Cap/hair cover/ head mask

### **Standard Universal Precautions:**

Wearing of Personal Protective Equipment (PPE): As discussed in 11.8 and 12.8

Prevention of injury from sharps:

Sharps injuries commonly occur during use of needles and surgical instruments and after useduring disposal.

Precautions to be observed:

Needles should not be recapped, bent or broken by hand.

Disposable needles & other sharps should be discarded into puncture resistant containers at the site of procedure.

Sharps should not be passed from one HCW (Health Care Worker) to another.

The person using the equipment should discard it. If necessary a tray can be used to transport sharps.

All sharps containers to be discarded when 3/4<sup>th</sup> full.

### **Staff Health Programme:**

#### **Health evaluation:**

A pre-employment medical checkup is performed at the time of joining services for all staff under the ambit of National policy.

All contractual staffs are required to submit a medical certificate from a government medical official, as an evidence of fitness prior to their joining duty.

An annual medical checkup will be done for all permanent staff of the hospital. Records are maintained by the administrative office.

**Employee health programme:**

Employee health education:

Periodic classes are conducted for paramedical staff by the Head – Blood Bank/Infection Control Nurse.

All employees are instructed in universal precautions, isolation policies, hand washing protocols and waste management.

All infections including cutaneous and or other diagnosed communicable diseases e.g. hepatitis mumps, rubella, measles, chicken pox, diarrhea, productive cough more than three weeks, rashes etc., are to be reported by staff to their immediate supervisor at which time appropriate action to protect the patients in the hospital will be taken.

All staff is informed that they should report exposure to potentially infectious body fluid to their immediate supervisor who in turn informs the Infection Control Nurse or concerned person in absence of ICN.

Action is taken after assessment of risk at each situation.

Work restrictions may be imposed in situations which call for such action.

Personnel shall adhere to policies and practices to minimize the potential spread of diseases and /or infection.

Personnel shall adhere to existing employee health requirements.

**Managing exposure to potentially infectious body fluid:**

Categories of exposure:

Needles stick injuries.

Non- intact skin exposure.

Mucosal exposure e.g. Splash into eye.

Immediate action to be taken:

Needle stick injuries: Briefly induce bleeding from the wound. Wash for 10 minutes with soap and water. Report to supervisor.

Non intact skin exposure: Wash for 10 minutes with soap and water. Report to supervisor.3.

Mucosal exposure e.g. splash into eye: .Wash for 10 minutes by using clean water or normal saline to irrigate the eye. The eyelid should be held open by another person wearing sterile gloves. Do not use soap and water or disinfectant.

Management:

If index patient is known, patient is checked for HIV antibodies HBsAg.

Injured health care worker is checked for anti HBs antibody and HIV after obtaining consent.

For HIV: NACO guidelines are followed for assessment of risk and suggestions are acted upon.

Guidelines are appended to this manual.

For HBV infection: In case patient is positive.

If health care worker has adequate anti HBs titre  $>100$ MIU- only reassurance need be given.

If titre is  $<10$  give first dose of vaccine and immunoglobulin 1000units. Advise to complete vaccination.

If titre is between 10& 100 MIU give booster.

In case patient is negative Check anti HBs titre and proceed accordingly.

### **Disinfection and Sterilization:**

Critical instruments / equipments (that are those penetrating skin or mucous membrane) should undergo sterilization before and after use. e.g. surgical instruments and implants.

Semi-critical instruments / equipments (that are those in contact with intact mucous membrane without penetration) should undergo high level disinfection before use and intermediate level disinfection after use. e.g. endotracheal tubes.

Non-critical instruments /equipments (that are those in contact with intact skin and no contact with mucous membrane) requires only intermediate or low level disinfection before and after use.e.g. ECG electrodes.

### **Disinfectants:**

**Glutaraldehyde:** Rapid acting -can be used up to 14 days after activation. Long acting - can be used up to 28 days after activating. Contact time- for disinfection 15-30 minutes. - for sterilization 8-10 hours.

**Sterilium:** Contains 2-propanol,1-propanol ,macetronium ethyl sulfate. Contact time for patient care hand wash: 1.5ml for 30 secs. Contact time for surgical hand wash: 9 ml for 3minutes.

**Ecoshield:** Contains stabilized hydrogen peroxide 11% w/v with 0.01% w/v diluted silver nitrate solution. For surface disinfection: 10% v/v solution in de-ionized water with contact time of 60 minutes. For fumigation: 1 litre of 20% v/v solution /1000 cu ft of space in 60 min.

**Bacilloid:** Contains chemically bound formaldehyde, glutaraldehyde and benzalkonium chloride. Used as surface disinfectant at 2% solution in operation theatres and at 0.5% in wards and dressing rooms. Can be sprayed onto wet surfaces with a low pressure sprayer and allowed to dry slowly.

**Beta dine:** Iodophor .This is a high level disinfectant. Used for surgical hand scrub, skin disinfection.

**Sodium Hypochlorite 10% stock-** Used for containing blood spills, disinfecting counter tops and other hard surfaces at 1 %. Used in laboratory for decontamination of waste from equipment as well as glassware at 5%.

**OPA (ortho-Phthalaldehyde).** Used as high level disinfectant for endoscopes. Its advantages are reduced exposure times at ambient temperatures, superior microbicidal activity and less toxic fumes.

**Alcohol - 70%:** Used for disinfection of non-disposable patient care items in out- patient departments and also in laboratory for cleaning of microscope lenses and surfaces of critical work surfaces.

**Alcohol - 99%:** Used for preparation of cotton swabs in phlebotomy cell etc.

### **Sterilization:**

#### **Autoclave:**

All metal articles used in surgery except sharp knives and fine scissors are autoclaved.

Autoclaving at 121°C for 20 minutes at 15 lbs pressure effectively kills most microorganisms and spores.

Working of an autoclave:

Loading.

Closing.

Air removal.

Steam exposure.

Holding.

Exhaust.

Drying.

Unloading.

Autoclaves (gravity displacement) are used in CSSD for instruments, certain plastics linen gauze and other items.

Flash sterilization is used for OT in emergency situations at 132°C at 30lbs for 3 minutes.

**Microbiological monitoring:**

Swabbing and culture for bacteria in OT once a week.

Air sampling to determine the quality of air in OT done weekly on Monday morning as well as randomly once a week to ensure sterility.

Testing efficacy of autoclaves.

Biological and chemical indicators are used to monitor the effectiveness of sterilization.

Biological indicators containing bacterial spores are used for monitoring the efficacy of sterilizers.

Commercially available spore strips impregnated with spores of *Bacillus stearothermophilus* are used.

Chemical indicator such as Bowie-Dick tapes (signoloc) show a change of color after exposure to sterilizing temperature.

**Outbreak Prevention:**

The system of surveillance should detect potential outbreaks as quickly as possible.

Ward staff should be encouraged to send samples to the laboratory from all suspected infections.

Lab staff should save certain reports for inspection by the infection control nurse and should inform the microbiologist of any evidence suggesting potential outbreak.

Following should be considered when an outbreak occurs or a case of communicable disease is found:

Isolation of infected patient.

Prevention of movement of staff to other wards.

Non admission of new patients unless immune.

Sending home as many patient as possible.

Administration of immune serum to highly susceptible patients.

Treatment of contacts.

Informing administration (general, nursing and medical).

Introduction of new measures or improving existing procedures e.g hand hygiene.

Closure of wards or introduction of cohort system in neonatal wards.

Sampling of contacts and environment

### **Visitors' policy:**

Though instructing and preparing visitors for patients in isolation is time consuming and often frustrating, their presence is valuable to the emotional well-being of the patient.

The visiting hours permitted in our hospital are from 4pm-7pm daily.

Visitors are allowed with visitors pass from the respective wards or ICU where patient is admitted.

Visitors who have experienced chorio, fever, Cough, sore throat, vomiting should be discouraged from visiting the hospital.

Children are allowed to visit between 6pm-7pm. They are not allowed in ICU, ICCU and RR.

Visitors should maintain the **NO SMOKING** policy.

Visitors should wash their hand well with soap and water before entering and when leaving the room.

Visitors must maintain a quiet environment and avoid unnecessary noise. Visitors are not allowed to bring flowers for the patients

### **Engineering Controls to prevent Infection:**

**General guidelines:** Engineering personnel shall report to the ward sister prior to commencing work in a patients' room or area. All engineering personnel must be aware of universal precautions. Prior to entering areas requiring sterile attire such as the operation theatre, engineering employees shall wear the prescribed clothing. They shall check in and out with the permission of the supervisor.

**Physical barriers between repair area and patient care facility:** When any construction or repair work is carried out in patient care areas, the supervisors must inform the MS who will inform the heads of the departments so that patients may be shifted, if required. When work is carried out in areas with immunocompromised patients or those require sterile atmosphere, adequate physical barrier must be present to prevent the spread of microbes through dust and debris. All areas must be fumigated before use following construction work.

**Ventilation system:** Regular cleaning of all window AC filters must be carried out in a systematic manner throughout the hospital. In areas such as microbiology lab where handling of infected material is carried out, more frequent checks of AC filters is required.

**Equipment maintenance:** All equipment is under labor Annual Maintenance contracts or Comprehensive Annual Maintenance Contracts. All contracts are renewed annually. The company conducts training for the staff.

**Mortuary Practices:** The temperatures in the mortuary must be maintained at 0°C. The mortuary must be cleaned thoroughly with soap and water twice a week.

**Pest control activities:**

Any sign of pest infestations, e.g. mice, cockroaches, ants, is reported to Hospital Infection Control Committee.

Once in every month the Facility Management Team shall go for rounds and report the need for pest control treatment.

**Housekeeping activities:**

A patient admitted to the hospital can develop infection due to bacteria that survive in the environment.

Therefore it is important to clean the environment thoroughly on a regular basis.

This will reduce the bacterial load and make the environment unsuitable for the growth of microorganisms.

**Biomedical Waste Management:**

Hospital waste is different from domestic waste in that it may contain biological material, which may possess potentially harmful microorganisms. Therefore, special care should be taken while managing hospital waste to make sure that it does not harm others. Waste management should also conform to legal requirements. The method of disposal should be acceptable to general public in that area. Waste minimization is also important. This can be achieved by strengthening “reuse services” which includes cleaning and sterilization.

**Objectives:** To prevent infection by maintaining good hygiene and sanitation. To protect the patient, patient attendants and all health care personnel from avoidable exposure to infection. To

prevent environmental pollution. To manage waste in a clean, healthy, economical and safe manner. To minimize waste.

**Major categories of Biomedical waste:** **A** Non infectious items: Domestic/kitchen waste.

Paper/wrapper. Ampoules, vials and IV bottles. **B** Infectious waste: Sharps. Plastics. Non plastic

**General Guidelines for all procedures:**

Hand washing is mandatory before, after and in between procedures and patients.

Each health care worker should be familiar with personal protection (Universal precautions) required for each procedure. These precautions should be strictly adhered to.

Follow proper waste segregation and disposal after each procedure.

It is the duty of the nurse to remind the physician regarding the due date of change.

**PROCEDURES:**

**Surveillance:**

Surveillance of the various high-risk, moderate-risk and low-risk areas are conducted by the following methods:

**Registers:** The following registers are maintained by the Infection control team:

OT and CSSD surface culture register.

ICU and Ward surface culture register.

Monthly microbiological data register.

Quality indicator surveillance register.

Water culture register.

**HAI forms:** These forms are available in each ward. It is the duty of in-charge sister in the ward to report any case suspected to be HAI, by filling up the form and submitting to ICN. Or separate registers should be maintained for detection of HAI viz UTIs, CRBSI, SSI and VAP. In-charge nurses should fill the registers on daily basis and report to ICN who along with the ICO will assess the rates of HAI.

**Correlation with Microbiological Reports:** The data collected is checked with the type of microorganism isolated from the specimens to assess if it's a case of HAI depending upon the time of insertion of catheter, patients clinical condition etc. **Rounds:** The ICN takes rounds of all OT'S, ICUs and wards to check whether all the staff is following the various infection control protocols. ICO along with ICN take surprise rounds as and when necessary.

**Air Sampling And Surface Cultures:** Air samples and surface swabs are taken for culture.

These are sent to Microbiology laboratory weekly on Monday morning as well as randomly once a week to check for any growth in the OT's and ensure sterility. If the culture shows a positive growth, disinfection and fumigation must be repeated and the culture must be carried out again.

**Statistics:** Statistics are maintained for incidence of various infections like wound infections, postoperative infections, vascular line infections, respiratory tract infections, urinary tract infections as well as O.T sterility. A monthly and yearly HAI is prepared. The statistics is collected in following way. Maintenance of separate registers for tracking the incidence of HAI by in-charge nurses on daily basis. Collection of data from in-charge nurses by ICN weekly or in 15 days. Analyzing the data by microbiologist and ICN and tracing the incidence of HAI.

**Special Studies: NICC:- International nosocomial infection control consortium:** AVMCH has participated in an international project named INICC which is a nonprofit Argentina based organization dealing with surveillance of data for assessing the rate of HAI worldwide to reduce the rate of HAI, extra length of stay and extra burden both for the hospital and the patient.

**Projects For Students:** PG students carry out project work in the Microbiology department and the data is collected relevant to infection control practices carried out in hospital. E.g. hand hygiene compliance, BMW, barrier nursing, bacterial contamination of mobile phones etc.

#### **Antibiotic Policy:**

**General features:** Prophylactic therapy will not exceed 24 hours duration after starting 1<sup>st</sup> dose. Empiric therapy should not continue beyond 72 hours or so till the report of culture and sensitivity is available. A review has to be done and if necessary antimicrobials are re-prescribed. Fever, redness & swelling do not mean infection. Inflammation is not synonymous with infection. Antimicrobial agents circulate in blood stream and in micro vascular compartment. Third space infections are best drained. Body immunity will take care of a large number of non-virulent organisms. Barring a few situations, antibiotic/antimicrobial therapy should be started after appropriate samples for cultures have been taken, without detrimental effect on the patients. Local wound infections generally need no antimicrobial agents. **NOTE:-** "Abscess or pus collection needs adequate drainage, antimicrobial agents are often useless or at best supplementary".

**Criteria for antimicrobial usage: Therapeutic Usage:** Antimicrobials are used for infections by specific microorganisms and as far as possible a narrow spectrum antimicrobial acting against

such specific infective agent should be used. Diagnosis of infection is based on clinical and / or laboratory evidence. **Prophylactic usage:** Primary Prophylaxis in contact cases of tuberculosis, diphtheria & meningococcal diseases. Secondary Prophylaxis in case of Rheumatic fever. Post exposure prophylaxis in case of exposure to HIV infected blood or body fluids as defined under 'Policy for Needle Stick Injury or Accidental Inoculation and percutaneous Mucus Membrane Exposure to Blood and Body Fluid Substances' of AVMCH. Prophylaxis in the Immuno-suppressed & Immuno-compromised. Surgical Prophylaxis. Post splenectomy patients.

Indications for Clinical use of Antimicrobial Combinations: Antimicrobial Combinations are acceptable in the following five situations: Prevention of Emergence of Resistant organisms: Justification well documented only in the case of Tuberculosis therapy. A Carbapenem antimicrobial agent, if used, against or for anti Pseudomonad activity, should be combined with either Ciprofloxacin or with an aminoglycoside. Polymicrobial Infection: If the polymicrobial infecting flora has either an Enterococcus or MRSA or if the organisms are not covered adequately by a broad spectrum Cephalosporin (3<sup>rd</sup> or 4<sup>th</sup> generation) or a Carbapenem, a combination of antibiotics may be used. Empirical Therapy: In neutropenic patients or in patients in whom the nature of infection is unclear only till the time culture & sensitivity reports are not available. Two agents are generally sufficient such as Ticarcillin + Gentamicin / Tobramycin . Once the culture reports are available, a switch over to single antimicrobial should be done as soon as possible. A combination of Amphotericin B and 5 fluorocytosine is useful in treating cases of Cryptococcosis or Candidiasis. Synergism in Infection of Immuno-suppressed or Immuno-competent patients: Even in cases of susceptible organism, two drugs may have to be combined in cases of abnormal host defense systems. Generally for gram negative bacilli, a combination of Cephalosporin or Ticarcillin or Piperacillin with an aminoglycoside is advocated. Caution: A combination of Beta Lactam - Beta lactam antibiotic e.g. Ceftazidime + Ceftriaxone or Cefuroxime or Amoxicillin and clavulanic acid may be antagonistic in nature. Their combination should be avoided except in situation like infections with *Burkholderia cepacia* & *Stenotrophomonas maltophilia* where Ceftazidime can be combined with Piperacillin+Tazobactam or Piperacillin or Ticarcillin + Clavulanate. Synergism: This is used in cases of moderately resistant organisms showing such a resistant pattern for all or most of the drugs, which can be safely given in such a patient. Two drugs to which the organism shows moderate resistance or to which the MIC values are high (not in the sensitive zone) can be

combined to have such an effect. Synergistic combinations have to be used in cases of Bacterial Endocarditis especially with respect to Enterococcus spp. This will require Penicillin and Streptomycin / Kanamycin / Amikacin / Gentamicin combination. Many serious infections with Pseudomonas aeruginosa will respond to a combination therapy with Carbenicillin, Ticarcillin, Mezlocillin, Azlocillin, or Piperacillin with Gentamicin / Tobramycin / Amikacin or Ciprofloxacin. Cotrimoxazole as a fixed combination therapy can be used in selective situations or it can be combined with three or four other agents in infections with organisms like Burkholderia cepacia & Stenotrophomonas maltophilia where I/V Cotrimoxazole can be combined with Ceftazidime / Meropenem and Piperacillin +Tazobactam or Ticarcillin-clavulanate + Tobramycin / Amikacin.

**Empirical therapy:** Empiric therapy of the following antimicrobial agents will be avoided: These agents may be called ETNA (Empiric Therapy Not Approved). Meropenem. Imipenem-Cilastatin. Vancomycin. Teicoplanin. Rifampicin. Chloramphenicol. Polymixin – B. Piperacillin+ Tazobactam. Ticarcillin+ Clavulanate. Cefoperazone + Sulbactam. Linzolid. Aztreonam. Amphotericin – B. Voriconazole. Caspofungin. Posiconazole. Ganciclovir. Acyclovir.

Drugs may be added to the list by the ICC or may be struck off from the list. Such drugs are to be used only under extraordinary life threatening conditions for empirical therapy with a justification given on the case sheet as to why it is being started.

A separate form would be required to be filled up by consultants for ordering these drugs and the request form would be signed by the consultant. If the antimicrobial is continued beyond 5 days, from day six onwards the 2<sup>nd</sup> signature will be of any other Senior Consultant or Microbiologist. The microbiologist in charge of the ICT will generate antibiotic susceptibility patterns for the HCO and will circulate it to the concerned HCW. He will review this policy so as to comply with the current antibiograms and make changes after approval of the ICC.

#### **Notification of Notifiable Diseases:**

All infectious diseases shall be notified to the IMC as per guidelines provided by IMC on an approved format (Refer Annexure).

The ICN during her daily visit in the hospital identifies patients suffering from any of the infectious diseases.

The findings are confirmed by the consultants & through the lab reports.

The ICN prepares the copy of the report.

The report is verified by the ICO & then given to the MRO for final report making in the format provided by the authorities.

The report is duly signed by the Medical Superintendent and it is then dispatched to the IMC office with a cover letter.

**Section B – Recordable Diseases:**

Cholera  
Anthrax  
Enteric Fever  
Diphtheria  
Hepatitis A  
Hepatitis B  
Influenza  
T.B Meningitis  
Malaria  
Tetanus'  
HIV  
Poliomyelitis  
Acute influenza pneumonia  
Cerebro spinal fever

**Section C – Recordable Diseases:**

J. Encephalities  
Chicken pox  
V. Encephalitis  
Epidemic Flu  
Whooping Cough  
Scarlet fever  
Gastro-Enteritis  
Measles  
Mumps

Dysentery  
Rabies  
Dengue  
Plague  
Tuberculosis

### **Hand Hygiene:**

Hand washing is usually limited to hands and wrists; the hands are washed for a minimum of 10 – 15 seconds with soap (plain or antimicrobial) and water.

**Purpose:** To prevent transmission of infectious agents among patient, health care personnel and visitors. It is the single most effective way to prevent the spread of infection.

**Types:** Antiseptic Hands wash. Antiseptic Hand Rub. Surgical Hand Wash.

### **Indication:**

**When should use soap and water?** When hands are visibly dirty. When hands are visibly soiled with blood and body fluids (Ex: vomiting, urine, stool, dressings etc). After handling contaminated articles, like (ex: urinals, bed pans, kidney tray dustbins etc.). On starting and completion of duty shifts. Before eating and after using a rest room. Prior to putting on sterile gloves for performing any procedures (Ex: insertion of a central venous catheter etc).

**When should use hand rub solution?** Before direct contact with patients. After contact with patients Ex: after taking pulse, blood pressure, After changing position. Direct contact in between the patients. Before and after direct contact with IV lines, any tubing's etc. Before and after administration of medication and injection.

**General instructions:** Remove all the hand and arm jewellery. Apply enough soap on hands to make good lather. Medical hand washing should be done for 20-30 sec. Surgical hand washing should be done for 3-5 min.

**Procedure:** Hand antisepsis removes or destroys transient micro-organisms and confers a prolonged effect. It may be carried out in one of the following two ways:

**General Hand washing Technique:** Remove watch and jewellery, stand well away from the sink Turn on the tap wet hands from finger tips to elbow, holding up to enable water to run down from the finger to the elbow. Apply soap and scrub each hand with the other, using rotatory movements from the finger tips to the elbows with special attention to the nails and finger webs. At the start of the shift, a **two minute scrub** is considered the shortest acceptable duration for

handwashing. A 30 second scrub should be done in between patient who are not grossly contaminated. If grossly contaminated, a 60 second scrub is recommended. Rinse thoroughly under running water ensuring that water flows from the fingertips to the elbows. Close the tap dry with clean towel beginning with the hands and proceeding to the wrists and then to the forearms. Dry with clean towel / paper towel. Turn off water using same paper towel and dispose in proper respectable containers.

**Surgical Hand Wash:** Strict aseptic techniques are to be followed by all personnel involved in surgical procedures: A minimum of **5 minutes scrub** is recommended before each operation. After the preliminary wash of both hands with soap and water, with the hands held up, scrub the hands with sterile brush and soap, starting at the finger nails, hands, and proceeding over the forearm to the elbow. Ensure that once the brush has been used over the wrist and forearm, that it is not used over the finger tips and palms. Particular attention is given to the fingernails. All personnel should be advised to keep nails short and while scrubbing, the undersurface of the nails should be cleaned. Rinse hands with running water. Keep arms and fingers held up and elbow down to ensure flow of water from tips to the elbow. Close tap with elbow. As an additional precaution, povidone iodine is applied on both hands and washed off with water after about 1 minute. Dry hand with a sterile towel and avoid touching contaminated articles/surfaces.

### **Personal Protective equipment (PPE):**

**The following principles guide the use of PPE:** Personal protective equipment should be chosen according to the risk of exposure. The hospital worker should assess whether they are at risk of exposure to blood, body fluids, excretions or secretions and choose their items of personal protective equipment according to this risk. Avoid any contact between contaminated (used) PPE and surfaces, clothing or people outside the patient care area. Discard the used PPE in appropriate disposal bags, and dispose of as per the policy of the hospital. Do not share PPE. Change PPE completely and thoroughly wash hands each time you leave a patient to attend to another patient or another duty.

**Gloves:** Wear gloves (clean, non-sterile) when touching blood, body fluids, secretions, excretions or mucous membranes. Change gloves between contacts with different patients. Change gloves between tasks/ procedures on the same patient to prevent cross-contamination between different body sites. Remove gloves immediately after use and before attending to

another patient. Wash hands immediately after removing gloves. Use a plain soap, antimicrobial agent or waterless antiseptic agent. Disposable gloves should not be reused but should be disposed of in Red bags.

**Masks:** Wear a mask to protect mucous membranes of the mouth and nose when undertaking procedures that are likely to generate splashes of blood, body fluids, secretions or excretions. **In AVMCH all the hospital workers must wear mask who enter in to the:** Postoperative wards, ICUs, Dialysis, CSSD, Theaters, It is also a must for the patient attenders who enters into Postoperative wards, ICU's. Cotton mask is available in the wards, ICU's, CSSD and theaters. Do not reuse disposable masks. They should be disposed Red bags.

**Gowns and plastic aprons:** Wear a gown (clean, non-sterile) to protect the skin and prevent soiling of clothing during procedures that are likely to generate splashes of blood, body fluids secretions or excretions. In AVMCH disposable gowns are kept in the PPE box, it can be used in case of emergency. Reusable gowns are kept separately for the hospital workers and patient attenders in all the postoperative wards, ICU's. The reusable gowns are not sterilized. Remove a soiled or wet gown as soon as possible. A plastic apron may be worn on top of the gown to protect exposure to blood, body fluids, secretions and excretions. Launder gowns and aprons appropriately if they are reusable, according to the hospital guidelines. Do not reuse disposable gowns and aprons. They should be disposed of according to the hospital facility protocol.

**Caps/head mask and boots/slippers/shoe covers:** Wear head mask/caps and slippers/boots where there is a *likelihood* the patient's blood, body fluids, secretions or excretions may splash, spill or leak onto the hair. Cotton head masks and hospital slippers are kept for the hospital workers and patient attendars who enters in to ICU's and Wards. Do not reuse disposable caps/shoe covers. They should be discarded according to the hospital facility protocol. Clean and disinfect reusable boots.

### **Isolation:**

#### **Purpose:**

To prevent the transmission of pathogenic microorganisms within the hospital.

To recognize the importance of all body fluids, secretions and excretions in the transmission of nosocomial pathogens.

To practice adequate precautions for infections transmitted by airborne Droplet & contact.

Measures for reduction of transmission.

**Hand washing:**

Frequent hand washing is the most important measure.

Hand washing facilities in all health care areas are accessible to health care providers.

Compliance with proper hand washing is monitored regularly by ICC members.

**Antiseptic hand wash:** Wash hands after touching blood, body fluids, secretions, excretions and contaminated items, whether gloves are worn or not. Wash hands immediately after gloves are removed. Wash hands between tasks and procedures on the same patient to prevent cross contamination of different body sites. Use antiseptic liquid soap for antiseptic hand washing. Use antiseptic soap followed by thorough hand washing for accidental skin contamination.

Antimicrobial hand washing products should be used for hand washing before personnel care for newborns and when otherwise indicated during their care, between patients in high-risk units, and before personnel take care of severely Immuno compromised patients.

**Surgical Hand rub:** Procedural hand hygiene includes full surgical scrub using running water and 10% Micro shield scrub solution from the fingertips to the elbow. The scrub should be performed for a minimum of 2 to 3 minutes.

**Gloves:** Clean, unsterile gloves may be worn as a protective barrier during procedures. Sterile gloves are worn when sterile procedures are undertaken.

**Use of Personal protective equipment: Ref. (PPE):**

**Patient isolation:**

**Patients are isolated when:** Suffering from highly transmissible diseases e.g. chicken pox.

Patient is placed in a single room with hand washing and toilet facilities. Infected with epidemiologically important microorganisms such as MRSA, Imipenem resistant Acinetobacter spp. Viral Hepatitis, Tuberculosis, Infection Disease.

**Barrier nursing:** The aim is to erect a barrier to the passage of infectious pathogenic organisms between the contagious patient and other patients and staff in the hospital, and hence to the outside world. Preferably, all contagious patients are isolated in separate rooms, but when such patients must be nursed in a ward with others, screens are placed around the bed or beds they occupy. Cohort nursing may be practiced as re-infection with the same organism is unlikely. The nurses, attending consultants as also any visitors must wear gowns, masks, and sometimes rubber gloves and they observe strict rules that minimize the risk of passing on infectious agents.

Surgical standards of cleanliness in hand washing are observed after they have been attending the patient. Bedding is carefully moved in order to minimize the transmission of airborne particles, such as dust or droplets that could carry contagious material. Barrier nursing must be continued until subsequent cultures give a negative report.

**Cleaning of equipment and articles:** Contaminated disposable articles are bagged appropriately in leak proof bags and disposed. Critical and Non-critical reusable medical equipment is disinfected or sterilized after use.

**Laundry:** Soiled linen should be handled as little as possible and with minimum agitation to prevent gross microbial contamination of the air and of persons handling the linen. All soiled linen should be bagged or put into carts at the location where it was used; it should not be sorted or pre-rinsed in patient-care areas. Linen soiled with blood or body fluids should be deposited and transported in bags that prevent leakage.

**Eating utensils:** Routine cleaning with detergent and hot water is sufficient.

**Terminal cleaning:** Terminal cleaning of walls, beds, and curtains may be done. Disinfectant fogging is not recommended.

**Isolation policy for certain groups of organism:**

**MRSA:** When MRSA is isolated in the lab the microbiologist will inform the sister-in – charge/duty doctor/head of unit. Patient is isolated and barrier nursed. Hand washing is strictly adhered to by all concerned. Linen is changed on a daily basis. Any contamination of linen requires to be decontaminated by autoclaving before sending to the laundry.

**Multi-resistant bacteria** e.g. Imipenem resistant Acinetobacter, multi-resistant Pseudomonas aeruginosa. The aim is to curtail the spread of such bacteria. Hence patient is to be placed on strict barrier nursing precautions irrespective of whether the organism is a coloniser or the cause of infection.

**Pulmonary tuberculosis:** Masks should be used during the care of all patients with sputum positive pulmonary tuberculosis. Note: Isolation precautions are to be followed until all previous culture sites are negative. **4.**

**HIV/HBV/ HCV infected patients:** Standard precautions.

**Concept of standard precautions:** They are a set of precautions designed to protect health care workers from exposure to blood borne pathogens. Since the majority of patients infected with HIV/HBV/ HCV are asymptomatic at the time of presentation all patients are approached as

having potentially infectious blood and body fluids. Precautions may vary based on anticipated exposure.

**Features of Standard precautions:** Use of Personal protective equipment and gloves (discussed). 2. Prevention of injury with sharps: Sharps injuries commonly occur during use of needles and surgical instruments and after use during disposal.

**Precautions to be observed:** Needles should not be recapped, it destroy with needle destroyer. Disposable needles & other sharps should be discarded into puncture resistant containers at the site of procedure. Sharps should not be passed from one HCW to another. The person using the equipment should discard it. If necessary a tray can be used to transport sharps. All sharps containers to be discarded when 3/4ths full. 3.

**Hand Hygiene:** as already discussed in 12.4.

**Disinfection of equipment:** Re-use instruments, tubing, etc only after decontamination and sterilization or decontamination, as appropriate (Refer to the chapter on Sterilization and Disinfection). Do not touch equipment with soiled gloves or gloves used for patient care. Surfaces of large equipment should be disinfected with a 1:100 dilution of sodium hypochlorite or an approved disinfectant. Heavy soiled equipment may require additional cleaning with detergent and water. Gloves must be worn while cleaning the equipment. 5.

**Waste disposal:** Plastic tubes, IV sets, Disposable syringes, Catheters, Urine bag, Ryle's tube, Gloves are disposed in the **blue plastic bags**. Human anatomical waste (organs, body parts) Material contaminated with blood, cotton, dressings, linen etc., Lab items like Cultures, dishes, vaccines, infectious materials are disposed in the **Yellow plastic bag**. Needles, blades, scalpels, broken ampoules, broken glasses, slides are disposed in **Plastic Container (Puncture proof)**. Ordinary non infectious waste is disposed in **green dustbin**.

**Linen:** Linen soiled with blood or potentially infectious body fluid must be placed in a leak proof bag and then sent for Washing. The soiled linen is soaked in 1%hypochlorite solution for 20minutes then sent for laundry. 7.

**Spill clean up:** Cover spills of blood or body fluids with 1% of freshly prepared sodium hypochlorite for 20 minutes. Then mop dry. A second decontamination may be done if required. Wash the area with detergent and water. Gloves must be worn during cleanup and decontamination procedures.

**Precautions against blood borne transmission:**

**Instruction for wards:**

**Admission:** Patients with HIV / HBV / HCV disease but presenting with unrelated illnesses may be admitted in any ward as per existing rules. Confidentiality shall be maintained with appropriate precautions to prevent nosocomial transmission.

**Preparation of patients:** It is the responsibility of the attending physician to ensure that patients, testing positive are informed about the result and receive counseling. The nursing staff will explain to patients, attendants and visitors (when necessary), the purpose and methods of hand washing, body substance and excreta precautions, and other relevant precautions.

**Specimens:** Adequate precautions are to be taken while collecting specimens. The specimens are to be transported in leak-proof containers placed inside a leak-proof plastic cover. Ensure that the cover and the outside of the container are not contaminated. Attach a 'Biohazard' label.

**Waste disposal:** A bin lined by a yellow plastic bag is placed in the patient's room for infectious waste. When the bag is 3/4ths full it is sent for disposal. Non-infectious waste does not require special precautions and is disposed in a manner similar to non-infectious waste generated from any other patient.

**Death of a patient:** Those cleaning the body should use gloves and other protective wear. Before leaving the ward, the body is bagged as for any case.

**Precautions against airborne transmission:** These precautions are designed to reduce the risk of airborne and droplet transmission of infectious agents, and apply to patients known or suspected to be infected with epidemiologically important pathogens that can be transmitted by these routes.

**Components of respiratory isolation:** Place the patient in a single / private room with closed doors. Patients with same illness (but no other infection) can be cohorted in one room. Masks to be worn by those who enter the patient's room. Susceptible persons should not enter the room of patients known or suspected to have measles or varicella (chicken pox). Gowns are not routinely necessary. Use gowns if soiling is likely. Gloves are necessary while handling patients. Hands must be washed after touching the patient or potentially contaminated articles and before taking care of another patient. Articles contaminated with infective material must be discarded or bagged and labeled before being sent for decontamination and reprocessing.

**Precautions against contact transmission:** Contact isolation precautions are recommended for specified patients known or suspected to be infected or colonized with epidemiologically

important microorganisms that can be transmitted by direct contact with the patient (hand or skin-to-skin contact that occurs when performing patient – care) or indirect contact (touching) with contaminated environmental surfaces or patient-care items.

**Components:** Gowns are indicated if soiling is likely. Gloves are indicated for touching infected material / area. Hands must be washed after touching the patient or potentially contaminated articles and before taking care of another patient. When possible, dedicate the use of non critical patient – care equipment to a single patient (or cohort of patients infected or colonized with the pathogen requiring precautions) to avoid sharing between patients. If use of common equipment or items is unavoidable, then adequately clean and disinfect them before use for another patient. Articles contaminated with infective material must be discarded or bagged and labeled before being sent for decontamination and reprocessing.

**Isolation rooms:** A private room is indicated for patients with infections that are highly infectious or are caused by microorganisms that are likely to be virulent when transmitted. When an infected patient shares a room with non infected patients, patients and personnel shall take measures to prevent the spread of infection. Personnel shall wear gloves and wash hands when indicated and ensure that contaminated articles are discarded or returned for decontamination and reprocessing.

**Isolation policy for special groups of organisms: Methicillin Resistant Staphylococcus aureus (MRSA):** The Microbiology department shall send an alert to the head of the concerned unit and the Hospital Infection Control when MRSA is isolated. Use respiratory (contact with mask) precautions. Accommodate these patients away from those with open wounds or Immuno-compromised. Hand washing is the single most important factor in controlling MRSA. Linen – sheets, pillow cases, and blankets should be changed on a daily basis and more often if soiling occurs. Linen should not be shaken in order to prevent dissemination of micro-organisms into the environment. Linen should be autoclaved before being sent to the laundry. The same will apply to masks, gowns and gloves. **Pulmonary tuberculosis:** Respiratory precautions should be taken for smear positive tuberculosis patients. A separate room is recommended only for adult patients with sputum positive pulmonary tuberculosis.

**Procedures in High-risk areas:**

SLIMS has identified precautions to be taken in these high risk areas for employee safety.

Type of exposure	Examples	Protective
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		<b>barriers</b>
<b>Low Risk</b> Contact with skin with no Visible blood	<ul style="list-style-type: none"> <li>• Injections</li> <li>• Minor wound dressing</li> </ul>	Gloves
<b>Medium Risk</b> Probable contact with blood; Splash unlikely	<ul style="list-style-type: none"> <li>• Insertion or removal of intravenous cannula</li> <li>• handling of laboratory specimens</li> <li>• Large open wounds dressing</li> <li>• Venipuncture, spills of blood</li> <li>• Vaginal examination</li> </ul>	Gloves ,Gowns and Aprons
<b>High Risk</b> probable contact with blood, splashing, uncontrolled bleeding	<ul style="list-style-type: none"> <li>• Major surgical procedures particularly in Neuro surgery and other minor surgical procedures</li> </ul>	Gloves, Water-proof Gown or Apron Eye wear, Mask

**Care of systems and indwelling catheters:**

**Urinary catheter care:** Recommendations for prevention of urinary catheter related infections:

- a. Urinary catheters should be inserted only when necessary and left in place only for as long as necessary. They should not be used solely for the convenience of patient-care personnel.
  - b. For selected patients, other methods of urinary drainage such as condom catheter drainage, suprapubic catheterization, and intermittent urethral catheterization can be useful alternatives to indwelling urethral catheterization.
- Hand Washing:** Hand Washing should be done immediately before and after any manipulation of the catheter site or apparatus .Patient attendants shall be educated about hand hygiene and the precautions to be taken in catheter management.
- Catheter Insertion:**
- a. Catheters should be inserted using aseptic technique and sterile equipment.
  - b. Gloves, drape, sponges, an appropriate antiseptic solution for periurethral cleaning, and a single-use packet of lubricant jelly should be used for insertion.
  - c. As small a catheter as possible, consistent with good drainage, should be used to minimize urethral trauma.
  - d. Indwelling catheters should be properly secured after insertion to prevent movement and urethral traction.
- Closed Sterile Drainage:** A sterile, continuously closed drainage system should be maintained. The catheter and drainage tube should not be disconnected unless the catheter must be irrigated.
- Irrigation:** Irrigation should be avoided unless obstruction is anticipated (e.g., as might occur with bleeding after prostatic or bladder surgery); closed continuous irrigation may be used to prevent obstruction. To relieve obstruction due to clots,

mucus, or other causes, an intermittent method of irrigation may be used. The catheter-tubing junction should be disinfected before disconnection. **Urinary Flow:** To achieve free flow of urine 1) The catheter and collecting tube should be kept from kinking; 2) The collecting bag should be emptied regularly using a separate collecting container for each patient (the draining spigot and nonsterile collecting container should never come in contact) 3) Poorly functioning or obstructed catheters should be irrigated (see Irrigation Recommendation 6) or if necessary, replaced; and 4) Collecting bags should always be kept below the level of the bladder and not in touch with the ground. **Catheter Change Interval:** Indwelling catheters should not be changed at arbitrary fixed intervals. Change only when clinically indicated. **Specimen Collection:** If small volumes of fresh urine are needed for examination, the distal end of the catheter, or preferably the sampling port if present, should be cleansed with a disinfectant, and urine then aspirated with a sterile needle and syringe.

**Intravascular Catheters:** An intravenous catheter is a direct line to the blood stream and is a potential source of serious but preventable infection. **Peripheral Cannula:** Document rationale for insertion and continuation. Document date and site of insertion. Review the need daily. Re-site the cannula within 72 hours or earlier if indicated 96 hours if IV filter used. Avoid positioning a cannula near a joint. Inspect the site each shift and report pain, redness or swelling to the doctor. Any bag of IV fluid must not hang for more than 24 hours. Use an IV filter if indicated. **Insertion of Cannula:** An aseptic technique must always be used. A good light is important. Choose the correct size device as per the patient's needs. Avoid touching any part of the cannula that will enter the body. Disinfect the skin before insertion. Secure the cannula to reduce movement. Cover the insertion site with a sterile dressing. **Common Pathogens Associated with Intravascular Devices:** Coagulase Negative Staphylococci. Staphylococcus aureus. Enterococcus spp. E. coli. Enterobacter spp. Pseudomonas aeruginosa. Klebsiella spp. Candida spp. **General Intravascular Catheter Related issues:** *Surveillance:* Monitor catheter sites visually or by palpation through the intact dressing on a regular basis. If patient has tenderness at the insertion site, fever without obvious source, or other manifestations suggesting local or systemic infection, the dressing should be removed to allow thorough examination of the site. Encourage patients to report to their health-care provider any changes in their intravascular catheter site or any new discomfort. *Hand Hygiene:* Observe proper hand washing precautions either by washing hands with conventional antiseptic containing soap & water or with alcohol

based gels or foams. Observe hand hygiene before & after palpating catheter insertion sites, as well as before & after inserting, replacing, accessing, repairing, or dressing an intravascular catheter. Palpation of the insertion site should not be performed after the application of antiseptic, unless aseptic technique is maintained. Use of gloves does not obviate the need for hand-hygiene. Aseptic Technique during Catheter Insertion & Care: Maintain aseptic technique for the insertion & care of intravascular catheters. Wearing clean rather than sterile gloves is acceptable for the insertion of peripheral intravascular catheters if the access site is not touched after the application of skin antiseptics. Sterile gloves should be worn for the insertion of arterial & central catheters. Wear clean or sterile gloves when changing the dressing on intravascular catheters. Catheter Insertion: Do not routinely use arterial or venous cut down procedures as a method to insert catheters. Catheter Site Care: Disinfect skin with an appropriate antiseptic before catheter insertion & during dressing changes. 2% chlorhexidine based preparation, tincture of iodine, an iodophor, or 70% alcohol can be used. Allow the antiseptic to remain on the insertion site & to air dry before catheter insertion. Allow povidone iodine to remain on the skin for at least 2 minutes, or longer if it is not yet dry before insertion. Do not apply organic solvents (acetone & ether) to the skin before insertion of catheters or during dressing changes. Catheter site dressing regimens: Use either sterile gauze or sterile, transparent, semi permeable dressing to cover the catheter site. Tunneled CVC sites that are well healed might not require dressings. If the site is bleeding or oozing, a gauze dressing is preferable to a transparent, semi-permeable dressing. Replace catheter site dressing if the dressing becomes damp, loosened, or visibly soiled. Change dressings at least weekly for adult & adolescent patients depending on the circumstances of the individual patient. Do not use topical antibiotic ointment or creams on insertion sites (except when using dialysis catheters) because of their potential to promote fungal infections & antimicrobial resistance. Do not submerge the catheter under water. Showering should be permitted if precautions can be taken to reduce the likelihood of introducing organisms into the catheter (e.g. if the catheter & connecting device are protected with an impermeable cover during the shower). Selection & Replacement of Intravascular Catheters: Select the catheter, insertion technique, & insertion site with the lowest risk for complications (infectious & noninfectious) for the anticipated type & duration of IV therapy. Promptly remove any intravascular catheter that is no longer essential. Do not routinely replace central venous or arterial catheters solely for the purpose of reducing the incidence of infection. Replace peripheral

venous catheters at least every 72-96 hours in adults to prevent phlebitis. Leave peripheral venous catheters in place in children until IV therapy is completed, unless complications (e.g. phlebitis & infiltration) occur. When adherence to aseptic technique cannot be ensured (i.e. when catheters are inserted during a medical emergency), replace all catheters as soon as possible & after no longer than 48 hours. Use clinical judgment to determine when to replace a catheter that could be a source of infection (e.g. do not routinely replace catheters in patients whose only indication of infection is fever). Do not routinely replace venous catheters in patients who are bacteremic or fungemic if the source of infection is unlikely to be the catheter. Replace any short term CVC if purulence is observed at the insertion site, which indicates infection. Replace all CVC's if the patient is hemodynamically unstable & CRBSI is suspected. Do not use guide wire techniques to replace catheters in patients suspected of having catheter-related infection.

**Replacement of: Administration Sets:** Replace administration sets, including secondary sets & add-on devices, no more frequently than at 72 hour intervals, unless catheter-related infection is suspected or documented. Replace tubing used to administer blood, blood products, or lipid emulsions (those combined with amino acids & glucose in a 3 in 1 admixture or infused separately) within 24 hrs of initiating the infusion. If the solution contains only dextrose & amino acids, the administration set does not need to be replaced more frequently than every 72 hours. Replace tubing used to administer propofol infusions every 6 to 12 hours, depending on its use, per the manufacturer's recommendation. **Needle-less Intravascular Devices:** Change the needle-less components at least as frequently as the administration set. Change caps no more frequently than every 72 hours or according to manufacturer's recommendations. Ensure that all components of the system are compatible to minimize leaks & breaks in the system. Minimize contamination risk by wiping the access port with an appropriate antiseptic & accessing the port only with sterile devices. **Parenteral Fluids:** Complete the infusion of lipid containing solutions (e.g. 3 in 1 solutions) within 24 hours of hanging the solution. Complete the infusion of lipid emulsions alone within 12 hours of hanging the emulsion. If volume considerations require more time, the infusion should be completed within 24 hours. Complete infusions of blood or other blood products within 4 hours of hanging the blood. **Injection ports:** Clean injection ports with 70% alcohol or an iodophor before accessing the system. Cap all stopcocks when not in use. **Respiratory Care:** In addition to the general guidelines that are to be adhered to, the following should also be noted with regard to respiratory care: Mouth flora influences development of

nosocomial pneumonia in ventilated patients. Frequent chlorhexidine mouthwashes minimise the chances of pneumonia. **a.Ventilator:** Sterile water is to be used in nebulizers and humidifiers. This should be replaced once or twice a day. Pneumatic circuits (masks, Y connection and tubes) are to be changed every 24-48 hours. Condensate in tubing should not be drained into the humidifier or airway as they contain large numbers of pathogenic organisms. This should be drained only into water traps. Use disposable circuits if cost permits. Use heat and moisture exchanging filter (HMEF) at Y connection for all patients if feasible and cost permits. Heat and moisture exchanging filter (HMEF) is to be changed every 24- 48 hours. It should not be removed from circuit except at the time of changing. Oxygen masks, venture devices and nebulizer chambers are cleaned carefully and then sterilized. Humidifier domes are **sterilized**. Ambu bags are cleaned thoroughly and are then sent for **Sterilization**. Microbiological surveillance of respiratory therapy equipment is practised in our hospital. **b.Tracheostomy Care / Endotracheal Tube:** Careful attention to post-operative wound care is mandatory. The patient should receive aerosol therapy to prevent dessication of the tracheal and bronchial mucosa or the formation of crusts. The skin around the tracheostomy tube should be cleaned with betadine (Povidone-iodine 5%) every four hours or more frequently, if necessary. In case of metal tracheostomy tubes, the inner cannula should be cleaned every four hours and more often if necessary to prevent the formation of crusts. The inner cannula is cleaned with water, immersed in hydrogen peroxide for 15 minutes and then rinsed with fresh & sterile normal saline. The plastic tracheostomy tubes are removed, another plastic tube is inserted, and the tube is cleaned, with hydrogen peroxide, and rinsed well before reuse. The tracheostomy tape securing the tube should be changed every 24 hours. This tape must be tied securely at all times. The first complete tube change should be performed no earlier than 4-5 days to allow time for the tract to be formed. Subsequent changes should be done weekly or as necessary. Clean technique should be used to change the tracheostomy tube unless there is a medical indication for sterile technique. The obturator should be at the bedside (preferably taped to the head of the bed) to be used if the tracheostomy tube accidentally is dislodged or is removed for any reason. **c.Suctioning of endotracheal / tracheostomy tube:** Employees should be instructed and supervised by trained personnel in proper technique before performing this procedure on their own. Assess the patient using auscultation, ECG, (if available) and vital signs prior to suctioning. **d.Sterile Suctioning:** Wash your hands. Use a catheter with a blunt tip. The wall suction should be set no higher than

120 mm Hg for adults and between 60 and 80 mm Hg for children. Attach the suction catheter to the suction tubing; do not touch the catheter with bare hands (leave it in its protective covering). Put on sterile gloves. The wearing of a mask is also strongly recommended. However, if saline does need to be instilled, 1/2 cc of sterile saline is put into the tracheostomy tube on inspiration only. If on a respirator, pre-oxygenate the patient by connecting the resuscitation bag to the artificial airway and ventilating the patient with three or four deep breaths. A mechanical ventilator on 100% oxygen may also be used by depressing the manual ventilation button three or four times. VIII Insert the catheter gently through the inner cannula until resistance is met. Do not apply suction during insertion. Withdraw the catheter approximately 1 cm and institute suctioning. Carefully withdraw the catheter, rotating it gently between the thumb and forefinger applying intermittent suctioning. Continuous suctioning for longer than 10 seconds may create an unacceptable level of hypoxia. The patient should be given time to rest between suctioning episodes. If possible, this time should be from two to three minutes. If the patient is receiving oxygen or ventilatory support, reapply the oxygen or ventilator for at least two minutes before re-suctioning. Observe for unfavourable reactions such as increased heart rate, hypoxia, arrhythmia, hypotension, cardiac arrest, etc. If oral suctioning is necessary, it should be done after the tracheostomy is suctioned. When suctioning is completed, clear the catheter and tubing of mucous and debris with sterile water or saline. Discard the catheter, water container, and gloves appropriately. Wash hands. The tubing and suction canister should be changed every 24 hours. The canister should be labeled with the date and time when they are changed. If debris adheres to the side of the tubing or the canister, either or both should be changed. The tubing should be secured between suctioning periods so that it will not fall to the bed, floor, etc.

**Protocols For Care Of Oxygenation Accessories:** Oxygen masks/nasal prongs: Must be wiped externally after each use and stored in a plastic cover in the patient's locker. It must be ensured that it is dry. Each set must be used only for one patient and must be kept till the patient is discharged. **Oxygen tubing (connecting tubings):** The tip of the oxygen tubing should be covered with sterile gauze. Empty sterile water plastic ampoules or sterile brown paper if not in use. If not in use these should be changed every 15 days and sent for gas sterilization. If they are not in use, they can be connected to the outlet and kept in the ETO plastic covering to avoid accumulation of dust. **Humidifier bottle (Wolffe's bottle):** Should be washed daily with soap

and water, dried by inverting over the flowmeter and re attached if not in use. This helps to maintain closed system at all times.

**Wound care: Surgical wounds:** Surgical wounds after an elective surgery are inspected on the third post-operative day, or earlier if wound infection is suspected. All personnel doing dressings should wash their hands before the procedure. Ideally, a two member technique is followed. One to open the wound, and one to do the dressing. If two health care workers are not available, then, take off the dressing, wash hands again before applying a new dressing. A clean, dry wound may be left open without any dressing after inspection. If there is any evidence of wound infection, or purulent discharge, then dressings are done daily, using Povidone-iodine to clean the wound and applying dry absorbent dressings.

**Protocols for replacement/change Infusion bottles:** Change every 24 hours. Use small volume bottles (250/100ml) for low volume infusions.

**Handling of collection and transportation of blood samples:**

**Specimens for general investigations:** Lab request forms should be duly filled and sent along with the specimen to the concerned departments. Use gloves and take special care if there are cuts or scratches on the hands. Take care to avoid contamination of hands and surrounding area with the blood. Use disposable / autoclaved syringes and needles. Use 70% ethanol or isopropyl alcohol swabs / sponges for cleaning the site of needle puncture. Use thick dressing pad or adsorbent cotton below the forearm when drawing blood and tourniquet above. Tourniquet must be removed before the needle is withdrawn. Place dry cotton – swab and flex the elbow to keep this in place till bleeding stops. Place used needles and syringes in a puncture resistant container containing disinfectant. Do not recap used needles.

**Specimen for culture:** All the specimens for culture must be taken before institution of antimicrobial therapy. However, therapy should not be delayed unnecessarily. For each specimen, sterile container must be used and spillage must be avoided during collection, catheterization and transportation. The specimen containers should be labeled with the name and hospital number of the patient. specimen from patients with suspected blood borne pathogens or other highly infectious organisms should be placed in plastic bags and should bear the biohazard

label of labeled as UP. Specimen should be incubated and never refrigerated once it is inoculated into the medium.

**Blood:** Draw under strict aseptic conditions. Prepare skin as for surgical procedures. Ensure povidone iodine is applied from the center to the periphery. Allow a contact time of three minutes. Alternatively 70% alcohol (spirit), tincture iodine may be used. After the needle is withdrawn, inject directly into blood culture bottles with another need.

**CSF and body fluids such as ascitic, peritoneal, pleural and synovial:** Collect the specimens in sterile containers with aseptic precautions. 3)

**Ear,nose and throat swabs:** Take two swabs of specimen and place in one sterile tube. It is not necessary to wet the swabs with saline or distilled water.

**Faeces:** Place small quantity of faeces in a sterile,wide mouthed bottle. Close tightly with screw cap.

**Miscellaneous specimens:** Ulcer exudates,swabs from wounds, burns, vagina, cervix etc. do not apply antiseptic solution before taking the specimens. Place 2 swabs of specimen in a sterile test tube. Send additional swabs when multiple examinations are required.

**Pus:** Collect 1-2 ml of pus in a sterile test tube. If this is not possible, take as much as possible on two sterile swabs and place in a sterile test tube. Send sufficient material in separate containers for multiple examinations (e.g. M tuberculosis, anaerobes, fungi).

**Sputum:** Collect an early morning, coughed up specimen after rinsing the mouth with plain water. Place 5-10 ml specimen into sterile screw capped bottle and send to the laboratory within 30 minutes. If there is delay, refrigerate and send within 1 hour.

**Urine:** Midstream clean catch sample is obtained. Suprapubic aspiration is a better method for collecting urine for culture, but is invasive. Use a 21 gauge 2.5” needle (longer than the usual needle) for this purpose.

**Transportation of specimens:** All the specimens should be transported in covered containers. Appropriate transport media should be used wherever needed. Laboratory request forms and the outside of the container should not be soiled with liquid specimens. If soiling has occurred, discard and collect another sample.

**Investigation of outbreak:**

**Investigation of an outbreak:** The occurrence of two or more similar cases relating to place and time is identified as a cluster or an outbreak and needs investigation to discover the route of

transmission of infection, and possible sources of infection in order to apply measures to prevent further spread. If the cases occur in steadily increasing numbers and are separated by an interval approximating the incubation period, the spread of the disease is probably due to person to person spread. On the other hand if a large number of cases occur following a shared exposure e.g an operation, it is termed a common source outbreak, implying a common source for the occurrence of the disease. **I. Epidemiological methods:** The investigation of an outbreak may require expert epidemiological advice on procedures. Formulation of a hypothesis regarding source and spread is made before undertaking microbiological investigations in order that the most appropriate specimens are collected. **Steps to be taken to investigation an outbreak:** **Step 1:** Recognition of the out break. Is there an increase in the number of cases of a particular infection or a rise in prevalence of an organism? Such findings indicate a possible outbreak. Preliminary investigation must be begun by developing a case definition, identifying the site, pathogen and affected population. Determination of the magnitude of the problem and if immediate control measures are required. If so general control measures such as isolation or cohorting of infected cases; strict hand washing and asepsis should be immediately applied. Verification of the diagnosis. Each case should be reviewed to meet the definition. Confirmation that an outbreak exists by comparing the present rate of occurrence with the endemic rate should be made. **Step 2:** The appropriate departments and personnel and the hospital administration should be notified and involved. **Step 3:** Additional cases must be searched for by examining the clinical and microbiological records. Line listings for every case, patient details, place and time of occurrence and infection details should be developed. An epidemic curve based on place and time of occurrence should be developed, the date analyzed, the common features of the cases e.g. age, sex, exposure to various risk factors, underlying diseases etc. should be identified. A hypothesis based on literature search and the features common to the cases; should be formulated to arrive at a hypothesis about suspected causes of the outbreak. Microbiological investigations depending upon the suspected epidemiology of the causative organism should be carried out. This will include (a) microbial culture of cases, carriers and environments (b) epidemiological typing of the isolates to identify clonal relatedness. The hypothesis should be tested by reviewing additional cases in a case control study, cohort study, and microbiological study. **Step 4:** Specific control measures should be implemented as soon as the cause of outbreak of identified. Monitoring for further cases and effectiveness of control measures should be done. A report

should be prepared for presentation to the HICC, departments involved in the outbreak and administration. **II. Immediate control measures:** Control measures should be initiated during the process of investigation. An intensive review of infection control measures should be made and general control measures initiated at once. General measures include: • Strict hand washing; • Intensification of environmental cleaning and hygiene. • Adherence to aseptic protocols, and • Strengthening of disinfection and sterilization. **III. Microbiological Study:** Microbiological study is planned depending upon the known epidemiology of the infection problem. The study is carried out to identify possible sources and routes of transmission. The investigation may include cultures from other body sites of the patient, other patients, staff and environment. Careful selection of specimens to be cultured is essential to obtain meaningful data. **IV. Specific control measures:** Specific control measures are instituted on the basis of nature of agent and characteristics of the high-risk group and the possible sources. These measures may include: Identification and elimination of the contaminated product. Modification of nursing procedures. Identification and treatment of carriers, and Rectification of lapse in technique or procedure. **V. Evaluation of efficacy of control measures:** The efficacy of control measures should be evaluated by a continued followed-up of cases after the outbreak clinically as well as microbiologically. Control measures are effective if cases cease to occur or return to the endemic level. The outbreak should be documented. **VI. Corrective actions to prevent reoccurrence:** Corrective actions are planned and implemented to prevent reoccurrence.

#### **Staff Health Programme:**

**Treatment of personnel:** All personnel with communicable illnesses shall report to their supervisors. Appropriate evaluation and therapy are the responsibility of the clinician. Personnel who develop infections shall be transferred to duties without direct patient contact or released from duty until no longer considered infectious. It is the policy of this hospital that no personnel are penalized. This is to encourage reporting of infection by personnel. Prophylactic therapy is provided to employees following occupational injuries unless employee is already immunized. If serologic tests are required to demonstrate immunity employees shall be assisted at no charge in obtaining these tests. Passive immunization with immune globulin (gamma globulin) shall be considered for the following kinds of exposure: Hepatitis. Varicella zoster. Measles. Rubella. Outbreak of infections within the hospital due to organisms such as salmonella, shigella,

meningococci, MRSA may prompt a search for carriers among personnel as part of control of the outbreak. Work restrictions may be imposed in situations which call for such action. **VI.**

### **Guidelines for Special Situations:**

**Pregnant personnel:** Shall not be assigned to care for patients with known Hepatitis B or who are carriers unless they have received three doses of hepatitis vaccine and have been documented to have anti-HBs antibody. Shall not be assigned to care for patients with rubella, or infants with congenital rubella syndrome or rubella. Will be informed of risks associated with parvovirus and CMV infections, herpes simplex and of infection control procedures to prevent transmission when working with high risk patient groups. Personnel not immune to chicken-pox shall not be assigned to care for patients with chicken pox or herpes zoster (disseminated or localized). Also refer appendix for Post Exposure Prophylaxis Guidelines for Occupational Exposure.

### **Disinfection and Sterilisation:**

**Endoscopes - cleaning and disinfection:** Mechanical cleaning: This is the most important step. Flush the air/water channel for 10-15 seconds to eject any blood or mucus. Aspirate detergent through the biopsy/suction channel to remove gross debris. Use a cleaning brush suitable for the instrument and channel size to brush through the suction channel. Disinfection: The endoscope and all internal channels should be soaked in 2% glutaraldehyde for 20 minutes. Rinsing: Following disinfection, rinse the instrument internally and externally to remove all traces of disinfectant. Drying: Dry the endoscope externally. Flush air through each channel.

### **Sterilisation:**

#### **Autoclave:**

Autoclaving at 121°C for 20 minutes at 15 lbs pressure effectively kills most microorganisms and spores

Working of an autoclave:

Loading.

Closing.

Air removal.

Steam exposure.

Holding.

Exhaust.

Drying.

Unloading.

Autoclaves (gravity displacement) are used in CSSD for instruments, certain plastics linen gauze and other items.

Flash sterilization is used for OT in emergency situations at 132°C at 30lbs for 3 minutes.

### **Housekeeping:**

#### **Housekeeping in wards:**

Wet mopping of the floor with disinfectant 2 times per day in non-critical areas. This has to be done 2-3 times per hour in critical areas.

Mopping after visiting hours is mandatory. Fresh O liquid (2-3% Benzalkonium chloride / Benzyl septol) can be used as disinfectants in the prescribed dilution.

Fresh cleaning solution accurately diluted for each task must be prepared.

Mops should be washed and dried thoroughly after each use.

These must be replaced when worn out.

Brooms should not be used, however, if absolutely necessary care must be taken that sweeping is not done during the time of dressing or meals.

Furniture and fixtures must be wiped daily with disinfectant.

Cleaning solution must be discarded immediately after use in dirty utility area.

It must not be discarded in wash basin or clinical sinks.

Hands must be washed properly before carrying out other duties.

Curtains must be washed every 15 days.

#### **House keeping in ICUs:**

Wet mopping of the floor with disinfectant is done every 2 hours.

Mopping after visiting hours is mandatory.

For cleaning the contaminated material e.g sputumcups, bedpans, urinals etc 5% sodium hypochlorite solution must be used, 75 ml of this solution must be diluted within 12 litres of water. This gives 325 ppm of chlorine.

This should be checked for potency with clstix daily.

For each task, fresh cleaning solution must be prepared.

Separate cups, bedpans, urinals, and shelf must be provided per bed.

General cleaning of walls should be done by fresh-o-liquid.

Curtains must be wiped every 7 days.

Cleaning solutions must be discarded immediately after use in the sluice.

It must not be discarded in wash basins or clinical sinks.

Hands must be washed properly before carrying out other duties.

Clean A/C filters twice weekly.

### **Housekeeping in special risk areas:**

The sister in-charge of the ward must inform the domestic supervisor immediately that special cleaning is required.

The domestic staff responsible must be made sufficiently aware of any risks, they must be adequately protected and must be aware of the procedures.

Separate cleaning equipment should be reserved for these areas.

A plastic bag for disposal of waste, a bowl for damp dusting preferably kept in the cubicle, disinfectant solution if required, disposable wipes and a mop and bucket designated for that area.

### **Procedure for cleaning isolated areas:**

All the equipments required for cleaning must be collected.

On entering the cubicle, hands must be washed and disposable aprons and gloves worn.

Large items must be put in plastic bag.

The floor must be cleaned with damp cloth.

Disinfectant solution if required must be made in the bowl.

Disposable wipes should be moistened in solutions and discarded after each use.

Structural surfaces including door handles must be cleaned first, furnishings must be cleaned starting with locker and finishing with wash basin and sink.

Gloves and plastic aprons should be discarded in the plastic bag after single use.

Hands must be washed and dried.

Sealed bags should be taken out of cubicle.

Buckets should be emptied and returned to the storage area.

If cleaning water is to be disposed in the cubicle some solution must be preserved to reclean the sink or toilet.

Otherwise cleaning water must be discarded in sluice.

### **House Keeping In The Operation Theatre:**

Theatre complex should be absolutely clean at all items.

Dust should not accumulate at any region in the theatre.

Soap solution is recommended for cleaning floors and other surfaces.

Operating rooms are cleaned daily and the entire theatre complex is cleaned thoroughly once a week.

### **Before the start of the 1<sup>st</sup> case:**

Wipe all equipment, furniture, room lights, suction points, OT table, surgical light reflectors, other light fittings, slabs etc with soap solution.

This should be completed at least one hour before the start of surgery.

### **Linen & gloves:**

Gather all soiled linen and towels in the receptacles provided.

Take them to the service corridor (behind the theatre) and place them in trolleys to be taken for sorting.

The dirty linen is then sent to the laundry.

Use gloves while handling dirty linen.

### **Instruments:**

Used instruments are cleaned immediately by the scrub nurse and the attender.

Reusable sharps are decontaminated in Lysol / hypochlorite and then washed in the room adjacent to the respective OR by scrubbing with a brush, liquid soap and vim.

They are then sent for sterilization in the CSSD.

After septic cases the instruments are sent in the instrument tray for autoclaving.

Once disinfected, they are taken back to the same instrument cleaning area for a manual wash described earlier.

They are then packed and re-autoclaved before use.

### **OT Environment:**

Wipe used equipment, furniture, OR table etc., with detergent and water.

If there is a blood spill, disinfect with sodium hypochlorite before wiping.

Empty and clean suction bottles and tubing with disinfectant.

**After the last case:**

The same procedures as mentioned above are followed and in addition the following are carried out.

Wipe over head lights, cabinets, waste receptables, equipment, furniture with ecoshield.

Wash floor and wet mop with liquid soap and then remove water and wet mop with Bacilloflor solution.

Clean the storage shelves scrub & clean sluice room.

**Weekly cleaning procedure:**

Remove all portable equipment.

Damp wipe lights and other fixtures with detergent.

Clean doors, hinges, facings, glass inserts and rinse with a cloth moistened with detergent.

Wipe down walls with clean cloth mop with detergent.

Scrub floor using detergent and water or Bacilloflor.

Stainless steel surfaces – clean with detergent, rinse & clean with warm water.

Replace portable equipment.

Clean wheel castors by rolling across toweling saturated with detergent.

Wash (clean) and dry all furniture and equipment (OT table, suction holders, foot & sitting stools, Mayo stands, IV poles, basin stands, X-ray view boxes, hamper stands, all tables in the room, holes to oxygen tank, kick buckets and holder, and wall cupboards).

After washing floors, allow disinfectant solution to remain on the floor for 5 minutes to ensure destruction of bacteria (Bacilloflor).

**Maintenance and Repairs:**

Machinery and equipment should be checked, cleaned and repaired routinely.

Urgent repairs should be carried out at the end of the days list.

Air conditioners and suction points should be checked, cleaned and repaired on a weekly basis.

Preventive maintenance on all theatre equipment to be carried out weekly and major work to be done at least once every year.

**Cleaning & Disinfection of Operation Theatres, Laboratory & Critical Care Areas:**

**Recommended Cleaning Schedule:** The recommended cleaning schedule includes:

Immediately prior to the commencement of an operative procedure the environment should be visually inspected for cleanliness and appropriate action to be taken. Spot cleaning of blood

substances should be undertaken as soon as practicable with an effective decontaminant.

Cleaning of contaminated furniture, equipment, floors and walls. At the conclusion of the day's operative schedule, operating rooms, anesthetic rooms, catheterization lab, scrub/utility areas, recovery rooms and corridors, furnishings, fixtures, fittings, flows and face plates of vent should be cleaned.

**Cleaning:**

**Daily:** Floors, bench tops and horizontal surfaces, furniture, equipment, sinks and toilets.

**Areas to be cleaned:** Operating area, preparation room, recovery room.

**Weekly cleaning:** Shelves and desks.

**Half yearly:** Ceilings, walls doors, light fittings, fire and smoke detector.

**Disinfection Practices: All horizontal surfaces:** Soap ,(Write down the disinfectant used and dilution of it)

**Central Sterilization Supply Department:**

**Receiving area:** The staff receives the used sets from the wards/ICU. They will check the sets for the completeness.

**Washing/cleaning area:** The staff will clean the instruments with plain water and in the vibrated cleaner. Disinfection of instruments:-The disinfectant (Incidure ) is used for the disinfection dilution – 10ml to 1 liter of water).

**Packing Area:** Instruments will be separated and kept as the different sets for the different surgeries. Mops, guaze pieces, needle packs, drapes are kept over the instruments in the sets. Personal protective equipment like cap, mask, and gloves are worn by the staff during the preparation of sets. Labeling of the sets. Each set/bin will have the class I indicator to check the sterility. Each load will have the class 6 indicator (Emulating loading indicator).

**Sterilization process:** In the sterilization process, automated sterilizer will undergoes different phases. (Annexure – I).

**Storage area:** The sets are stored in cupboard differently with Labels.

**Issuing Area:** Issues the sets/Bins on request and documents in the register with its load/Batch No. and indicators. Taken the receiver's signature also.

**Validation / Verification: Daily-** Class I Indicator - Every Set/Bin. Class 6 Indicator - Every Batch/Coad. **Weekly:** - Biological Indicator. Bowie Dick Indicator - Bowie Dick is used to check the penetration of steam. **Biological Indicator:** The tube contains a population of

geobacillus theemophillus spores soaked on a strip of paper and it has an growth indicator media of purple color contained in ampule. This should be autoclaved at 121<sup>0</sup>C for at least 30min. Place the biological indicator along with the sets/bins in an appropriate manner & generally it has to be placed in the center of the load. Change from purple to yellow growth indicates a sterilization process failure has occurred. If no color change, result is valid.

**Recall:** If any sterilization process failure has occurred, issued sets/bins brought back to CSSD immediately rectify the process and re-sterile the equipment. Take necessary actions on failure/ complications also.

**Weekly rounds:** The CSSD staff will do the weekly Rounds. Expired dressing sets/bins brought back to CSSD documents its details. Check the instruments, sets, prepares & reesterilizes the sets & kept ready for the next use. Indicators of used sets / bins are entered in format class I Indicator in the wards / ICU'S (Annexure-II).

**Laundry and Linen Management:**

Linen should be washed at 80-90°c over 20 minutes with detergent in the water since this is the most effective way of killing vegetative bacteria. The linen should be steam pressed. Only the linen used in procedures requiring sterile technique should be sterilized. This procedure is done in O.T. Washing of linen is not undertaken in the premises of the hospital. Guidelines are provided for the processing of soiled linen within the hospital premises. **I. Routine Handling of Soiled Linen:** Soiled linen should be handled as little as possible and with minimum agitation to prevent gross microbial contamination of the air and of persons handling the linen. All soiled linen should be bagged or put into carts at the location where it was used; it should not be sorted or pre-rinsed in patient-care areas. Linen soiled with blood or body fluids should be deposited and transported in bags that prevent leakage. Soiled Linen with blood or body fluids, and all linen are soaked in 1% hypochlorite solution for 20minutes before washing. Personnel handling soiled linen should be provided with PPE. **II. Transportation of Clean Linen:** Clean linen should be transported and stored by methods that will ensure its cleanliness. **Laundry process:** Laundry chemicals used in the in-house laundry section. **III. Storage of clean linen:** The Linen is stored in the House keeping department in the Linen Storage Room.

Process of washing	Duration	Detergents used
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Soaking of linen	20mts	Sodium hypo chlorite / liquid bleach
Pre wash	10mts	Plain water
Main wash	30mts	Laundered dent & boost, detergent
Rinse	10mts	Laundered rinse , neutral agent
Soft wash	10mts	Refinol soft , fabric softener

### **Biomedical waste management:**

**Hospital waste management consists of the following steps:** **Segregation** should take place at the source of waste generation. It is important that segregation takes place at source, as it is the person who generates the waste knows best about its nature. A color code is followed which is maintained throughout the hospital. All the patient care areas should have appropriate containers for collecting the waste. The hospital follows the colour codes for segregating waste and disposal as per guidelines; **Black bag:** This encompasses general noninfectious waste, which is sent to IMC for final disposal. It includes: Domestic/kitchen waste. Papers. Packaging. Empty saline bottles, vials and ampoules. **Red bag:** This encompasses the infectious waste, which is incinerated or disinfected and then sent to IMC for final Disposal. The waste includes: Human tissues, organ parts and body parts, placenta. Cytotoxic drug ampoules and vials, discarded or expired drugs. Disposable items like infected IV tubing's. A rubber catheter, Infected IV sets, cannulas, Ryle's tube etc. **Puncture proof containers:** filled with 0.5% sodium hypochlorite is used for disposing sharps like needles, Syringes, scalpels, vials, ampoules and stillest. These are further sent to IMC for final disposal. **Radioactive waste:** It encompassed the syringes and the needles used to administer the radio opaque dye and the radioactive isotopes. The syringes, needles and the isotopes are collected in lead containers till they are free of radioactivity. Then the lead containers are sold as scrap.

### **Needle-stick injury:**

#### **Handing Syringes and Needles:**

DOs: Pass syringes and needles in a tray. Preferably cut it with needle destroyer. Put needle and syringes in 1% Sodium hypochlorite solution. Remove cap of needle near the site of use. Pick up open needle from tray / drum with forceps.

DON'Ts: Never pass on open syringe and needle directly to next person. Do not bend or break used needle with hands. Never test the fineness of the needle's tip before use with bare or gloved hand. Never pick up open needle by hand. Never recap any needle. Never dispose it off by breaking it with hammer / stone.

**Sharps disposal: Definition:** Sharps refer to needles razors, scalpel blades, broken glasses and any other object capable of penetrating the skin. Sharps must never cross hands and must be carried in a tray or dish to the site of disposal. **Needles must never be re-sheathed after use.**

The person using the sharps is responsible for its disposal into the puncture proof container with 1% bleach. The container should be placed in a safe place. The container should not be more than 3/4<sup>th</sup> full and the contents well immersed in the solution. HCP should not attempt to retrieve items once discarded or try to empty out the contents. **Never recap, bend or break disposable needles.**

**Dealing With Sharps Injury:** When sharps injury occurs the following must be done:

**First Aid:** Stop the procedure immediately.

**Contaminated Wound:** encourage bleeding from the skin wound and wash. The injured area with copious soapy water, disinfectant, scrub solution or water.

**Contaminated intact skin:** wash the area with soap and water.

**Contaminated Eyes:** gently rinse the eyes while open with saline or water.

**Contaminated mouth:** spit out any fluid- rinse the mouth with water and spit out again.

**Retention:** if possible of the item and details of its source for identification of possible infection.

**Report Accident:** All occupational exposures must be fully documented in the sentinel event reporting form.

**Risk Assessment:** The factors which should include, nature and extent of the injury / item causing the injury (e.g.: solid or hallow needle)/body substance involved/ volume of the blood / body substances to which employee was exposed.

**Classification of Exposure:**

<p><b>Protective barriers</b> <b>Low Risk</b></p>	<p>Contact with skin with no visible blood (a) Injections (b) Minor wound dressing Gloves</p>
<p><b>Medium Risk</b></p>	<p>Probable contact with blood Splash unlikely</p>

	<ul style="list-style-type: none"> <li>• Vaginal examination,</li> <li>• Insertion or removal of intravenous cannula</li> <li>• Handling of laboratory specimens</li> <li>• Large open wounds dressing</li> <li>• Venipuncture spills of blood</li> </ul> <p>Gloves, Gowns and Aprons</p>
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1.1.1 **Blood Testing (Consent Required):**

<b>Health care worker</b>	<b>Source</b>
1. Hepatitis B surface Antigen (HBsAg)	Hepatitis B status
2. HIV I & II Antibodies	HIV status
3. Hepatitis C virus	Hepatitis C status

**NOTE:** The Blood samples for the investigation for source and Health care works are sent for rapid testing. Confirmation of reactive result is not necessary for starting PEP but the process should continue to confirm and confidentiality of the source is maintained. If source unknown epidemiological information is taken into account. The Health care works should have completed Hepatitis B immunization within 3 months of their present Employment.

Post Exposure Prophylaxis – HBV:

**Exposure to HBsAg-Positive Source:** Exposed persons who are known to have responded to vaccination are considered protected and need no further vaccine series. Exposed persons who are in the process of being vaccinated but who have not completed the vaccine series should receive the appropriate dose of HBIG (i.e.0.06 ml/kg) and should complete the vaccine series-doses. Persons who have written documentation of a complete hepatitis B vaccine series and who did not receive post-vaccination testing should receive a single vaccine booster dose.

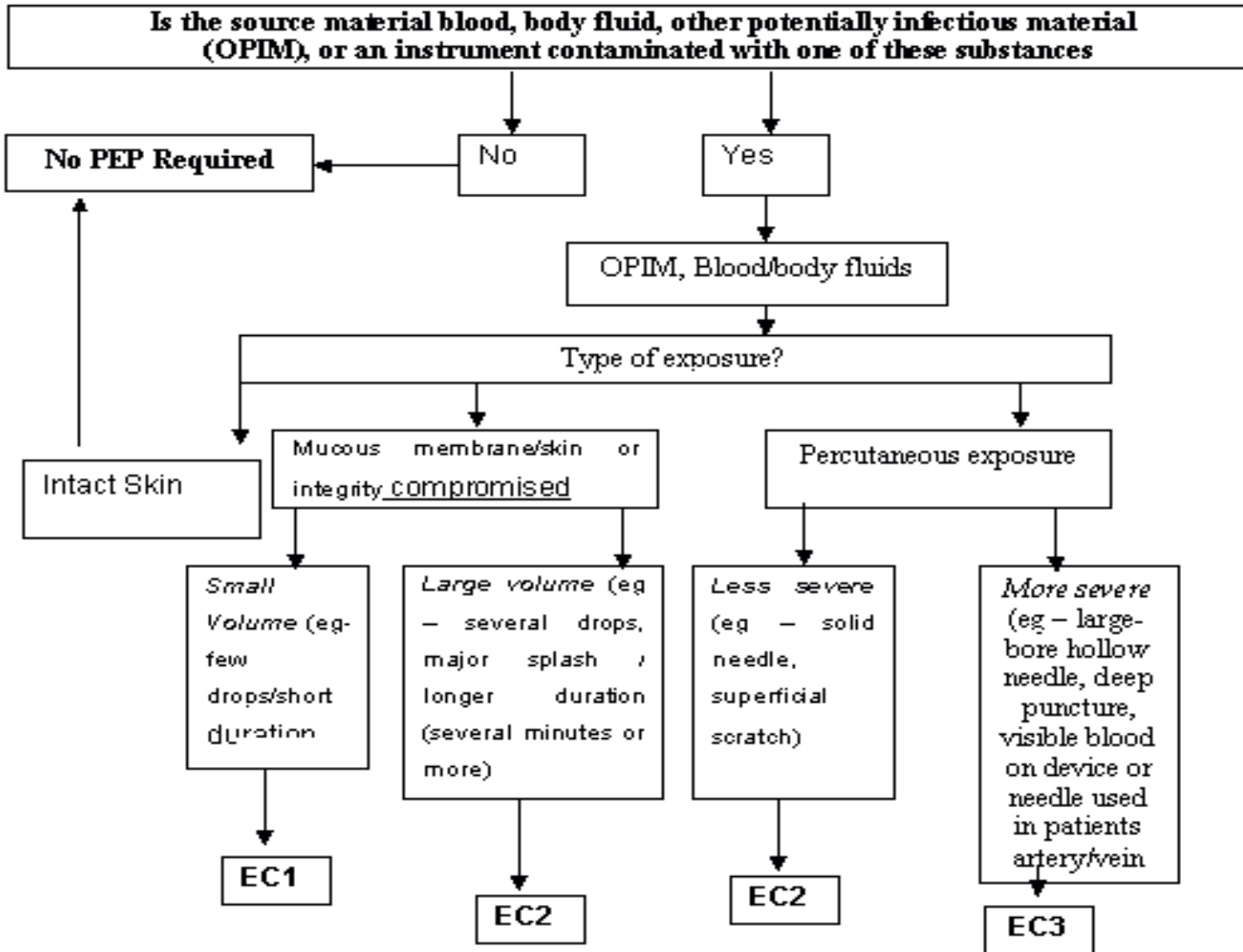
Alternatively, these persons can be managed according to guidelines for management of persons with occupational exposure to blood or body fluids that contain blood. Unvaccinated persons or persons known not to have responded to a complete hepatitis B vaccine series should receive both HBIG and hepatitis vaccine as soon as possible (preferably  $\leq 24$  hours) after a discrete, identifiable exposure to blood or body fluids that contain blood from an HBsAg-positive source. Hepatitis B vaccine should be administered simultaneously with HBIG in a separate injection site, and the vaccine series should be completed by using the age-appropriate vaccine dose and schedule.

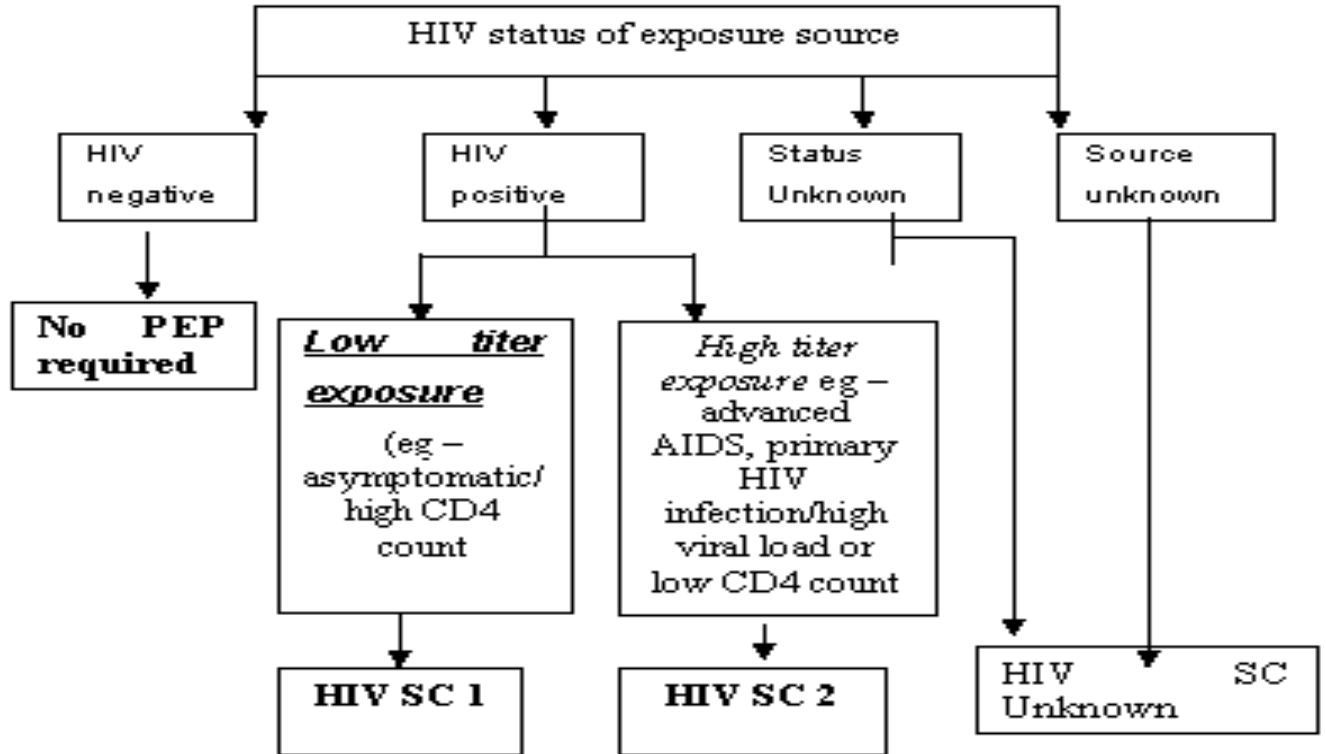
**Exposure to Source with Unknown HBsAg Status:** Unvaccinated persons who have a discrete, identifiable exposure to blood or body fluids containing blood from a source with unknown HBsAg status should receive the hepatitis B vaccine series, with the first dose initiated as soon as possible after exposure (preferably within 24 hours) and the series completed by using the age appropriate dose and schedule. Exposed persons who are not fully vaccinated should complete the vaccine series. Exposed persons with written documentation of a complete hepatitis B vaccine series require no further treatment.

**Guidelines for post exposure hepatitis B Immuno-prophylaxis of unvaccinated persons who have a discrete identifiable exposure to blood or body fluids that contain blood.**

Cause of Exposure		Suggested action
<b>Discrete exposure to an HBsAg*-positive source</b>	Percutaneous (e.g., bite or needle stick) or mucosal exposure to HBsAg-positive blood or body fluids that contain blood	Administer hepatitis B vaccine and hepatitis B immune globulin (HBIG)†
<b>Discrete exposure to a source with unknown HBsAg status</b>	Percutaneous (e.g., bite or needle stick) or mucosal exposure to blood or body fluids that contain blood from a source with unknown HBsAg status	Administer hepatitis B vaccine†

**Follow Up:** HCWs are tested for HBsAg status at 3 and 6 months as a follow up and for the completion of vaccination.





#### Determination of PEP Recommendation:

**Basic regimen:** Zidovudine (AZT) –600 mg in divided doses (300mg/twice a day or 200 mg/thrice a day for 4 weeks). Lamivudine (3TC) – 150 mg twice a day for 4 weeks.

**Expanded regimen: (4 weeks therapy):** Basic regimen + Indinavir – 800 mg/thrice a day, or any other protease Inhibitor.

**Testing, Counseling and Follow up:** The health care provider should be tested for HIV as per the following schedule. Base-line HIV test - at time of exposure. Repeat HIV test - at six weeks following exposure. 2nd repeat HIV test - at twelve weeks following exposure. On all three occasions, HCW must be provided with a pre-test and post-test counseling. HIV testing should be carried out on three ERS (Elisa/ Rapid/ Simple) test kits or antigen preparations. The HCW should be advised to refrain from donating blood, semen / Organ /tissues and abstain from sexual intercourse. In case sexual intercourse is undertaken a Latex condom be used consistently. In addition, women HCW should not breast -feed their infants.

**Duration of PEP:** PEP should be started, as early as possible, after an exposure. It has been seen that PEP started after 72 hours of exposure is of no use and hence is not recommended. The

optimal course of PEP is not unknown, but 4 weeks of drug therapy appears to provide protection against HIV. If the HIV test is found to be positive at anytime within 12 weeks, the HCW should be referred to a physician for treatment.

**Pregnancy and PEP:** Based on limited information, anti-retroviral therapy taken during 2nd and 3rd trimester of pregnancy has not caused serious side effects in mothers or infants. There is very little information on the safety in the 1st trimester. If the HCW is pregnant at the time of exposure to HIV, the designated authority/physician must be consulted about the use of the drugs for PEP.

**Steps to be undertaken by the Infection control officer on receiving information about exposure:** All needle-stick/sharp injuries should be reported to the Infection Control Nurse. A separate register is maintained by the Infection Control nurse. Infection control officers in hospitals have been directed to ensure that PEP drugs are available at all times.

**Post HCV Exposure Management / Prophylaxis (PEP):** Post exposure follow-up of health-care, emergency medical, and public safety workers for hepatitis C virus (HCV) infection. For the source, Baseline testing for Anti-HCV.\* For the person exposed to an HCV-positive source, baseline and follow-up testing including: Baseline testing for Anti-HCV and ALT activity; and Follow-up testing for anti-HCV (e.g., at 4-6 months) and ALT activity. (If earlier diagnosis of HCV infection is desired, testing for HCV RNA may be performed at 4-6 weeks.) No vaccine available. If acute hepatitis develops administer 10mu Interferon, with or without Ribavirin three times a week until ALT normalizes or for 3 months.

**Immunization schedule:** Hepatitis B Virus: 0, 1, 6 months booster dose 1 year after 3<sup>rd</sup> dose. For Health care workers, after (1 series doses), vaccine response status Anti HBs levels should be checked after 1-2 months of 1 series. < 10 IU/ml Repeat 2<sup>nd</sup> series. Again test for Anti HBs after 1-2 months of 2<sup>nd</sup> series. No response and HBsAg Negative counsel to take precautions. HbsAg Positive - Manage

### **Management of Spills:**

**Blood and Body fluid Spillage:** The Spills shall be promptly confined by covering it with absorbent material like paper napkins, toilet paper or newspaper. Do not touch the soiled material by hand. Either use forceps, tongs or gloved hands. Rubber gloves are better than surgical gloves. 1: 10 Sodium Hypochlorite solution / Household Chlorine bleach (5000 – 6150 ppm available chlorine)/Baccillocid special 2% must be poured on and around the spill area for at

least 20 minutes and remove the soiled material. Discard all soiled material into contaminated yellow waste bag as per hospital waste disposal policy. Put 1: 100 dilution Sodium Hypochlorite / Household Chlorine bleach (500 – 615 ppm available chlorine)/Bacillo-floor-0.5% spray over the area. Clean the area with detergent soap and water. Mop dry. Take off gloves, wash and dry hands.

**Chemical spillage:** The method to manage the spill remains same except in place of disinfectant neutralizing chemicals are used. For acidic substances sodium and calcium carbonate and for basic substances citric acid powder or other acid is used.

**Mercury spillage:** Mercury is a very toxic element. Whenever its spillage occurs it should be managed carefully. Remove all gold and silver ornaments worn in hands/forearms. Use two pair of gloves with facemasks and eye protection. Try to gather all the small droplets of mercury with the help of cardboard sheet to make a big drop. Suck this drop using a syringe. Put this drop in a plastic container having 5-10 ml of water and seal it with tape. Send this to the manufacturer to reuse. Keep the syringe in plastic container for future use.

#### **Special Care Units:**

**INTENSIVE CARE UNITS: Design of the Unit** Space around and between beds should be adequate for placement and easy access to equipment and to patients. Good house keeping practices should be followed. This includes regular cleaning of all areas, maintenance, linen and curtain changes etc. Clean floor at least four times a day. **1. Procedures to be followed by**

**health care personnel:** Hand Hygiene: Importance of this cannot be over-emphasized in the ICU setting. Standard Precautions: as appropriate, should be followed by all staff while handling patients or samples (refer to the section on Universal Precautions). Wear plastic aprons and gloves for all procedures. Remove and discard them immediately after each patient. Use gloves for / all patient contact. Wear masks while examining patients with 'uncertain' diagnosis. **2.**

**Instruments:** Although disposable items are ideal, reusable items are often used, for reducing the cost. Separate thermometers should be used for each patient. Trolleys are to be adequately loaded and should be used for bedside procedures. **3. Microbiological monitoring:** Swabs for culture are taken from common dust settling areas and air conditioners once a month. **II.**

**OBSTETRICS AND LABOUR ROOM:** Policies regarding admission of pregnant women with infection. **1. Pregnant women suffering from infections:** Not in Labor: Admit in medical wards / isolation ward, just as one would admit a non-pregnant woman with similar illness. In

Labor: Admit to isolation side of labor room. **2. Indications for admission to isolation side in**

**labor room:** Pregnant women with at least 22 weeks of gestation and in labour with: Hepatitis (A, E or unknown). Diarrhea and Dysentery (severe, watery, with blood and mucous). Known infection with a blood borne pathogen (HBV, HCV & HIV). Suspected or confirmed

communicable disease requiring isolation. **3. Labour Room: a. Housekeeping has to be**

**meticulous:** Clean the floor at least four times in 24 hours. One of these should be with detergent and copious amounts of water. phenol may be used to mop the floor for the remaining times.

Any spill of blood or fluids should be immediately decontaminated with 1% Sodium hypochlorite 10 minutes, mopped dry and then cleaned thoroughly with detergent and water.

Environment and equipment should be maintained dust free. Strip the bed and wipe clean with detergent and water and then once more with bacillol spray after each patient. Wear gloves for this procedure. Use fresh linen for each patient. **b. Personnel:**

Follow universal Precautions with absolute care. Sterile gloves, gown, plastic apron, goggles, mask and impervious footwear (covering dorsum and sole) are recommended while conducting delivery and any other procedure where spill / splash is expected. Wear gloves and plastic apron for performing vaginal examination and preparing parts. Anyone with open wounds skin lesions should not be involved in invasive procedures. Wash hands after each procedure and between patients.

**Hospital Acquired Infection (HAI) Surveillance:**

**Urinary tract infection rate (UTI). Respiratory tract infection rate (VAP). Intravascular device infection rate (CRBSI). Surgical site infection rate (SSI). Catheter related blood**

**stream infections:** The following should be the surveillance criteria to define catheter related blood stream infections. The patient has **a central line in place.** (Midline catheters, non tunneled central venous. Catheters, pulmonary artery catheters, peripherally inserted central venous catheters, tunneled venous catheters, umbilical catheters, peripheral catheters, percutaneously inserted into central veins (sub-clavian, central, internal jugular, or femoral). The patient has been admitted **for > 48 hours** in that health care unit. The patient has any of the following criteria being fulfilled. Recognized **pathogen isolated from blood culture.** Pathogen is not related to infection from another sites. Common skin contaminant isolated from 2 blood cultures drawn on separate occasions and organism is not related to infection at another site. Positive antigen test and organism is not related to infection at another site. Patient  $\leq 12$  months of age and has fever  $> 38^{\circ} \text{C}$ , Hypothermia, Apnoea, Bradycardia. Common skin contaminant isolated

from 2 blood cultures drawn on separate occasions and organism is not related to infection at another site. Positive antigen test and organism is not related to infection at another site.

**Calculation:** All the patients on central lines in a unit are included for surveillance. Data collected by infection control nurse with above criteria fulfilled. End of month add all the catheter days for a unit. Number of blood stream infections (BSI) / 1000 catheter days = (Number of BSI / Total number of catheter days) X 1000.

**Ventilator associated Pneumonia (VAP):** The following criteria need to be fulfilled: The patient should have been on mechanical ventilation (either through an endotracheal tube or through Tracheostomy) in an ICU for > 48 hours to be qualified to be a case under consideration for VAP. Rales or dullness to percussion on physical examination of chest and any of the following: New onset of purulent sputum or change in character of sputum. Same organism isolated from blood culture as from respiratory tract with no other source of infection. Isolation of pathogen from specimen obtained by transtracheal aspirate, bronchial brushing or biopsy. Chest radiographic examination showing new or progressive infiltrate / consolidation, cavitations without carcinoma or tuberculosis or pleural effusion. And any of the following: New onset of purulent sputum or change in character of sputum. Same organism isolated from blood cultures as from respiratory tract with no other obvious source of infection. Isolation of pathogen from specimen obtained by transtracheal aspirate, bronchial brushing, or biopsy. Histopathological evidence of pneumonia. **The number of ventilator days is calculated as for BSI for that unit and the number of VAP** as characterized by the above criteria is also calculated over a month. The denominator is taken as number of VAP / 1000 ventilator days, i.e. number of VAP as defined by the above criteria/number of ventilator days X 1000.

**Catheter Related Urinary Tract Infection (CRUTI):** To be classified for surveillance the following needs to be fulfilled: The patient should have been Foley's or in dwelling catheter in a unit for > 48 hours to be qualified to be a case under consideration for CRUTI. And An indwelling urinary catheter should have been present within 7 days before the urine is cultured. And Patient has history of fever (> 38<sup>0</sup> C) urgency, frequency, dysuria or suprapubic tenderness. And Patient has urine culture of  $\geq 1$  lakh organisms/ml urine with no more than two types of organisms. The number of urinary catheter days is calculated as for BSI for that unit and the number of UTI as characterized by the above criteria is also calculated over a month. The

denominator is taken to be number of UTI / 1000 urinary catheter days. i.e, (Number of UTIs as defined by the above criteria / Total number of urinary catheter days) x 1000.











**Surgical site infection rate (SSI):** Data is collected in a fixed format by the incharges nursing which is collected by the ICNs and analysed by the ICO. SSI involves patients developing infection within 30 days of surgery and is calculated as The number of patients developing SSI after surgery over a month is calculated. The denominator is taken as Number of patients undergoing same surgeries. % of SSI is calculated as: (Number of SSIs as defined by the above criteria / Total number of patients undergoing same surgery) x 100.

**VALUE ADDED COURSE**

**HOSPITAL INFECTION CONTROL**

**Annexure II**

**STUDENT ENROLLMENT LIST (JAN-JUNE 2018)**

S.No.	University no	Name of the student	Year / CRR I	Signature
1.	U16MB351	POOJA KUMARI	II nd	
2.	U16MB352	PRADEEP .T	II nd	
3.	U16MB353	PRASHANT.S	II nd	
4.	U16MB354	PRIYADARSHINI .K	II nd	
5.	U16MB355	PRIYADARSHINI .S	II nd	
6.	U16MB357	PRIYADARSHINI .U	II nd	
7.	U16MB358	PRIYADHARSHINI .V	II nd	
8.	U16MB356	PRIYADHARSHINI.S	II nd	
9.	U16MB359	PRIYANK VATS	II nd	
10.	U16MB360	RADHIKA .C	II nd	
11.	U16MB361	RAJASHREE .M	II nd	
12.	U16MB362	RAJAT TYAGI	II nd	
13.	U16MB363	RAJEEV RANJAN SINGH	II nd	
14.	U16MB364	RAMAPRIYA .M	II nd	
15.	U16MB365	RIYAS AHAMED .M	II nd	
16.	U16MB366	RUCHI YADAV	II nd	
17.	U16MB367	RUPESH RANJAN	II nd	
18.	U16MB368	SAI PAVAN KUMAR .B	II nd	
19.	U16MB369	SAJUTI DEY	II nd	
20.	U16MB370	SAKTHIMALAR .R	II nd	

**RESOURCE PERSON**

**DR JALAKANDAN**

**COORDINATOR**

**Dr S NITHIANANDAM**

DEPARTMENT OF ANAESTHESIOLOGY  
SRI LAKSHMI NARAYANA INSTITUTE  
OF MEDICAL SCIENCES  
OSUDU, KUDLUR, PUDUCHERRY-605 002

Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudalur, Puducherry-605 002

### **Annexure III**

#### **MCQ: HOSPITAL INFECTION CONTROL**

1. The most common means of spreading infections are
  - a. Soiled instruments
  - b. Infected patients
  - c. Human hands
  - d. Domestic animals
2. Which of the following are the factors that increases a patients potential for acquiring a nosocomial infection
  - a. Age
  - b. Nutritional status
  - c. Status
  - d. All the above
3. Hand hygiene is to be used in the following situation by health profession in any institution
  - a. Before causing for patient
  - b. After causing for patient
  - c. when preparing for an invasive procedure
  - d. All the above
4. Growth replication determined by environment
  - a. Bacteria
  - b. Viruses
  - c. Fungi
  - d. Protozoa

5. Which of the following refers to patient who enters a hospital with a known infection

- a. Nosocomial infection
- b. Iatrogenic infection
- c. Community acquired infection
- d. Idiopathic infection

6. Which of the following are the elements needed to transmit an infection

- a. Infectious agent
- b. Reservoir
- c. Means of transmission
- d. All the above

7. Which color bag should you use when disposing the clinical waste

- a. Red
- b. Yellow
- c. Green
- d. Blue

8. Any process that destroy non spore forming containments on inanimate object is

- a. Disinfectant
- b. Antisepsis
- c. Sterilization
- d. Degeneration

9. The time required to kill 90% of the microorganism in a sample at specific temperature is the

- a. Thermal death point
- b. D value
- c. E value
- d. Thermal death temperature

10. Which one the following is bactericidal

- a. Deep freezing
- b. Flue decaying
- c. Ionizing radiation
- d. Membrane filtration

Annexure III

Roopesh Anjan

9/10

**MCQ: HOSPITAL INFECTION CONTROL**

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---

Ruchi yadhav

Annexure III



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**Annexure V**

**Student Feedback Form**

Course Name: **HOSPITAL INFECTION CONTROL**

Subject Code: **ANAES 06**

Name of Student: \_\_\_\_\_ Roll No.: \_\_\_\_\_  
\_\_\_\_\_

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

<b>Sl. NO</b>	<b>Particulars</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>1</b>	Objective of the course is clear					
<b>2</b>	Course contents met with your expectations					
<b>3</b>	Lecturer sequence was well planned					
<b>4</b>	Lectures were clear and easy to understand					
<b>5</b>	Teaching aids were effective					
<b>6</b>	Instructors encourage interaction and were helpful					
<b>7</b>	The level of the course					
<b>8</b>	Overall rating of the course	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

**\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory**

Suggestions if any:

Annexure V

**Student Feedback Form**

Course Name: **HOSPITAL INFECTION CONTROL**

Subject Code: **ANAES 06**

Name of Student:                     POOJAKUMARI                     Roll No.: U16MB361

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear				/	
2	Course contents met with your expectations			/		
3	Lecturer sequence was well planned					/
4	Lectures were clear and easy to understand			/		
5	Teaching aids were effective				/	
6	Instructors encourage interaction and were helpful					/
7	The level of the course			/		
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Overall Good

Annexure V

**Student Feedback Form**

Course Name: **HOSPITAL INFECTION CONTROL**  
Subject Code: **ANAES 06**

Name of Student: PRIVANK WATS Roll No.: U16MB359

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear			/		
2	Course contents met with your expectations				/	
3	Lecturer sequence was well planned					/
4	Lectures were clear and easy to understand			/		
5	Teaching aids were effective				/	
6	Instructors encourage interaction and were helpful					/
7	The level of the course			/		
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

To improve level of the  
course more

Date: 07.05.2018

From  
Dr. Nithianandam  
Professor and Head,  
Department of Anaesthesia  
Sri Lakshmi Narayana Institute of Medical Sciences  
Puducherry

To  
The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Puducherry

**Sub: Completion of value-added course: HOSPITAL INFECTION CONTROL**

Dear Sir,

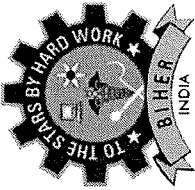
With reference to the subject mentioned above, the department has conducted the value-added course titled: Hospital Infection Control for session January – June 2018 for 20 students. We solicit your kind action to send certificates for all the participants, whose name list is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards,

  
Dr. Nithianandam, S

**Encl: Certificates**

**Photographs**



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research

(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that POOJA KUMARI has actively participated in

the Value Added Course on Hospital Infection Control held during January - June 2018

Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502,

India.

*[Signature]*  
Dr. JALAKANDAN NARAYANA INSTITUTE  
DEPARTMENT OF ANESTHESIOLOGY  
SRI LAKSHMI NARAYANA INSTITUTE  
OF MEDICAL SCIENCES  
PONDICHERY-605 502

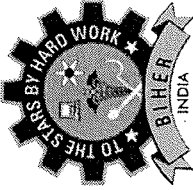
RESOURCE PERSON

*[Signature]*

Dr. NITHIANANDAM S

Coordinator  
Sri Lakshmi Narayana Institute of Medical Sciences  
Pondicherry-605 502

COORDINATOR



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research

(Deemed to be University under section 3 of the UGC Act 1956)

## CERTIFICATE OF MERIT

This is to certify that RAJAT TYAGI has actively participated in

the Value Added Course on Hospital Infection Control held during January - June 2018

Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502,

India.

*[Signature]*  
Dr. JAYAKANDAN  
DEPARTMENT OF ANESTHESIOLOGY  
SRI LAKSHMI NARAYANA INSTITUTE  
OF MEDICAL SCIENCES  
OSDU, KODAYAKKAM, PONDICHERY-605 502

Dr. NITHIANANDAM S

COORDINATOR

Head of Dept. Microbiology,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osdu, Kodayakkam, Pondicherry - 605 502.



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SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES



OSUDU, AGARAM VILLAGE, KUDAPAKKAM POST, PUDUCHERRY-605502.

Date 20.12.17

From  
DR. BALAJI SUBRAMANIYAN,  
Professor and Head,  
Department of dentistry,  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
Bharath Institute of Higher Education and Research,  
Chennai.

To  
The Dean,  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Permission to conduct value-added course: cleft palate**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: **cleft palate** on 4.1.18. We solicit your kind permission for the same.

Kind Regards

DR. BALAJI SUBRAMANIYAN

**FOR THE USE OF DEANS OFFICE**

Names of Committee members for evaluating the course:

The Dean: DR. SUGUMARAN

The HOD: DR. BALAJI SUBRAMANIYAN

The Expert: DR. BALAJI SUBRAMANIYAN

The committee has discussed about the course and is approved.

DEAN  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
OSUDU, AGARAM VILLAGE,  
KUDAPAKKAM POST,  
PUDUCHERRY - 605 502

Dean

Dr. R. BALAJI SUBRAMANIYAN  
Subject Expert  
Associate Professor  
Department of Dentistry  
Sri Lakshmi Narayana  
Institute of Medical Sciences  
Osudu, Agaram, Puducherry.

HOD  
Dr. R. BALAJI SUBRAMANIYAN  
Associate Professor  
Department of Dentistry  
Sri Lakshmi Narayana  
Institute of Medical Sciences  
Osudu, Agaram, Puducherry





OFFICE OF THE DEAN

**Sri Lakshmi Narayana Institute of Medical Sciences**  
OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P -II ) dt. 11/07/2011 ]  
[ Affiliated to Bharath University, Chennai - TN ]

**Circular**

27.12.18

**Sub: Organising Value-added Course: Cleft palate reg ON 4.1.18**

With reference to the above mentioned subject, it is to bring to your notice that SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES, **Bharath Institute of Higher Education and Research**, is organising “\_cleft palate ON 4.1.18\_”. The course content and registration form is enclosed below.”

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before 2.1.18. Applications received after the mentioned date shall not be entertained under any circumstances.

DEAN  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
OSUDU, AGARAM VILLAGE,  
KODARAKKAM POST,  
PUDUCHERRY - 605 502

Dean

Encl: Copy of Course content and Registration form.



## COURSE PROPOSAL

**Course Title: CLEFT PALATE**

**Course Objective: To enlighten students about significance of cleft palate**

**Course Outcome: In depth knowledge regarding cleft palate**

**Course Audience: MBBS STUDENTS**

**Course Coordinator: DR. SUGUMARAN**

**Course Faculties with Qualification and Designation:**

**1. DR.BALAJI SUBRAMAIYAN.R M.D.S & PROFESSOR**

**Course Curriculum/Topics with schedule (Min of 30 hours)**

SINo	Date	Topic	Time	Hours
1	4.1.18	Applied anatomy of palate	4PM-6PM	3 hrs
2	11.1.18	Embryology of maxilla	4pm-7 pm	3hrs
3	24.1.18	Cleft lip	5pm-8pm	3 hrs
4	4.2.18	Cleft alveolus	4pm-7pm	3hrs
5	14.2.18	Cleft palate	5pm-8pm	3 hrs
6	23.2.18	Oral examination of pts with deformities	5pm-8pm	3 hrs
7	4.3.18	Constricted Maxilla	4pm-7pm	3 hrs
8	20.3.18	Concave profile	5pm-8pm	3 hrs
9	1.4.18	Facial asymmetry	5pm-8pm	3 hrs
10	10.4.18	Treatment regime for cleft pts	4pm-7pm	3 hrs
			Total Hours	30

**REFERENCE BOOKS: (Minimum 2)**

**1. PETERSON-FALZONE CLEFT PALATE**

**2.HEISTER'S CLEFT PALATE**



## ABSTRACT

Cleft lip is defined as a congenital deformity that occurs in the primary palate which is located anteriorly to incisive foramen. Its occurrence may be unilateral, bilateral, complete or incomplete. Cleft palate is defined as a congenital abnormality that occurs in the secondary palate (soft and hard palate). Its occurrence may be unilateral, bilateral, complete or incomplete.

Our understanding of cleft palates has come a long way over the last few decades. A better understanding of the long-term consequences of a cleft palate and its effect on speech development challenges surgeons to not only effectively repair the cleft, but to also restore function of the palate for adequate speech. Coordination with speech pathologists is integral for effective management of cleft palate patients, particularly as children begin to develop language. The various challenges and goals of cleft palate management.

Cleft lip and palate are the most common facial deformity. It may involve lip only, lip and palate and palate only. The main reasons of clefting in infants may be either environmental (such as smoking, alcohol, poor nutrition) or genetic factors (such as familial factors and chromosomes). A number of specialists involves in treatment of clefting and decides the best treatment plan depending on the site of defect and age of the infant.

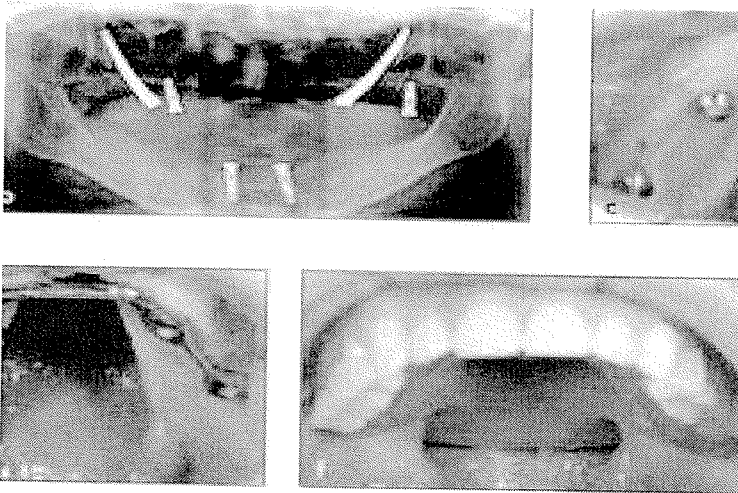


## CLEFT PALATE

### Introduction

The cleft lip and palate deformity is a congenital defect of the middle third of the face, consisting of fissures of the upper lip and or palate. The patient with clefts of the primary and secondary palate presents a complex biologic, sociologic, and psychologic problems. For the effective treatment of the cleft palate patients, there should be coordinating efforts of numerous specialists from the medical, dental and speech pathology departments.

Prosthetic need will vary with each patient from presurgical orthopedic appliances, speech aids, single tooth replacements, multiple tooth replacements, complete dentures with speech aid and prosthetic replacement of the missing facial units.



## CLEFT PALATE

Is defined as a congenital fissure or elongated opening in the soft and/or hard palate Or An opening in hard and/or soft palate due to improper union of the maxillary process and median nasal process during the second month of intra uterine development.

### Aetiology

-heredity

-infections

drugs {phenytoin, barbiturates etc} in first trimester of pregnancy

poor diet

hormonal imbalance

### Classification

-Based on the extent of the defect

Class I :- cleft lip with cleft alveolus (primary palate)

Class II :- cleft of hard and soft palate (secondary palate) class II :- combination of class I and class II

Veau's classification (1922)

*Class I cleft involves only the soft palate*

*Class II :- involve the soft and hard palate but not the alveolus.*

*Class III :- which involves the soft and the hard palate continuing through the alveolus on one side at pre maxillary area.*

*Class IV :- which involves the soft and the hard palates, the cleft continuing through the alveolus on both sides, leaving a free premaxilla.*

## **PROBLEM ASSOCIATED WITH CLEFT PALATE**

1. Feeding problem in infancy due to oronasal communication

Lack of negative pressure necessary for suckling . Nasal regurgitation of food

Feeding time is significantly longer and fatigues both baby and parent

2. Defective speech : Inadequate palate function causes

Defective speech & hypernasality

Patient may recruit abnormal facial and pharyngeal muscle for speech .

Atypical movement pattern of tongue, lips and mandible .

3. Abnormal swallowing patterns :

Inadequate separation between the oral and nasal cavities in order to prevent nasal regurgitation .

4. Recurrent middle ear infections : Due to velopharyngeal deficiency , middle ear infections are common in cleft palate patients.

5. Abnormal tongue & Jaw – position : Medial –position of the maxillary segments forces the tongue and jaw to assume a lower position . Abnormal position of the tongue below the teeth stops the vertical development of the maxilla by interfering with normal tooth eruption . There will be compensatory eruption of the mandibular teeth which increases the vertical development and produces an occlusion at highest level than is desirable for aesthetic facial proportions.

6. Protruded pre-maxilla :- seen in bilateral cleft cases . Lip closure is often difficult

7. Associated facial defects : Such as nasal deformity , ear deformity , facial cleft, mid-facial retrusion etc.

9. Dental problems include constricted upper arch and crossbite, missing teeth (Commonly lateral incisor ) supernumerary teeth closed bite, severe malocclusion .10. Socio- psychological,

problems : Most patients will have psychological trauma due to poor speech and aesthetics so treatment should also address psychological needs of patients also .

### **Team approach**

Cleft palate patients presents with a complex biologic, sociologic, and psychologic problems. Best management involves several disciplines, a team approach. Members include.

Pediatrician

Plastic Surgeon

Pedodontist

Otolaryngologist

Speech pathologist

Prosthodontist

Geneticists

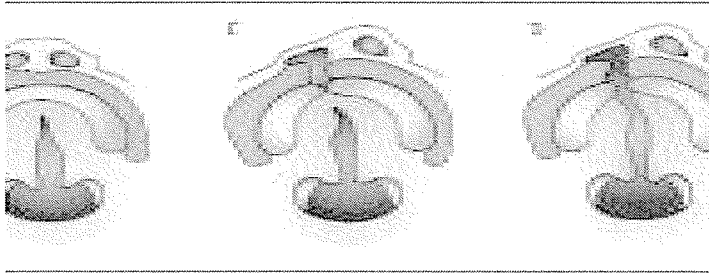
Pediatric psychiatrist and social worker .

Diagnosis in cleft palate treatment

It is based on the assessment of findings on morphology – and function

**Treatment of cleft plate patients** It is suggested that first correction of a cleft palate was by Demosthenes(384-323 B.C),great Greek Orator, who used to visit seashore in search of properly sized pebbles to fill his palatal defect thereby improve his speech.

## Classification



Types of clefts (Mossey et al., 2009) A represents cleft lip and alveolus.

Several authors classified the cleft lip and palate.

Veau (1931) classified the clefts into four main groups:

- Clefts of soft palate.
- Clefts of hard palate.
- Unilateral clefts of the lip, alveolus and palate.
- Bilateral clefts of the lip, alveolus and palate.

According to Koch et al., (1995), Kernahan (1971) suggested a new classification of cleft lip and palate and it gives the shape of Y letter and includes:

- 1 and 4 represent the right and left side of the nasal floor, respectively.
- 2 and 5 represent the right and left side of the lip, respectively.
- 3 and 6 represent the right and left side of the paired alveolar segment, respectively.
- 7 represent the primary palate.
- 8 and 9 represent the secondary palate

Kernahan classification of cleft lip and palate. (Koch et al., 1995).

## Etiology

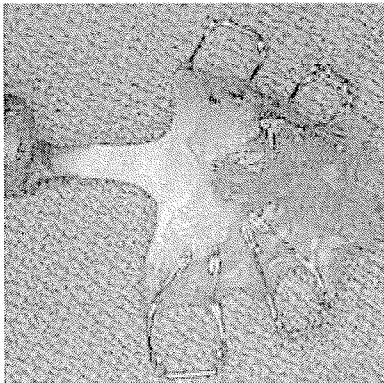
### 1. Environmental factors

#### 1. Smoking and alcohol

Smoking and alcohol are considered as the main causes of clefts where high risk of developing a cleft is found in pregnancies with high alcohol abuse and smoking

### 2. Nutritional factors

Nutritional status plays an essential role in developing cleft lip and palate. Vitamin B6 deficiency was the ma



VALUE ADDED COURSE

**CLEFT PALATE**

**DI-7**

**List of Students Enrolled Sep 2018 – Jan- 2019**

<b>Year MBBS Student</b>		
<b>Sl. No</b>	<b>Name of the Student</b>	<b>Roll No</b>
<b>1</b>	SUWATHI .R	U15MB385
<b>2</b>	SYLVIA MARY. S	U15MB386
<b>3</b>	THAJES KENCY.F	U15MB387
<b>4</b>	THIRUNAVUKARASU .S	U15MB388
<b>5</b>	UTHISH. R	U15MB389
<b>6</b>	VELMURUGAN .D	U15MB390
<b>7</b>	VENKATA KUMAR .R	U15MB391
<b>8</b>	VENKATESH. G	U15MB392


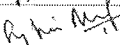


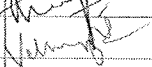



**DR.BALAJI SUBRAMANIYAN**  
**RESOURCE PERSON**

**DR.JAYALAKSHMI**  
**COORDINATOR**



Bharath Institute of Higher Education and Research  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES

Participant list of Value added course: CLEFT PALATE

Sl.No	Reg.No	Name of the candidate	Signature
1	U15MB385	SUWATHI .R	
2	U15MB386	SYLVIA MARY. S	
3	U15MB387	THAJES KENCY.F	
4	U15MB388	THIRUNAVUKARASU .S	
5	U15MB389	UTHISH. R	
6	U15MB390	VELMURUGAN .D	
7	U15MB391	VENKATA KUMAR .R	
8	U15MB392	VENKATESH. G	





**SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH**

**CLEFT PALATE**

and DI 7

**QUESTIONS**

**Course Code: DI 7**

**I. ANSWER ALL THE QUESTIONS**

1. Cleft lip/Cleft alveolus ?
2. Pre maxillary excess?
3. Anterior collapse?
4. Retrognathic maxilla?
5. Pierre - Robin syndrome?



Name: YUTHISH R.  
Roll NO: 015413329

## Cleft palate

1. Cleft palate is a type of clefting congenital deformity caused by abnormal facial development during gestation.

• A cleft is a fissure or opening.

- Clefts can also affect other parts of the face such as eyes, ears, nose, cheeks, and forehead.

### Primary palate:

During the fifth week the primary palate forms by the growth & fusion of the medial nasal, lateral nasal and maxillary processes.

### Secondary palate:

During the 8th week two shelf-like outgrowths from the maxillary swellings form the secondary palate.

The 2 palatal shelves interfuse vertically  
position because of the interseptal layer.

### Classification

- Group I (A)

Defect of the soft palate alone.

- Group II (B)

Defects involving the hard and soft palate

(Not extending anterior to the alveolar ridge.)

- Group III (C)

Defect involving the palate through to the alveolar ridge.

- Group IV (D)

Complete bi-lateral clefts.

### Complications:

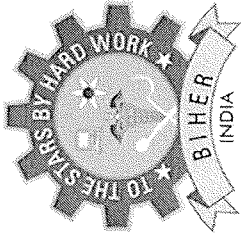
- Feeding difficulties

- Ear Infection and hearing loss

- Dental problem

- Speech difficulties

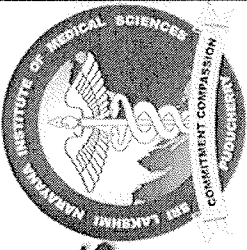
- Psychological challenges.



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research

(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that THIRUNAVUKARASU.S has actively participated in the

Value Added Course on *CLEFT PALATE* held during SEP 2018– JAN-2019 Organized by Sri

Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr. Balaji

RESOURCE PERSON

Dr. Jayalakshmi

COORDINATOR



## Student Feedback Form

Course Name: CLEFT PALATE

Subject Code: DI-7

Name of Student: Venkatesh Kumar, R Roll No.: U15MB391

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear			✓		
2	Course contents met with your expectations			✓		
3	Lecturer sequence was well planned				✓	
4	Lectures were clear and easy to understand				✓	
5	Teaching aids were effective			✓		
6	Instructors encourage interaction and were helpful			✓		
7	The level of the course			✓		
8	Overall rating of the course	1	2	✓3	4	5

\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Date: 20.12.17

  
Signature



## COURSE COMPLETION

Date 11.4.2018

From  
DR. BALAJI SUBRAMANIYAN.R  
Department of dentistry  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
Bharath Institute of Higher Education and Research,  
Chennai.

Through Proper Channel

To  
The Dean,  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
Bharath Institute of Higher Education and Research,  
Chennai.

### Sub: Completion of value-added course: CLEFT PALATE

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: **CLEFT PALATE** on 10.4.18. We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards



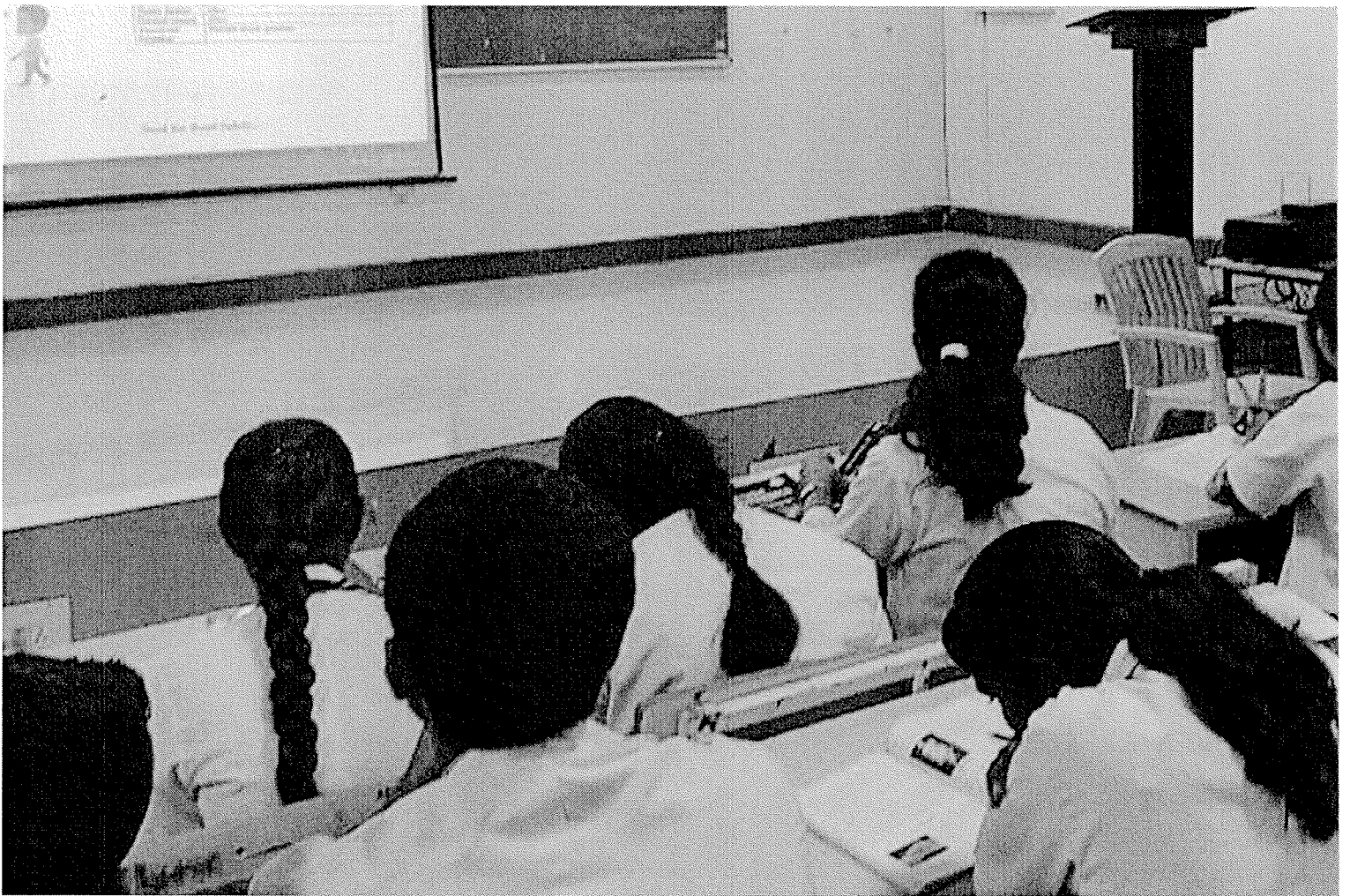
DR. BALAJI SUBRAMANIYAN

Dr. BALAJI SUBRAMANIYAN  
Department of Dentistry  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudam, Madhavaram, Post Colony 605 502.

**Encl: Certificates**

**Photographs**









## Sri Lakshmi Narayana Institute of Medical Sciences

Date 02/01/2018

From  
Dr.K.R.Jothikumar,  
Professor and Head,  
otorhinolaryngology,  
SLIMS  
Bharath Institute of Higher Education and Research,  
Puducherry.

To  
The Dean,  
SLIMS  
Bharath Institute of Higher Education and Research,  
Puducherry.

**Sub: Permission to conduct value-added course: : Hands on training on Hearing Evaluation Using Impedance Audiometry reg.**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: Simulation Based Training In Audiology on Jan 2018 to April 2018. We solicit your kind permission for the same.

Kind Regards

Dr.K.R. Jothikumar

---

### FOR THE USE OF DEANS OFFICE

Names of Committee members for evaluating the course:

The Dean:

The HOD:

The Expert:

The committee has discussed about the course and is approved.


Dean 

(Sign&Seal)

**DEAN**  
Prof.K.BALAGURUNATHAN,M.S  
(General surgeon)  
SRI LAKSHMI NARAYANA  
INSTITUTE OF MEDICAL SCIENCES  
OSUDU PONDICHERRY

  
Dr. R. VENKATARAMANAN, M.S.  
Reg. No: 72549  
Professor ENT  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502.

Subject expert  
(Sign & Seal)

  
**Seal & Signature of the HOD**  
**PROFESSOR & HOD**  
**DEPARTMENT OF E.N.T**  
Sri Lakshmi Narayana Institute Of Medical Sciences  
PONDICHERRY - 605 502



OFFICE OF THE DEAN

## Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P-II ) dt. 11/07/2011 ]

[ Affiliated to Bharath University, Chennai - TN ]

**Ref. No. SLIMS/Dean Off/VAC/024**

**Date:03/01/18**

**From**

The Dean  
Sri Lakshmi Narayana Institute of Medical sciences,  
Pondicherry – 605502

**To**

The Registrar,  
Bharath Institute of Higher Education and Research,  
Chennai - 600073.

Respected Sir

**Sub:** Request for permission and approval of Syllabus for certificate course (Value Added course) for the academic year 2017-18 - Reg  
**Ref:** Requesting letter received from Departments  
\*\*\*\*\*

With reference to the above, herewith forwarding the proposed list of Value-added courses for necessary permission and approval of syllabus to conduct the same.

This is for your kind information and needful action.

Thankingyou

Yours faithfully

[DEAN]

**DEAN**  
Prof.K.BALAGURUNATHAN,M.S  
(General surgeon)  
SRI LAKSHMI NARAYANA  
INSTITUTE OF MEDICAL SCIENCES  
OSUDU PONDICHERRY

**Encl's:**

1. Requesting letter received from department
2. Syllabus of thecourse
3. Details of faculty handlingcourse

**Sri Lakshmi Narayana Institute of Medical Sciences,  
Puducherry**

**VALUE ADDED COURSE : Hands on training on Hearing Evaluation Using  
Impedance Audiometry**

**COURSE CO-ORDINATOR DETAILS**

**Faculty Name:** Dr. K.Venkataramanan

**Email ID:**entslims@gmail.com



# Bharath

INSTITUTE OF HIGHER EDUCATION AND RESEARCH  
(Declared as Deemed - to - be - University under section 3 of UGC Act 1956)

**Ref. No. BHIER/ VAC/B-02**

**Date:05.01.2018**

**From**

The Registrar,  
Bharath Institute of Higher Education and Research,  
Chennai - 600073.

**To**

The Dean  
Sri Lakshmi Narayana Institute of Medical sciences,  
Pondicherry – 605502

Sir / Madam,

**Sub:** Approval of Syllabus to conduct certificate course (Value Added course) for the academic year 2017-2018 – Reg.

**Ref:** Ref. No. SLIMS/Dean Off/VAC /024 Dated: 03.01.2018

\*\*\*\*\*

With reference to the above, it is to inform that the proposal submitted to conduct Value Added Course has been accepted and approved by BIHER, council meeting. List of the VAC are mentioned below for the academic year 2017– 2018. The abstract of the VAC course completion detail should be submitted to the Registrar office.

Thanking you

Yours faithfully



REGISTRAR



OFFICE OF THE DEAN

## **Sri Lakshmi Narayana Institute of Medical Sciences**

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P-II ) dt. 11/07/2011 ]  
[ Affiliated to Bharath University, Chennai - TN ]

### **Circular**

07/01/2018

**Sub: Organising Value-added Course:** Hands on training on Hearing Evaluation Using Impedance Audiometry reg.

With reference to the above mentioned subject, it is to bring to your notice that SLIMS, **Bharath Institute of Higher Education and Research**, is organising “**Hands on training on Hearing Evaluation Using Impedance Audiometry**”. The course content and registration form is enclosed below.

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before 15/01/2017. Applications received after the mentioned date shall not be entertained under any circumstances.

DEAN

**DEAN**  
Prof.K.BALAGURUNATHAN, M.S  
(General surgeon)  
SRI LAKSHMI NARAYANA  
INSTITUTE OF MEDICAL SCIENCES  
OSUDU PONDICHERRY

Encl: Copy of Course content

## VALUE ADDED COURSE

### 1. Name of the programme & Code

Hands on training on Hearing Evaluation Using Impedance Audiometry–  
A value added course for the medical students.  
& ENT 06

### 2. Duration & Period

30 hrs & Jan 2018-April 2018

### 3. Information Brochure and Course Content of Value Added Courses

*Enclosed as Annexure- I*

### 4. List of students enrolled

*Enclosed as Annexure- II*

### 5. Assessment procedures:

Pre test and post test which includes 10 mcqs - *Enclosed as Annexure- III*

### 6. Certificate model

*Enclosed as Annexure- IV*

### 7. No. of times offered during the same year:

1 time Jan 2018- April 2018

### 8. Year of discontinuation:2018

### 9. Summary report of each program year-wise

Value Added Course- Jan 2018- April 2018					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	ENT 06	Hands on training on Hearing Evaluation Using Impedance Audiometry	1.Dr.Venkataramanm 2. Dr. Sreedhar.B 3.Dr. kalaiarasi.R	3 <sup>rd</sup> year MBBS students	15 students & 2018


### 10. Course FeedBack

*Enclosed as Annexure- V*



**RESOURCEPERSON**

1. Dr.K.R.Jothikumar
2. Dr.B.Sreedhar



**COORDINATOR**

**Dr.K.Venkataramanan**

## **COURSE PROPOSAL**

### **1. NAME OF THE PROGRAMME**

Hands on training on Hearing Evaluation Using Impedance Audiometry– A value added course for the medical students.

### **2. AIM**

To provide hands on training to the students on Hearing Evaluation Using Impedance Audiometry

### **3. OBJECTIVES**

a) To teach the students how to use Impedance audiometry for evaluation of hearing and interpretation of the graph pattern

### **4. METHODOLOGY**

Students who are interested in participating in value added course are enrolled and the course is conducted for them during the non college hours for a period of 30 hours from Jan 2017 – June 2017 . This course is conducted every 6 months.

**Course Audience: 3<sup>rd</sup> year MBBS students**

**Course Coordinator: Dr.K.Venkataramanan**

**Course Faculties with Qualification and Designation:****1.Dr.K.R. jothikumar****2.Dr. Sreedhar.B****3.Dr. Kalaiarasi.R****Schedule followed during the course**

No	Topic	Title	Duration	Date and time
1	Hands on training on Hearing Evaluation Using Impedance Audiometry	Introduction on impedance audiometry	3 hrs	4pm-7pm(20/1/18)
		Interpretation of tympanogram	3 hrs	4pm-7pm(16/1/18)
		Fallacies of tympanometry test	3 hrs	4pm-7pm(13/2/18)
		ET function test, stapedial reflex test and its principle	3 hrs	4pm-7pm(26/2/18)
		Metz recruitment test and acoustic reflex decay test	3 hrs	4pm-7pm(3/3/18),
		Other uses of acoustic reflex test	3 hrs	4pm-7pm(8/3/18)
		Demonstration of impedance audiometry and interpretation of results	6hrs	4pm-6pm(13/3/18),4pm-6pm(18/3/18),4pm-6pm(25/3/18)
		Hands on training on impedance audiometry and DOPS	6hrs	4pm-6pm(29/3/18),4pm-6pm(4/4/18),4pm-6pm(10/4/18)
		TOTAL	30HRS	

REFERENCE BOOKS: 1) SCOTT BROWN 7th edition

2) ANIRBAN BISWAS 2nd edition

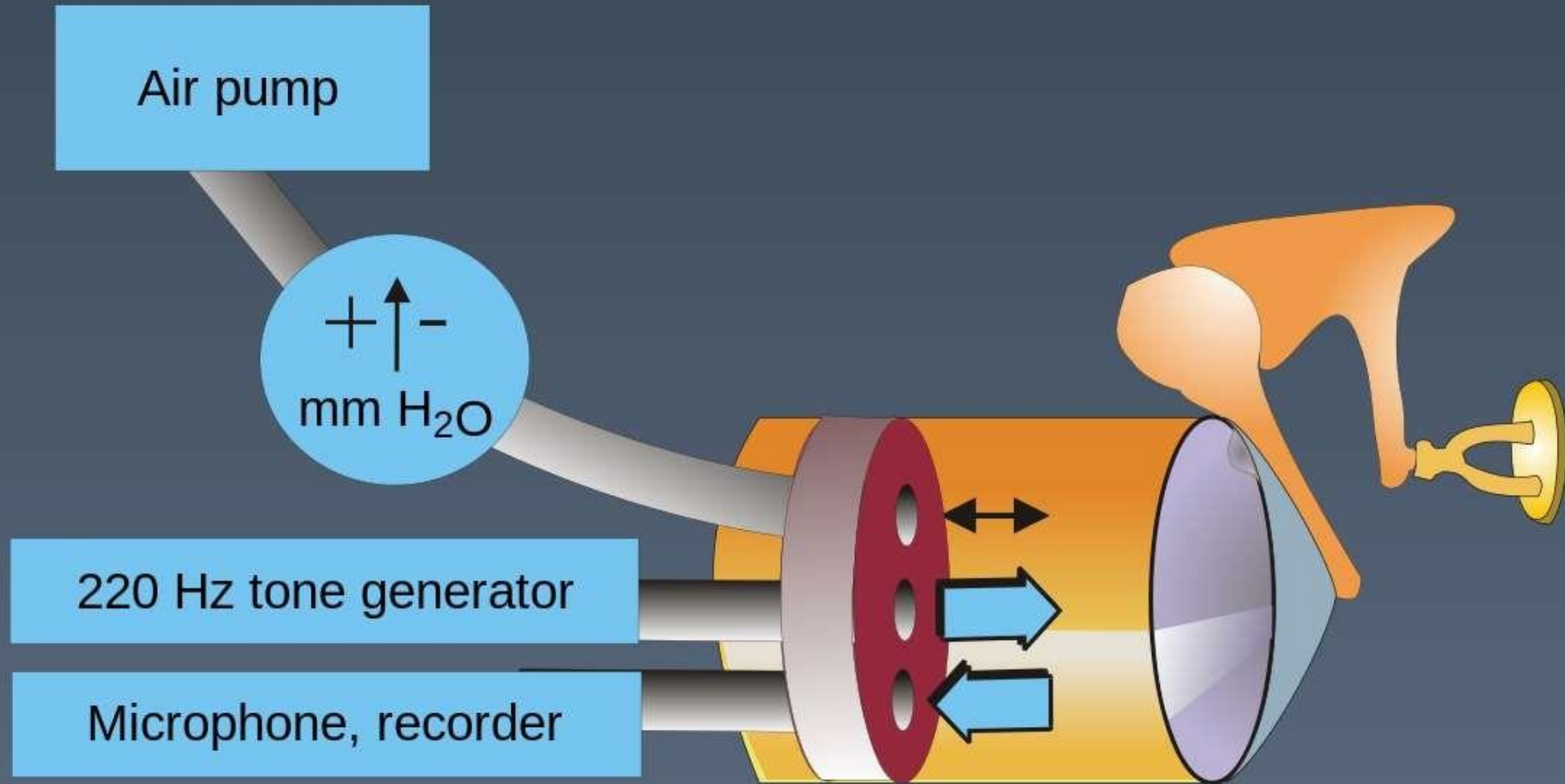


# Tympanometry



- This test is a measure of the condition of middle ear with intact tympanic membrane.
- It measures the impedance (resistance) to the flow of sound energy through middle ear **on pressure changes** in the external auditory canal (EAC).
- Objective test
- It is a type of impedance audiometry.

# Tympanometry



- The 3<sup>rd</sup> channel changes the pressure of EAC from + 200 to -400.
- When the pressure of EAC and middle ear becomes equal , maximum mobility of TM happens & therefore max. flow of acoustic energy (sound) occurs to middle ear.

- In tympanometry we measure 2 factors:
  - Compliance (opposite of resistance/ impedance)
  - Middle ear pressure

## i) Compliance

- It is the ease of mobility of tympanic membrane.
- The less the impedance (resistance), the more is the compliance.

In any ossicular discontinuity, TM mobility increases

In any ossicular fixation or fluid in middle ear, the compliance is decreased.

## ii) Middle ear pressure

- We just keep on changing the pressure of EAC through probe.
- During this process, when the process of EAC matches that of middle ear, d/t resonance, more TM movement occurs.
- For e.g. we found that TM moves max. when pressure of EAC is -200 mm of H<sub>2</sub>O, this indicates that middle ear pressure is also -200mm of H<sub>2</sub>O.

## Significance of middle ear pressure

- The pressure of middle ear is regulated by the Eustachian tube.
- Normal pressure in adult is -50 to +50 mm of H<sub>2</sub>O.
- Normal pressure in children is -150 to +50 mm of H<sub>2</sub>O.
- If the pressure is negative beyond the normal range, it signifies Eustachian tube blockade.

# Cases

1. Reduced compliance, middle ear pressure also negative

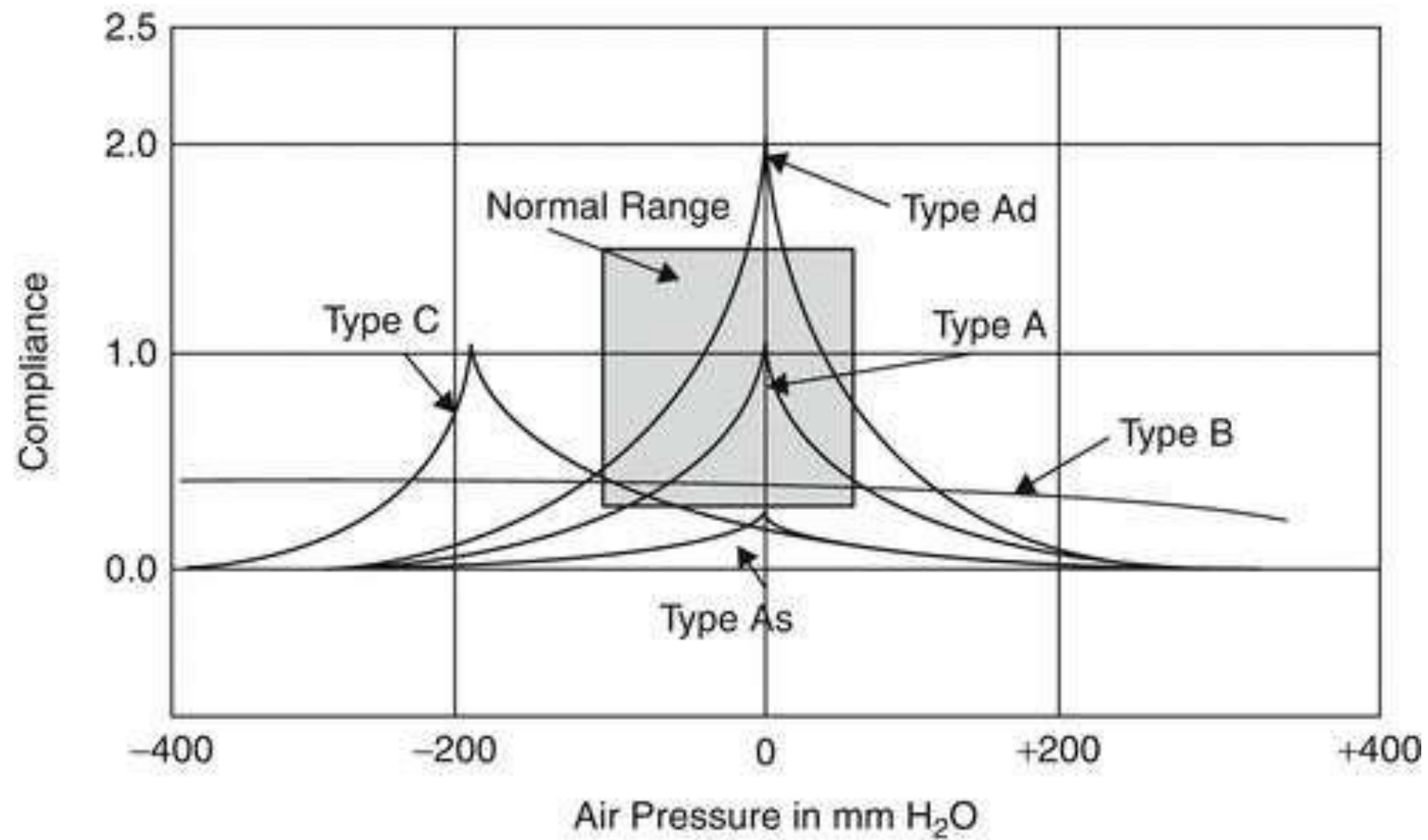
normal



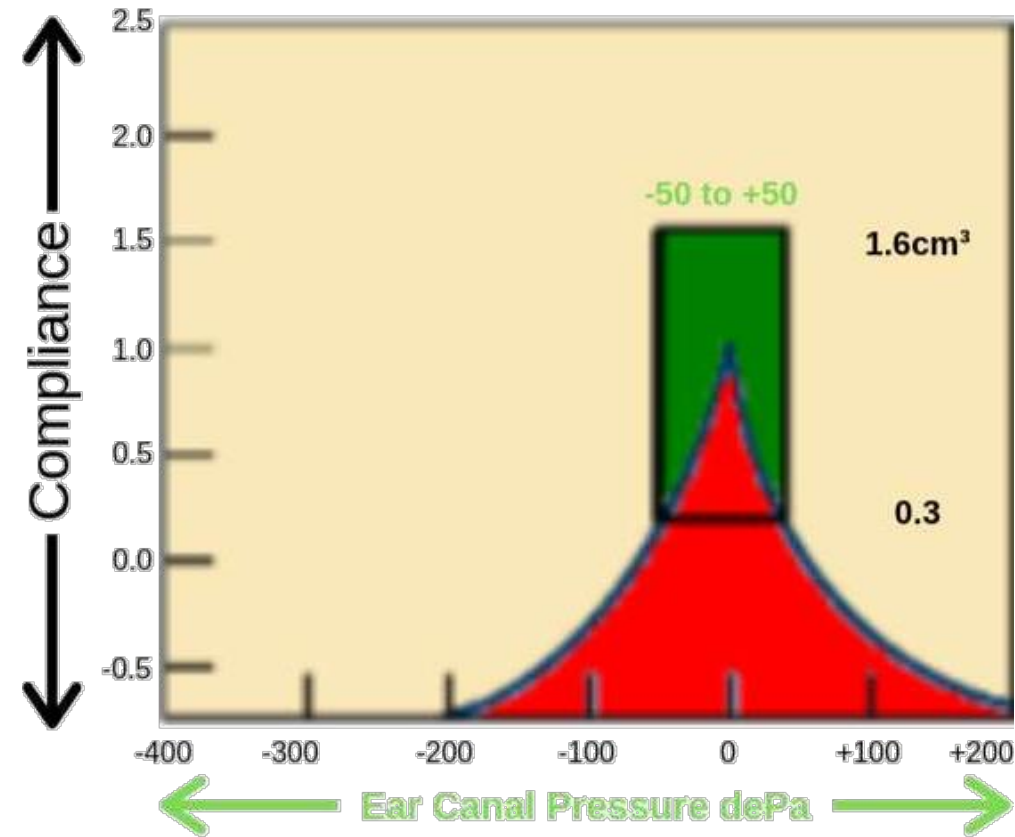
ET is block leading to fluid collection in middle ear,  
e.g. in serous otitis media



ET is normal, reduced compliance is d/t ossicular  
fixity e.g. in otosclerosis



# Type A

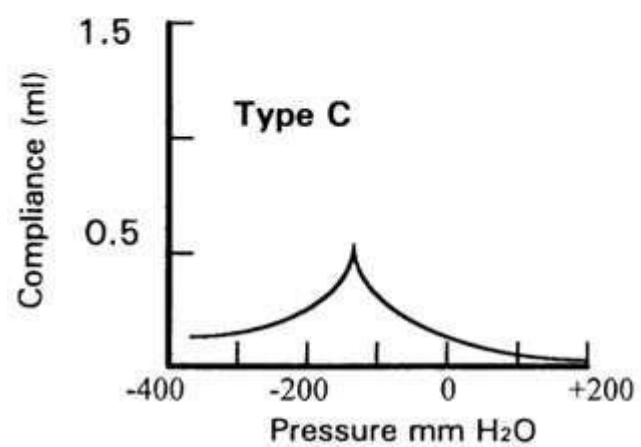
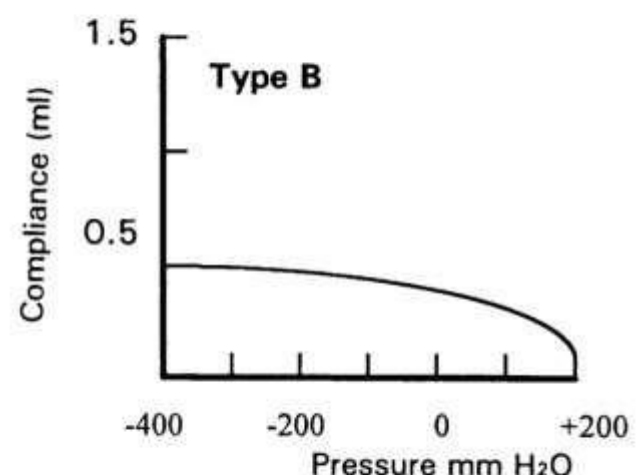
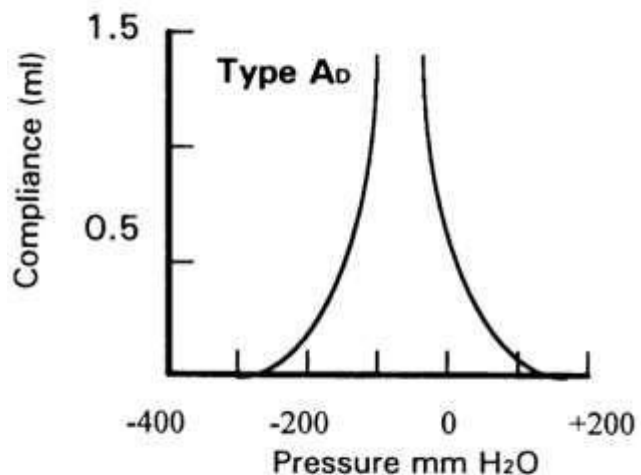
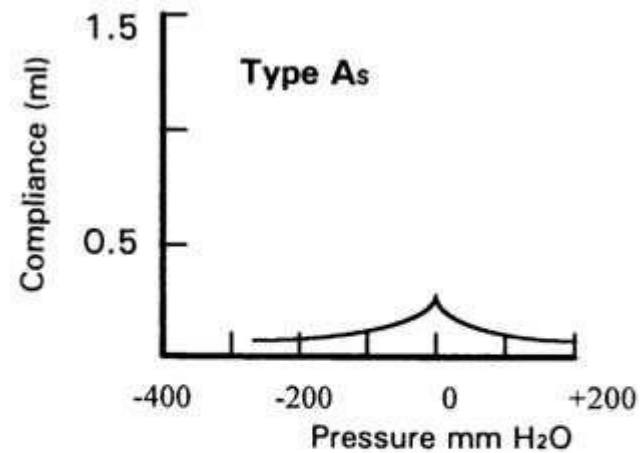
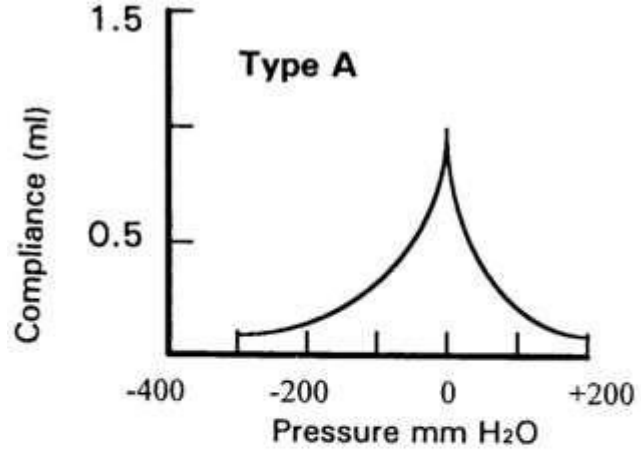


## Normal Tympanogram

**Ear Canal Volume (ECV) 0.6 to 2.5 cm<sup>3</sup>**

**Middle Ear Pressure (MEP) -50 to +50 dePa**

**Admittance/Compliance 0.3 to 1.6cm<sup>3</sup>**



Type	X axis (middle ear pressure)	Y axis (compliance of TM)	Examples
<b>A</b>	Normal (ET function is normal)	Normal (mobility of TM is normal)	-
<b>As (S - Stiffness)</b>	Normal	decrease	Otosclerosis or any ossicular fixation, tumors of middle ear like glomus jugulare
<b>Ad (D - Discontinuity)</b>	Normal	Increased (TM moves excessively)	Ossicular discontinuity, thin & lax TM, Also in post stapedectomy ear.
<b>C (C - closure)</b>	Negative (ET closure which is of short duration)	Normal (since ET closure is of short time, not enough fluid is collected)	Early stage of ET obstruction (closure)
<b>B (B - blocked)</b>	Negative (ET blocked for prolonged period)	Decreased (d/t collection of secretions/fluid in middle ear). So dome shaped curve.	Serous otitis media & adhesive otitis media (sequelae of SOM)

**When the secretions or fluid fill the middle ear cavity completely, leading to no movement of TM, a flat curve results.**

**Annexure 2**  
**Bharath Institute of Higher Education and Research**  
**SLIMS**

1	U15MB250	AARTHI .H
2	U15MB251	ABARNA. M
3	U15MB252	ABINAYA.J
4	U15MB253	ADARSH .S
5	U15MB254	AGILAN .A
6	U15MB255	AKSHAYA .S
7	U15MB256	AKSSHAYA .M.R
8	U15MB257	AMARNATH. S
9	U15MB258	AMUDHESAR .K.M
10	U15MB259	ANANDH.S
11	U15MB260	ARCHITH VIGNESH .B
12	U15MB261	ARJUNBALAJI .A
13	U15MB262	ARUL NIVETHINI V.A
14	U15MB263	ARUL PRINCE. E
15	U15MB265	ARUN PRASAD. K

ANNEXURE 3  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL  
SCIENCES  
PUDUCHERRY

TOPIC: Hands on training on Hearing Evaluation Using Impedance Audiometry (ENT 06)  
STUDENT NAME:  
UNIVERSITY NO:

1. Impedance audiometry is for pathology of  
a. External ear      b. middle ear  
c. inner ear          d. mastoid air cell

2. Flat tympanogram seen in  
a. ossicular discontinuity      b. SOM  
c. otosclerosis                  d. safe CSOM

3. B type tympanogram seen in  
a. SOM                                  b. Otosclerosis  
c. ossicular discontinuity      d. all of the above

4. Impedance audiometry is done using frequency probe of  
a. 226 hz                  b. 550 hz  
c. 440hz                  d. 1000hz

5. Stapedial reflex is mediated by  
a. 5<sup>th</sup> and 7<sup>th</sup> nerves      b. 5<sup>th</sup> and 8<sup>th</sup> nerves  
c. 6<sup>th</sup> and 7<sup>th</sup> nerves      d. 7<sup>th</sup> and 8<sup>th</sup> nerves

6. Which following assess the resistance in middle ear  
a. PTA                  b. impedance audiometry  
c. Caloric test      d. BERA

7. Dome shaped tympanogram is found in  
a. ossicular discontinuity      b. SOM  
c. otosclerosis                  d. middle ear fluid

8. In otogenesis imperfecta the tympanogram is  
a. Flat                  b. non compliance  
c. high compliance      d. low compliance

9. Ad type tympanogram seen in  
a. ossicular discontinuity b. SOM  
c. otosclerosis d. CSOM

10. In otosclerosis the type of tympanogram seen is  
a. type A b. Type AS  
c. Type B d. Type C

PRE TEST

6

6. which following assess the resistance in middle ear

- a. PTA
- b. Impedance audiometry
- c. Caloric test
- d. BERA

7. Dome shaped tympanogram is found in

- a. ossicular discontinuity
- b. SOM
- c. otosclerosis
- d. middle ear fluid

8. In otogenesis imperfecta the tympanogram is

- a. Flat
- b. non compliance
- c. high compliance
- d. low compliance

9. Ad type tympanogram seen in

- a. ossicular discontinuity
- b. SOM
- c. otosclerosis
- d. CSOM

10. In otosclerosis the type of tympanogram seen is

- a. type A
- b. Type AS
- c. Type B
- d. Type C

ANNEXURE 3  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
PUDUCHERRY

TOPIC: Hands on training on Hearing Evaluation Using Impedance Audiometry (ENT 06)

STUDENT NAME: Anandh.S

UNIVERSITY NO: VISMB259.

(4)

1. impedance audiometry is for pathology of

- a. External ear    b. ~~middle ear~~  
c. inner ear      d. mastoid air cell

2. flat tympanogram seen in

- ~~a. ossicular discontinuity~~    b. SOM  
c. otosclerosis                  d. safe CSOM

3. B type tympanogram seen in

- a. SOM                                  b. ~~Otosclerosis~~  
c. ossicular discontinuity    d. all of the above

4. impedance audiometry is done using frequency probe of

- a. 226 hz                  b. 550 hz  
c. 440hz                  d. ~~1000hz~~

5. stapedial reflex is mediated by

- a. 5<sup>th</sup> and 7<sup>th</sup> nerves    b. 5<sup>th</sup> and 8<sup>th</sup> nerves  
c. ~~5<sup>th</sup> and 7<sup>th</sup> nerves~~    d. 7<sup>th</sup> and 8<sup>th</sup> nerves

6. which following assess the resistance in middle ear

- X a. PTA  b. impedance audiometry
- c. Caloric test d. BERA

7. Dome shaped tympanogram is found in

- a. ossicular discontinuity b. SOM
- X c. otosclerosis  d. middle ear fluid

8. In otogenesis imperfecta the tympanogram is

- X a. Flat  b. non compliance
- c. high compliance d. low compliance

9. Ad type tympanogram seen in

- a. ossicular discontinuity b. SOM
- X c. otosclerosis d. CSOM

10. In otosclerosis the type of tympanogram seen is

- a. type A b. Type AS
- c. Type B d. Type C

ANNEXURE 3  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
PUDUCHERRY

TOPIC: Hands on training on Hearing Evaluation Using Impedance Audiometry (ENT 06)

STUDENT NAME: Abarna . M

UNIVERSITY NO: VICMB251

(2)

1. impedance audiometry is for pathology of

- a. External ear    b. ~~middle ear~~  
c. inner ear      d. mastoid air cell

2. flat tympanogram seen in

- ~~a. ossicular discontinuity~~    b. SOM  
c. otosclerosis                  d. safe CSOM

X

3. B type tympanogram seen in

- a. SOM                                  b. Otosclerosis  
c. ossicular discontinuity    d. ~~all of the above~~

X

4. impedance audiometry is done using frequency probe of

- a. 226 hz                  b. 550 hz  
c. 440hz                  d. ~~1000hz~~

X

5. stapedial reflex is mediated by

- a. 5<sup>th</sup> and 7<sup>th</sup> nerves    b. ~~5<sup>th</sup> and 8<sup>th</sup> nerves~~  
c. 6<sup>th</sup> and 7<sup>th</sup> nerves    d. 7<sup>th</sup> and 8<sup>th</sup> nerves

X

POST TEST

6

6. which following assess the resistance in middle ear

- a. PTA
- b. impedance audiometry
- c. Caloric test
- d. BERA

7. Dome shaped tympanogram is found in

- a. ossicular discontinuity
- b. SOM
- c. otosclerosis
- d. middle ear fluid

8. In otogenesis imperfecta the tympanogram is

- a. Flat
- b. non compliance
- c. high compliance
- d. low compliance

9. Ad type tympanogram seen in

- a. ossicular discontinuity
- b. SOM
- c. otosclerosis
- d. CSOM

10. In otosclerosis the type of tympanogram seen is

- a. type A
- b. Type AS
- c. Type B
- d. Type C

9

ANNEXURE 3

SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES

PUDUCHERRY

TOPIC: Hands on training on Hearing Evaluation Using Impedance Audiometry (ENT 06)

STUDENT NAME: Abarna . M .

UNIVERSITY NO: U15MB251.

1. impedance audiometry is for pathology of

- a. External ear     ~~b. middle ear~~  
c. inner ear         d. mastoid air cell

2. flat tympanogram seen in

- ~~a. ossicular discontinuity~~     b. SOM  
c. otosclerosis                     d. safe CSOM

3. B type tympanogram seen in

- a. SOM                                 ~~b. Otosclerosis~~  
c. ossicular discontinuity     d. all of the above

4. impedance audiometry is done using frequency probe of

- ~~a. 226 hz~~                     b. 550 hz  
c. 440hz                         d. 1000hz

5. stapedial reflex is mediated by

- ~~a. 5<sup>th</sup> and 7<sup>th</sup> nerves~~     ~~b. 5<sup>th</sup> and 8<sup>th</sup> nerves~~  
c. 6<sup>th</sup> and 7<sup>th</sup> nerves     d. 7<sup>th</sup> and 8<sup>th</sup> nerves

6. which following assess the resistance in middle ear

- a. PTA
- ~~b. Impedance audiometry~~
- c. Caloric test
- d. BERA

7. Dome shaped tympanogram is found in

- a. ossicular discontinuity
- ~~b. SOM~~
- c. otosclerosis
- d. middle ear fluid

8. In otogenesis imperfecta the tympanogram is

- ~~a. Flat~~
- ~~b. non compliance~~
- c. high compliance
- d. low compliance

9. Ad type tympanogram seen in

- ~~a. ossicular discontinuity~~
- b. SOM
- c. otosclerosis
- d. CSOM

10. In otosclerosis the type of tympanogram seen is

- a. type A
- b. Type AS
- ~~c. Type B~~
- d. Type C

ANNEXURE 3  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
PUDUCHERRY

TOPIC: Hands on training on Hearing Evaluation Using Impedance Audiometry (ENT 06)

STUDENT NAME: Anandh S

UNIVERSITY NO: VISMB259.

1. Impedance audiometry is for pathology of

- a. External ear     ~~b. Middle ear~~
- c. Inner ear         d. mastoid air cell

2. flat tympanogram seen in

- ~~a. ossicular discontinuity~~     b. SOM
- c. otosclerosis                     d. safe CSOM

3. B type tympanogram seen in

- ~~a. SOM~~                                     b. Otosclerosis
- ~~c. ossicular discontinuity~~     d. all of the above

4. Impedance audiometry is done using frequency probe of

- ~~a. 226 hz~~                     b. 550 hz
- c. 440hz                     d. 1000hz

5. stapedial reflex is mediated by

- ~~a. 5<sup>th</sup> and 7<sup>th</sup> nerves~~     b. 5<sup>th</sup> and 8<sup>th</sup> nerves
- c. 6<sup>th</sup> and 7<sup>th</sup> nerves     d. 7<sup>th</sup> and 8<sup>th</sup> nerves

ANNEXURE 4



## Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



**CERTIFICATE OF MERIT**

This is to certify that \_\_\_\_\_ has actively participated in the Value Added Course on Hands on training on Hearing Evaluation Using Impedance Audiometry held during Jan 2018 – April 2018 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

**Dr.K.R. Jothikumar**  
RESOURCE PERSON

**Dr.R.Venkataramanan**  
COORDINATOR



## Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



### CERTIFICATE OF MERIT

This is to certify that Dr.Abinaya.J (U15MB252) has actively participated in the Value Added Course on Hands on training on Hearing Evaluation Using Impedance Audiometry held during Jan 2018 – April 2018 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr.K.R. Jothikumar  
RESOURCE PERSON

Dr.R.Venkataramanan  
COORDINATOR

**Annexure 5**  
**Course/Training Feedback Form**  
**Student Feedback Form**

Course Name: Hands on training on Hearing Evaluation Using Impedance Audiometry

Subject Code: **ENT06**

Name of Student: \_\_\_\_\_ Roll No.: \_\_\_\_\_

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					
2	Course contents met with your expectations					
3	Lecturer sequence was well planned					
4	Lectures were clear and easy to understand					
5	Teaching aids were effective					
6	Instructors encourage interaction and were helpful					
7	The level of the course					
8	Overall rating of the course	1	2	3	4	5

*\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory*

Suggestions if any:

Course/Training Feedback Form

Student Feedback Form

Course Name: Hands on training on Hearing Evaluation Using Impedance Audiometry

Subject Code: ENT06

Name of Student: AMARNATH S Roll No.: V15 MB-257

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear				✓	
2	Course contents met with your expectations				✓	
3	Lecturer sequence was well planned					✓
4	Lectures were clear and easy to understand				✓	
5	Teaching aids were effective				✓	
6	Instructors encourage interaction and were helpful			✓		
7	The level of the course					✓
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

OVERALL THE LECTURES WERE VERY GOOD

Course/Training Feedback Form

Student Feedback Form

Course Name: Hands on training on Hearing Evaluation Using Impedance Audiometry

Subject Code: ENT06

Name of Student: ARUN PRASAD, K Roll No.: V15MB265

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear				✓	
2	Course contents met with your expectations			✓		
3	Lecturer sequence was well planned				✓	
4	Lectures were clear and easy to understand				✓	
5	Teaching aids were effective					✓
6	Instructors encourage interaction and were helpful					✓
7	The level of the course					✓
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

THE COURSE WAS GOOD AND HELPFUL.

ANNEXURE 6

Date : 15/4/2018

From  
Dr.K.R. Jothikumar,  
Dept of Otorhinolaryngology,  
SLIMS  
Bharath Institute of Higher Education and Research,  
Puducherry.

Through Proper Channel

To  
The Dean,  
SLIMS,  
Bharath Institute of Higher Education and Research,  
Puducherry.

**Sub: Completion of value-added course: Hands on training on Hearing Evaluation Using Impedance Audiometry reg.**

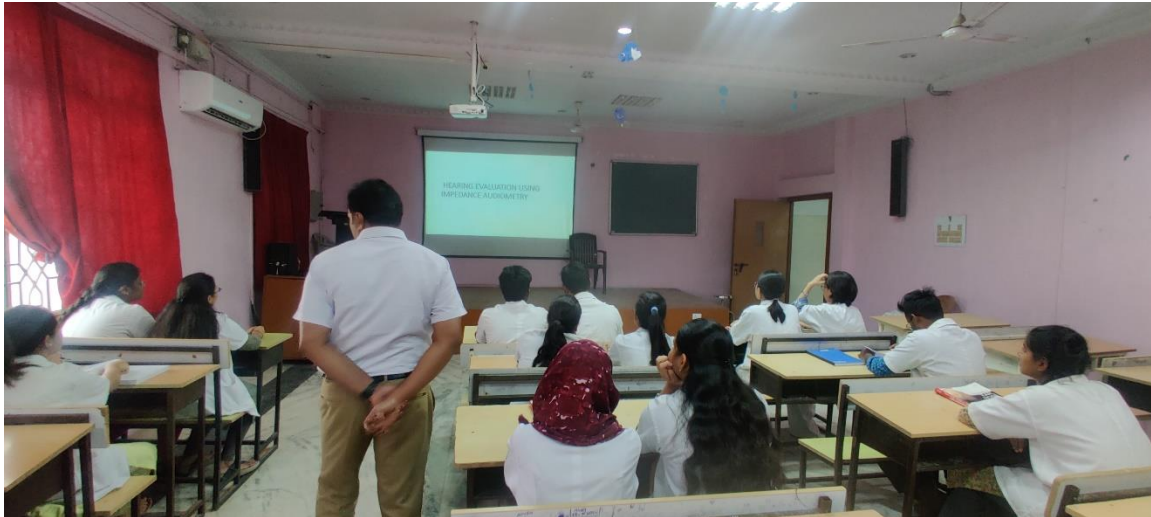
Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: **Hands on training on Hearing Evaluation Using Impedance Audiometry** on Jan 2018 to April 2018. We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.  
Kind Regards

Dr.K.R.Jothikumar  
<HOD Sign and Seal>



ANNEXURE 6











Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



Date: 2<sup>nd</sup> Dec 2017

From  
Dr. S.N. Rathod,  
Professor and Head,  
Department of Forensic Medicine,  
Sri Lakshmi Narayana Institute of Medical Sciences,  
Bharath Institute of Higher Education and Research,  
Chennai.

To  
The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences,  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Permission to conduct value-added course: Professional Responsibility**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: **Professional Responsibility** on January 2018 – June 2018. We solicit your kind permission for the same.

Kind Regards

Dr. S.N. Rathod

---

**FOR THE USE OF DEANS OFFICE**

Names of Committee members for evaluating the course:

The Dean: *Dr. JAYALAKSHMI*

The HOD: *Dr. S.N. RATHOD*

The Expert: *Dr. S.N. RATHOD*

The committee has discussed about the course and is approved.

*[Signature]*  
Dean

(Sign & Seal)

*[Signature]*  
Subject Expert,

*Dr. S.N. RATHOD*  
(Sign & Seal)

Professor & Head  
Dept. of Forensic Medicine  
Sri Lakshmi Narayana Institute of  
Medical Sciences, Puducherry.

HOD

*[Signature]*  
(Sign & Seal)

Professor & Head  
Dept. of Forensic Medicine  
Sri Lakshmi Narayana Institute of  
Medical Sciences, Puducherry.



**Sri Lakshmi Narayana Institute of Medical Sciences**

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



**Circular**

3<sup>rd</sup> Dec 2017

**Sub: Organising Value-added Course: Professional Responsibility reg**

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research**, is organizing **Professional Responsibility**. The course content and registration form is enclosed below.”

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before Dec 15<sup>th</sup> 2017. Applications received after the mentioned date shall not be entertained under any circumstances.

  
Dean

Encl: Copy of Course content and Registration form.



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



## Annexure 2 – Course Proposal

**Course Title:** Professional Responsibility

**Course Objective:**

1. The Problem of Professional Responsibility?
2. Medical Professionalism- Relevance and Impact on Society
3. Professional Responsibility in an Age of Experts and Large Organizations
4. Socially Responsible Physician
5. Hidden Agendas in Teaching and Learning in Medicine
6. Role of Incentives in Promoting Professional Responsibility
7. Educator's Professional Responsibility for Intervention in Family Health Issues
8. Professional Ethics in Community-Engaged Healthcare Training
9. Integrating Professional Services to Close Reciprocal Gaps in Health and Education
10. Professional Responsibility to Collaborative Community

**Course Outcome:** On successful completion of the course the students will have knowledge about the rise of medical negligence and how to handle them.

**Course Audience:** 2<sup>nd</sup> year MBBS student

**Course Coordinator:** Dr. Jayalakshmi

**Course Faculties with Qualification and Designation:**

1. Dr. S.N. Rathod, MBBS, MD (Forensic Medicine), Professor and head

**Course Curriculum/Topics with schedule (Min of 30 hours)**

S.No	Date	Topic	Time	Hours
1.	06-01-18	The Problem of Professional Responsibility?	2 pm to 5 pm	3
2.	20-01-18	Medical Professionalism- Relevance and Impact on Society	2 pm to 5 pm	3
3.	03-02-18	Professional Responsibility in an Age	2 pm to 5 pm	3



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
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## Annexure 3

**Bharath Institute of Higher Education and Research**

**Sri Lakshmi Narayana Institute of Medical Sciences,**

Participant list of Value added course: **Professional Responsibility on January 2018 – June 2018**

Sl.No	Reg. No	Name of the candidate
1.	U17MB371	SHACHI SHASTRI
2.	U17MB372	SHATAVISHA MUKHERJEE
3.	U17MB373	SHEDAM OMKAR MAHADEV
4.	U17MB374	SHIVA VEERANNA HOUSR
5.	U17MB375	SHIVAM ANMOL
6.	U17MB376	SHIVANI BISWAL
7.	U17MB377	SHREYA KUMARI
8.	U17MB378	SHUBHAM KAMDE
9.	U17MB379	SOTALA MANULIKHA CHOWDARI
10.	U17MB380	SOUNDHARYA.K
11.	U17MB381	SOURABH DAS
12.	U17MB382	SRIKAVYA .G
13.	U17MB383	SRISHTI SINGH
14.	U17MB384	SRITAMA SAHA
15.	U17MB385	SUBHASHREE ABHIPSA GIRI
16.	U17MB386	SUMAN KUMAR SAHOO
17.	U17MB387	SURVE BHUSHAN SUNIL
18.	U17MB388	SURVESH PODDAR
19.	U17MB389	SURYAWANSHI SIDDHANT AJAY
20.	U17MB390	SYAMA SHAJEEV



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



## Annexure 5

Date 17-06-2018

From  
Dr. S. N. Rathod  
Forensic Medicine & Toxicology  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

Through Proper Channel

To  
The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

### **Sub: Completion of value-added course: Professional Responsibility**

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled **Professional Responsibility** on Jan 2018 - June 2018. We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.


Kind Regards

  
Dr. Jayalakshmi

Dr. S.N. Rathod

Encl: Certificates

Photographs

  
Dr. S.N. Rathod  
Professor & Head  
Dept. of Forensic Medicine  
Sri Lakshmi Narayana Institute of  
Medical Sciences, Puducherry



**SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH**

**Annexure - IV**

**MEDICAL NEGLIGENCE**

**MCQ EXERCISE**

**Course Code: FMT VAC08**

1. Can doctors be tried under the consumer protection act?
  - a. Yes
  - b. No
2. Can police arrest a doctor on receiving a complaint of medical negligence
  - a. Yes
  - b. No
3. Can a doctor be imprisoned if proved negligent
  - a. Yes
  - b. No
4. Is there a provision available for doctors to be insured from bearing the cost of defence against a negligence
  - a. Yes
  - b. No
5. A doctor who is on off duty is called for an emergency procedure. He is drunk but performs the procedure without any complications. Can he be charged with negligence?
  - a. Yes
  - b. No
6. There are no Act in India to protect doctors from violence
  - a. True
  - b. False
7. If the body is cremated and no autopsy is performed then the doctor can be charged with negligence
  - a. True
  - b. False

## VALUE ADDED COURSE

### 1. Name of the programme & Code

Professional Responsibility & FMT VAC-12

### 2. Duration & Period

30 hrs & January 2018 – June 2018

### 3. Information Brochure and Course Content of Value Added Courses

*Enclosed as Annexure- I*

### 4. List of students enrolled

*Enclosed as Annexure- II*

### 5. Assessment procedures:

Multiple choice questions- *Enclosed as Annexure- III*

### 6. Certificate model

*Enclosed as Annexure- IV*

### 7. No. of times offered during the same year:

(1) January 2018 – June 2018

### 8. Year of discontinuation: 2018

### 9. Summary report of each program year-wise

Value Added Course- January 2018 – June 2018					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	FMT VAC-12	Professional Responsibility	Dr. S.N. Rathod	2 <sup>nd</sup> MBBS	20 (Jan 2018- June 2018)

### 10. Course Feed Back

*Enclosed as Annexure- V*

  
**RESOURCE PERSON**

Professor & Head

Dept. of Forensic Medicine

Jyoti Lakshmi Narayana Institute of  
Medical Sciences, Puducherry

  
**COORDINATOR DEAN**

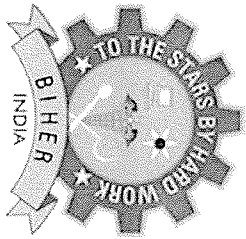
**VALUE ADDED COURSE****Professional Responsibility and FMT VAC12****List of Students Enrolled Jan 2018 – June 2018**

<b>2<sup>nd</sup> Year MBBS Student</b>		
<b>Sl. No</b>	<b>Roll No.</b>	<b>Name of the student</b>
1	U17MB371	SHACHI SHASTRI
2	U17MB372	SHATAVISHA MUKHERJEE
3	U17MB373	SHEDAM OMKAR MAHADEV
4	U17MB374	SHIVA VEERANNA HOUSR
5	U17MB375	SHIVAM ANMOL
6	U17MB376	SHIVANI BISWAL
7	U17MB377	SHREYA KUMARI
8	U17MB378	SHUBHAM KAMDE
9	U17MB379	SOTALA MANULIKHA CHOWDARI
10	U17MB380	SOUNDHARYA.K
11	U17MB381	SOURABH DAS
12	U17MB382	SRIKAVYA .G
13	U17MB383	SRISHTI SINGH
14	U17MB384	SRITAMA SAHA
15	U17MB385	SUBHASHREE ABHIPSA GIRI
16	U17MB386	SUMAN KUMAR SAHOO
17	U17MB387	SURVE BHUSHAN SUNIL
18	U17MB388	SURVESH PODDAR
19	U17MB389	SURYAWANSHI SIDDHANT AJAY
20	U17MB390	SYAMA SHAJEEV

**RESOURCE PERSON***Professor & Head*

Dept. of Forensic Medicine

Dr. Lakshmi Narayana Institute of  
Medical Sciences, Puducherry.**COORDINATOR DEAN**



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that \_\_\_\_\_ has

actively participated in the Value Added Course on “*Professional Responsibility*” held during

January 2018 – June 2018 Organized by Sri Lakshmi Narayana Institute of Medical

Sciences, Pondicherry- 605 502, India.

Dr. S.N. Rathod

RESOURCE PERSON

Dr. Jayalakshmi

COORDINATOR

## VALUE ADDED COURSE

### 1. Name of the programme & (Code)

Adolescent substance abuse (FMT- VAC 04)

### 2. Duration & Period

30 hrs & July 2017 to December 17 and Jan 2018 to June 2018

### 3. Information Brochure and Course Content of Value Added Courses

*Enclosed as Annexure- I*

### 4. List of students enrolled

*Enclosed as Annexure- II*

### 5. Assessment procedures:

Multiple choice questions- *Enclosed as Annexure- III*

### 6. Certificate model

*Enclosed as Annexure- IV*

### 7. No. of times offered during the same year:

2

### 8. Year of discontinuation: 2018

### 9. Summary report of each program year-wise

Value Added Course- July 2017 - June 2018					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	FMT-04	Adolescent substance abuse	Dr. S.N.Rathod	2 <sup>nd</sup> MBBS	20 ( July 17 – Dec17)
2	FMT-04	Adolescent substance abuse	Dr. S.N.Rathod	2 <sup>nd</sup> MBBS	20 (Jan 18- June18)

### 10. Course Feed Back

*Enclosed as Annexure- V*

**RESOURCE PERSON**

**COORDINATOR**

# **Adolescent substance abuse**

## **PARTICIPANT HAND BOOK**

## COURSE DETAILS

Particulars	Description
Course Title	Adolescent substance abuse
Course Code	FMT VAC 04
Objective	<ol style="list-style-type: none"> <li>1. Terminology and classification</li> <li>2. Etiology and pathogenesis of adolescent substance abuse</li> <li>3. Epidemiology of adolescent substance use and psychoactive substance use disorders.</li> <li>4. Dual diagnosis: Psychoactive substance abuse and psychiatric comorbidity</li> <li>5. Adolescent substance use and psychoactive substance use: relation to suicidal behavior</li> <li>6. Maternal and infancy addiction: adolescent mothers and their offspring</li> <li>7. HIV/AIDS and psychoactive substance use in adolescents</li> <li>8. prevention of psychoactive substance use disorders and suicide</li> <li>9. Treatment modalities of psychoactive substance use</li> </ol>
Further learning opportunities	Psychiatry ,Forensic Toxicology and Pharmacology aspects of substance abuse
Key Competencies	On successful completion of the course the students should be able to diagnose, manage ,prevent and treat adolescent substance abuse
Target Student	2 <sup>nd</sup> yr MBBS Students
Duration	30hrs Every July 2017– Dec 2017 & Jan 2018 – June 2018
Theory Session	22hrs
Practical Session	8 hrs
Assessment Procedure	Multiple choice questions

## 1. Terminology and classification

Major efforts expended in recent decades toward developing a consequence-oriented, problem-based, clinically valid classification system have resulted in the inclusion of a large number of syndromes in the Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-IV), of the American Psychiatric Association (1994), or the generally comparable International Classification of Diseases, 10th edition (ICD-10), which has been developed to succeed the 9th edition (ICD-9) published by the World Health Organization (1980). However, for many of these disorders, including substance-related disorders, there are relatively limited data on key dimensions that are necessary for validating their designation as distinct disorders. The importance of diagnostic classifications rests in the communicative reliability of this system between professionals. Also, an ideal diagnostic label is expected to indicate the course of the disorder, the most likely prognosis, and the best available treatment. The purpose of this chapter is twofold: (1) to review the evolution of the diagnostic conception of PSUD up to the crystallization period of the new DSM-IV (American Psychiatric Association, 1994) and ICD-10 criteria and to investigate its application for adolescent psychoactive substance use disorder (APSUD); (2) to explore whether APSUD is sufficiently distinct from adult PSUD to merit a separate diagnostic entity. In other words, is APSUD a disorder with specific features that can be measured to provide clinical utility and predictive validity that are different from the present hypothesized model of adolescent-adult PSUD continuum? The following sections present a review of data both for and against such designation.

### EVOLUTION OF THE NOSOLOGY OF PSYCHOACTIVE SUBSTANCE USE DISORDER

The same diagnostic criteria for PSUD are at present indiscriminately utilized for adolescents as well as adults. The research on the development of an operational definition of PSUD has lacked age population specificity. Lack of clarity, uniformity, and standardization in the terminology used for substance use disorders in general was demonstrated in the 1980s. This inconsistency is probably related to an array of concepts and terms in active use as well as disagreements among the variety of professional disciplines involved in the field. The state of the art regarding the validity of APSUD is also unclear, because it has not been thoroughly investigated, nor has its clinical utility and specificity been negated.

DSM-III Substance Use Disorders: The categorical approach to pathological use of drugs resulted in DSM-III (American Psychiatric Association, 1980), in which the terms "abuse" and "dependence" were the pivotal concepts in the section entitled "Substance Use Disorders." Necessary for the diagnosis of dependence in DSM-III were tolerance or withdrawal or both. Substance abuse in DSM-III, on the other hand, focused on impairment in other life domains as a result of use. The division of substance abuse disorders into these two categories has been supported by several research groups (Filmore, 1988; Hasin, Grant, & Endicott, 1990;

Roizen, Cahalan, & Shanks, 1978). Recently, Hasin et al. (1990) reported a 4-year longitudinal epidemiological study of male drinkers. At follow-up, 70% of the subjects who were initially classified as alcohol abusers were either still abusers or classified as remitted and only 30% progressed to alcohol dependence. This finding contrasted significantly with the commonly held assumption that abuse is usually a prodromal phase to dependence and thus supported the distinction between abuse and dependence. Furthermore, this distinction was reported to be moderately predictive of disorder severity and treatment outcome. Other predictors, however, including age of onset and intensity of alcohol or drug use, family history of substance abuse-dependence and number and severity of comorbid conditions, especially antisocial personality, have predicted both severity and outcome at least as robustly (Nathan, 1991). The progress in terminology attributed to DSM-III was captured by Nathan (1991), who stated that DSM-III moved away from the implicit moralizing that burdened those positions of DSM-I and DSM-II devoted to substance abuse and dependence, the sexual deviations, and antisocial behavior. It did so, in part, by allocating a separate category to the substance use disorders, thereby eliminating the guilt by association implicit in their DSM-I and DSM-II placement. In addition, the text of the DSM-III highlighted research findings that implicated sociocultural and genetic factors in the etiology of these disorders, thereby emphasizing the role scientists and clinicians had begun to play in their study and treatment.

Criticism of DSM-III criteria for abuse-dependence has mainly addressed its inflexibility in accounting for the heterogeneity among identified patients and problems with specificity and sensitivity (Rounsaville, 1987; Rounsaville, Spitzer, & Williams, 1986; Schuckit et al., 1985). Rounsaville (1987) identified the following seven key problems: (1) There is a lack of reference to coexistent features commonly manifested in these disorders. (2) The conceptualization of substance use disorders is not theory-driven. (3) The use of tolerance as a criterion for dependence is not specified. (4) The relation between abuse and dependence is inconsistent and illogical in several substance categories in DSM-III. (5) Blackouts are incorrectly defined in the alcohol abuse and dependence criteria. (6) The limiting, time-linked phrases (e.g., one month duration, intoxicated throughout the day) were not derived empirically and, in many instances, do not accord with clinical experience. (7) Quantity and frequency of drug use are inconsistent features of the criteria. Nathan (1991) pointed out that the dependence criteria include and sometimes mix two different concepts: psychological dependence, characterized by a pathological pattern of use, and physiological dependence, demonstrated by a substance-specific withdrawal syndrome. Kleber (1990) noted that there was no provision in DSM-III for severity of dependence. Also, there is no distinction between dependence and long-term medical use of an opiate or sedative that results in tolerance and that, with abrupt cessation, is likely to result in withdrawal. According to DSM-III, opiate and sedative dependence with no abuse are considered

psychiatric disorders, whereas similar states related to chronic use of antihypertensive drugs or tricyclic antidepressants are not.

Conclusion: The state of the art of APSUD does not support a distinct adolescent-oriented category separate from the present DSM-III-R/IV oriented terminology. Also, severity and chronicity do not appear to account for differences in age-related symptomatology, and their impact on meeting the criteria of PSUD phenomenology (besides medical complications) is limited. However, these conclusions do not preclude such a development in the future, especially following more empirical research regarding some key questions for which there are no data: (1) What is the natural history of PSUDs in children and adolescents? (2) What are the nature and magnitude of spontaneous recovery among adolescents? (3) What are the magnitude and nature of the effects of experimentally controlled use of alcohol and other psychoactive substances in adolescents? It is dear that such research may be constrained by legal restrictions and may therefore have to be postponed until these individuals reach adulthood. Lack of such research limits our understanding about subgrouping of adolescents with APSUDs. Any further development in adolescent substance abuse prevention and treatment will have to rely on age-appropriate generated nosology and data. Finally, the potential for the existence of "good prognosis APSUD" needs to be explored, particularly following Hasin et al.'s (1990) findings that most alcohol abusers did not progress to alcohol dependence. Most adolescents with alcohol abuse do not fit Babor's (1992) or Cloninger's (1987) description of a "malignant" course alcoholism. Therefore, it is reasonable to suggest that there are at least two different types of alcoholism in adolescence. It appears that PSUD with conduct disorder, with or without depressive symptomatology, shares considerable similarities with Type B or Type 1, and alcohol abuse or dependence without comorbid conduct disorder may be comparable to Type A or Type 1.

## **2.Etiology and Pathogenesis of adolescent substance abuse:**

There is a growing consensus in the literature that children of alcoholics (COAs) or of parents with other psychoactive substance use disorders (PSUDs) are more prone to PSUDs and PSUD-related problems than are children of non-abusers . Also, PSUDs and other psychiatric disorders such as antisocial personality disorder (ASPD) and mood disorders tend to cluster in families . COAs are at least 4-5 times more likely to become alcoholics than are children of non-alcoholic parents (Goodwin, 1985). Variables that are most reliably associated with heightened risk of alcoholism are family history of alcoholism and history of antisocial behavior in adolescence (Nathan, 1988). Indeed, based on more than 100 studies reviewed by Cotton (1979), the strong familial aggregation of alcoholism is one of the most robust findings in medical research. There is no universal consensus regarding an etiological model of PSUD that may apply to the different subpopulations. Present

evidence points to the importance of multiple factors such as genetic-biological, developmental, and environmental processes. The most demonstrative and influential empirical study recognizing the heterogeneity of the population of alcoholics was derived from an investigation of the importance of biological vs. environmental etiology of alcoholism. It has been concluded that some alcoholics may have developed alcoholism because of environmental causes (Type 1: milieu-limited), whereas others may have been influenced by a strong genetic vulnerability for an early-onset (Type 2: male-limited) alcoholism. The growing understanding of the importance of the heterogeneity of patterns of psychoactive substance use, abuse, and dependence—each potentially having multiple etiologies—and reports that perhaps only 30% of the variance of familial transmission of alcoholism is attributable to genetic factors. Investigators from various fields, such as molecular and clinical genetics, pathophysiology, and neuropsychopharmacology, as well as psychopathology and sociobehavioral science, have participated in efforts to improve understanding of the etiology and pathogenesis of PSUDs. There are distinct advantages in taking a broad-spectrum approach to this endeavor, since doing so favors the widely accepted multifactorial paradigm of addiction (Nathan, 1990). However, it is important to acknowledge the likelihood that each factor carries a different etiological and/or pathogenetic relative weight. The research results are then biased toward a unidimensional etiological explanation. Although there has been rapid growth in the literature on adolescent substance use (ASU) and adolescent PSUDs (APSUDs), research on this population is still in its infancy. Also, due to the longer history of research on adult alcoholism (as compared with that of research on abuse of other psychoactive substances), the relative magnitude and depth of studies on the etiology and pathogenesis of alcoholism are greater. These facts are especially noteworthy because, when appropriate in this discussion, relevant adult-oriented literature on alcoholism is presented and relied on as a basis for generalization. However, it is crucial to remember that although alcohol abuse/dependence is a subset of PSUD, results should be generalized cautiously and their limitations noted. This chapter examines the vast literature pertaining to multiple determinants of risk and invulnerability to APSUDs (i.e., genetic-biological, developmental, environmental) as well as to the transition from ASU to APSUD. The importance of distinguishing between normative and pathological use of psychoactive substances is illuminated in terms of developmental task perspective. The biopsychosocial approach utilized in this chapter helps to emphasize that because the initiation of ASU, the transition to PSUD, and the maintenance of PSUD and related behaviors may be predicted by somewhat different etiological pathways, different therapeutic interventions (e.g., prevention, treatment) may be implemented along the life span. Attempts to separate genetic-biological contributions to the development of ASU and PSUDs from developmental and environmental factors may appear to be forced and artificial, if not impossible.

**GENETIC-BIOLOGICAL RISK FACTORS:** How early do risk factors appear? Following a genetic-biological approach, one would assume that risk factors are constitutional and may be detected even before the child is born using the techniques of molecular genetics. If that is the case, taking the spectrum of alcohol consumption through alcohol dependence, for example, then what is inherited?

Drinking habits? Alcoholism per se? A susceptibility to alcoholism? Related comorbidity? Or are there any other possibilities? Also, do the behaviors related to the phenomenon of alcohol drinking or the fullblown disorder result from the impact of one or more genes? What genes may be responsible for the coexpression of additional comorbidities? To answer these intriguing questions, three main designs for behavioral genetic studies have been utilized: (1) Twins who have identical genomes have been studied in comparison to twins who share only half their genes. (2) Adopted-away COAs constituted the population for a second research method. (3) Genetic markers associated with alcoholism or other PSUDs or both have been sought, especially in high-risk populations (particularly in COAs).

Genetic Studies of Dopamine Receptors: The brain's dopaminergic reward system in the mesolimbicmesocortical area attracted the interest of investigators who reported on the ability of psychoactive substances to activate these systems. Molecular geneticists detected the gene for the dopamine D2 receptor (DRD2) on chromosome 11, and Blum et al. (1990) provided initial evidence that DRD2 might have an influence on susceptibility to alcoholism. The findings of Blum et al. (1990) need to be viewed with caution because of the small size of the sample of deceased alcoholics whose brain tissue was the source of the DNA investigated. Also, in view of the presumed heterogeneity of alcoholism and its likely polygenic causes, it is unlikely that one gene has the power to identify almost 70% of alcoholics. Two alleles of the D2 receptors named A) and A2 were detected on chromosome 11 by Blum et al. (1990). The A) allele was reported to be related to alcoholism. Ethnic-racial variations were reported regarding this allele (i.e., the frequency of the A) allele in African Americans is significantly higher than in whites). Alcoholics displayed approximately twice the amount of A)allele displayed by control populations. The severity of alcoholism appeared to be directly correlated with such an association. The A) allele has also been found to be associated with Tourette's syndrome, attention-deficit hyperactivity disorder, and autism. Subjects with histories of polysubstance abuse also yielded elevated A) and more significant B) frequencies (Smith et al., 1992). Another recent publication reported that genetics plays a role in determining smoking behavior according to a study of male twins (Carmelli, Swan, Robinette, & Fabsitz, 1992). The study indicated significant familial influences .on smoking behavior, but not on smoking intensity. Three components of smoking behavior (never smoked, current smoking, and quitting) were moderately influenced by genetic factors. The authors concluded that smoking could be viewed as a collection of forms of behavior rather than a single habit. In conclusion, the pattern of alcoholism inheritance does not fit a single-gene (Mendelian) pattern of inheritance such as in color blindness or Huntington's chorea. No single gene is postulated to control such a complex behavior as is manifested in alcoholism. Observed rates of alcoholism are not consistent with a simple polygenic model either (assuming a number of genes of approximately equal impact) (Dinwiddie, 1992)Also, it is suggested that caution be exercised in concluding that genetic markers that have been found may be the ultimate answer to an accurate subtyping of alcoholics or high-risk populations. Finally, evidence to date suggests that if the allele modifies risk for alcoholism, it does so in a nonspecific

way, possibly by modulating the phenotypic expression of alcoholism. However, it is still inconclusive whether the AI allele is a modifier or only a potential marker. Further rigorous and replicable research is needed in this domain.

### **3.Epidemiology of adolescent substance use and psychoactive substance use disorders**

It has been reported that in the early 1990s, the general downward trend in the prevalence of drug use that started in 1980 has continued. Despite this encouraging report, which implies that adolescents continue to move away from the use of drugs (especially alcohol, marijuana, and cocaine), a considerable number of youngsters continue to use illicit drugs. The measurement of adolescent substance use (ASU) and adolescent psychoactive substance use disorders (APSUDs) is complicated by the facts that the desired information pertains to illegal behavior related to age or drugs of use, or both, and that subpopulations of interest may not volunteer to cooperate. Other key issues reported are trends in attitudes and beliefs about drugs, especially regarding perceived harmfulness, perceived availability, and personal disapproval of drug use. The study, subtitled also "Monitoring the Future," includes neither the estimated 20% of high school dropouts nor absentees on the day of survey at each school. However, the stability of the reports generated over 17 consecutive years provides a good measurement of trends in that seniors who are frequently truant are similar in many respects to dropouts. Given that drug use is higher among dropouts, it is likely that the inclusion of dropouts would tend to raise the observed prevalence rates for all drugs and all subgroups. Eighth-grade students represented the junior high school population and 10th-grade students as well as seniors represented the high school population. These subpopulations may reduce the impact of school dropouts on prevalence estimates. On the basis of the 1991 survey, the trends of drug use of most psychoactive substances studied may be divided into two groups. Group 1 included drugs such as the three most commonly used ones, alcohol, marijuana, and cocaine, with the addition of the category defined as "Other Stimulants." This group shows a consistent trend of reduction in use, including annual prevalence, 30-day prevalence, and, most important, 30-day prevalence daily use. Group 2 includes most of the other illicit drugs, the use rates of which either are down, by less than statistical significance, or have remained fairly stable at a low level of use. These drugs include mainly inhalants, crystal methamphetamine ("ice"), heroin, phencyclidine (PCP), sedatives, and anabolic steroids. Cigarette smoking and the use of lysergic acid diethylamide (LSD) by adolescents deserve specific attention due to an arrest in the mild decline trend of the former and the increase in use of the latter.

#### **TRENDS IN THE USE OF SPECIFIC DRUGS PER SUBPOPULATIONS :**

Cigarette Smoking: The rate of smoking among males dropped slightly more than among females, resulting in a modest reversal of the sex differences (in contrast to the situation with most other drugs used. Among 8th graders, 44% have already tried cigarettes. Initiation of use when they were 6th graders was reported by 20%.

## Alcohol:

The proportions of seniors who had drunk in the last 30 days dropped 3% from the 1990 level and 18% from a decade ago. The rate of decline of binge drinking was about 2% in 1991 and about 10% as compared to 1981. The 30-day prevalence declined more than 3% and daily use was reduced by only 0.1 % in the last year. The sex differences in alcohol use have narrowed. Gender differences in annual prevalence have been virtually eliminated. The proportions of males admitting to binge drinking continued to decline in the 1980s, whereas the decline in binge drinking by females was more modest, resulting in a continued narrowing of the gap between the sexes. Reports on various types of alcoholic beverages indicate that the largest sex difference is attributed to heavy use of beer by males. Hard liquor is consumed only slightly more by males than by females. Females tend to drink more wine coolers than male seniors, and wine is equally used by both sexes. Drinking in the past year is reported by 54% of 8th graders, 27% report having gotten drunk at least once, and 13% admitted to binge drinking during the 2-week period prior to the survey. More than 8% started drinking before or in the 6th grade. Alcohol use among the white and Native American subgroups is higher than among other ethnic/racial subpopulations. Rates of daily drinking were the highest among 12th-grade Native Americans and were nearly as high among Mexican Americans and white seniors. Within each of these groups, daily drinking is about 2-4 times as likely among males as among females. African-American, Hispanic, and Asian-American females are more likely to abstain from alcohol than are white females.

**Marijuana:** This is the most widely used illicit drug among high school seniors. Marijuana has been referred to as a "gateway" drug. Indeed, the single best predictor of cocaine use is frequent use of marijuana during adolescence. Only 1 % of those not regularly using any drug and 4% of legal drug users had experimented with opiates, cocaine, and hallucinogens, as compared to 26% of marijuana users. Annual prevalence rates for marijuana are highest among Native American females and males, and nearly as high among white males and females and Mexican American males. The lowest annual rates are reported by Latin-American females, African-American females, and Asian-American males and females. Monthly and daily rates maintain the same racial and ethnic distinctions. Male/female differences are more pronounced among African Americans and Hispanic

**Anabolic steroids:** These agents were added to the survey in 1989. Since then, there has been a very gradual decline in lifetime and annual prevalence. Among males, who account for most of the steroid use, the proportions using in the prior year were 2.8% in 1989, 2.6% in 1990, and 2.4% in 1991. For just the boys in the 8th, 10th, and 12th grades, the corresponding rates are 3%, 3.1 %, and 3.5%. Risk groups for exposure are athletes and bodybuilders, who use steroids to enhance their ability and to be aggressive and wrestlers concerned with making their weight class. In another recent study of adolescent users of anabolic steroids, it was reported that

about 250,000 seniors have used these substances at least once and that those adolescents who became chronic users were more likely to use other drugs as well. Many of these adolescents reported having shared needles.

#### **4. Dual diagnosis: Psychoactive substance abuse and psychiatric comorbidity**

Adolescence is a critical developmental phase for the onset and recognition of psychiatric disorders including psychoactive substance use disorders (PSUDs). The co-occurrence of PSUDs with other psychiatric disorders has been termed a "dual diagnosis" (DD), and the patients so diagnosed have been defined as "dually diagnosed" (DUDI). The prevalence of DD is high, and the recently increased recognition of the concept of comorbid \* disorders has important clinical, public health, and research implications. From the clinical perspective, subgroups of DUDI individuals may respond differentially to specific therapeutic approaches. Regarding public health interests, subgroups of adolescents with comorbid disorders may be at a higher risk of contracting or manifesting additional disorders and of increased severity of the course of each one of the index disorders. The implications for research on DD are that more homogeneous subgroups within a given diagnostic category can be studied to broaden the knowledge about this diagnostic entity. This chapter reviews the methodological and nosological issues in diagnosing and understanding the nature of DD, the epidemiology of DD, and the specific relationship between a variety of psychiatric disorders and PSUDs of adolescents and their families. Finally, special reference is made to future clinical and research implications concerning prevention and treatment of DD. The literature on comorbidity in adults is used as a departure point in some sections due to the sparsity of data on adolescents.

It is often unclear whether a patient's symptoms are a consequence of substance abuse per se or are indicative of a comorbid psychiatric disorder. Moreover, in such patients, the sequelae of psychoactive substance intoxication or withdrawal or both are often difficult to distinguish from the signs and symptoms of concurrent psychiatric disorder. It is important to reemphasize that dual diagnosis is a term limited to the relationship between disorders and is not applicable to symptoms associated with PSUDs, which are considered to be manifestations of the severity of PSUDs. Rather than accepting reports of DD at face value, one must maintain increased awareness based on an understanding of conceptual and diagnostic models in the practical context delineated above to limit potential pitfalls in a relatively sparsely researched domain. The diagnostic process of comorbid disorders and the reliability and stability of DD are factors of great importance that as yet have been reported only in research conducted with DUDI adults. Regarding the diagnostic process, information derived from multiple informants is believed to facilitate the process and to enhance the specificity of prevalence estimates of disorders. Also, in the case of DD, a "best estimate" procedure may be helpful in enhancing the accuracy of the diagnostic process. Such a procedure is

especially likely to be helpful when data from direct interview either are missing or may be inaccurate if the subject withholds or provides false information. A "best estimate" diagnosis is one made by a clinician on the basis of diagnostic information from a direct interview conducted by another clinician plus information from medical records and from reports of family members. It has been reported that current mood disorders and psychotic disorders were less reliably diagnosed in a group with current PSUDs compared to two control groups, one with past PSUDs and the other without a history of PSUD . However, the results were adequately reliable to aid in classification. It was also concluded that delaying diagnosis until at least 1-2 weeks after cessation of drug use is likely to improve classification results. A study of the stability of psychiatric comorbidity in alcoholic men after 1 year revealed that the symptoms are stable over time and therefore constitute a potential target for treatment . Thus, patients over time tend to minimize the number and intensity of symptoms associated with other psychiatric disorders rather than simply to deny all symptoms at one time and acknowledge other symptoms at another. In order to make a reliable and valid psychiatric diagnosis, rating scales are frequently utilized. However, some argue that the assessment of comorbid psychopathology, especially of depression among substance abusers, lacks acceptable specificity. Indeed, the results among adult patients support only limited use of measures .

The rates of anxiety disorders, major depression, and substance use disorders were high in the age group of 18-24 years. About 22% of the 18- to 30-year-olds had a substance use disorder according to DSM-III, and fewer than one third of them had a comorbid depressive or anxiety disorder manifested before age 20. Moreover, almost 3 of every 4 subjects with psychiatric comorbidity indicated that the substance abuse started later than the other psychiatric disorders. These findings demonstrate a doubling of risk for subsequent substance use disorders in young adults who have had an earlier depressive or anxiety disorder. The relationship between depression and PSUDs in adolescents has recently received increased attention following analysis of the age of onset of psychiatric disorders. The prevalence of psychiatric disorders among alcoholics and other substance-abusing adults was found to be very high. Ross, Glaser, and Germanson (1988) reported that 78% of their 501 patients with substance use disorders met DSM-III criteria for a lifetime comorbid psychiatric disorder, with 65% suffering from a concurrent psychiatric disorder. Confirming these results is a study that reported that 81 % of 339 alcoholics were found to have associated mental disorders (Roy et al., 1991). The most common lifetime disorders were other drug abuse, ASPD, mood disorders, and anxiety disorders. Studies among treated adolescents with PSUDs also revealed a high prevalence of comorbid disorders, primarily mood or conduct disorders or both. In a study of 459 adolescents seen for psychiatric evaluation in a general hospital emergency room, it was reported that almost half those with elevated blood alcohol levels (17% of the total sample) had at

least one additional psychiatric diagnosis, with depression being the most common (Reichler, Clemente, & Dunner, 1983). A study of 41 adolescents admitted to a psychiatric hospital for psychiatric disorders concluded that about 70% were also diagnosed as substance abusers (Roerich & Gold, 1986).

### **5. Adolescent substance use and psychoactive substance use: relation to suicidal behaviour**

The leading external causes of adolescent morbidity and mortality are motor vehicle accidents, homicide, and suicide, in declining order. Adolescent psychoactive substance use disorders (APSUDs) and unprotected sex leading to teenage pregnancies, abortions, and communicable diseases including acquired immunodeficiency syndrome (AIDS) are also major problems of epidemic proportion. However, among black adolescent males, homicide is the leading cause of death. Substance abuse, availability of arms, social stressors, low socioeconomic status, and increased interpersonal violence contribute to the problem. This chapter primarily reviews the association between APSUDs and suicidal behavior. Additional high-risk behaviors/activities that are presumed to be associated with PSUDs and suicide. Many studies have reported an elevated risk ratio for suicidal behavior in adults diagnosed with PSUDs. The sparsity of literature on the relationship between suicidal behavior and adolescent substance use (ASU) or APSUDs causes concern for the following reasons: 1. Suicide rates for the 15- to 24-year age group have almost tripled since the late 1950s, and suicide is now the second leading cause of death for this age group. 2. Adolescents display the highest involvement with psychoactive substances. 3. Concomitant psychopathologies, especially conduct and mood disorders, have been identified as risk factors for adolescent suicide and are frequently diagnosed in adolescents with PSUDs. Retrospective studies and psychological autopsy investigations of adolescent suicides provide most of the data about the relationship between suicidal behavior and APSUDs, although methodological constraints limit the generalization of conclusions derived from such studies. There is an unfortunate mental and conceptual gap that precludes adults from acknowledging and accepting adolescent behaviors in the context of normal adolescent development. Behaviors such as adolescent substance use, early sexual experimentation, risky driving, musical preference, and even an occasional interest in the occult are components of the adolescent life-style. A behavior should be considered risky when it can compromise physical health and psychosocial aspects of successful adolescent development. PSUDs, unprotected sex, violent behavior, driving while intoxicated, school dropout, and immersion in the occult are some obvious examples. The clinical utility of life-style as a useful concept is measured by its focus on the adolescent as a whole rather than on each potentially risky behavior. PSUD is a high-risk factor for suicidal behavior. An adolescent male who is likely to be intoxicated and to have access to a firearm is at the highest risk for suicide. An additional diagnosis of conduct disorder, mood disorder, or personality disorder, and lack of intervention by a mental health professional, especially after a precipitating stressful event, previous suicide attempts, and homicidal ideations, add to the risk. Although there has been a clear association between depression and suicidal behavior among adolescents, the clinician should exercise caution in assuming that suicide risk declines significantly following an adolescent's response to treatment for depressive symptomatology. The existence of other high-risk factors such as substance abuse and other environmental factors is still a threat. It is difficult to predict who will commit suicide, even among high-risk adolescents. However, decreased availability of firearms and treatment of PSUD and other accompanying psychopathology are

important. Research on adolescents with PSUDs and the suicidal behavior spectrum is particularly valuable when the methodological design is solid, the studies provide a longitudinal perspective, and a random doubleblind design is utilized. Finally, biological factors and markers should be explored in these adolescents and first-degree relatives. Only comprehensive and sound research will be able to provide us with extended understanding of the subject.

## **7. HIV/AIDS and psychoactive substance use in adolescents**

The acquired immunodeficiency syndrome (AIDS) represents the end stage manifestation of a prolonged infection with the human immunodeficiency virus (HIV). Children and adolescents may contract AIDS from sexual contact with any infected person, following injection with contaminated blood, or from pre- or perinatal transmission. This chapter reviews various aspects of HIV and AIDS in relation to psychoactive substance use disorders (PSUD) in parents and their children as well as among adolescents. Females and children with HIV infection currently represent two of the fastest-growing populations in the HIV / AIDS epidemic in the United States (Etemad & Ponton, 1991). The vast majority of pediatric AIDS victims (84%) contracted the disease from their mothers in the perinatal period. Of the mothers, 49% were intravenous drug users (IVDUs) and 21 % were sex partners of IVDUs, and 16% of these children were born either to mothers with HIV infection, risk not specified, or to sex partners of males with HIV, risk unspecified (AACAP HIV Issues Committee, 1991). Infection by blood products accounts for fewer than 3% of children with AIDS, and sexual molestation by infected adults is rarely a documented source of HIV infection in children. Some obstetric services have reported HIV-seropositive rates of 1- 3% among their pregnant patients (Nanda, 1990. Also, significant differences exist between rates reported in the inner city vs. rural areas. The most recognized adolescent risk group consists of disenfranchised inner city youngsters using psychoactive substances and engaging in unprotected sex. Also, homeless youths and male or female prostitutes of adolescent age are at high risk for AIDS and HIV transmission to others. The prevalence of teenage pregnancy in the United States is the highest in the industrialized world, and teenage females who are IVDUs or engage in unprotected sex, or both, may infect their fetuses. Psychoactive substances may impair judgment and reduce inhibition, thus leading to risky sexual behavior; condoms also were less likely to be used if use of alcohol or other psychoactive substance was combined with sex (CDC, 1991). The relationship between the use of specific psychoactive substances and increased risk factors for AIDS has been investigated.

Opioids: Compromised immune function as a result of exposure to opiates may add to the risk of infection and disease progression. This increased risk results from more than simply the use of shared needles (Schleifer et al., 1991). In addition to decreased lymphocyte functional responses, a significant reduction in numbers of T-cells has been reported among opiate users. Incubation of heroin addicts' cells with the opiate antagonist naloxone reversed some of the immune effects . Impairment in cell-mediated immunity related to heroin use has also been suggested. Further investigations are needed to shed more light on this matter.

Alcohol: Acute alcohol consumption has been implicated experimentally in the impairment of both cellular and humoral immunity. It is difficult, however, to extrapolate these experimental results to naturalistic settings in humans. Natural killer cell activity, which plays a role in resistance to viral infection and neoplasia and may be involved in progression of HIV infection, is also inhibited by

alcohol use. Alterations in immune function are thought to play a role in the increased susceptibility to infection found in alcoholics.

Other Substances: Studies of the effects of cocaine and marijuana on human immunity have been conflicting. The relationship between polysubstance abuse and the function of the immune system has been examined. Opiates have been found to depress immune function and cocaine may reverse this depression when used in combination; however, alcohol attenuates the effect of cocaine. Other factors may further compromise the immune system and increase the risk of HIV infection and disease. These factors include malnutrition, life stress, and depression, which are highly prevalent in substance abusers. Interventions to treat these factors may therefore have important benefits. PREVENTION: Women with positive HIV status [tested by the enzyme-linked immunosorbent assay (ELISA) and confirmed by the Western blot] may wish to avoid pregnancy, since there is a substantial risk (50%) of transmission to the fetus in utero. It has been reported that 38% of women terminated their pregnancies after learning they were seropositive (Schleifer et al., 1991). By law, partner notification must be carried out, but to be effective it should be complemented with other outreach and educational interventions (AACAP HIV Issues Committee, 1991). Primary prevention among adolescents is increasing, although it is noteworthy that education for safer sex needs to stress the 5-15% failure rate of condoms in protecting against HIV transmission.

GUIDELINES FOR TREATMENT: A confidential pre- and post-HIV test counseling session is important, and HIV infection control and treatment need to be implemented following a sero positive result. Anti-HIV drug therapy with zidovudine (AZT) reduces morbidity, especially in children with AIDS dementia and encephalopathy. Assessment of neuropsychological functioning and psychiatric needs is important. Access to health and social care is crucial, especially for children with infected parents or who are orphaned (AACAP HIV Issues Committee, 1991). 7.6. CONCLUSION The increased number of children and adolescents afflicted with HIV / AIDS and the association of maternal addiction and unsafe sex with perinatal transmission are major reasons for concern. Additional resources for prevention, treatment, and research of this epidemic are needed.

## **8. prevention of psychoactive substance use disorders and suicide**

Efforts to prevent use and abuse of psychoactive substances by children and adolescents focus on interventions designed to reduce substance supply and demand. According to a report by the Board of Trustees of the AMA (1991), law enforcement and health authorities curtail the supply aspects by closing gaps in the drug control system, eradicating illicit drugs at the point of production, achieving balance between the demand for and supply of drugs manufactured for medical use and the control of diversion of such drugs to the illicit market, and obstructing or intercepting the trafficking in illicit drugs. According to the same report, reducing the demand involves deferring or precluding initiation of use by nonusers, reducing all use of illicit drugs and inappropriate use of licit drugs, and engaging in programs of prevention, treatment, and rehabilitation. Understanding early predictors of adolescent substance use (ASU) and the transitions involved in the progression to adolescent psychoactive substance use disorders (APSUDs) is critical for effective prevention. Defining target populations, outcome goals, and measurements for effective prevention strategies and programs is also necessary. The resources and participants to be enlisted in the prevention endeavors need to be defined and may be drawn from many sources, including immediate families, schools, community organizations, policy makers, and the media. This chapter utilizes data reviewed earlier in this book

regarding the onset and development of ASU and APSUDs to address the present state of and future perspective for effective prevention. The chapter also reviews adolescent suicide prevention because of the high incidence of suicidal behavior among adolescents with PSUDs. Successful efforts to reduce the prevalence of substance abuse can be utilized to introduce prevention-intervention in suicidal and other high-risk behaviors. A considerable body of literature concerning the etiological determinants of substance use, abuse, and dependence has been published, although most of the publications failed to discriminate among the levels of involvement. Most users do not make the transition to become abusers; therefore, it is crucial to understand the roles and the mechanisms of the factors responsible for the development of ASU vs. APSUDs. A detailed discussion of these factors is beyond the purpose of this chapter and is presented in other chapters. However, it is worthwhile to briefly review the pivotal factors and conceptual framework responsible for this transition. Genetic markers and twin and adoption studies provide evidence for the heritability of the liability for alcoholism and to a lesser extent for other PSUDs. The individual at risk is exposed immediately after birth and throughout life to environmental risk and protective factors. Among the most influential environmental factors are family, school, and peers. Psychopathology such as PSUDs may be the result of interactions of temperamental predisposition (e.g., difficult temperament) with environmental factors. However, there is a bidirectional "threshold effect" that may expose the child to the results of increased risk or corrective experiences that from the stand point of intervention may, respectively, enable or cause the individual to return to the "under-threshold" range or to remain in/progress to the "beyond-threshold" range. As the child matures, flexibility of behavioral repertoire diminishes, because habitual patterns of behavior become more and more firmly established. This crystallization of responses to environmental stimuli and interaction style makes interventions increasingly difficult to apply. If this stabilization of deviance happens "under threshold," it demands intervention in the form of prevention. However, if it occurs "beyond the threshold," treatment is the intervention of choice. Thus, from a pragmatic perspective, it appears that prevention and treatment are two subsets of intervention curricula that are to be applied at different chronological and severity points on the continuum of the subclinical phenomenon and the clinical disorder. This chapter utilizes data reviewed earlier in this book regarding the onset and development of ASU and APSUDs to address the present state of and future perspective for effective prevention. The chapter also reviews adolescent suicide prevention because of the high incidence of suicidal behavior among adolescents with PSUDs. Successful efforts to reduce the prevalence of substance abuse can be utilized to introduce prevention-intervention in suicidal and other high-risk behaviors.

The 1986 Anti-Drug Abuse Act defined high-risk youth as children and teenagers under age 18 who, because of the presence of certain characteristics and conditions, are especially likely to use illegal drugs and/or alcohol. This definition recognizes "characteristics" (i.e., constitutional traits) and "conditions" (i.e., environmental circumstances) as instrumental for the development of PSUDs. The nine risk factors included in the 1986 Act are as follows: (1) the economically disadvantaged; (2) children of substance-abusing parents; victims of (3) physical, (4) sexual, or (5) psychological abuse; (6) runaways or homeless youth; (7) school dropouts; (8) pregnant adolescents; and (9) adolescents who have attempted suicide. As Clayton (1992) noted, these are the "types" of children and adolescents for whom services are rendered in the communities. There is also a certain level of confusion in these risk factors, however, because most of them could serve as effects as well as causes of PSUDs, depending on the temporal ordering and direction of the relationship. These risk

factors are in accord with the conceptual framework presented in the problem-behavior theory and with the increasingly recognized reality that adolescents at high risk for PSUDs or who have already developed PS UD's have multiple problems or deviant behaviors such as delinquency, suicidal behavior, unplanned pregnancy, and more. The most common approaches to primary or early prevention are media campaigns and education programs. The goal of primary prevention among children and adolescents is to defer or preclude initiation of drug use, especially cigarettes, alcohol, and marijuana. These targeted "gateway" drugs serve as "villains" based on the fear arousal model of prevention. Even experimental use of these drugs is portrayed as dangerous, especially in mass media campaigns. Films and videos that dramatize the risks associated with drug use are usually utilized. The traditional education program is a prevention strategy used mainly in the form of information dissemination. An approach making use of informative materials to increase knowledge of the consequences of drug use, and promotion of an antidrug attitude in a classroom setting accompanied by displays of substances and relevant literature, is common. These approaches to prevention among children and adolescents were found to be ineffective by empirical studies, as reviewed by Schinke, Botvin, and Orlani (1991). The assumption that increased knowledge will decrease drug use was found to be invalid. In fact, there were reports that this approach may serve to increase adolescents' curiosity, which may initiate substance use. Media campaigns may tackle prevention by aiming at reducing harmful behaviors related to drinking. Success in the decrease of injuries related to drunk driving suggests that media intervention with motivated individuals is effective (Nathan, 1990). At the same time, however, the media indirectly provoke the adolescent to seek out cigarettes and alcohol by portraying the products as harmless and "cool" to use (e.g., Joe Camel, beer commercials). Coate and Grossman (1987) reported that use of alcohol by youths declines when either the price of alcoholic beverages or the legal drinking age increases. This finding should encourage community efforts to influence appropriate legislation. Affective education, designed to increase self-esteem and enhance responsible decision-making and personal growth, was another approach to prevention in the 1970s. No information on drugs was included in the program, yet the expectation was that the youngsters would be able to make the right decision regarding drug use. Both approaches, i.e., affective education and alternative activities, were found to be ineffective in the prevention of drug use. In fact, in the quest for a "natural high," as experienced in wilderness programs and in some entertainment and vocational programs, there were reports of increased substance abuse. Reports regarding the ineffectuality of these approaches to primary prevention were supported by two recent publications. It was concluded that a unidimensional approach to prevention in an extremely heterogeneous population is likely to be ineffective for a large percentage of participants (Tarter, 1992). A more advanced strategy for prevention is based on a psychosocial approach. These prevention programs are aimed at enhancing and social skills). These strategies are employed as part of primary, secondary, and tertiary prevention strategies and usually utilize manuals in group settings. Such strategies are rooted in social-learning theory and problem-behavior theory. According to the social-learning theory, individuals learn how to behave according to a four-component model: (1) role modeling, (2) reinforcement, (3) establishment of normative expectations, and (4) coping with social pressure. A fifth component is sometimes employed, i.e., training for generalization. A program entitled "Life Skills Training" based on the social-learning theory was developed by Botvin, Baker, and Renick (1984). The program was taught to 6th and 7th graders, at times led by peers, and resulted in significant improvements. The problem-behavior theory derives from a sociopsychological framework and recognizes the importance of the complex interaction of personal factors (cognition,

attitudes, beliefs), physiological genetic factors, and perceived environmental factors to problems occurring during adolescence, such as drug use, precocious sexual behavior, and delinquency . A problem behavior is one that is identified as a problem within the context of a particular value system and that elicits a social response designed to control it. Substance use, therefore, helps the adolescent to achieve personal goals such as peer group approval and alleviation of discomfort in interpersonal or intrapersonal conflicts. Programs designed to increase awareness of social influence to use drugs, and to reduce anxiety, enhance social and assertive skills, encourage resistance to substance use, and change attitudes and beliefs were reported to reduce smoking initiation up to 50% in 1-year follow-up studies (Botvin et al. , 1990). Other reports of substantial reduction in the prevalence of experimental smoking ranging from 42% to 75% cited the use of prevention approaches based on the social-learning theory and the problem-behavior theory. The intervention in children and adolescents at risk should start by enhancing the motivation of the child or adolescent and the caretakers to participate in a prevention program before the initiation of drug use. The objective of the intervention is to change the specific components of vulnerability within both the individual and the environment. Stable remission of a psychiatric disorder in the adolescent or in the caretaker, or in both, is a key to meaningful intervention. A hypothesis to be tested is that prevention for individuals at risk for PSUDs appears to command the same principles as those for intervention and a curriculum comparable to but less intense than that for treatment of PSUDs. Research has yet to report the results of a study that would aim at prevention intervention for children at risk for PSUDs and their caretakers. A control group of matched children and caretakers without a known family history of PSUDs and other risk factors for APSUDs may improve the scientific merit of such a study.

Suicide prevention: The efforts to prevent suicide have led to the development of primary, secondary, and tertiary prevention-intervention programs. Primary prevention programs are usually education- or curriculum-based courses. Secondary prevention of suicide focuses on identification and referral of at-risk youth, and the aim of tertiary prevention is to provide crisis intervention and treatment for suicide attempters. Education- or curriculum-based programs are very popular in schools, and their number increased dramatically in the 1980s and early 1990s. Their main goals, according to are (1) to raise awareness of the problem of adolescent suicide, (2) to train participants to identify adolescents at risk of suicide, and (3) to educate participants about community mental health resources and referral techniques. These programs are most commonly directed to high school students and their teachers and parent. The curriculum of a program commonly includes a review of the epidemiology of suicidal behavior, identification of "warning signs" of suicidal behavior, and discussion of depression. Referral systems and referral techniques, the importance of confidentiality, and problemsolving as well as stress-reduction skills are also addressed. Like programs for prevention of substance abuse, suicideprevention programs that operate mostly at school may never reach the adolescent high-risk population they are targeting. These adolescents are high school dropouts, teens with mental disorders, and others who are also at increased risk for suicide. It has been noted that many suicide victims are likely to have been absent from school before their suicidal act , as compared to students who regularly attend school and are not at high risk for suicidal behavior. The effectiveness of suicide-prevention programs has been evaluated and published so far only in two large controlled studies that included only self-report measures of knowledge and attitude variables. Students most at risk for suicide (those who reported on a previous attempt) found the programs upsetting, and even good attendance in the sessions did not

affect their attitude, nor was there a reduction in self-reported suicidal ideations or attempts. Spirito et al. (1988) indicated that the program improved knowledge only minimally and was ineffective in changing attitudes. Boys, who complete suicide more commonly than girls, reported changes in the undesirable direction, such as increased hopelessness and maladaptive coping responses following exposure to the suicide-prevention program.

Identification and referral for intervention or treatment of adolescents at risk for suicide is the focus of secondary prevention. Following a suicide or a suicide attempt by an adolescent, there is an increased risk for subsequent outbreaks of suicidal behavior by friends or adolescents from the same school who are at risk. Screening and referral for further treatment of students at risk for suicide following two suicides in the same high school proved to be effective. It is essential that mental health professionals, physicians, nurses, and teachers be trained for increased awareness to suicidal behavior and knowledge about the referral process and system. Professionals who work with youth at risk, such as runaways, juvenile delinquents, and psychiatric patients, must acquire diagnostic and intervention skills. Training programs for settings that host such populations have been developed and have been shown to be effective.

## **9. Treatment modalities of psychoactive substance use**

The objectives of this chapter are to describe the reported treatment modalities/interventions in different settings of treatment for adolescents with psychoactive substance use disorders (PSUDs). The development of the current state of knowledge concerning relations among patient variables, treatment characteristics, and environmental factors is discussed in light of the treatment-related politics of the era. Consideration is given to selection and planning of individualized treatment menus and review of updated treatment strategies, with special attention to the most commonly diagnosed comorbid psychiatric disorders. Present and future suggestions to decrease attrition and treatment failure and to improve treatment efficacy and aftercare are illuminated.

- (1) Treatment contributes significantly to patients' improvement.
- (2) Major improvements following substance abuse treatment are not limited to alcohol and drug use only; several other areas show moderate to major changes as well.
- (3) The extent of improvement is not clearly related to the treatment process. This study heralded the beginning of a new era in the research on treatment outcome and was followed by other studies that have employed rigorous research methodology and have investigated measurable treatment-outcome objectives. Also, subsequent treatment planning development has had to consider that polysubstance abuse is the rule rather than the exception, that a large proportion of patients with PSUDs are afflicted with a comorbid psychiatric disorder, and that the present classification of PSUDs recognizes these clinical characteristics as occurring along a gradient of severity.

Studies conducted among adults with PSUDs in the 1970s suggested that patient variables are predominantly more predictive of treatment outcome than are characteristics of treatment programs (Holden, 1987). This conclusion could be attributed mainly to the "black box" regimen used in most programs, which was characterized by a shotgun approach to treatment lacking dear differential components ( type of facility, treatment philosophy, and length of treatment appeared to be the pivotal characteristics of the program, without patient-treatment matching). With the advancement of treatment knowledge, it has

become dearer that a substantial proportion of the explained variance is shared between patient-related and program-related variables. Also, patient-environment interactions are gaining recognition as important determinants that contribute to the maintenance of posttreatment objectives. The articles on the treatment of APSUDs reviewed herein contribute to the understanding of this issue; however, their methodological limitations must be noted again in order to forestall unconditional generalizing. Large cohort studies on the treatment of APSUDs emerged in the late 1970s. Rush (1979) conducted treatment-outcome research on a mixed population of adolescents and young adults in the Pennsylvania substance-abuse treatment system. His criteria for successful treatment outcome included complete abstinence in addition to an index score combining education, training, and employment, which he defined as Productivity. Most of the 2,940 adolescents included in this sample were enrolled in outpatient programs. Patient variables that were found to predict treatment completion as well as treatment success in these drug free outpatient clinics included enrollment in education and employment programs at the time of admission, the abuse of only one psychoactive substance (a nonopioid agent), being white, and being older when the substance of abuse was first used. Delinquency at admission was inversely correlated with successful treatment outcome at discharge. It is important to note that Rush (1979) included other important patient variables under the definition of delinquency used in the study, such as a longer continuous use of psychoactive substances and early initiation of use.

Legal aspects of admission and treatment: Facilities that treat minors have to follow some basic common rules with slight differences. Consent for admission to an inpatient unit must be provided by the caretaker and child (unless the child or adolescent has been committed). Any patient under 18 years of age who is married, a parent, or emancipated has the right to consent on his or her own behalf. Prior to rendering any care without parental consent, the facility must obtain a written acknowledgment from the minor stating that he or she was: (1) advised of the purpose and nature of such treatment services; (2) told that he or she may withdraw the signed acknowledgment at any time; (3) told that the facility will make attempts to convince the child of the need for involvement of other family members in treatment and the facility's preference for parental consent for the rendering of treatment services; and (4) advised that a medical/clinical record of his or her treatment services will be made and maintained by the facility. For overnight treatment, parental consent is always required unless the parents refuse, in which case the Family Court may substitute its consent. The provisions of various laws and regulations establish that it is usually, though not always, necessary to obtain parental consent to deliver substance-abuse treatment to minors. However, the release of information regarding such treatment is governed by the strict Federal rules regarding education and medical records. Regardless of state laws granting parents unilateral rights to consent to treatment, the Federal rules require both a parent's and a minor patient's prior consent to the release of medical record information that would identify the patient as an alcohol or drug abuser. Whenever state law does permit a minor to consent unilaterally to treatment, the Federal rules require that only the patient's consent need be obtained prior to the release of medical records information. Also, drug- or alcohol-abusing patients must be notified on admission of the protections afforded by the Federal rules . Methadone maintenance treatment programs for patients under 18

years of age need to consider some legal implications. According to the Food and Drug Administration regulation. A person under 18 is required to have had two documented attempts at short-term detoxification or drug-free treatment to be eligible for maintenance treatment.

Behavioral and cognitive therapy: Behavioral and cognitive (BC) therapy processes play a possible role in the etiology and pathogenesis of PSUDs. The drug dependence syndrome proposed by Edwards and Gross implicates both biological processes and learning. The rapid reinstatement of tolerance and withdrawal symptoms with resumption of substance abuse in afflicted individuals suggests a biological process, whereas the use of psychoactive agents to relieve withdrawal symptoms and craving in response to internal or external cues seems more consistent with a learning process composed of behavioral and cognitive elements. Pavlovian conditioning models of tolerance and relapse incidence based on animal as well as human data indicate that environmental cues present at the time of substance administration contribute to tolerance. Stimuli associated with drug-seeking behavior followed by substance abuse precede the onset of drug effects and establish anticipatory responses (cognitive, physiological, and emotional). These external cues, such as places, situations, people, and drug paraphernalia, can serve as "paired" conditioning stimuli. These stimuli can provoke conditioned responses even in the absence of the drug. Because these conditioned responses are often drug-opposite (or "drugcompensatory") in nature, they may often mimic the effects of withdrawal symptoms. Psychoactive substances may serve as positive reinforcement (e.g., euphoria) or negative reinforcement (e.g., relief of withdrawal symptoms or unpleasant affects), and these characteristics contribute to the maintenance of PSUDs. The recognition of the importance of the relations among the host, agent, and environment to the initiation and maintenance of PSUDs led to the development of experimental BC strategies for the treatment of PSUDs. Recent challenges to the effectiveness of various treatment modalities of PSUDs suggest that many of the modalities are modestly effective at best. The introduction of BC interventions has contributed to the available treatment strategies and was reported to reduce rates of "lapse" (the initial episode of psychoactive substance use following a period of recovery) and "relapse" (a process in which indicators or warning signs appear prior to the individual's actual resumption of psychoactive substance use). Cognitive therapy is an active, short-term, symptom-reduction oriented system of psychotherapy. The therapy is based on an information-processing model that aims toward correcting cognitive distortions and specific habitual errors in thinking (Beck & Rush, 1989). The overall strategy in the wide variety of specific therapeutic techniques available is a blend of verbal procedures and behavior modification techniques. The most common variants are rational emotive therapy, stress inoculation training, and BC therapy. According to cognitive therapy, early experiences in life result in underlying "schemas"-i.e., subconscious avenues-that assign meaning and organization to events. Thinking errors may result from such schemas and lead to stereotyped unreasonable ideas that overtake a person's approach to life. These ideas are termed "automatic thoughts." Automatic thoughts and faulty schemas lead to self-fulfilling prophecies. The purpose of therapy is to make patients aware of their automatic thoughts, schemas, and reasoning errors, then develop and exercise new ways of thinking. These strategies and techniques have been implemented in a variety of psychiatric disorders and

maladaptive behaviors including depression, anxiety, suicidal behavior, aggressive behavior, and PSUDs.

Emergency treatment of the substance abusing adolescent:

Overdose or severe intoxication: The first priority in emergency treatment of overdose or severe intoxication, particularly in the unconscious patient, is to follow the ABC mnemonic: Assure that the Airway is patent, that Breathing (ventilation) is adequate and regular, and that Circulation-related vital signs, such as pulse and blood pressure, are sufficient for life support. Consideration must be given to differential diagnoses for the comatose adolescent (e.g., hypoglycemia or ketoacidosis). A thorough physical examination is essential to identify signs and symptoms of trauma. Also, clues for the psychoactive substance(s) responsible for a toxic state and possible trauma may be found by meticulous assessment of the eyes (e.g., nystagmus), pupils (e.g., dilation), skin (e.g., needle marks), odors, and a search of the patient's clothing. The patient and accompanying parties may also provide the necessary information, following a comprehensive anamnestic history. It is noteworthy that street drugs are often misrepresented, and what the adolescent thinks he swallowed, injected, snorted, or smoked may be altogether different from what he actually took. A list of street names of drugs could help improve communication with the patient and identification of the abused agents by accompanying parties. Examples of substance-specific physical findings include these: Needle marks may be visible in the case of injection of heroin or stimulants, as may bullae usually secondary to barbiturate injection. Pustular dermatosis or rash around the mouth is a sign of a chronic solvent abuser, as are tell tale smells of hydrocarbons and solvents on the patient's breath. Signs of paint on the hands or on the patient's face might be clues to the use of cans of spray paint for inhalation "bagging." These tables do not list withdrawal symptoms. Laboratory work should include an immediate analysis of bodily fluids such as urine and blood, and of gastric contents if a gastric lavage has been done. Clinical personnel must take proper precautions against contamination by the patient's body fluids to prevent an HIV or hepatitis infection. Emergency treatment for overdose of unknown substances usually involves beginning an intravenous infusion once airway, breathing, and circulation are assessed. Dextrostick to assess for hypoglycemia caused by or mimicking alcohol intoxication is necessary. IV naloxone (Narcan), 2 mg, with repeat dose every half hour as necessary should be given if the patient is unconscious. This dose should be repeated every 1-2 hours after the patient regains consciousness if there is a response suggesting that a narcotic is present. Long-acting opiates, particularly methadone, will outlast the antagonist effects of single doses of Narcan. Cardiovascular support, artificial respiration, keeping the patient warm, and elevating the legs to avoid signs and symptoms of shock are part of the immediate management of an undefined overdose until laboratory testing can be obtained. Noncomatose adolescents who are intoxicated and who have not ingested tart or caustic materials (such as lye, acid, or hydrocarbons) may be administered syrup of ipecac, 30 ml, to induce vomiting prior to being seen in the emergency room. Following emesis (or for patients for whom ipecac is contraindicated) and only after gastric contents have been aspirated for analysis, ingestion or gastric infusion of 50-100 g activated charcoal in 4-8 oz of water is suggested. Gastric lavage should be performed meticulously only after protection of the airway has been established and by trained emergency room personnel. If a patient vomits the first dose of activated charcoal, the dose can safely be

repeated. Multiple doses of charcoal are indicated for drugs that are recirculated enterohepatically, such as glutethimide. Most substances are well absorbed by activated charcoal, including volatile substances such as alcohol, kerosene, and other hydrocarbons; barbiturates; opioids; cocaine; and amphetamines.

Stimulants: Overdose of a stimulant (e.g., amphetamine) is a medical emergency because of the risk of seizures and cardiac arrhythmias. Antiarrhythmia drugs and intravenous benzodiazepine, carbamazepine, or phenytoin may be necessary. A review of physical examination and laboratory tests for trauma is necessary. Gastric lavage with acidic solution and acidification of the urine with ascorbic acid or ammonium chloride may enhance excretion of the amphetamines. A hypertensive crisis is treated with antihypertensives and  $\alpha$ -adrenergic blockers. Haloperidol is used to manage psychotic reactions. Anxiety reactions may be managed with reassurance and occasionally small doses of a short-acting benzodiazepine such as lorazepam (Ativan).

Cocaine: The biphasic problems of acute cocaine overdose are notorious. The first phase of high stimulation may require "talking down" therapy and reassurance. The patient may experience panic, paranoia, agitation, and visual and tactile hallucinations ("coke bugs," "coke lights," or "trails"). This visual-tactile phenomenon is also associated with acute amphetamine overdose. Seizures may require intravenous diazepam or phenytoin. Arrhythmias may require propranolol, lidocaine, or phenytoin. The second phase of cocaine overdose may present with profound depression, suicidal ideation, drug-seeking, hypertension, respiratory depression, and shock. Intravenous fluids, reassurance, and prevention of further ingestion are part of the treatment. Amphetamines and cocaine may trigger psychotic episodes requiring psychiatric attention and may be treated with small doses of neuroleptic such as haloperidol.

Alcohol: Alcohol-intoxicated patients should be questioned and evaluated for trauma, multiple chemical ingestions, and hypoglycemia. Alcohol is absorbed rapidly, and emesis, lavage, and activated charcoal are seldom useful alone unless other substances have been ingested. Blood alcohol levels of 0.4 mg% are usually considered toxic, but death may occur at lower doses. Correction of metabolic abnormalities and supportive care of respiration, circulation, and body temperature are necessary in the alcohol-unconscious adolescent until the patient regains consciousness. Alcohol is metabolized by a zero-order metabolism at a steady rate of somewhere between 10 and 100 m/liter per hour. The use of stimulants such as coffee to so-called "sober up" an intoxicated individual with alcohol is contraindicated. Tactile stimulation of a partially comatose patient can be of help. When the patient is conscious, forced liquids, exercise, and fresh air can help toward speeding return to full consciousness.

Opioids: Opioids are used intranasally or intravenously (IV). Overdose is common in the IV drug user. Doses of naloxone, 0.4-2 mg, in repeated doses every 1/2-1 hour depending on the degree of sedation, is the treatment of choice. The classic signs of opiate overdose are pinpoint pupils and hypoventilation. Cardiorespiratory support and intravenous infusion are often necessary. Pulmonary edema may require emergency hospital treatment. For long-acting opioids such as methadone or propoxyphene (Darvon), repeated doses of naloxone

may be necessary. Long term signs and symptoms of opioid withdrawal may be managed with oral clonidine or clonidine transdermal patches.

## VALUE ADDED COURSE

### Adolescent substance abuse FMT VAC 04

#### 4. List of Students Enrolled January 2018 – June- 2018

<b>2<sup>nd</sup> Year MBBS Student</b>		
<b>Sl. No</b>	<b>Name of the Student</b>	<b>Reg No</b>
<b>1</b>	VASIPALLI SUJITHA	U16MB391
<b>2</b>	VENKAT SRI RANGAN.P.B	U16MB392
<b>3</b>	VENKATACHALAPATHY .G	U16MB393
<b>4</b>	VIDHY ADHARAN.S	U16MB394
<b>5</b>	VIGNESH .D	U16MB395
<b>6</b>	VIGNESH .S	U16MB396
<b>7</b>	VIJAY .M	U16MB397
<b>8</b>	VINDUJA VIJAY	U16MB398
<b>9</b>	VIPIN SHARMA	U16MB399
<b>10</b>	VISALINI .S	U16MB400
<b>11</b>	SHACHI SHASTRI	U17MB371
<b>12</b>	SHATAVISHA MUKHERJEE	U17MB372
<b>13</b>	SHEDAM OMKAR MAHADEV	U17MB373
<b>14</b>	SHIVA VEERANNA HOUSR	U17MB374
<b>15</b>	SHIVAM ANMOL	U17MB375
<b>16</b>	SHIVANI BISWAL	U17MB376
<b>17</b>	SHREYA KUMARI	U17MB377
<b>18</b>	SHUBHAM KAMDE	U17MB378
<b>19</b>	SOTALA MANULIKHA CHOWDARI	U17MB379
<b>20</b>	SOUNDHARYA.K	U17MB380

**RESOURCE PERSON**

**COORDINATOR**

## VALUE ADDED COURSE

### Adolescent substance abuse FMT VAC 04

#### 4. List of Students Enrolled July 2017 – December- 2017

<b>2<sup>nd</sup> Year MBBS Student</b>		
<b>Sl. No</b>	<b>Name of the Student</b>	<b>Reg No</b>
<b>1</b>	SANDHYA	U16MB371
<b>2</b>	SARA .R	U16MB372
<b>3</b>	SARASWATI .N	U16MB373
<b>4</b>	SATHYA VIJAYENDRAN P.U	U16MB374
<b>5</b>	SHAIKH IMRAN SHAIKH NAJIR	U16MB375
<b>6</b>	SHIKHA SONI	U16MB376
<b>7</b>	SINGAMSETTY SANDEEP	U16MB377
<b>8</b>	SINGAMSETTY SRINIVAS	U16MB378
<b>9</b>	SNEHA	U16MB379
<b>10</b>	SNEHA SINGH	U16MB380
<b>11</b>	SRIRAM .S	U16MB381
<b>12</b>	SUBALAKSHMI .D	U16MB382
<b>13</b>	SUNITHA .A	U16MB383
<b>14</b>	SURENDAR RAJ .S	U16MB384
<b>15</b>	SUSMITHA .V	U16MB385
<b>16</b>	SWATI GUPTA	U16MB386
<b>17</b>	SWATI KUMARI	U16MB387
<b>18</b>	THAMARAIAK KANNAN	U16MB388
<b>19</b>	THEEPTHI .T	U16MB389
<b>20</b>	UDDIP DATTA RAY	U16MB390

**RESOURCE PERSON**

**COORDINATOR**



**SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH**

**Annexure - IV**

**SPORTS INJURIES**

**MULTIPLE CHOICE QUESTIONS**

**Course Code: FMT 04**

**I. ANSWER ALL THE QUESTIONS**

**1. A synthetic depressant and analgesic is**

- a. LSD
- b. Morphine
- c. Pethidine
- d. Heroin

**2. Alcoholics generally suffer from which vitamin deficiency**

- a. Vit D
- b. Vit E
- c. Vit A
- d. Vit K

**3. Which of the following is hallucinogenic drug**

- a. Morphine
- b. Cocaine
- c. LSD
- d. Heroine

**4. Anabolic steroids are the same as corticosteroids. Both drugs have the same dangerous side effects.**

- a. True
- b. False



## SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION AND RESEARCH

5. Most people who are treated for substance-use disorder need to stay in treatment for at least **3 months**.

- a. True
- b. False



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that \_\_\_\_\_ has  
actively participated in the Value Added Course on *Adolescent substance abuse* held during  
July 2017 – December 2017 Organized by Sri Lakshmi Narayana Institute of Medical  
Sciences, Pondicherry- 605 502, India.

Dr.S.N.Rathod  
RESOURCE PERSON

Dr. Jayalakshmi  
COORDINATOR

## Student Feedback Form

Course Name: **Adolescent substance abuse**

Subject Code: **FMT VAC 04**

Name of Student: \_\_\_\_\_ Roll No.: \_\_\_\_\_

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

SI. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					
2	Course contents met with your expectations					
3	Lecturer sequence was well planned					
4	Lectures were clear and easy to understand					
5	Teaching aids were effective					
6	Instructors encourage interaction and were helpful					
7	The level of the course					
8	Overall rating of the course	1	2	3	4	5

*\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory*

Suggestions if any:

Date:

Signature



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



## Annexure 1

Date: 2<sup>nd</sup> Jan 2018

From  
Dr. S.N. Rathod,  
Professor and Head,  
Department of Forensic Medicine,  
Sri Lakshmi Narayana Institute of Medical Sciences,  
Bharath Institute of Higher Education and Research,  
Chennai.

To  
The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences,  
Bharath Institute of Higher Education and Research,  
Chennai.

### **Sub: Permission to conduct value-added course: Adolescent substance abuse**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: **Adolescent substance abuse**

from January 2018 – June 2018. We solicit your kind permission for the same.

Kind Regards

Dr. S.N. Rathod

---

### **FOR THE USE OF DEANS OFFICE**

Names of Committee members for evaluating the course:

The Dean:

The HOD:

The Expert:

The committee has discussed about the course and is approved.

Dean

Subject Expert

HOD

(Sign & Seal)

(Sign & Seal)

(Sign & Seal)



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



## Circular

3<sup>rd</sup> January 2018

### **Sub: Organising Value-added Course: Adolescent substance abuse**

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research**, is organizing **Adolescent substance abuse**. The course content and registration form is enclosed below.”

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before January 17<sup>th</sup> 2018. Applications received after the mentioned date shall not be entertained under any circumstances.

Dean

Encl: Copy of Course content and Registration form.



**Annexure 2 – Course Proposal**

**Course Title: Adolescent substance abuse**

- Course Objective:**
1. Terminology and classification
  2. Etiology and pathogenesis of adolescent substance abuse
  3. Epidemiology of adolescent substance use and psychoactive substance use disorders.
  4. Dual diagnosis: Psychoactive substance abuse and psychiatric comorbidity
  5. Adolescent substance use and psychoactive substance use: relation to suicidal behavior
  6. Maternal and infancy addiction: adolescent mothers and their offspring
  7. HIV/AIDS and psychoactive substance use in adolescents
  8. prevention of psychoactive substance use disorders and suicide
  9. Treatment modalities of psychoactive substance use

**Course Outcome:** On successful completion of the course the students will be able diagnose and manage adolescent substance and psychoactive substance abuse

**Course Audience:** 2<sup>nd</sup> year MBBS student

**Course Coordinator:** Dr. Jayalakshmi

**Course Faculties with Qualification and Designation:**

**1. Dr. S.Prasanth Kumaran** MBBS, MD (Forensic Medicine),  
Assistant Professor

**Course Curriculum/Topics with schedule (Min of 30 hours)**

S.No	Date	Topic	Time	Hours
1	14-01- 18	Terminology and classification	2 pm to 5 pm	3
2	28-01- 18	Etiology and pathogenesis of adolescent substance abuse	2 pm to 5 pm	3
3	11-02- 18	Epidemiology of adolescent substance use and psychoactive substance use disorders	2 pm to 5 pm	3
4	25-02- 18	Dualdiagnosis:Psychoactive	2 pm to 5 pm	3



# Sri Lakshmi Narayana Institute of Medical Sciences

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		substance abuse and psychiatric comorbidity		
5	08-03- 18	Adolescent substance use and psychoactive substance use: relation to suicidal behavior	2 pm to 5 pm	3
6	22-03- 18	Maternal and infancy addiction: adolescent mothers and their offspring	2 pm to 5 pm	3
7	13-04- 18	HIV/AIDS and psychoactive substance use in adolescents	2 pm to 5 pm	3
8	27-04-18	prevention of psychoactive substance use disorders and suicide	2 pm to 5 pm	3
9	24-05-18	Treatment modalities of psychoactive substance use	2 pm to 5 pm	3
10	08-06-18	Treatment modalities of psychoactive substance use	2 pm to 5 pm	3
			Total Hours	30

## REFERENCE BOOKS: (Minimum 2)

1. Adolescent substance abuse- a comprehensive guide to theory and practice
2. Handbook of adolescent substance abuse



# Sri Lakshmi Narayana Institute of Medical Sciences

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(Deemed to be University under section 3 of the UGC Act 1956)



## Annexure 3

**Bharath Institute of Higher Education and Research**

**Sri Lakshmi Narayana Institute of Medical Sciences,**

Participant list of Value added course: **Adolescent substance abuse on January 2018 – June 2018**

Sl.No	Reg.No	Name of the candidate	Signature
1.	U16MB391	VASIPALLI SUJITHA	
2.	U16MB392	VENKAT SRI RANGAN.P.B	
3.	U16MB393	VENKATACHALAPATHY .G	
4.	U16MB394	VIDHY ADHARAN.S	
5.	U16MB395	VIGNESH .D	
6.	U16MB396	VIGNESH .S	
7.	U16MB397	VIJAY .M	
8.	U16MB398	VINDUJA VIJAY	
9.	U16MB399	VIPIN SHARMA	
10.	U16MB400	VISALINI .S	
11.	U17MB371	SHACHI SHASTRI	
12.	U17MB372	SHATAVISHA MUKHERJEE	
13.	U17MB373	SHEDAM OMKAR MAHADEV	
14.	U17MB374	SHIVA VEERANNA HOUSR	
15.	U17MB375	SHIVAM ANMOL	
16.	U17MB376	SHIVANI BISWAL	
17.	U17MB377	SHREYA KUMARI	
18.	U17MB378	SHUBHAM KAMDE	
19.	U17MB379	SOTALA MANULIKHA CHOWDARI	



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



20	U17MB380	SOUNDHARYA.K	
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# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



## Annexure 4

### Course/Training Feedback Form

**Course:** Adolescent substance abuse  
**Date:** January 2018– June 2018  
**Name:**  
**Reg NO.**  
**Department:** Forensic medicine and toxicology

**Q 1:** Please rate your overall satisfaction with the format of the course:

- a. Excellent    b. Very Good    c. Satisfactory    d. unsatisfactory

**Q 2:** Please rate course notes:

- a. Excellent    b. Very Good    c. Satisfactory    d. unsatisfactory

**Q 3:** The lecture sequence was well planned

- a. Excellent    b. Very Good    c. Satisfactory    d. unsatisfactory

**Q 4:** The lectures were clear and easy to understand

- a. Excellent    b. Very Good    c. Satisfactory    d. unsatisfactory

**Q 5:** Please rate the quality of pre-course administration and information:

- a. Excellent    b. Very Good    c. Satisfactory    d. unsatisfactory

**Q 6:** Any other suggestions:

**Comments:**

**Thank you for taking the time to complete this survey, your comments are much appreciated.**

**OPTIONAL Section:** Name \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



## Annexure 5

Date: 09-06-2018

From  
Dr. S. N. Rathod  
Forensic Medicine & Toxicology  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

Through Proper Channel

To  
The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

### **Sub: Completion of value-added course: Adolescent substance abuse**

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled **Adolescent substance abuse** from January 2018– June 2018. We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards

Dr. Jayalakshmi

Dr. S.N. Rathod

**Encl: Certificates**

**Photographs**



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



## Annexure 6 - SAMPLE CERTIFICATE TO BE ATTACHED

	<b>Sri Lakshmi Narayana Institute of Medical Sciences</b> Affiliated to Bharath Institute of Higher Education & Research (Deemed to be University under section 3 of the UGC Act 1956)	
<b>CERTIFICATE OF MERIT</b>		
<p>This is to certify that _____ has actively participated in the Value Added Course on “Moral Narration” held during July 2018 – Dec 2018 Organized by <u>Sri Lakshmi Narayana Institute of Medical Sciences</u>, Pondicherry- 605 502, India.</p>		
<p>Dr. S.N. Rathod RESOURCE PERSON</p>		<p>Dr. Jayalakshmi COORDINATOR</p>



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



## Annexure 1

Date: 2<sup>nd</sup> July 2017

From  
Dr. S.N. Rathod,  
Professor and Head,  
Department of Forensic Medicine,  
Sri Lakshmi Narayana Institute of Medical Sciences,  
Bharath Institute of Higher Education and Research,  
Chennai.

To  
The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences,  
Bharath Institute of Higher Education and Research,  
Chennai.

### **Sub: Permission to conduct value-added course: Adolescent substance abuse**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: **Adolescent substance abuse** from July 2017 – December 2017. We solicit your kind permission for the same.

Kind Regards

Dr. S.N. Rathod

---

### **FOR THE USE OF DEANS OFFICE**

Names of Committee members for evaluating the course:

The Dean:

The HOD:

The Expert:

The committee has discussed about the course and is approved.

Dean

Subject Expert

HOD

(Sign & Seal)

(Sign & Seal)

(Sign & Seal)



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



## Circular

3<sup>rd</sup> July 2017

### **Sub: Organising Value-added Course: Adolescent substance abuse**

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research**, is organizing **Adolescent substance abuse**. The course content and registration form is enclosed below.”

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before July 17<sup>th</sup> 2017. Applications received after the mentioned date shall not be entertained under any circumstances.

Dean

Encl: Copy of Course content and Registration form.



## Annexure 2 – Course Proposal

**Course Title:** Sports injuries

- Course Objective:**
1. Terminology and classification
  2. Etiology and pathogenesis of adolescent substance abuse
  3. Epidemiology of adolescent substance use and psychoactive substance use disorders.
  4. Dual diagnosis: Psychoactive substance abuse and psychiatric comorbidity
  5. Adolescent substance use and psychoactive substance use: relation to suicidal behavior
  6. Maternal and infancy addiction: adolescent mothers and their offspring
  7. HIV/AIDS and psychoactive substance use in adolescents
  8. prevention of psychoactive substance use disorders and suicide
  9. Treatment modalities of psychoactive substance use

**Course Outcome:** On successful completion of the course the students will be able diagnose and manage adolescent substance and psychoactive substance abuse

**Course Audience:** 2<sup>nd</sup> year MBBS student

**Course Coordinator:** Dr. Jayalakshmi

### **Course Faculties with Qualification and Designation:**

**1. Dr. S.Prasanth Kumaran** MBBS, MD (Forensic Medicine),  
Assistant Professor

### **Course Curriculum/Topics with schedule (Min of 30 hours)**

S.No	Date	Topic	Time	Hours
1	14-07- 17	Terminology and classification	2 pm to 5 pm	3
2	28-07- 17	Etiology and pathogenesis of adolescent substance abuse	2 pm to 5 pm	3
3	11-08- 17	Epidemiology of adolescent substance use and psychoactive substance use disorders	2 pm to 5 pm	3
4	25-08- 17	Dual diagnosis: Psychoactive	2 pm to 5 pm	3



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



		substance abuse and psychiatric comorbidity		
5	08-09-17	Adolescent substance use and psychoactive substance use: relation to suicidal behavior	2 pm to 5 pm	3
6	22-09-17	Maternal and infancy addiction: adolescent mothers and their offspring	2 pm to 5 pm	3
7	13-10-17	HIV/AIDS and psychoactive substance use in adolescents	2 pm to 5 pm	3
8	27-10-17	prevention of psychoactive substance use disorders and suicide	2 pm to 5 pm	3
9	24-11-17	Treatment modalities of psychoactive substance use	2 pm to 5 pm	3
10	08-12-17	Treatment modalities of psychoactive substance use	2 pm to 5 pm	3
			Total Hours	30

## REFERENCE BOOKS: (Minimum 2)

1. Adolescent substance abuse- a comprehensive guide to theory and practice
2. Handbook of adolescent substance abuse



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



## Annexure 3

**Bharath Institute of Higher Education and Research**

**Sri Lakshmi Narayana Institute of Medical Sciences,**

Participant list of Value added course: **Adolescent substance abuse on July 2017 – Dec 2017**

Sl.No	Reg.No	Name of the candidate	Signature
1.	U16MB371	SANDHYA	
2.	U16MB372	SARA .R	
3.	U16MB373	SARASWATI .N	
4.	U16MB374	SATHYA VIJAYENDRAN P.U	
5.	U16MB375	SHAIKH IMRAN SHAIKH NAJIR	
6.	U16MB376	SHIKHA SONI	
7.	U16MB377	SINGAMSETTY SANDEEP	
8.	U16MB378	SINGAMSETTY SRINIVAS	
9.	U16MB379	SNEHA	
10.	U16MB380	SNEHA SINGH	
11.	U16MB381	SRIRAM .S	
12.	U16MB382	SUBALAKSHMI .D	
13.	U16MB383	SUNITHA .A	
14.	U16MB384	SURENDAR RAJ .S	
15.	U16MB385	SUSMITHA .V	
16.	U16MB386	SWATI GUPTA	
17.	U16MB387	SWATI KUMARI	
18.	U16MB388	THAMARAIAK KANNAN	
19.	U16MB389	THEEPHI .T	



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



20	U16MB390	UDDIP DATTA RAY	
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# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



## Annexure 4

### Course/Training Feedback Form

**Course:** Adolescent substance abuse  
**Date:** July 2017– Dec 2017  
**Name:**  
**Reg NO.**  
**Department:** Forensic medicine and toxicology

**Q 1:** Please rate your overall satisfaction with the format of the course:

- a. Excellent    b. Very Good    c. Satisfactory    d. unsatisfactory

**Q 2:** Please rate course notes:

- a. Excellent    b. Very Good    c. Satisfactory    d. unsatisfactory

**Q 3:** The lecture sequence was well planned

- a. Excellent    b. Very Good    c. Satisfactory    d. unsatisfactory

**Q 4:** The lectures were clear and easy to understand

- a. Excellent    b. Very Good    c. Satisfactory    d. unsatisfactory

**Q 5:** Please rate the quality of pre-course administration and information:

- a. Excellent    b. Very Good    c. Satisfactory    d. unsatisfactory

**Q 6:** Any other suggestions:

**Comments:**

**Thank you for taking the time to complete this survey, your comments are much appreciated.**

**OPTIONAL Section:** Name \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



## Annexure 5

Date: 12-12-2017

From  
Dr. S. N. Rathod  
Forensic Medicine & Toxicology  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

Through Proper Channel

To  
The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

### **Sub: Completion of value-added course: Adolescent substance abuse**

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled **Adolescent substance abuse** on July 2017– Dec 2017. We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards

Dr. Jayalakshmi

Dr. S.N. Rathod

**Encl: Certificates**

**Photographs**



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



## Annexure 6 - SAMPLE CERTIFICATE TO BE ATTACHED

	<b>Sri Lakshmi Narayana Institute of Medical Sciences</b> Affiliated to Bharath Institute of Higher Education & Research (Deemed to be University under section 3 of the UGC Act 1956)	
<b>CERTIFICATE OF MERIT</b>		
<p>This is to certify that _____ has actively participated in the Value Added Course on “Moral Narration” held during July 2018 – Dec 2018 Organized by <u>Sri Lakshmi Narayana Institute of Medical Sciences</u>, Pondicherry- 605 502, India.</p>		
<p>Dr. S.N. Rathod RESOURCE PERSON</p>		<p>Dr. Jayalakshmi COORDINATOR</p>

SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES



Date: 08/12/2017

From  
Dr. Aravind. C  
Professor and Head,  
Department of General Medicine  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research  
Chennai

To  
The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research  
Chennai

**Sub: Permission to conduct value-added course: Importance of history taking in diagnosis**

Respected Madam,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: "Importance of history taking in diagnosis" on 05/01/2018. We solicit your kind permission for the same.

Kind Regards

*Dr. Aravind. C*  
Dr. Aravind. C  
Reg.No:68432  
Professor & HOD, General Medicine  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502.

**FOR THE USE OF DEAN'S OFFICE**

Names of Committee members for evaluating the course:

The Dean: Dr. Jayalakshmi

The HOD: Dr. Aravind. C

The Expert: Dr. Chellapandian

The committee has discussed about the course and is approved.

Dean

*Dr. G. Jayalakshmi*  
Dr. G. JAYALAKSHMI, BSC.,MBBS.,DTC.D.,M.D.,  
DEAN  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Ageram Kudapakkam, Post,  
Villanur Commune Puducherry-605 502.

*Dr. Chellapandian*  
Subject Expert  
DEPARTMENT OF GENERAL MEDICINE  
SRI LAKSHMI NARAYANA  
INSTITUTE OF MEDICAL SCIENCES  
OSUDU, KUDAPAKKAM, PUDUCHERRY-605 502.  
*Dr. Aravind. C*  
Dr. Aravind. C  
Reg.No:68432  
Professor & HOD, General Medicine  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502.

DR. C. ARVIND, MD.  
101, K. S. ROAD,  
MADRAS 20

DR. C. ARVIND, MD.  
101, K. S. ROAD,  
MADRAS 20



OFFICE OF THE DEAN

## Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P -II ) dt. 11/07/2011 ]  
[ Affiliated to Bharath University, Chennai - TN ]

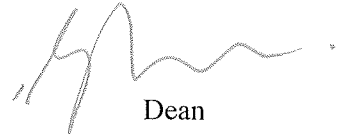
### Circular

13/12/2017

#### **Sub: Organising Value-added Course: IMPORTANCE OF HISTORY TAKING IN DIAGNOSIS reg**

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research**, is organising a Value added course, titled, "Importance of history taking in diagnosis" between January 2018 and April 2018. The course content is enclosed below.

The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before 02/01/2018. Applications received after the mentioned date shall not be entertained under any circumstances.



Dean

**Dr. G. JAYALAKSHMI**, BSC., MBBS., DTCO., M.D.,  
DEAN

Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Ageram Kudapakkam, Post,  
Villanur Commune Puducherry-605 502.

Encl: Copy of Course content



## COURSE PROPOSAL

- Course Title:** Importance of history taking in diagnosis
- Course Objective:** To create an awareness among students of the 2<sup>nd</sup> year M.B.B.S about the importance of history taking in diagnosis
- Course Outcome:** The Students acquired knowledge on the importance of history taking in clinical diagnosis
- Course Audience:** A batch of 15 students belonging to the 2nd year of M.B.B.S
- Course Coordinator:** Dr. Aravind. C

### **Course Faculties with Qualification and Designation:**

1. Dr. Chellapandian

Professor  
Department of General Medicine  
SLIMS

2. Dr. Muthukumarasamy. B

Professor  
Department of General Medicine  
SLIMS

### Course Curriculum/Topics with schedule

Sl No	Date	Topic	Time	Hours	Name of the faculty
1.	05/01/2018	What is history taking?	5 pm to 8 pm	3 hours	Dr. Chellapandian
2.	12/01/2018	The age old tradition of collecting ailment related information	4: 30 pm to 6: 30 pm	2 hours	Dr. Chellapandian
3.	19/01/2018	Winning trust and building rapport	5 pm to 8 pm	3 hours	Dr. Muthukumarasamy. B
4.	26/01/2018	How history taking aids in diagnosis the most	5 pm to 7 pm	2 hours	Dr. Muthukumarasamy. B
5.	09/02/2018	The current investigation oriented medical practice – A boon or a bane?	5 pm to 7 pm	2 hours	Dr. Chellapandian
6.	16/02/2018	How to gather	4: 30 pm to 6: 30	2 hours	Dr. Chellapandian

		certain personal history	pm		
7.	23/02/2018	Converting the patient's symptoms to arriving at a diagnosis	5 pm to 7 pm	2 hours	Dr. Chellapandian
8.	02/03/2018	How to approach an anxious, apprehensive patient	5 pm to 7 pm	2 hours	Dr. Muthukumarasamy. B
9.	16/03/2018	How to disintegrate a convoluted history	4 pm to 6 pm	2 hours	Dr. Muthukumarasamy. B
10	23/03/2018	The ever-changing diagnostic tools	4 pm to 7 pm	3 hours	Dr. Chellapandian
11	30/03/2018	How the new diagnostic tools assist history taking	4 pm to 6 pm	2 hours	Dr. Aravind. C
12	06/04/2018	Informing the probable diagnosis to an anxious patient	4 pm to 7 pm	3 hours	Dr. Chellapandian
13	13/04/2018	SUMMARY – History taking the lost art!	4 pm to 6 pm	2 hours	Dr. Aravind. C
			Total Hours	30	

**REFERENCE BOOKS:**

1. HARRISON'S PRINCIPLES OF INTERNAL MEDICINE; 18<sup>th</sup> EDITION
2. HUTCHINSON'S CLINICAL METHODS

## VALUE ADDED COURSE

1. Name of the programme and code  
Importance of history taking in diagnosis; IM08
2. Duration & period  
30 hrs; between January 2018 – April 2018
3. Information Brochure and course content of value-added courses  
Enclosed as Annexure – I
4. List of students enrolled  
Enclosed as Annexure – II
5. Assessment procedures:  
Short notes – Enclosed as Annexure – III
6. Certificate model  
Enclosed as Annexure – IV
7. No. of times offered during the same year  
1; January 2018 – April 2018
8. Year of discontinuation  
2018
9. Summary report of each program year wise:

VALUE ADDED COURSE: January 2018 – April 2018					
Sl. No.	Course code	Course name	Resource persons	Target Students	Strength and year
1	IM08	Importance of history taking in diagnosis	Dr. Chellapandian Dr. Muthukumarasamy. B	2 <sup>nd</sup> year MBBS	15 (January 2018 – April 2018)

10. Course feedback  
Enclosed as Annexure V

**RESOURCE PERSON – Dr. Chellapandian**

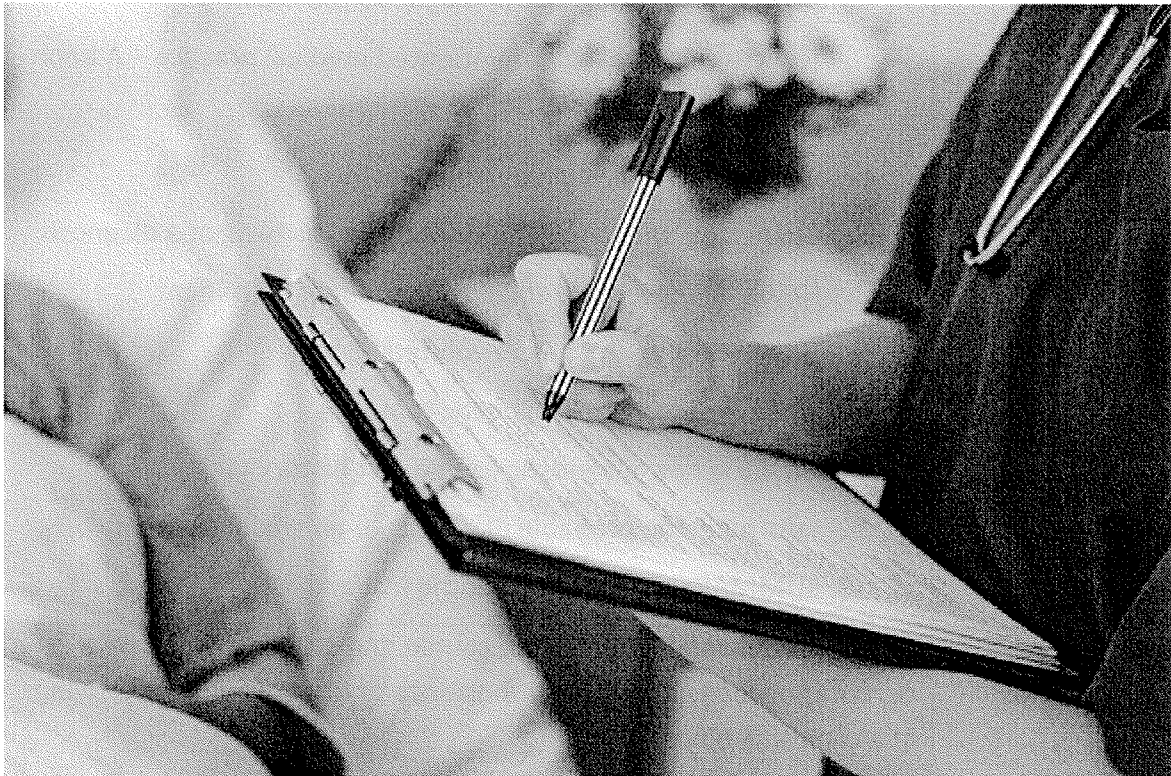
**COORDINATOR – Dr. Aravind. C. ARAVIND, MD.**

Reg.No:68452  
Professor & HOD, General Medicine  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502.



ANNEXURE - I  
PARTICIPANT HANDBOOK

IMPORTANCE OF HISTORY TAKING IN CLINICAL DIAGNOSIS



## HISTORY TAKING – THE LOST ART!!!

### COURSE DETAILS

PARTICULARS	DESCRIPTION
Course title	IMPORTANCE OF HISTORY TAKING IN DIAGNOSIS
Course code	IM08
Objective	<ol style="list-style-type: none"><li>1. What is history taking?</li><li>2. The age old tradition of collecting ailment related information</li><li>3. Winning trust and building rapport</li><li>4. How history taking aids in diagnosis the most</li><li>5. The current investigation oriented medical practice – A boon or a bane?</li><li>6. How to gather certain personal history</li><li>7. Converting the patient's symptoms to arriving at a diagnosis</li><li>8. How to approach an anxious, apprehensive patient</li><li>9. How to disintegrate a convoluted history</li><li>10. The ever-changing diagnostic tools</li><li>11. How the new diagnostic tools assist history taking</li><li>12. Informing the probable diagnosis to an anxious patient</li><li>13. SUMMARY – History taking the lost art!</li></ol>
Key competencies	On successful completion of the course, the students will have a better knowledge about the importance of history taking in arriving at a clinical diagnosis
Target students	Second year MBBS
Duration	30 hours; between January 2018 and April 2018
Assessment procedure	Short notes

## IMPORTANCE OF HISTORY TAKING IN DIAGNOSIS

“With the rapid extension of laboratory tests of greater accuracy, there is a tendency for some clinicians and hence for some students in reaching a diagnosis to rely more on laboratory reports and less on the history of the illness, the examination and behavior of the patient, and clinical judgment. While in many cases laboratory findings are invaluable for reaching correct conclusions, the student should never be allowed to forget that it takes a man, not a machine, to understand a man.”

The important contribution of the history and physical in making a correct medical diagnosis has been known for centuries. Rufus of Ephesus in approximately 100 AD wrote, “It is important to ask questions of patients because with the help of these questions one will know more exactly some of the things that concern the disease and one will treat the disease better.” Although the history and physical continues to be the most important tool that enables the competent physician to make a correct diagnosis, these skills are being undermined by technology that many physicians mistakenly believe to be the new gold standard.

In 1938, William Mayo said, “Sometimes I wonder whether today we take sufficient care to make a thorough physical examination before our patient starts off on a round of laboratories, which have become so necessary that oftentimes we do not fully appreciate the value of our five senses in estimating the condition of the patient.” In most medical schools, students are taught the art of physical diagnosis early in their preclinical years without a thorough understanding of their application to clinical medicine. These students are then placed under the tutelage of residents and junior attendings who often are not skilled practitioners of the art of physical diagnosis and who, themselves, rely heavily on technology to make a diagnosis. Morning report, which is a prime educational venue for physicians-in-training, has become a contest to see which resident can develop the longest list of differential diagnoses instead of the single most likely diagnosis.

This often leads to “shotgun” testing to rule out or in all possibilities. It is, therefore, no wonder that the cost of medical care is skyrocketing as every patient is scanned and tested to absurdity.

## HISTORY TAKING – THE LOST ART

In 1946, Allen in his monograph, *Medical Education and the Changing Order*, wrote: “with the rapid extension of laboratory tests of greater accuracy, there is a tendency for some clinicians and hence for some students in reaching a diagnosis to rely more on laboratory reports and less on the history of the illness, the examination and behavior of the patient and clinical judgment. While in many cases laboratory findings are invaluable for reaching correct conclusions, the student should never be allowed to forget that it takes a man, not a machine, to understand a man.” Although it is often said that much of the reliance on testing results from the fear of malpractice, there is no evidence that excess testing diminishes the number of diagnostic errors. The major problem seems to be that the science of medicine is replacing the art of medicine. Preclinical students are usually taught the physical examination in a lecture hall. They practice on each other and mostly find a normal examination. Even when they are taken to the bedside, the teaching of clinical skills is often done by trainees or junior faculty, who themselves do not possess the necessary expertise. The students are then tested with an objective structured clinical examination during which they go through the motions of demonstrating an examination that has little content. During the 3rd and 4th years, medical students rotate on the wards where their clinical skills are supposed to be reinforced by their residents. The most common notation that we find documented in the cardiovascular examination is often “regular rate and rhythm without murmurs or gallops,” despite the presence of numerous abnormal findings. The mnemonic, LGFD (looks good from door), has been jokingly used by more senior clinicians to describe the examinations of their younger colleagues. Although many medical schools now offer courses in advanced physical diagnosis, these are usually as electives. How many students participate in these courses and how effective is the learning, is unclear.

## WHERE ARE WE FALLING SHORT??

Less than 50% of medical students report that attending physicians observed them performing some aspect of a physical examination, and less than 20% report they are observed interviewing a patient. Even when faculty members do observe a student’s performance, many do not identify the errors made by those students during their examinations. Schwartz et al have shown that the physical examination skills of medical students at the end of the 3rd

year declined compared with the 2nd year students. At the end of the 4th year, before joining a residency program, students are required to pass a clinical skills examination. Again, they are asked to demonstrate the motions of an ideal examination on standardized (normal) patients. Whether they can actually identify an abnormality is not tested. That, unfortunately, is all the skill needed to be an internal medicine resident who is then supposed to teach 3rd and 4th year medical students.

Multiple studies have shown that residents across specialties lack the skills required to identify or recognize common abnormalities on a physical examination. Wu et al demonstrated that self-confidence in the ability to perform certain examination skills (fundoscopic examination, identifying a thyroid nodule, interpreting a diastolic murmur) remained low throughout the continuum of training from student to faculty. More concerning was that these authors found that residents perceived the physical examination to be of less utility than did the medical students.

There is no doubt or question regarding the need of appropriate laboratory and radiological testing or the fact that the physical examination may often be misleading and therefore cannot diagnose every condition. However, that does not limit the value or importance of a well-performed history and physical. Even in these modern times dominated by technological innovations, most diagnoses are still made by the history and physical.

An automated analysis of the complicated clinicopathological conference (CPC) cases presented in the New England Journal of Medicine showed that correct diagnosis could be made in 64% of the cases using only the findings from the history and physical.

The problem is as obvious as the solution. Residents need a formal curriculum for teaching the physical examination. It is not as easy as it sounds. It will mean policy changes from accrediting and certifying bodies and it will require programs to develop a standardized curriculum. In response to the realization that training programs have been deficient in insuring that graduating residents have achieved clinical competence, the Accreditation Council for Graduate Medical Education (ACGME) has dramatically changed the accreditation system.

Accredited programs must be directly observed to demonstrate that they have achieved appropriate milestones in their physical examination training. Yet, to be successful, we have to be certain that those who are doing the observing not only have the time to do this but have

the necessary training. Some academic centers have faculty development programs aimed at rejuvenating clinical skills in interested faculty. Unfortunately, such centers are in the minority.

#### FACULTY DEVELOPMENT:

Faculty development in the area of physical diagnosis skills and teaching techniques will need to go hand in hand with increased direct training and supervision of trainees. Programs will need to identify proficient teachers and clinicians and adjust schedules to allow increased direct supervision in an already busy program. It may even mean hiring more faculty and providing incentives for those who teach this curriculum, all of which are major challenges in this era of declining resources.

#### TECHNOLOGY vs. TECHNIQUE

By the end of World War II, x-rays, which formerly entailed several minutes of exposure time, could be performed in a matter of seconds and, for the first time, arterial blood gas measurement was possible.

As attractive as these technologies seemed in the 1940s, the advancements of medical technology since then are even more alluring. Yet, technology seems to be replacing basic medical skills rather than complementing them. In "Introduction to Clinical Medicine: A Time for Consensus and Integration," Omori and colleagues discuss concerns over history-taking and physical examination instruction, particularly during the first 2 years of medical school. A national collaboration on the integration of clinical skills education through medical school curriculum will be necessary.

Although this is a critical initial step, beyond the poor acquisition of basic clinical skills is the documented decline of some rudimentary skills after the second year of medical school. Why should history-taking and physical examination skills crest when they remain esoteric concepts and plateau or decrease when they should be used in actual practice of medicine? Regardless of the formal educational curriculum, the skills should improve if they are used to guide patient care decisions.

Contrary to the paramount importance often ascribed to technology, numerous studies have demonstrated that technology has not necessarily improved the quality of patient care. Successive cohorts of autopsies over the last century have consistently demonstrated similar

rates of misdiagnosis despite the use of advanced diagnostic procedures. For example, unknown malignancies were diagnosed in 36.5% of autopsies in 1923, compared with 41% in 1972 and 44% in 1998. In another study of 167 patients who died during a stay in the intensive care unit, autopsies uncovered a major diagnostic error in 32% of patients despite extensive diagnostic testing. In fact, the use of imaging was noted to contribute to misdiagnosis. Physicians missed the diagnosis of endocarditis in 9 patients despite ordering echocardiograms in the week before each of their deaths. By contrast, 3 patients diagnosed with endocarditis by echocardiogram subsequently had their diagnoses refuted during autopsy. In another autopsy study, the authors determined that ultrasound and computed tomography scanning provided misleading information for 7% of patients, whereas history and physical examinations rarely misled physicians (1% for history and 2% for physical examination).

More recently, the Medicare program evaluated the use of imaging services nationwide and found a threefold variation in the number of examinations obtained across the United States. Despite substantial differences in the use of imaging studies, no demonstrable changes in quality or patient outcomes were noted.

Although recent technological advances offer numerous tools to aid in diagnosis, their use should be guided by thorough history and physical examinations. Studies have consistently demonstrated that history-taking and physical examinations are the most important factors in arriving at a correct diagnosis, whereas lab tests and imaging studies play only minor roles. The aforementioned study of autopsy results concluded that history-taking and physical examinations provided conclusive information for determining the main diagnosis in 73% and 62% of patients, respectively. By comparison, imaging techniques provided conclusive information for diagnoses of 35% of patients and standard lab tests for 22% of patients. In fact, inaccurate, incomplete, or misinterpreted patient histories are among the leading causes for diagnostic errors. Physicians acknowledge the poor discrimination of individual history and physical examination findings but often neglect to consider the true sensitivity and specificity of imaging and other tests. Using technology becomes a “gold standard” for diagnosis instead of an adjunct to clinical judgment.

THE STATE OF CLINICAL SKILLS

Inconsistencies between laboratory findings and clinical data go undetected simply because too many physicians are insufficiently disciplined in the proper use of clinical skills and in the analysis of clinical data. Too often, palpably illogical laboratory findings are accepted without question.

Despite the importance of history-taking and physical examination, clinical skills education has decreased since the 1960s, with deficiencies beginning in medical school and continuing through residency and into practice. With the erosion of thorough historytaking and physical examinations, clinical reasoning (the ability to develop the gestalt impression) has also decreased. Although essential to determining the correct diagnosis, appropriate history-taking and physical examination are futile without the ability to interpret gathered information. History-taking is frequently limited by close-ended questions that fail to gather specific details critical to clinical decision-making. For example, instead of determining the severity, context, alleviating factors, exacerbating factors, and chronology of dyspnea, its presence becomes a yes or no response.

Beyond the clear decline in skills, medical students who demonstrate proper technical ability have serious deficiencies in clinical reasoning before they enter residency training. In a study comparing student scores on an objective structured clinical examination (OSCE), which requires a complete organ system examination and a clinical performance examination (CPX), which requires a focused physical based on the patient's history, a large discrepancy was noted among student scores. Students who excelled in the technical examination (OSCE) performed inconsistently when deciding on the appropriate physical examination elements during the patient scenario (CPX).

In fact, the two scores showed no correlation on individual cases. Apparently, being able to perform a physical examination correctly during an OSCE (the standard used by most medical schools) does not translate into appropriate use of those skills in patient care.

### CLINICAL SKILLS IN TEACHING HOSPITAL

A glimpse of clinical education during medical school and residency illuminates several reasons for the overall decline in clinical decision-making skills. Before the Feddock Clinical Skills 1970s, internal medicine rounds with the attending physician were considered the platform for demonstrating history-taking, physical examinations, and clinical decision-making. Attending physicians demonstrated clinical skills, refined a physician-in-training's

techniques, and corrected errors or misinterpretations. By 1978, the rate of performing bedside examinations during teaching time had decreased to 16%, and many physicians estimate that number has decreased even further. Today, physicians-in-training rarely see attending physicians demonstrate history-taking and physical examination techniques and apply their findings to clinical decision-making. Rounds at many hospitals have shifted from bedside interactions with patients focused on the patient's history and physical examination to conference room learning focused on the patient's latest laboratory and imaging results. A recent national survey of medical students inquired about the quality of teaching during the inpatient component of their internal medicine clerkships. One third of students reported that their attendings rarely or never saw new patients with the team, not including the number who saw but did not examine the patients with the team.

Not only are senior physicians failing to demonstrate clinical skills, but physicians-in-training are rarely observed taking histories or performing physical examinations, or offered feedback on their clinical skills. Less than 50% of medical students reported that the attending physician observed them performing some aspect of a physical examination, and less than 20% reported they were observed interviewing a patient. Even when faculty members do observe a student's performance, many do not identify the errors made by those students during their examinations. Observation and feedback are essential because physicians-in-training commit a high number of errors in routine history-taking and physical examinations. These errors have significant consequences; in one study, an attending physician's physical examination ultimately changed the diagnosis or disease management for one-quarter of the patients admitted to an internal medicine service, providing proof that any feedback on clinical skills is beneficial.

In another study of the accuracy of resident presentations, resident physical examination skills directly correlated to the amount of time attending physicians spent with them at the bedside examining patients.<sup>18</sup> However, physical examination skills did not correlate with classic measures of medical knowledge, such as resident in-training examination scores or prior medical school class rank, indicating those measurements do not automatically translate to clinical skills.

Despite its decline, both medical educators and physicians-in-training still consider bedside teaching one of the most valuable learning tools. Although many lament the changes in medical education focus, medical schools overall have done little to improve the way clinical

skills are taught. Since the 1980s, innovations in medical education have attempted to refocus the activities of medical schools and teaching hospitals back on education. New modalities, such as standardized patients, simulators, and computer technology, have been included to improve the teaching of clinical skills. However, these recent instructional methods have one common factor—they require less faculty involvement.

In a recent case study, faculty members at one medical school consistently made curricular decisions that would best preserve faculty research time, resulting in a persistent decrease over the last half-century in student-faculty contact. Identifying faculty who will take the time to teach medical students is now one of the most substantial difficulties faced by course directors. Although many of the new teaching technologies offer outstanding, nonintimidating platforms for students to refine their skills, they cannot replace patient interactions supervised by faculty.

#### SUMMARY:

Current movements to improve clinical skills education are essential and long overdue. Acknowledging that the provision of high quality medical care requires strong clinical skills and clinical reasoning, the Association of American Medical Colleges established the Task Force on the Clinical Skill Education of Medical Students.

Several recommendations from this task force emphasize the importance of clinical skills. First, the task force acknowledged that clinical skills education is a longitudinal process that must be taught throughout medical school, residency training, and postgraduate work. Clinical skills are often ignored after the second year of medical school, even though they should be continuously reinforced and advanced to include more sophisticated techniques.

Second, the task force emphasized that faculty members must take the primary role in teaching clinical skills. The development of clinical skills requires close mentorship with someone who can not only teach the specified skills, but also assess and provide feedback to the student.

Third, the task force recommended that the evaluation of clinical skills must be patient-centered. Simulators and computerized technology are useful adjuncts to teaching clinical skills, but to deliver high-quality patient care, students must learn with actual patients.

Emphasizing clinical skills is as significant as acknowledging the impact of the hidden curriculum perpetuated in many clinical arenas. Students and residents will value what their faculty mentors value and their observations of faculty-patient interactions demonstrate what skills are truly important to succeed as a physician. Rushed rounds with attending physicians exaggerate the importance of ancillary testing at the expense of clinical skills. With a greater reliance on laboratory studies and imaging, the details of history and physical examinations become inconsequential and no longer change the diagnostic approach. Physician educators must not only dedicate themselves to teaching clinical skills, but also emulating those skills in everyday work. They must integrate new technology into clinical education without diverting attention from patients. Expectations for physicians-in-training should include a progressive improvement in clinical skills, guided by faculty feedback to correct and advance those skills.

Although clinical faculty members play an essential role in promoting the development of necessary clinical skills in physicians-in-training, they must have sufficient support from medical school or teaching hospital leadership, as well as individual departments. Even motivated teaching faculty find numerous barriers within the administration of the medical school or teaching hospital. Medical education, particularly basic clinical skills education, is a low priority, especially in comparison to the income-generating endeavors of research and clinical work. In general, faculty are given little time to dedicate to teaching duties, so they either risk salary cuts or they teach “on their own time” after completing their clinical or research activities.

In addition, teaching activities often do not contribute significantly to promotion and tenure decisions. Many medical school promotion and tenure committees have difficulty accepting the expanded definition of scholarship that rewards certain teaching activities. Ultimately, medical schools and teaching hospitals must instill value in teaching basic clinical skills by providing physicians the time and the compensation for these activities.

Teaching clinical skills is time-intensive and requires dedicated faculty who are able to demonstrate, teach, and provide feedback. Current faculty members may lack the clinical expertise to be successful, adding to the difficulty in finding strong physician models proficient in teaching clinical skills. Most current medical school or teaching hospital faculty completed their education during a time of diminished emphasis on clinical skills, so they

may lack confidence in their own skills. Teaching is not an intuitive endeavor for all physicians, and faculty are limited in their ability to assess clinical skills and provide quality feedback to physicians-in-training. Faculty development is necessary to improve the current clinical skills of medical school faculty and provide proper instruction on the teaching and evaluation of clinical skills.

Although history-taking and physical examination skills are often considered rudimentary, they serve as the foundation for all clinical decision-making and their significance should not be disregarded or forgotten.

Modern technology has improved physician understanding of ailments and created new tools to use in diagnostic paradigms, but the technology is not infallible. Indiscriminate use of new technology will not improve health care but will only contribute to spiraling health care costs. The enhancement of clinical skills curricula must be accompanied by focusing clinical training back on patients and away from computerized data.

In the words of Sir William Osler, “it is a safe rule to have no teaching without a patient for a text, and the best teaching is that taught by the patient himself.”

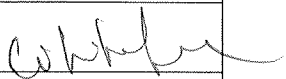
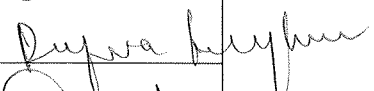


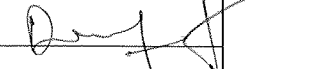


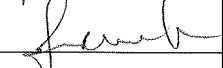



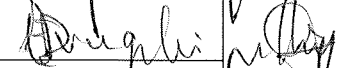
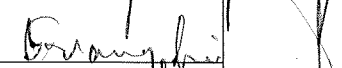
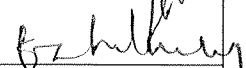

Annexure II

**Bharath Institute of Higher Education and Research**

Sri Lakshmi Narayana Institute of Medical Sciences

Participant list with signatures

Value added course: **Importance of History taking in clinical diagnosis (dated 05/01/2018)**

Sl.No	Reg.No	Name of the candidate	Signature
1.	U15MB272	CIBIBALAA. D	
2.	U15MB273	DEEPIKA DIVYA KUMARI. B	
3.	U15MB274	DEEPIKA PRIYADHARSHINI. B	
4.	U15MB275	DEVANAND .M	
5.	U15MB276	DEVANATHAN. R	
6.	U15MB277	DHANA PRIYA .P	
7.	U15MB278	DHANALAKSHMI. M	
8.	U15MB279	DHANUSH .R	
9.	U15MB280	DHANUSH KODALI	
10.	U15MB281	DHIVYA KUMARI .P	
11.	U15MB282	DIVYA .S	
12.	U15MB283	DIVYA DHARSHINI .N	
13.	U15MB284	EVANGELINE PRETTY .G	
14.	U15MB285	EZHILARASI. R	
15.	U15MB286	FATHIMA BANU. A	





**SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL  
SCIENCES**

**Annexure - III**

**IMPORTANCE OF HISTORY TAKING IN CLINICAL DIAGNOSIS**

**SHORT NOTES**

**Course Code: IM08**

**WRITE SHORT NOTES ON THE FOLLOWING:**

1. How to obtain history from an anxious, apprehensive patient
2. Importance of personal and family history
3. Important communication techniques to establish rapport and earn trust from a patient
4. How technology is overshadowing technique in medical practice





IMPORTANCE OF HISTORY TAKING IN CLINICAL DIAGNOSIS

SHORT NOTES

Student Name:

DEVANAND M

Course Code: IM08

WRITE SHORT NOTES ON THE FOLLOWING:

1. How to obtain history from an anxious, apprehensive patient
2. Importance of personal and family history
3. Important communication techniques to establish rapport and earn trust from a patient
4. How technology is overshadowing technique in medical practice

72  
A  
D. C. ARAVIND

1. To obtain history from an anxious patient  
we have to first ask the patient to  
the calm down the patient down

2. personal and family history up-

personal history will let us  
know the habits & how deep father

of the patient

any known addiction like Alcohol  
can cause cerebral and both liver

Smoking can cause COPD.

family history will let us know about  
the genetically acquired diseases  
like DM; HTN; BA.

3. Listening to the patient carefully  
and gaining their trust.

Showing the patient that we are  
concerned about these problems

4. Technology is overshadowing medical practice  
techniques because our patients are.

Searching on internet and taking self  
treatment becomes readily & available  
with internet



IMPORTANCE OF HISTORY TAKING IN CLINICAL DIAGNOSIS

SHORT NOTES

Student Name:

DHANUSH KODALI

Course Code: IM08

WRITE SHORT NOTES ON THE FOLLOWING:

1. How to obtain history from an anxious, apprehensive patient
2. Importance of personal and family history
3. Important communication techniques to establish rapport and earn trust from a patient
4. How technology is overshadowing technique in medical practice

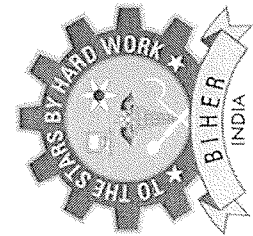
*Handwritten signature and initials:*  
D. C. ARAVI MD

1) By identifying the reason for their anxiety & to find a reason that will help them to be more comfortable. Educating the patient about their disease / procedure. Being calm while collecting the history. Being kind look professionally.

2) Personal history suggestion of substance abuse which is root cause of various other problems. Dietary history can also give a clue on dietary cause of illness. Live CAD

3) practicing compassion & empathy, being kind & profound word. By being calm & collected when the patient is anxious.

4) Technology has reduced the practical & manual approach to the patient in diagnosing a disease. For example palpatory method to find a diagnosis has been shifted to doing a USA abdomen.



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research

(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that           DHIVYA KUMARI .P           has actively participated in the

Value Added Course on “Importance of history taking in diagnosis” between January

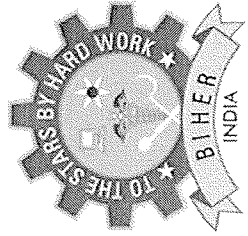
2018- April 2018, organized by Sri Lakshmi Narayana Institute of Medical Sciences,

Pondicherry- 605 502, India.

*Chellapandian*  
DEPARTMENT OF GENERAL MEDICINE  
**Dr. Chellapandian**  
INSTITUTE OF MEDICAL SCIENCES  
BIHER, PONDICHERRY.

*Aravind*  
**Dr. Aravind. C**  
REG. NO. 66803  
COORDINATOR  
Sri Lakshmi Narayana Institute of Medical Science  
Pondicherry-605 502





# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research

(Deemed to be University under section 3 of the UGC Act 1956)

## CERTIFICATE OF MERIT

This is to certify that           DHANA PRIYA .P           has actively participated in the

Value Added Course on “Importance of history taking in diagnosis” between January

2018 -April 2018, organized by Sri Lakshmi Narayana Institute of Medical Sciences,

Pondicherry- 605 502, India.

*Chellapandian*

Dr. Chellapandian

RESOURCE PERSON

*Dr. C. Aravind*

Dr. C. ARAVIND, MD.,

Dr. Aravind. C

Professor & HOD, General Medicine  
Sri Lakshmi Narayana Institute of Medical Sciences  
Co-ordinator

COORDINATOR



ANNEXURE - V  
**Student Feedback Form**

Course Name: **Importance of history taking in clinical diagnosis**

Subject Code: **IM08**

Name of Student: DWYA-S Roll No.: V15MB282

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear				✓	
2	Course contents met with your expectations				✓	
3	Lecturer sequence was well planned				✓	
4	Lectures were clear and easy to understand			✓		
5	Teaching aids were effective				✓	
6	Instructors encourage interaction and were helpful					✓
7	The level of the course				✓	
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Date: 3 / 04 / 2028

  
Signature



ANNEXURE - V  
**Student Feedback Form**

Course Name: **Importance of history taking in clinical diagnosis**

Subject Code: **IM08**

Name of Student: Veibhava D Roll No.: U15MB272

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					✓
2	Course contents met with your expectations					✓
3	Lecturer sequence was well planned					✓
4	Lectures were clear and easy to understand				✓	
5	Teaching aids were effective				✓	
6	Instructors encourage interaction and were helpful				✓	
7	The level of the course					✓
8	Overall rating of the course	1	2	3	4	5

**\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory**

Suggestions if any:

 Signature

Date: 13/04/2018



Date: 16/04/2018

From  
Dr. Aravind. C  
Department of Internal Medicine  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

Through Proper Channel


To  
The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Completion of value-added course: Importance of history taking in diagnosis**

Respected Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: **“Importance of history taking in diagnosis”** on 13/04/2018. We solicit your kind action to send certificates for the participants. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards

  
Dr. Aravind, MD.,  
Reg.No:68432  
Professor & HOD, General Medicine  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502.

**Encl: Photographs**









**Sri Lakshmi Narayana Institute of Medical Sciences**

From  
Dr K Balagurunathan,  
Professor and Head,  
General Surgery,  
Sri Lakshmi Narayana Institute Of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

Date 3/12/2017

To  
The Dean,  
Sri Lakshmi Narayana Institute Of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Permission to conduct value-added course: MINOR BEDSIDE SURGICAL PROCEDURES**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: **MINOR BEDSIDE SURGICAL PROCEDURES , 30 hours course on JAN 2018- JUNE 2018**. We solicit your kind permission for the same.

Kind Regards

**PROFESSOR & HOD**  
DEPARTMENT OF GENERAL SURGERY  
Sri Lakshmi Narayana Institute of Medical Sciences  
PONDICHERRY - 605 002

DR K BALAGURUNATHAN

HOD, GENERAL SURGERY

---

**FOR THE USE OF DEANS OFFICE**

Names of Committee members for evaluating the course:

The Dean: DR G. JAYALAKSHMI

The HOD: DR K BALAGURUNATHAN

The Expert: DR M . SENTHIL VELAN

The committee has discussed about the course and is approved.



**Dr. G. JAYALAKSHMI, BSC., MBBS., DFCB., M.D.,**  
**DEAN**  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agaram, Kudapakkam Post,  
Villanur Commune, Puducherry-605502.

Dean

(Sign & Seal)



**Dr. M. SENTHILVELAN, MS.,**  
Reg. No: 53175  
Professor General Surgery  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502.

Subject Expert

(Sign & Seal)



**PROFESSOR & HOD**  
**DEPARTMENT OF GENERAL SURGERY**  
Sri Lakshmi Narayana Institute of Medical Sciences  
PONDICHERRY - 605 502

HOD

(Sign & Seal)



OFFICE OF THE DEAN

# Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P-II ) dt. 11/07/2011 ]  
[ Affiliated to Bharath University, Chennai - TN ]

## Circular

07.12.2017

**Sub: Organising Value-added Course: MINOR BEDSIDE SURGICAL PROCEDURES**

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research** is organizing a value added course on “**MINOR BEDSIDE SURGICAL PROCEDURES**”.

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before 1<sup>ST</sup> January 2018. Applications received after the mentioned date shall not be entertained under any circumstances.

Dr. G. JAYALAKSHMI, BSC., MBBS., DICO., M.D.,  
DEAN  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agaram, Kudopakam Post,  
Villanur Commune, Puducherry - 605502.

**Dean**

## Course Proposal

Course Title: MINOR BEDSIDE SURGICAL PROCEDURES

Course Objective:

1. Urinary catheterization – demonstration
2. indications, procedure, complications
3. Nasogastric tube insertion – demonstration
4. indications , procedure, complications
5. Incision and drainage
6. Venesection
7. Iv cannula insertion
8. Stoma care – definition, types of stoma,
9. Indications for stoma
10. patient counselling, site
11. post operative management of stoma
12. stoma related complications

Course Outcome:

Course Audience: MBBS UNDERGRADUATES

Course Coordinator: Dr K Balagurunathan

Course Faculties with Qualification and Designation:

1. Dr K Balagurunathan , Prof and HOD General Surgery
2. Dr Asayas Bosco Chandra Kumar, Prof General Surgery
3. Dr . M Senthil Velan, Prof General Surgery

Course Curriculum/Topics with schedule (Min of 30 hours)

SINo	Date	Topic	Time	Hours	Faculty
1.	25/1/2018	1. Urinary catheterization – demonstration	4-6PM	3	Dr. Senthil Velan
2.	27/1/2018	2. indications, procedure, complications	4-6PM	2	Dr K Balagurunathan

3.	2/2/2018	3. Nasogastric tube insertion – demonstration	4-7PM	3	<b>Dr. Senthil Velan</b>
4.	4/2/2018	4. indications , procedure, complications	4-6PM	2	<b>Dr K Balagurunathan</b>
5.	6/2/2018	5. Incision and drainage	4-7PM	3	<b>Dr Asayas Bosco</b>
6.	8/2/2018	6. Venesection	4-7PM	3	<b>Dr. Senthil Velan</b>
7.	11/2/2018	7. Iv cannula insertion	4-7PM	3	<b>Dr Asayas Bosco</b>
8.	12/2/2018	8. Stoma care – definition,types of stoma,	4-6PM	2	<b>Dr Asayas Bosco</b>
9.	14/2/2018	9. Indications for stoma	4-6PM	2	<b>Dr. Senthil Velan</b>
10.	16/2/2018	10. patient counselling, site	4-6PM	2	<b>Dr Asayas Bosco</b>
11.	18/2/2018	11. post operative management of stoma	4-6PM	2	<b>Dr Asayas Bosco</b>
12..	20/2/2018	12. stoma related complications	4-7PM	3	<b>Dr. Senthil Velan</b>
			TOTAL HOURS	30	

**REFERENCE BOOKS: (Minimum 2)**

1. Schwartz's Principles of Surgery, 11th Edition
2. Bailey And Love's Short Practice of Surgery 27th Ed
3. Manual of Common Bedside Surgical Procedures – Christopher .J Sonnenday

**VALUE ADDED COURSE**

**1. Name of the programme & Code**

MINOR BEDSIDE SURGICAL PROCEDURES & GS08

**2. Duration & Period**

30 hrs JAN 2018- JUNE 2018

**3. Information Brochure and Course Content of Value Added Courses**

*Enclosed as Annexure- I*

**4. List of students enrolled**

*Enclosed as Annexure- II*

**5. Assessment procedures:**

Multiple choice questions- *Enclosed as Annexure- III*

**6. Certificate model**

*Enclosed as Annexure- IV*

**7. No. of times offered during the same year:**

1 TIME JAN 2018- JUNE 2018

**8. Year of discontinuation: 2018**

**9. Summary report of each program year-wise**

Value Added Course JAN 2018- JUNE 2018					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	GS08	MINOR BEDSIDE PROCEDURES	Dr. M SENTHIL VELAN	4 <sup>TH</sup> MBBS	20 ( JAN 2018- JUNE 2018)

**10. Course Feed Back**


*Enclosed as Annexure- V*

  
**Dr. M. SENTHILVELAN, MS.,**  
Reg. No: 53175  
Professor General Surgery  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502.

**RESOURCE PERSON**

**DR M SENTHIL VELAN**

**(PROF GENERAL SURGERY)**

  
**PROFESSOR & HOD**  
DEPARTMENT OF GENERAL SURGERY  
Sri Lakshmi Narayana Institute of Medical Sciences  
PONDICHERRY - 605 502

**CO-ORDINATOR**

**DR K BALAGURUNATHAN**

**(HOD GENERAL SURGERY)**

**MINOR BEDSIDE SURGICAL PROCEDURES**

**PARTICIPANTS HAND BOOK**

## COURSE DETAILS

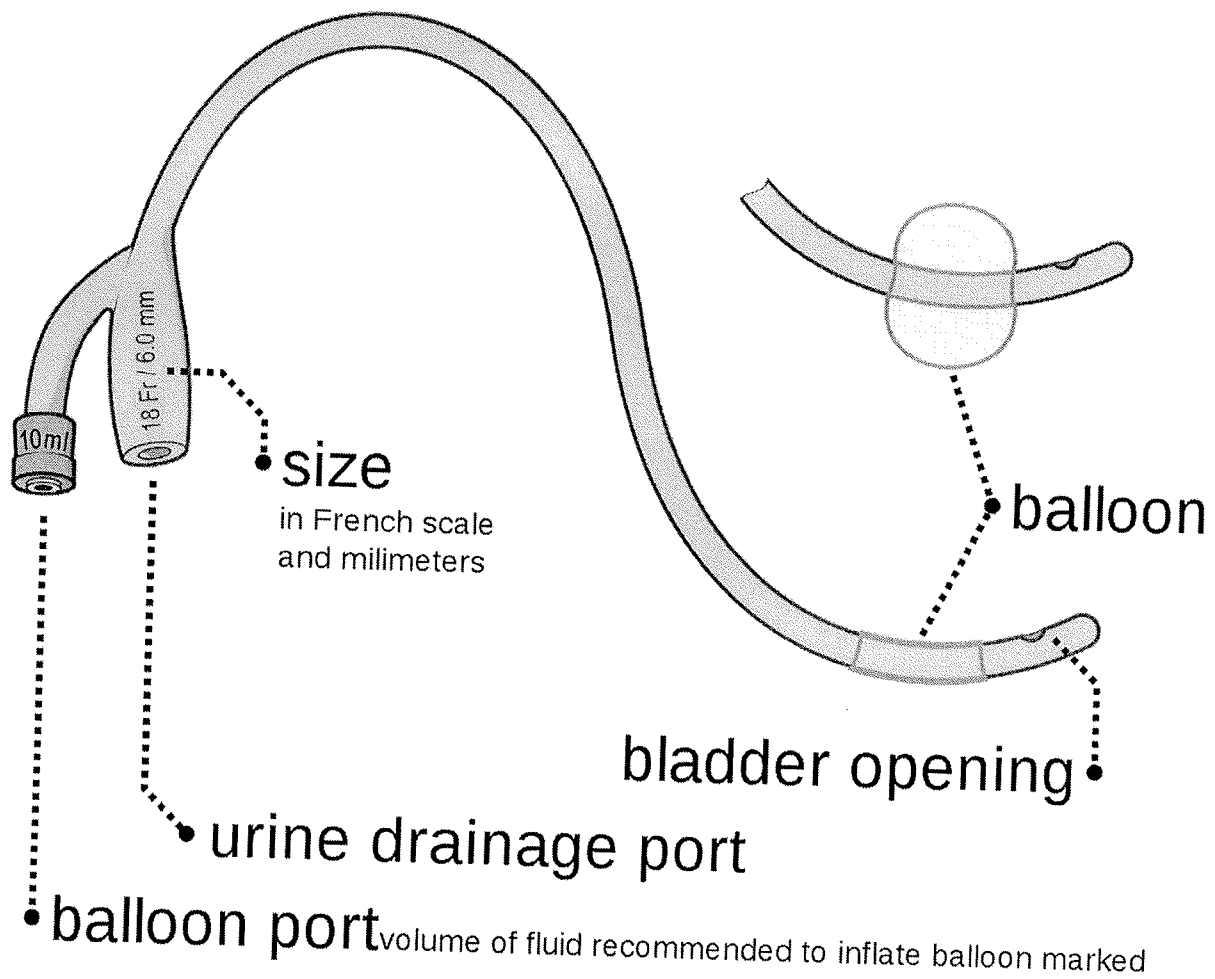
Particulars	Description
Course Title	MINOR BEDSIDE SURGICAL PROCEDURES
Course Code	GS08
Objective	<ol style="list-style-type: none"><li>1. Urinary catheterization – demonstration</li><li>2. indications, procedure, complications</li><li>3. Nasogastric tube insertion – demonstration</li><li>4. indications , procedure, complications</li><li>5. Incision and drainage</li><li>6. Venesection</li><li>7. Iv cannula insertion</li><li>8. Stoma care – definition,types of stoma,</li><li>9. Indications for stoma</li><li>10. patient counselling, site</li><li>11.post operative management of stoma</li><li>12.stoma related complications</li></ol>
Further learning opportunities	
Key Competencies	On successful completion of the course the students will have skill in handling and performing minore bedside surgical procedures
Target Student	4 <sup>th</sup> yearMBBS Students
Duration	30hrs JAN 2018- JUNE 2018
Theory Session	10hrs
Practical Session	20hrs

Assessment Procedure	Multiple choice Questions
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## URINARY CATHETERISATION

### Catheters used :

1. simple non-self retaining red rubber catheter,
2. Foley's self retaining catheter,
3. Gibbon's catheter,
4. metal catheter.

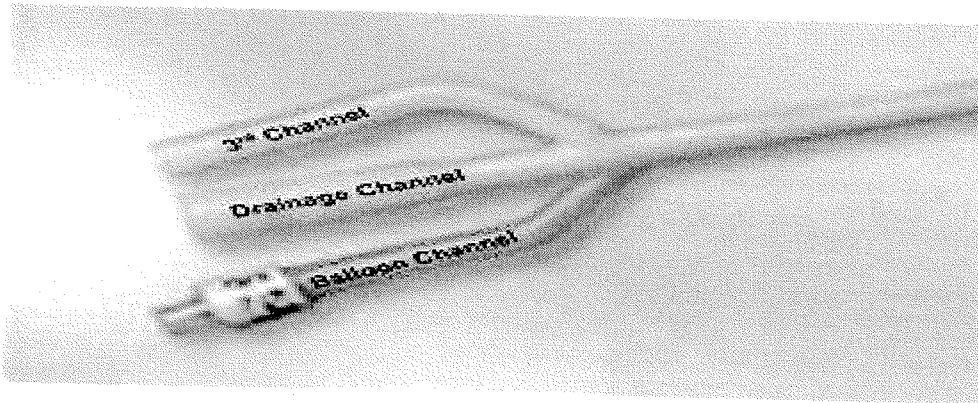


### Indications

- Retention of urine due to BPH, stricture urethra, trauma (with all care and precaution gently one trial is done).
- In major surgery postoperative period.
- In acute conditions and in shock patients to measure the hourly urine output.

## **Causes of Retention of Urine**

- Bladder outlet obstruction.
- BPH, carcinoma prostate.
- Prostatitis, prostatic abscess.
- Bladder carcinoma close to bladder neck.
- Bladder stone obstructing bladder neck.
- Hypertrophy of bladder neck muscle.
- Stricture at bladder neck.
- Causes at urethral level.
  - Urethral stricture- may be due to trauma or inflammatory (gonococcal/nonspecific) or neoplastic or after catheterisation/cystoscopy or after surgery (TURP/urethral surgery/ perineal urethrostomy).
  - Urethral stone.
  - Tumours.
  - Posterior urethral valve.
  - Urethral trauma.
  - Meatal stenosis.
  - Pinhole meatus/phimosis.
- Other causes— – Postoperative period. – Postsurgery—of haemorrhoidectomy/fissurectomy/fistulectomy. – Spinal injury/spinal surgery/spinal anaesthesia. – Drugs like anticholinergics, antidepressants or antihypertensives

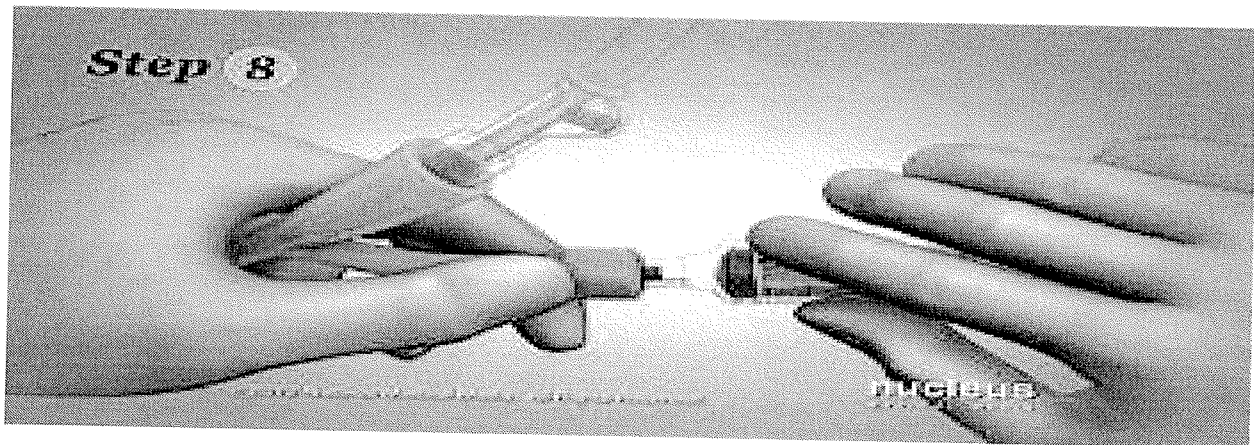


Foley's catheter is commonly used. Urosac bag, gloves, sterile towel, 2% xylocaine jelly and distilled water are needed.

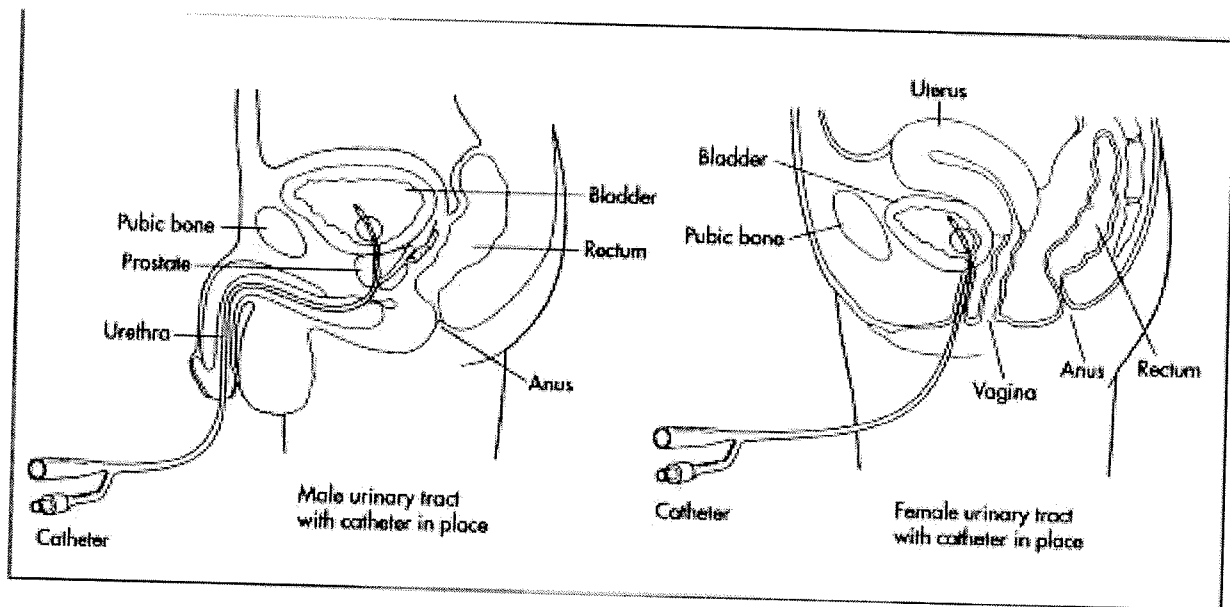
### **Procedure**

- Explain the patient about the procedure. Sterile gloves are worn after hand wash. Patient will be in supine position with legs apart. Genitalia are cleaned with povidone iodine solution. Draping is done using sterile towel.
- Prepuce is retracted and glans is cleaned again. 20 ml of 2% xylocaine jelly is taken in a syringe and pushed into the urethra through the external meatus.
- After 5 minutes, penis is held vertically (so that urethra gets straightened to make easier passage of the catheter) and Foley's catheter tip is lubricated with jelly and is gently passed into the urinary bladder. Urine flow through the catheter confirms that it is inside the bladder.
- It is advanced further more and balloon near the tip is inflated using distilled water. Air is not used for this purpose. Normal saline may get crystallised and so ideal is distilled water

Quantity inflated should be noted in the case sheet. Usually 20 ml is used. It is actually written in the Foley's catheter. After inflation catheter is pulled out to confirm that balloon is inflated properly.



- Catheter is connected to urosac bag. Prepuce is placed in normal position otherwise paraphimosis can develop.
  - In adult 16 F catheter is used. F-French unit- 16 mm circumference (Charriere unit). Usual Foley's catheter is kept for 7-10 days. If there is a need to keep catheter for more than 10 days then silicon coated Foley's catheter is used as it is least reactive. Foley's catheter is made up of latex. In children 10 F or 8 F is used
- Three-way Foley's catheter is used to irrigate the bladder with normal saline/glycine solution continuously in post-TURP (Transurethral Resection of Prostate) or after bladder surgery or after bladder trauma.
- Foley's catheter often is reinforced with tension wires to prevent block and is called as haematuric Foley's catheter.
  - Maryfield introducer is used often to pass the Foley's catheter into the bladder. It has got a curve with a groove over the convex part to accommodate the catheter.
  - Balloon should be deflated completely before removal of the catheter otherwise urethral injury and haematuria can occur.
  - In females labia majora are retracted apart to identify the urethral orifice to pass the catheter.



### Complications of Catheterisation

- Infection.
- False passage.
- Bleeding.
- **Inability to deflate the balloon while removing the catheter.**

In such occasions, following methods are used:

Inflating the balloon further with ether/ air/water and bursting the balloon. –

Passing guide wire of the ureteric catheter via the inflating channel.

After giving traction to catheter so as to make balloon nonmobile and fix, long, fine needle is passed per-abdomen in suprapubic place so as to puncture the balloon.

### Causes for Inability to Pass the Catheter

- Urethral stricture, BPH.

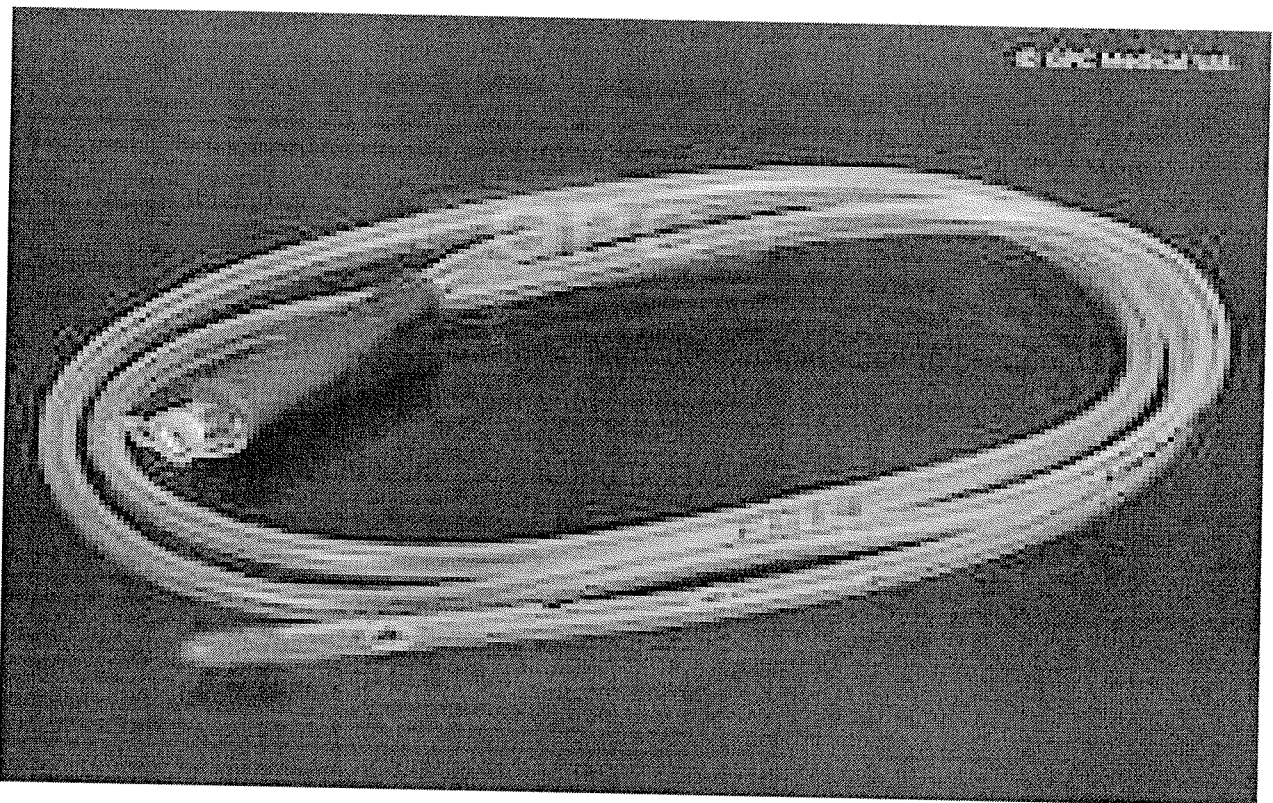
- Meatal stenosis

## **INSERTION OF A NASOGASTRIC TUBE**

### **Indications**

- For decompressing stomach in intestinal obstruction, after abdominal surgery. It prevents aspiration and distension of intestines.
- For gastric function tests.

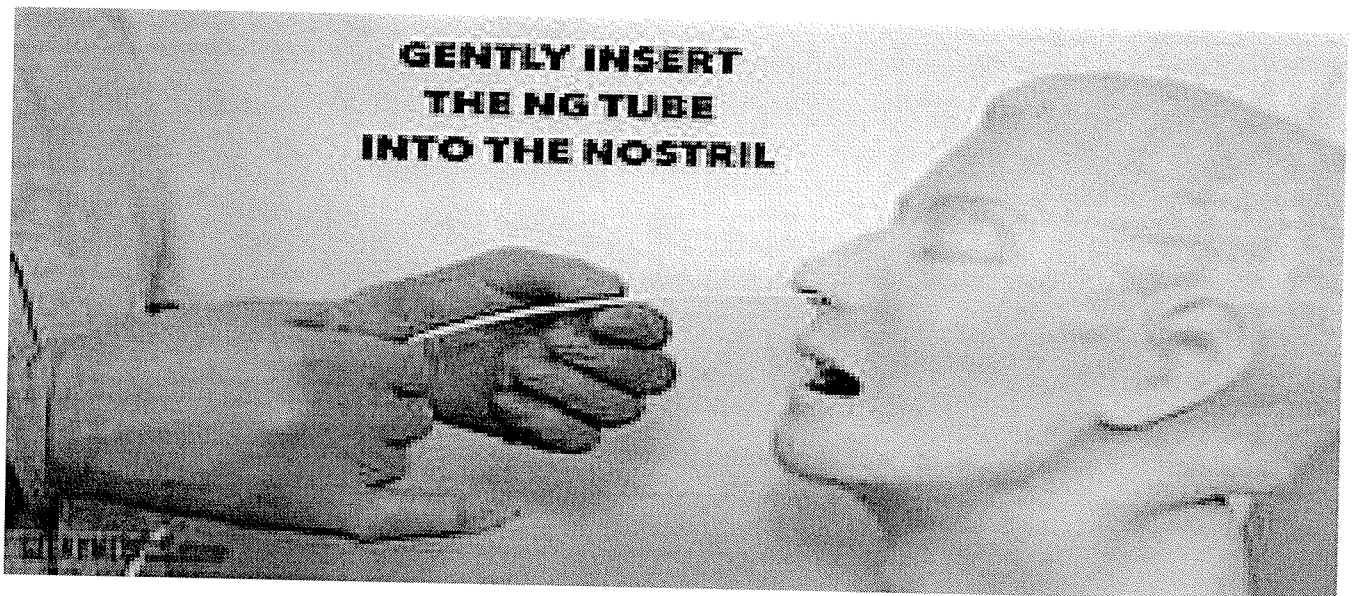
- In gastric outlet obstruction to decompress the stomach and also to give stomach wash. Stomach tube is better (Ewald's tube) for this.
- For feeding purpose.
- **Baid test:** Passed Ryle's tube will be palpable per abdomen in pseudocyst of pancreas as stomach is stretched forward.
- Ryle's tube will not enter the stomach in Boerhaave's syndrome.



### Procedure

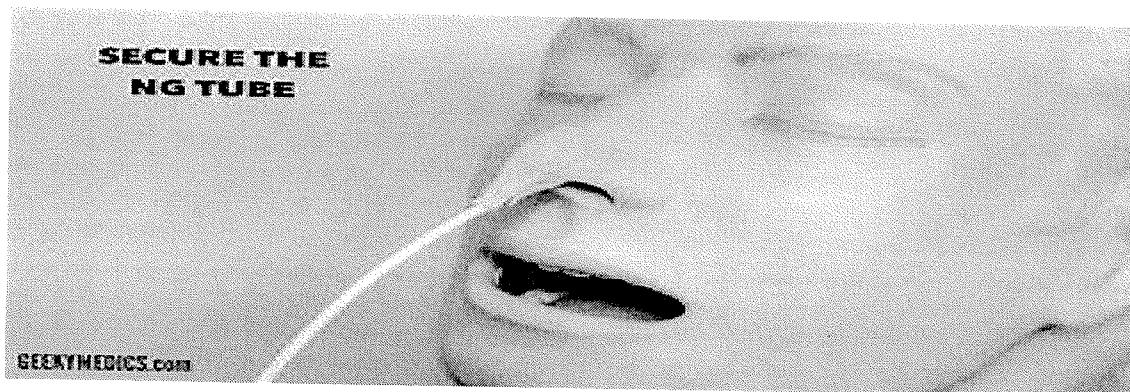
- Procedure is explained to the patient. Usually no. 16 tube is used in adult. It is one meter long usually of plastic (earlier red rubber) with three lead shots in the tip.
- Lead shots in the tip make it easier to pass. (Infant feeding tube does not have lead shots). It has got different marking ring/rings (2, 3, and 4).

- First ring signifies O-G junction (40 cm). Two rings for body of stomach (50 cm), three for the pylorus (60 cm) and four for duodenum (70 cm).
- Xylocaine jelly 2 % is lubricated to the tube. It is passed one of the nostril (wider one) horizontally until it reaches the posterior pharyngeal wall. Patient is asked to swallow if needed with the help of cup of water.
- Tube passes through the relaxed cricopharyngeus and then into oesophagus. Afterwards it is easier to pass into the oesophagus.





- Once it is in the oesophagus adequately tube is fixed to nostril. Confirmation of the tube in the stomach is done by aspirating the bile and also by injecting 30 ml of air into the stomach through the tube which can be heard in the epigastrium with a stethoscope as a gurgling sound.
- Tube can be used for continuous drainage or drainage hourly or at regular intervals.



### **Problems with Ryle's Tube**

- Discomfort to the patient.
- Blockage • Coiling in the mouth. • Displacement

## **ABSCESS DRAINAGE**

Abscess is a localised collection of pus lined by granulation tissue covered by pyogenic membrane. It contains pus in loculi.

### **Bacteria Causing Abscess**

- *Staphylococcus aureus*.
- *Streptococcus pyogenes*.
- Gram-negative bacteria (*E. coli*, *Pseudomonas*, *Klebsiella*).
- Anaerobes.

### **Factors Precipitating Abscess Formation**

- General condition of the patient: Nutrition, anaemia, age of the patient.
- Associated diseases: Diabetes, HIV, immunosuppression.
- Type and virulence of the organisms.
- Trauma, haematoma, road traffic accidents.

*Abscess should be drained only once it is formed under the cover of antibiotics.*

### **Features of formed abscess are**

- Pointing tenderness
- Visible pus
- Excruciating pain
- Localized swelling
- Induration (brownish induration)

### **Abscess is Drained by Hilton's Method**

Under general or regional anaesthesia, after cleaning and draping, using needle with syringe pus is aspirated and confirmed. Adequate incision is made over the skin in longitudinal to neurovascular bundle. Pyogenic membrane is opened using sinus forceps. Pus is collected for culture and sensitivity. All loculi should be broken. Wound is washed with saline. Gauze drain or corrugated drain is placed in the wound. Antibiotics are continued. Wound is allowed to granulate and heal.

Local anaesthesia may not act as pus is acidic in nature and xylocaine will not be effective in this acidic media.

### **Complications**

- Improper drainage and residual abscess.

- Septicaemia.
- Sinus formation.
- If abscess is near the major vessels, sloughing of the wall of the vessel and torrential haemorrhage can occur occasionally.
  - Sarcoma and aneurysms may mimic pyogenic abscess especially when it is deep seated and so necessary investigations like CT scan and aspiration of the content should be done before incision and drainage.

### **Abscess in Special Locations**

Abscess in special locations may not show features of formed abscess. In those locations abscess should be drained without waiting for features of formed abscess—pointing, fluctuation. They are—

- Parotid abscess.
- Breast abscess.
- Ludwig’s angina—It is actually a cellulitis not an abscess but needs exploration and decompression.
- Thigh abscess.
- Ischiorectal abscess.

## **STOMA CARE**

### **Definition :**

Stoma is an artificial opening or ‘mouth like’ to the exterior, the abdominal wall so as to drain the content from the tubular structures inside, like bowel or ureter.

It is done for diversion of urine or faecal matter in case of malignancy, trauma, and sepsis or after surgery.

### **Types**

**Ileostomy:** Terminal 5 cm ileum is projected out, on to the skin of abdominal wall to drain semiliquid, faecal matter.

**Colostomy:** Colon at different levels, as required can be brought out to the skin as colostomy, to divert faecal matter.

**Cutaneous ureterostomy:** Cut ends of one or both ureters are apposed to the skin of abdominal wall.

**Ileal urinary conduit:** Segment of isolated ileum can be used to drain urine from the ureter as urinary ileal conduit. Ureters are anastomosed to a closed ileal conduit. Ileal stoma is brought out as stoma. Different types of continent ileostomies are in use to prevent leak, soakage and discomfort.

**Vesicostomy:** It is done in children. Here anterior bladder wall is brought out and bladder mucosa is sutured to the skin of abdominal wall. Stoma created may be round (commonly) or square in shape.

Different types of stoma.

### **Preparation and Counselling of the Patient for Stoma**

- Stoma of any type causes to certain extent of psychological and physical trauma to the
- Patient should be explained about the procedure and should be convinced and consoled about the stoma.
- Detailed meaning, explanation and after care of the stoma should be discussed.
- Indication for the stoma and consent for the same should be taken.
- Reassurance about the stoma, its care, and its position should be diagrammatically explained to the patient and his close relative.
- In case of obstructive disease, stoma is done as an inevitable procedure to relieve the obstruction often it may be temporary.

- Proper bowel preparation by bowel wash, gut irrigation is required before surgery.

### **Stoma site**

- The surgeon selects the site of the stoma. Nurse should be there with surgeon.

Stoma is usually sited midway between anterior superior iliac spine and umbilicus.

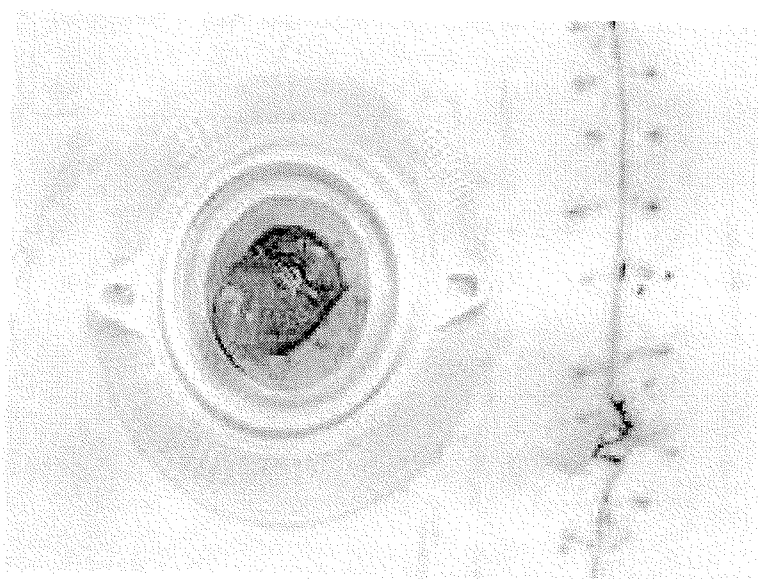
- It should be away from the belt line.
- It should be away from the scar, creases, and bony points.
- Patient should be assessed for proper size, adequacy for stoma in lying down, sitting, and standing positions.
- Proper stoma appliances should be decided after thorough check up and discussion with patient and patient's relative.
- Stoma site should be marked properly before surgery.
- Ileostomy is usually sited on the right iliac fossa, colostomy on left iliac fossa.
- Allergy for the particular appliances should be checked for.
- The patient should consult stoma therapist.

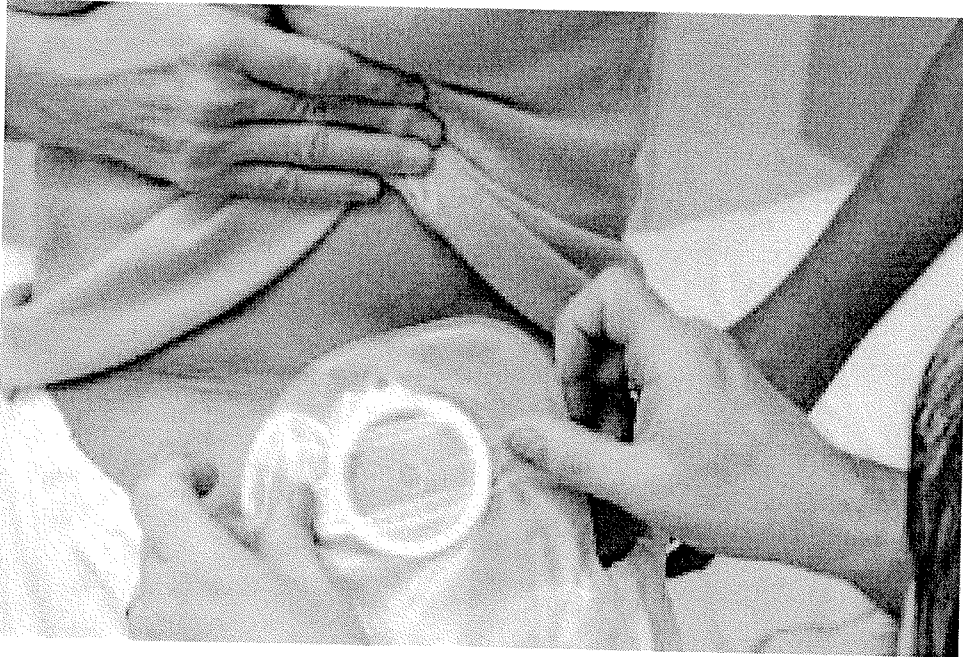
### **Postoperative Care for the Stoma**

- Stitches are removed in 6-10 days.
- Dressing should be done first over the stoma and after placement of appliance, laparotomy wound is dressed otherwise stoma appliance will not sit properly.
- Patient should be observed for any complications.

Once wound has healed patient can take bath by removing the appliances. After bath skin is dried up and stoma appliances can be fit again.

- Patient should be taught about the stoma care and its appliances. • Care and prevention of skin excoriation due to leak is also looked into.
- Psychotherapy is given for the patient.
- Skin should be absolutely dry prior to placing the stoma appliances.

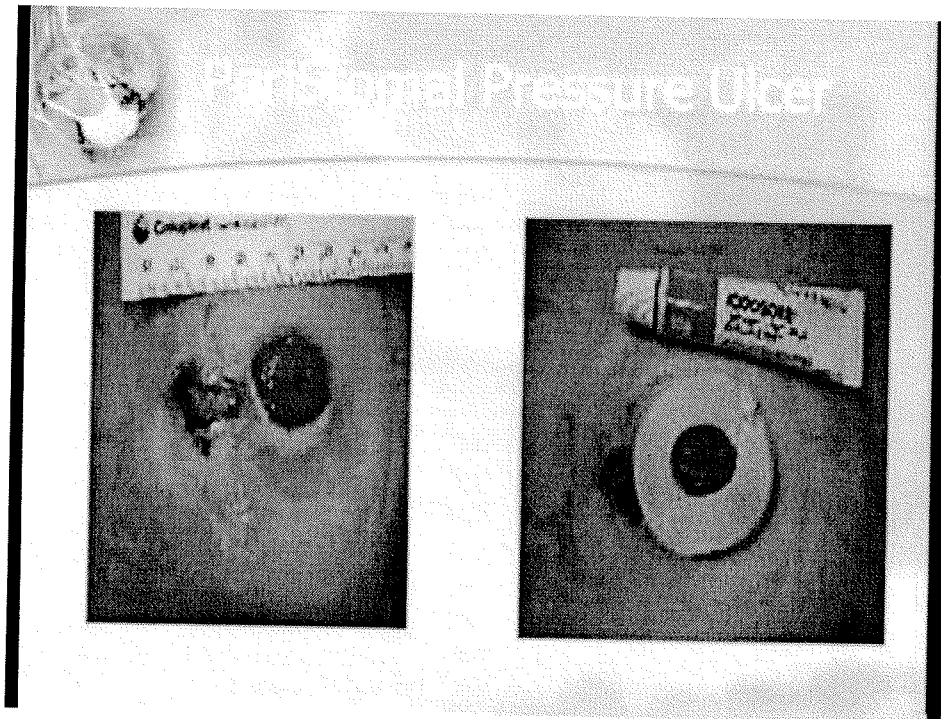




### **Complications of Stoma**

- Skin excoriation.
- Mucosal prolapse
- Stenosis and block.
- Infection either bacterial or candidial.
- Diarrhoea due to irritation.
- Leak due to improper fitting of the appliances, scar, irregularity of stoma, prolapse.
- Bleeding from the stoma edge.
- Herniation of the abdominal contents adjacent to stoma.

**Skin Excoriation** It is a major problem in stoma patients. It is basically due to leak adjacent to appliances.



**Causes for excoriation:**

- Leak due to improper appliances.
- Wet skin before placing the appliance.
- Inadequate stoma hole.
- Improper and inadequate adhesive sheet usage.
- Allergy • Infection like of bacteria and Candida.
- Altered weight of the patient.

- Stoma bag is overfilled or kinked or air in the stoma bag. Treatment of excoriation
- Control of infection by antibiotics or control of moniliasis.
- Allergy has to be confirmed, and if it is the cause the agent is found out and treated as required.
- Zinc oxide cream application.
- Change of the type of appliance. • Refashioning of the stoma.

Stoma Appliances Stoma appliances are devices, which are used to collect and dispose the effluent materials which come out of the stoma.

### **Ideal Stoma Appliance :**

- Leak proof.
- Should not damage the stoma and surrounding skin.
- Should prevent odor.
- Should be available.
- Easier to use.

### **Types of Appliances**

- Closed type is discarded when full and is used in patients with well formed stool.
- Drainable type is used in patients with loose liquid stool. It can be emptied and retained and re used. Immediately after colostomy, drainable appliance is used. Later it can be changed over to closed type.
- One-piece stoma appliance with a bag and adhesive attached system, which adheres to skin around the stoma

- Two-piece stoma appliance has got a flange with adhesive system and a bag over it, which can be removed and replaced with a new one without disturbing the flange underneath. Bag can be
  - Transparent, in which fluid can be visualized. It is used in initial period of the stoma.
  - Opaque, in which fluid cannot be visualized. It is used eventually later.

### **General Care and Advice to Patients with Stoma**

- Patient can have normal diet. Diet, which regulates the bowel action, is better. Plenty of water is advisable.
- Patient can go for normal work, exercise like sports, swimming, tennis. Stoma appliances suitable for these works are available.

## **VENESECTION**

### **Equipment needed for venesection**

Treatment request form Written consent (1st venesection only)

Chair / bed

Dinamap for observations

Venesection pack (includes bag and needle)

Venesection trolley Weighing scales

Gloves and apron

Tourniquet 2% Chlorhexidine in 70% alcohol wipe

Dressing Tape Gauze/bandage

Additional equipment for an isovolaemic venesection

IV fluid giving set Volumetric pump 500ml normal saline (and prescription)

Cannulation equipment

If patient prone to fainting/feeling faint, they may require IV fluids alongside their venesection

### **Patients suitable for venesection**

Haemochromatosis (C282Y homozygote or C282Y h63d conjugate)

Polycythaemia Rubra Vera (PRV)

Transfusion associated iron overload

### **PROCEDURE**

Open the venesection pack Re-check patient consent and willingness to proceed

Extend patient's arm and support on pillow

Apply hand-gel, put on gloves and apron

Apply tourniquet (single use) Assess venous access – ante-cubital fossa Insert needle at 15-30° angle, secure with tape, once venous access is established – blood will flow into the bag

If additional blood samples are needed, these can be taken now via the blood collection pouch

Place venesection bag on scales, below the level of the ante-cubital fossa

Select an appropriate vein for venesection. (Rotate the veins used to prevent excessive scarring of the vein walls). Apply the blood pressure cuff and pump to 40 mmHg.

Select the vein in the ante-cubital fossa. Wipe the vein site with alcohol swab and let the area dry for 30 secs.

Smoothly insert the butterfly needle bevel up into the vein to establish flow.

Take blood tests if required for Hb, Hct, Ferritin etc via a 10ml syringe. Use forceps to prevent blood loss from tubing.

Attach butterfly to the luer lock connector and release the clamp. Release pressure cuff to 20mmHg Take the required amount of blood, usually 400mls.

Once venesection is complete, remove the needle and apply pressure to the site for 5 minutes.

Ensure closing of clamp on bottle and dispose into yellow medical waste bin. Remove butterfly and cover with a pressure dot and gauze square.

#### IV CANNULA INSERTION

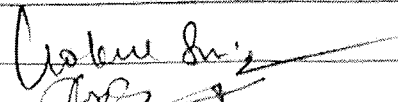
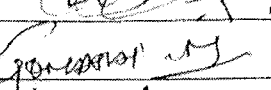
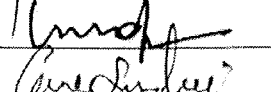
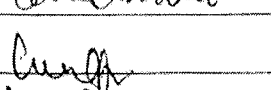
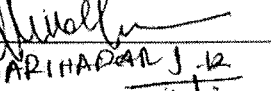
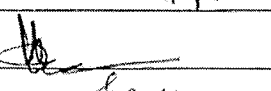
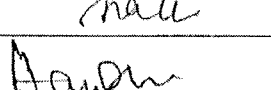

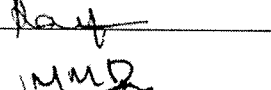
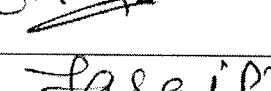
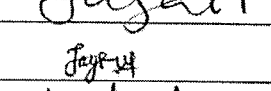

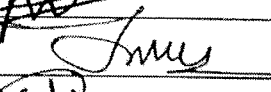
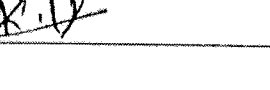



1. Check and make sure that all needed things are present (sterile/ clean gloves, IV cannula (Gauge size depends on patient's age and condition), cotton balls with alcohol, dry cotton balls, sterile gauze, waste receptacle and/or sharps container, plaster, splint, tourniquet, and labels).
2. Explain well the procedure to the patient and significant others and depending on institution, obtain consent from the patient.
3. Observe proper Hand hygiene before and after the procedure.
4. Assess and choose for IV site, making sure that the working area is well lighted.
5. Apply tourniquet to 5 to 12 cm above the injection site.
6. Check for radial pulse below the tourniquet.
7. Prepare the site with an effective antiseptic solution or with cotton balls with alcohol in circular motion and allow it to dry for 30 seconds (Always wear gloves when doing a venipuncture).
8. With an appropriate IV cannula, pierce the skin with the correct technique.

9. Upon visualization of back flow, continue inserting the cannula into the vein.
10. Position the cannula parallel to the skin; holding the stylet stationary and slowly advance the cannula until the hub is 1mm to the puncture site.
11. Carefully slip sterile gauze under the hub. Then release the tourniquet and remove the stylet while applying a digital pressure over the cannula with one finger about **1 to 2 inches** from the tip of the inserted cannula.
12. Then you may connect the specified infusion tubing or port prescribed by the physician.
13. Anchor the cannula firmly with a transparent plaster or tape and a small piece of sterile OS; apply splint if needed.
14. Label on the IV tape near the IV site to indicate the date of insertion, type and gauge of cannula and countersign.
15. Observe the patient and encourage the patient to verbalize any discomfort. Report any untoward effect.
16. Document the procedure in the patient's chart and endorse thereafter to next shift.
17. And lastly, discard sharps and waste properly according to protocol of institution.

VALUE ADDED COURSE

**MINOR BEDSIDE SURGICAL PROCEDURES and GS08**

**List of Students Enrolled JAN 2018- JUNE 2018**

Year MBBS Student			
Sl. No	Name of the Student	Roll No	Signature
1	GOKUL SRIRAM D	U16MB291	
2	GOLLA SRUTHI	U16MB292	
3	GOMATHI M	U16MB293	
4	GRACELIN RINI J	U16MB294	
5	GUNA SUNDARI M	U16MB295	
6	GUNTI YAGNA NARAYANAN	U16MB296	
7	HANEESHA PALETI	U16MB297	
8	HARIHARAN J K	U16MB298	 HARIHARAN J.K
9	HARI PRIYA	U16MB299	
10	HARSHKA S	U16MB300	 haru
11	HARITHA SREE K	U16MB301	
12	HARSHITHA CHOWDARY P	U16MB302	
13	HEMA PRIYA	U16MB303	
14	JADHAV MAHESH MOHAN RAO	U16MB304	 JMD
15	JAGAI PRYA	U16MB305	 Jagai Priya
16	JAYASRI J	U16MB306	 Jayasri
17	JESTIN K J	U16MB307	 Jestin K J
18	JEYACHANDRAN S	U16MB308	
19	JINCY J MANU	U16MB309	
20	KARTHIK K	U16MB310	 K.K



Havi Priya  
U16MB299

**SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH**

Annexure – IV

**Minor Bedside Surgical Procedures**

**MULTIPLE CHOICE QUESTIONS**

**Course Code: GS08**

**ANSWER ALL THE QUESTIONS**

1. catheters used for urinary drainage

a. simple non-self retaining red rubber catheter

b. Foley's self retaining catheter,

c. Gibbon's catheter,

d. all of the above

2. cause for inability to pass urinary catheter

a. Urethral stricture

b. BPH.

c. Meatal stenosis

d. all of the above

3. Methods to be followed to deflate the balloon while removing obstructed catheter

a. Inflating the balloon further with ether/ air/ water and bursting the balloon. –

b. Passing guide wire of the ureteric catheter via the inflating channel.

c. After giving traction to catheter so as to make balloon nonmobile and fix, long, fine needle is passed per-abdomen in suprapubic place so as to puncture the balloon.

d. all of the above



**SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH**

4. Problems with Ryle's Tube

- a. Discomfort to the patient.
- b. Blockage
- c. Coiling in the mouth.
- d. Displacement



5. First ring of Ryle's tube signifies

- a. O-G junction .
- b. body of stomach
- c. the pylorus
- d. duodenum



6. What is Terminal 5 cm ileum is projected out, on to the skin of abdominal wall to drain semiliquid, faecal matter called?

- a. ileostomy
- b. ileo-urinary conduit
- c. colostomy
- d. none



7. where is the usual stoma site?

- a. midway between asis and umbilicus
- b. midway between pubic symphysis and umbilicus
- c. para umbilical
- d. none



**SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH**

8. what are the Complications of Stoma ?

- a. Skin excoriation.
- b. Mucosal prolapse
- c. Stenosis and block.
- d. all of the above

ASSESSOR NAME :

SIGNATURE :

DATE :

*M. Senthilvelan*  
20/2/2018

✓  
4/1

**Dr. M. SENTHILVELAN, MS.,**  
Reg. No: 53175  
Professor General Surgery  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502.



GOKUL SRIRAM D / U16MB291

**SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH**

Annexure – IV

**Minor Bedside Surgical Procedures**

**MULTIPLE CHOICE QUESTIONS**

**Course Code: GS08**

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**SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH**

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**SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH**

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2/2

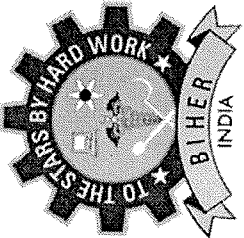
ASSESSOR NAME : M. SENTHIL VELAN .

SIGNATURE :

DATE :

*M.V.* 20/2/2018

**Dr. M. SENTHILVELAN, MS.,**  
Reg No 53175  
Professor General Surgery  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osaka, Karnataka



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research

(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that HARIHARAN J K has actively participated in the Value

Added Course on MINOR BEDSIDE SURGICAL PROCEDURES held during Jan 2018

– June 2018 Organized by Sri Lakshmi Narayana Institute of Medical Sciences,

Pondicherry- 605 502, India.

**Dr. M. SENTHILVELAN, MS.**

Reg. No. 53175

Professor General Surgery

Sri Lakshmi Narayana Institute of Medical Sciences

Osudu, Kudapakkam, Puducherry-605 502.

**Dr. M Senthil Velan**

**RESOURCE PERSON**

**PROFESSOR & HOD**

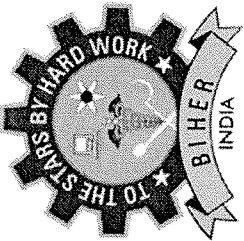
DEPARTMENT OF CENTRAL SURGERY

at Sri Lakshmi Narayana Institute of Medical Sciences

PONDICHERRY - 605 502

**Dr. K BALAGURUNATHAN**

**COORDINATOR**



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research

(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that GOKUL SRIRAM D has actively participated in the Value

Added Course on MINOR BEDSIDE SURGICAL PROCEDURES held during Jan 2018

– June 2018 Organized by Sri Lakshmi Narayana Institute of Medical Sciences,

Pondicherry- 605 502, India.

Dr. M. SENTHILVELAN, MS.,

Reg. No: 53175

Professor General Surgery

Sri Lakshmi Narayana Institute of Medical Sciences

Osudu, Kudapakkam, Puducherry-605 502.

Dr. M Senthil Velan

RESOURCE PERSON

PROFESSOR & HOD

DEPARTMENT OF GENERAL SURGERY

Sri Lakshmi Narayana Institute of Medical Sciences

PONDICHERRY - 605 502

Dr. K BALAGURUNATHAN

COORDINATOR

## Student Feedback Form

Course Name: MINOR BEDSIDE PROCEDURES

Subject Code: GS08

Name of Student: Armathi. M Roll No.: V16MB293

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					✓
2	Course contents met with your expectations				✓	
3	Lecturer sequence was well planned					✓
4	Lectures were clear and easy to understand					✓
5	Teaching aids were effective					✓
6	Instructors encourage interaction and were helpful					✓
7	The level of the course					✓
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Date: 20/2/2018

Armathi. M  
Signature

## Student Feedback Form

Course Name: MINOR BEDSIDE PROCEDURES

Subject Code: G508

Name of Student: Jayanti. J Roll No.: U16 MB306

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					✓
2	Course contents met with your expectations				✓	
3	Lecturer sequence was well planned					✓
4	Lectures were clear and easy to understand			✓		
5	Teaching aids were effective					✓
6	Instructors encourage interaction and were helpful				✓	
7	The level of the course					✓
8	Overall rating of the course	1	2	3	4	✓ 5

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Date: 20/2/18

Jayanti.  
Signature

Date 18/6/2018

From  
Dr K Balagurunathan,  
Professor and Head,  
General Surgery,  
Sri Lakshmi Narayana Institute Of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

Through Proper Channel

To  
The Dean,  
Sri Lakshmi Narayana Institute Of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Completion of value-added course: MINOR BEDSIDE SURGICAL PROCEDURES**

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: **MINOR BEDSIDE SURGICAL PROCEDURES** for 20 students on JAN 2018- JUNE 2018. We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards



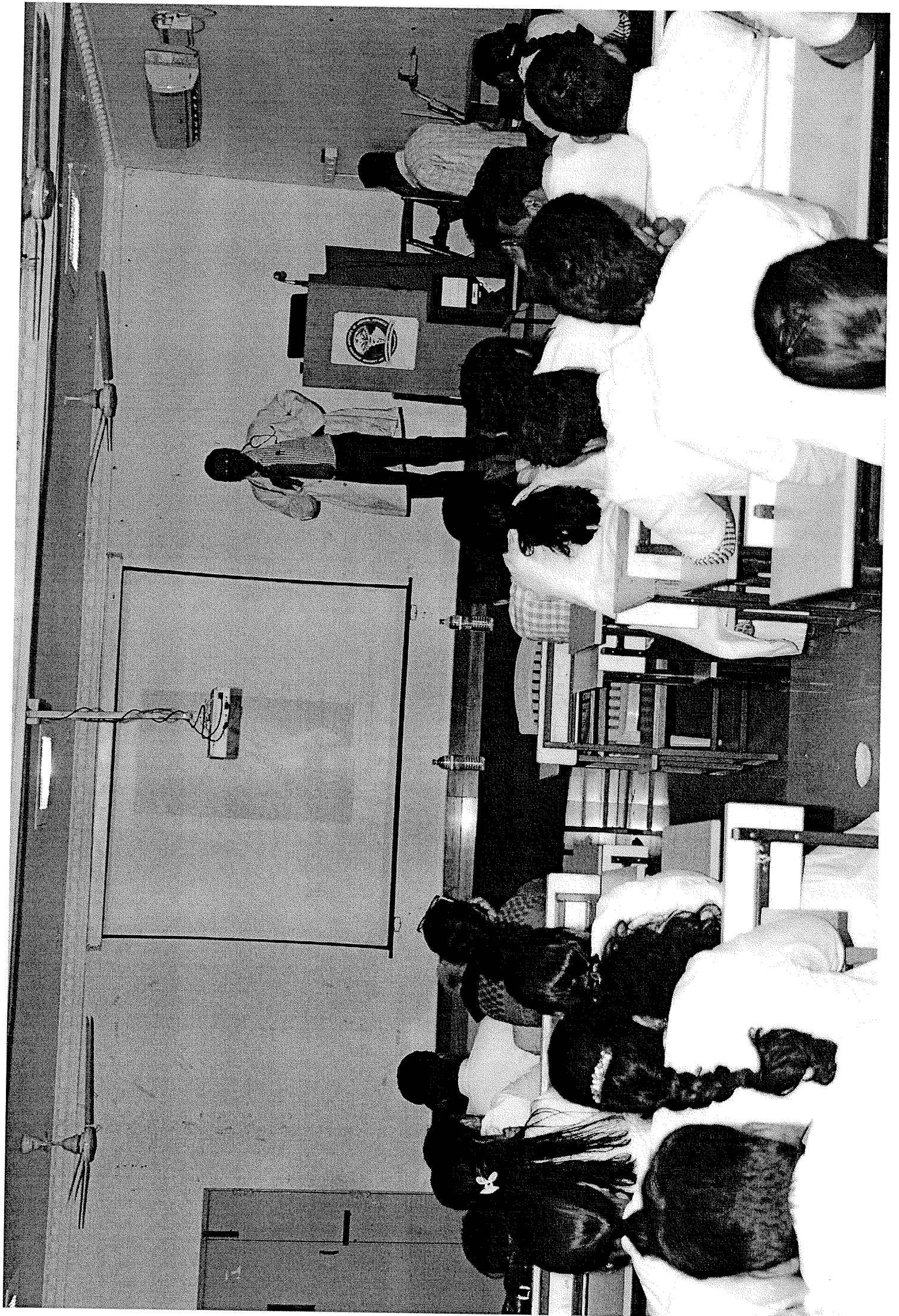
**PROFESSOR & HOD**  
**DEPARTMENT OF GENERAL SURGERY**  
Sri Lakshmi Narayana Institute of Medical Sciences  
PONDICHERRY - 605 002

Dr. BALAGURUNATHAN

HOD General Surgery

**Encl: Certificates**

**Photographs**





**SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES**

**Date:7.05.2017**

**From**

Dr.Ambigai meena,  
Professor and HOD,  
Department of Obstetrics and Gynaecology,  
Sri Lakshmi Narayana Institute of Medical Sciences,  
Bharath Institute of Higher Education and Research,  
Chennai.

**To**

The Dean,  
Sri Lakshmi Narayana Institue Of Medical Sciences,  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Permission to conduct value-added course: PSYCHIATRY IN OBSTETRICS**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled:  
**PSYCHIATRY IN OBSTETRICS** on JUL 2017 - DEC 2017. We solicit your kind permission for the same.

Kind Regards

Dr. Ambigai meena

---

**FOR THE USE OF DEANS OFFICE**

Names of Committee members for evaluating the course:

The Dean Dr. Sugumaran

The HOD: Dr. Ambigai meena

The Expert The committee has discussed about the course and is approved.

**Dean**

**DEAN**  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
OSUDU, AGARAKKAM VILLAGE,  
KODDANKAM POST,  
PUDUCHERRY - 605 192

**Subject Expert**

**ASSOCIATE PROFESSOR**  
DEPT. OF OBSTETRICS & GYNAECOLOGY  
Sri Lakshmi Narayana Institute of  
Medical Sciences  
OSUDU, PUDUCHERRY.

**HOD**

**PROFESSOR**  
DEPT. OF OBSTETRICS & GYNAECOLOGY  
Sri Lakshmi Narayana Institute of  
Medical Sciences  
OSUDU, PUDUCHERRY.



OFFICE OF THE DEAN

## **Sri Lakshmi Narayana Institute of Medical Sciences**

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P -II ) dt. 11/07/2011 ]  
[ Affiliated to Bharath University, Chennai - TN ]

15.06.2017

### Circular

**Sub: Organising Value-added Course: PSYCHIATRY IN OBSTETRICS- reg**

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research**, is organizing “**PSYCHIATRY IN OBSTETRICS**”. The course content and registration form is enclosed below.”

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before 30.06.2017. Applications received after the mentioned date shall not be entertained under any circumstances.

Dean

**DEAN**  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
OSUDU, AGARAM VILLAGE,  
KUDAPAKKAM POST,  
PUDUCHERRY - 605 502

## Course Proposal

Course Title: **Psychiatry in Obstetrics**

**Course Objective:**

1. **Overview of Psychiatry in Obstetrics**
2. **How can mental health be affected by pregnancy ?**
3. **Prediction and Detection**
4. **Mental disorders**
5. **Depression**
6. **Panic disorders**
7. **Eating disorders**
8. **Psychoses in pregnancy**
9. **Schizophrenia**
10. **Pharmacological medications**

**Course Outcome:** knowledge about psychiatry in obstetrics

**Course Audience:** Final MBBS Undergraduates

**Course Coordinator:** Dr.DURGA

**Course Faculties with Qualification and Designation:**

**Dr.Ambigai meena. Prof and HOD, OG**

**Dr.Durga, Associate Professor, OG**

**Course Curriculum/Topics with schedule (Min of 30 hours)**

	Date	Topic	Time	Hours
1	4.01.2018	Over view Psychiatry	4.00pm -5.00pm	1
2	8.01.2018	How can mental health be affected by pregnancy ?	4.00pm -7.00pm	3
3	20.01.2018	Prediction and Detection	4.00pm -8.00pm	4
4	5.02.2018	Mental Disorder	4.00pm -8.00pm	4
5	16.02.2018	Depression	4.00pm -8.00pm	4
6	3.03.2018	Panic disorders	4.00pm-8.00pm	4
7	12.03.2018	Eating disorders	4.00pm -6.00pm	2
8	16.04.2018	Psychoses in pregnancy	4.00pm -6.00pm	2
9	26.04.2018	Schizophrenia	4.00pm - 6.00pm	2
10	3.05.2018	Pharmacological Medications	4.00pm -6.00pm	2
			<b>Total Hours</b>	<b>30</b>

**REFERENCE BOOKS: (Minimum 2)**

**Willaims Obstetrics Edition 21**

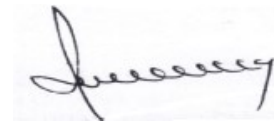
**Williams Gynaecology Edition 18**

## VALUE ADDED COURSE

1. **Name of the programme & Code** Psychiatry in Obstetrics , OBGY 7
2. **Duration & Period** 30 hrs & Jul 2017 - Dec 2017
3. **Information Brochure and Course Content of Value Added Courses**  
*Enclosed as Annexure- I*
4. **List of students enrolled** *Enclosed as Annexure- II*
5. **Assessment procedures:** Multiple choice questions- *Enclosed as Annexure- III*
6. **Certificate model** *Enclosed as Annexure- IV*
7. **No. of times offered during the same year:** 1- Jul 2017 - Dec 2017
8. **Year of discontinuation:** 2017
9. **Summary report of each program year-wise**

Value Added Course					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	OBGY 7	Psychiatry in Obstetrics	Dr. DURGA	FINAL YEAR MBBS	Jul 2017 - Dec 2017

10. **Course Feed Back** *Enclosed as Annexure- V*



**RESOURCE PERSON**

ASSOCIATE PROFESSOR  
DEPT. OF OBSTETRICS & GYNAECOLOGY  
Sri Lakshmi Narayana Institute of  
Medical Sciences  
OSUDU, PUDUCHERRY.

**COORDINATOR**

DEAN  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
OSUDU, AGARAKKAVI VILLAGE,  
POODARAKKAVI POST,  
PUDUCHERRY - 605 002

Psychiatry in obstetrics

# **PARTICIPANTS HAND BOOK**

**le family! !**

lers during pregnancy and the postnatal period can have serious  
for the health and wellbeing of a mother and her baby, as well as for her  
er family members.

health be affected by pregnancy?

health during pregnancy.

g a mental illness when they get pregnant.

al health problems in the past.

top medication when they get pregnant have a high risk of getting ill again  
every 10 women who stop antidepressants in early pregnancy become

health problems for the first time in pregnancy.

n?

es, Depression,

monitoring for high risk patient should be at all times.

disorder.

h complications/Miscarriage.

W.

e. ● Social status.

e.

ection

to assess mental wellbeing of high risk patients by medical professional

ions should be asked to all patients:

you been feeling about yourself lately? Q2: during the past month, have  
n bothered by feeling down, depressed or hopeless? (23: during the past  
you often been bothered by having little interest or pleasure in doing

d be delivered by perinatal mental health network, consisting of perinatal  
specialist, obstetrician, social worker and safeguarding team if needed.

ld be a multidisciplinary decision involving the psychiatrist, obstetrician

Disorder or mental illness is a psychological or behavioural pattern that occurs  
abnormally and is thought to cause distress or disability that is not expected as part of  
development or culture"

Types of mental disorders:

Examples: Phobia

General anxiety disorder

Personality disorder

Borderline

Obsessive

Compulsive disorder Post-traumatic stress disorder

Bipolar disorders: Major depressive

Disorders

orders.

orders:

order

e disorder

s: Anorexia nervosa

sa

# ssion

disorder characterized by episodes of all-encompassing low mood  
by low self-esteem and loss of interest or pleasure in normally enjoyable

to 70% of women report some negative mood symptoms during  
prevalence of women who meet the diagnostic criteria for depression  
n to be between 13.6% at 32 weeks gestation and 17% at 35 to 36  
n. Peak through first and third trimester.

that is left untreated in pregnancy, either because symptoms are not  
because of concerns regarding the effects of medications, can lead to a  
negative consequences, including lack of compliance with prenatal care  
ions, poor nutrition and self-care, self-medication, alcohol and drug use,  
ants and thoughts of harming the fetus, and the development of postpartum  
er the baby is born.

# ssion

at examined 1123 mother-infant pairs reported that infants of mothers pregnancy showed less frequent positive facial expressions and and that these infants were also harder to console.

B, Bauchner H, Parker S, et al.  
ressive symptoms during pregnancyj  
rritability. J DevBehavPediatr

mild or moderate depression;

thdrawal of antidepressants

psychological therapy (CBT, IPT) If history of

pressive episodes or new moderate/severe

structured psychological treatment.

sant treatment.

on treatment if no response.

esistant patients; consider different single drug

or ECT before considering combination



# disorder

disorder characterized by recurring severe panic attacks".

panic disorder during pregnancy is variable and remains unclear.

reports of pregnant women with pre-existing panic disorder have  
increase in symptoms during pregnancy, large-scale studies have reported  
decrease in symptoms for women with preexisting panic disorder.

panic disorder during pregnancy is reported.

effects of anxiety and panic on the course of the pregnancy and the health  
are not well understood.

showed a correlation between increased anxiety and increased resistance in  
blood flow.

testing should be performed.

# disorder

biological therapies (CBT, supportive psychotherapy, relaxation, sleep hygiene, and dietary counseling) should be considered before pharmacological therapies (benzodiazepines, antidepressants).

in the treatment of panic disorder; paroxetine should not be started and a safer drug should be considered.

# disorder

y  
e prevalence or course of generalized anxiety disorder (GAD) through

ferentiate from normal anxiety during pregnancy.

reatment for GAD, switching to CBT should be considered.

sive

isorder characterized by thoughts that cannot be controlled (obsessions)  
behaviours or rituals that cannot be controlled (compulsions) in  
ese thoughts".

the disorder include excessive washing or cleaning; repeated checking;  
ing; preoccupation with sexual, violent or religious thoughts; relationship-  
ions; aversion to particular numbers; and nervous rituals, such as opening

# disorder

sive

ts suggest that women may be at an increased risk for the onset of OCD  
ncy and the postpartum period.

f women with diagnosed OCD, 39% of the participants reported that their  
ring a pregnancy.

ted normally, as usually on psychological therapy.

ation of more than one antidepressant.

Prevalence of eating disorders in pregnant women is approximately 4-9%.

It is suggested that the severity of symptoms may actually decrease during pregnancy.

Bulimia nervosa reduces a woman's fertility. ● Women with bulimia nervosa are more likely to have a planned pregnancy.

Psychological treatment rather than antidepressants.

Caution with breastfeeding if on fluoxetine.

Pregnancy

Psychoses are less fertile, partly as a result of hyperprolactinaemia. With antipsychotic drugs, the newer atypical drugs such as clozapine and risperidone do not have this effect.

The occurrence of newly-discovered episodes of psychosis during pregnancy is rare.

With a history of psychosis, the relapse rates are high.

pregnancy

a number of systematic reviews that women with psychotic disorders are at a higher risk of obstetric complications and stillbirths.

Common manifestations being bipolar illness, followed by psychotic depression and schizophrenia.

disorder

diagnosis for a mood disorder; usually of alternating episodes of mania and depression.

The risk is the same in pregnancy as at any other time.

The use of treatment in unplanned pregnancies increases the risk.

disorder



men who are stable on antipsychotic, should be maintained on  
with monitoring of weight gain and diabetes.

um as a prophylactic treatment, consider antipsychotics.

e while on medication consider increase of dose or change to another

# Psychosis

Disorder characterized by a breakdown of thought processes and by a range of abnormal emotional responses".

Symptoms include auditory hallucinations, paranoid or bizarre delusions, or disorganized speech and thinking, and it is accompanied by significant social or occupational dysfunction.

Affects about 0.3—0.7% in general population.

Psychosis during pregnancy can have devastating consequences for both the mother and the fetus. Including failure to obtain proper prenatal care, negative pregnancy outcomes such as low birth weight and prematurity, and neonaticide or suicide.

Women with a history of psychosis require close monitoring by health care professionals during pregnancy.

# schizophrenia

schizophrenia who are planning a pregnancy or pregnant, should be treated according to guidelines except switch from atypical to typical antipsychotics should be considered.

schizophrenia who are breastfeeding, should be treated according to guidelines except that women receiving depot medication should be advised that their infants may develop extrapyramidal symptoms.

# Pharmacological medication

ts

clics have a higher fatal toxicity index than selective serotonin reuptake (SSRI's)

is the SSRI with the lowest known risk during pregnancy

nortriptyline and sertraline are present in breast milk at relatively low (fluoxetine)

r 20 weeks gestation may be associated with an increased risk of persistent hypertension in the neonate

taken in the first trimester may be associated with foetal heart rate defects

pressants carry the risk of withdrawal or toxicity in neonates — in most effects are self limiting.

nes

t be routinely prescribed for pregnant women, except for short term of extreme anxiety and agitation.

tus cleft palate

onate — floppy baby syndrome

# Pharmacological medication

neural tube defects

convert to another drug (e.g. for bipolar disorder convert to antipsychotic)

daily limit to max 1 gram per day in divided doses in slow release format.

5 mg per day folic acid)

should not be routinely prescribed for women who are pregnant

due to risk of foetal agranulocytosis in the Infant

— risk factors for gestational diabetes should be taken into account

antipsychotics and anticholinergic drugs should not be routinely prescribed to

women because they may show extrapyramidal side effects several months after

discontinuation.

Lithium and Lamotrigine

Lithium increased risk of neural tube defects (6 to 20 per 1000), also risk of

central tract problems and cardiac abnormalities - Lamotrigine carries risk of

9 per 1000 exposed fetuses. - Stop if possible

# Pharmacological medication

First trimester and during breast feeding

at high risk of relapse — gradual withdrawal over 4 weeks

Converting to antipsychotic

Stopping for first then restarting in second trimester if not planning to breast

Monitoring check levels every 4 weeks, then weekly from 36 weeks and within 24

hours of birth. Adjust dose to keep at the lower end of the therapeutic range

Fluid balance in labour risk of dehydration and lithium toxicity

Necessary to check lithium levels

Electroconvulsive therapy (ECT)

Use available on risk of harm to foetus.

ers in pregnancy may be under-diagnosed and under-estimated.

ders affect the mother, the baby and the whole family and can have  
quences on the pregnancy.

nary team should be involved.

on is associated with better outcome.

l therapy is superior to pharmacological therapy during pregnancy and  
g. (it always the balance of advantages against disadvantages)

Thank's

(7)

Value Added courses  
**PSYCHIATRY IN OBSTETRICS**

List of Students enrolled Jul 2017 – Dec 2017

SL. NO	ROLL NO.	NAME	Signature
1.	U14MB261	KARTHIKA PRIYA. S.K	Karthika Priya
2.	U14MB262	KAVYA. K	Kavya
3.	U14MB263	KAVYASHREE.P	Kavyashree
4.	U14MB264	KEERTHI.R	Keerthi
5.	U14MB265	KELHOUNEIR TSEIKHANUO	Lelouneir
6.	U14MB266	KIRTHICK SARAN RAJA. V	Kirthick Saran
7.	U14MB267	KISHORE KANNA.A	Kishorekanna
8.	U14MB268	LINGABARATHAN.A	Lingabarathan
9.	U14MB269	LITHIGA. M	Lithiga
10.	U14MB270	LOHISHVAR.A	Lohishvar
11.	U14MB271	LOKESHKUMAR. B	Lokeshkumar
12.	U14MB272	MADIMCHETTY SATHYA AASHEERV	Madimchetty
13.	U14MB273	MAHANMAHARAJA	Mahammud Raja
14.	U14MB274	MANOJ. R	Manoj. R
15.	U14MB275	MANOJ. S	Manoj. S
16.	U14MB276	MEGAVANNAN. T	Megavannan
17.	U14MB277	MOHAN RAJ. K	Mohan Raj
18.	U14MB278	MONISHA. M	Monisha
19.	U14MB279	MURALIPRASATH. V	Muraliprasath
20.	U14MB280	NANDHA KUMAR. V	Nandha Kumar

# PSYCHIATRY IN OBSTETRICS

## MCQs

- 1. ....is the SSRI with the lowest known risk during pregnancy**  
a) Fluoxetine b) Citalopam c) Sertraline d) Vilazodone
- 2. ....increased risk of neural tube defects**  
a) Lamotrigene b) Carbamazepine c) Clozapine d) nortriptyline
- 3. ....reduces a woman's fertility**  
a) Anorexia nervosa b) Schizophrenia c) Mania d) Depression
- 4. floppy baby syndrome is caused by.....**  
a) Anti Depressants b) Anti Convulsants c) Anti Anxiety d) SSRIs
- 5. Olanzapine risk factors for.....**  
a) PIH b) GDM c) ACP d) HELLP syndrome
- 6. What is the ratio of risk of Neural Tube Defect, while the patient is on Carbamazepine ?**  
a) 2-4 0/100 b) 5-70/100 c) 6-20/100 d) 3-10/100
- 7. Which anti - psychotic has high risk of Oral Cleft defect ?**  
a) Lamotrigene b) Clozapine c) nortriptyline d) Vilazodone
- 8. ....% of participants reported that their OCD began during pregnancy**  
a) 34 b) 39 c) 47 d) 37
- 9. Prevalence of eating disorder in pregnant women..... %**  
a) 9-12 b) 10-20 c) 4-9 d) 2-9
- 10. All are present in breast milk relatively low levels EXCEPT**  
a) Imiprimine b) Nortriphyline c) Sertaline d) Fluoxetine

## PSYCHIATRY IN OBSTETRICS

## MCQs

7

8/10

1. ....is the SSRI with the lowest known risk during pregnancy

- a) Fluoxetine  b) Citalopam c) Sertraline d) Vilazodone

2. ....increased risk of neural tube defects

- a) Lamotrigene  b) Carbamazepine c) Clozapine d) nortriptyline

3. ....reduces a woman's fertility

- a) Anorexia nervosa b) Schizophrenia c) Mania d) Depression

4. floppy baby syndrome is caused by.....

- a) Anti Depressants b) Anti Convulsants  c) Anti Anxiety. d) SSRIs

5. Olanzapine risk factors for.....

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- a) 2-4 0/100 b) 5-70/100  c) 6-20/100 d) 3-10/100

7. Which anti - psychotic has high risk of Oral Cleft defect ?

- a) Lamotrigene  b) Clozapine c) nortriptyline d) Vilazodone

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- a) 34 b) 39  c) 47 d) 37

9. Prevalence of eating disorder in pregnant women..... %

- a) 9-12 b) 10-20 c) 4-9 d) 2-9

10. All are present in breast milk relatively low levels EXCEPT

- a) Imiprimine  b) Nortriphyline c) Sertaline d) Fluoxetine



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that KISHORE KANNA has actively participated in the Value Added Course on **Psychiatry in Obstetrics** held during Jul 2017 – Dec 2017 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

**RESOURCE PERSON**

ASSISTANT PROFESSOR  
DEPT. OF OBSTETRICS & GYNAECOLOGY  
Sri Lakshmi Narayana Institute of  
Medical Sciences  
OSUDU, PUDUCHERRY.

**COORDINATOR**

**DEAN**  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
OSUDU, AGARAM VILLAGE,  
KODAPAKKAM POST,  
PUDUCHERRY - 605 502



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that MANOJ. S has actively participated in the Value Added Course on **Psychiatry in Obstetrics** held during Jul 2017 – Dec 2017 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

**RESOURCE PERSON**

ASSISTANT PROFESSOR  
DEPT. OF OBSTETRICS & GYNAECOLOGY  
Sri Lakshmi Narayana Institute of  
Medical Sciences  
OSUDU - PUDUCHERRY.

**COORDINATOR**

**DEAN**  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
OSUDU, AGARAM VILLAGE,  
KODAPAKKAM POST,  
PUDUCHERRY - 605 502

**Annexure 4**

**Course/Training Feedback Form**

**Course:**

**Date:**

**Name:**

**Reg NO.**

**Department: Obstetrics and Gynaecology**

**Q 1:** Please rate your overall satisfaction with the format of the course:

- a. Excellent    b. Very Good    c. Satisfactory    d. unsatisfactory

**Q 2:** Please rate course notes:

- a. Excellent    b. Very Good    c. Satisfactory    d. unsatisfactory

**Q 3:** The lecture sequence was well planned

- a. Excellent    b. Very Good    c. Satisfactory    d. unsatisfactory

**Q 4:** The lectures were clear and easy to understand

- a. Excellent    b. Very Good    c. Satisfactory    d. unsatisfactory

**Q 5:** Please rate the quality of pre-course administration and information:

- a. Excellent    b. Very Good    c. Satisfactory    d. unsatisfactory

**Q 6:** Any other suggestions:

**Comments:**

**Thank you for taking the time to complete this survey, your comments are much appreciated.**

**OPTIONAL Section:** Name \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

Course: **PSYCHIATRY IN OBSTETRICS**

Date:

Name: **KAVYAK**

Reg NO. **014 MB 262**

Department: **Obstetrics and Gynaecology**

**Q 1:** Please rate your overall satisfaction with the format of the course:

- a. Excellent     b. Very Good    c. Satisfactory    d. unsatisfactory

**Q 2:** Please rate course notes:

- a. Excellent    b. Very Good    c. Satisfactory    d. unsatisfactory

**Q 3:** The lecture sequence was well planned

- a. Excellent     b. Very Good    c. Satisfactory    d. unsatisfactory

**Q 4:** The lectures were clear and easy to understand

- a. Excellent    b. Very Good    c. Satisfactory    d. unsatisfactory

**Q 5:** Please rate the quality of pre-course administration and information:

- a. Excellent     b. Very Good    c. Satisfactory    d. unsatisfactory

**Q 6:** Any other suggestions:

**Comments:**

**Thank you for taking the time to complete this survey, your comments are much appreciated.**

**OPTIONAL Section:** Name \_\_\_\_\_ Date \_\_\_\_\_  
Signature \_\_\_\_\_

7

Course/Training Feedback Form

Course: PSYCHIATRY IN OBSTETRICS  
Date:  
Name: KEERTHI, R  
Reg NO. UH MB 264  
Department: Obstetrics and Gynaecology

Q 1: Please rate your overall satisfaction with the format of the course:

a. Excellent  b. Very Good  c. Satisfactory  d. unsatisfactory

Q 2: Please rate course notes:

a. Excellent  b. Very Good  c. Satisfactory  d. unsatisfactory

Q 3: The lecture sequence was well planned

a. Excellent  b. Very Good  c. Satisfactory  d. unsatisfactory

Q 4: The lectures were clear and easy to understand

a. Excellent   b. Very Good  c. Satisfactory  d. unsatisfactory

Q 5: Please rate the quality of pre-course administration and information:

a. Excellent  b. Very Good  c. Satisfactory  d. unsatisfactory

Q 6: Any other suggestions:

Comments:

Thank you for taking the time to complete this survey, your comments are much appreciated.

OPTIONAL Section: Name \_\_\_\_\_

Signature \_\_\_\_\_

Date \_\_\_\_\_

**Date: 24.12.2017**

**From**

Dr.Durga  
Assistant Professor,  
Obstetrics and Gynaecology,  
Sri Lakshmi Narayana institute of Medical sciences,  
Bharath Institute of Higher Education and Research,  
Chennai.

Through Proper Channel

**To**

The Dean,  
Sri Lakshmi Narayana institute of Medical Sciences,  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Completion of value-added course: Psychiatry in Obstetrics**

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: **Psychiatry in Obstetrics** on Jul 2017 - Dec 2017 . We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regard



**Dr.DURGA**

ASSOCIATE PROFESSOR  
DEPT. OF OBSTETRICS & GYNAECOLOGY  
Sri Lakshmi Narayana Institute of  
Medical Sciences  
OSUDU, PUDUCHERRY.

**Encl: Certificates**

**Photographs**

**VALUE ADDED COURSES**

**OBGY 7 PSYCHIATRY IN OBSTETRICS**





**SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES**

Date:27.10.2017

From  
Dr.Ambigai meena,  
Professor and HOD,  
Department of Obstetrics and Gynaecology,  
Sri Lakshmi Narayana Institute of Medical Sciences,  
Bharath Institute of Higher Education and Research,  
Chennai.

To  
The Dean,  
Sri Lakshmi Narayana Institue Of Medical Sciences,  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Permission to conduct value-added course: Legal aspects**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: **Legal aspects** on JAN 2018 - JUNE 2018. We solicit your kind permission for the same.

Kind Regards

Dr. Ambigai meena

---

**FOR THE USE OF DEANS OFFICE**

Names of Committee members for evaluating the course:

The Dean : Dr. Sugumaran

The HOD: Dr. Ambigai meena

The Expert: Dr. Yashodha

Dean

Subject Expert

HOD

**DEAN**  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
OSUDU, AGARAM VILLAGE,  
KODANKKAM POST,  
PUDUCHERRY - 605 002

**ASSOCIATE PROFESSOR**  
DEPT. OF OBSTETRICS & GYNAECOLOGY  
Sri Lakshmi Narayana Institute of  
Medical Sciences  
OSUDU, PUDUCHERRY.

**PROFESSOR & HEAD**  
DEPT. OF OBSTETRICS & GYNAECOLOGY  
Sri Lakshmi Narayana Institute of  
Medical Sciences  
OSUDU, PUDUCHERRY.



OFFICE OF THE DEAN

## Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P -II ) dt. 11/07/2011 ]  
[ Affiliated to Bharath University, Chennai - TN ]

15.12.2017

### Circular

#### **Sub: Organising Value-added Course: Legal aspects- reg**

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research**, is organizing “**Legal aspects**”. The course content and registration form is enclosed below.”

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before 30.12.2017. Applications received after the mentioned date shall not be entertained under any circumstances.

Dean

**DEAN**  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
OSUDU, AGARAM VILLAGE,  
KUDAPAKKAM POST,  
PUDUCHERRY - 605 502

## Course Proposal

Course Title: Legal aspects

**Course Objective:**

1. Over view of legal aspects
2. MTP act
3. Pre conception techniques
4. Pre natal conception techniques
5. Cental supervisory board
6. Genetic counseling centers
7. Appropriate authority committee
8. Offenses and penalties
9. Rape victim examinations
10. DO 's and DON'T

**Course Outcome:**

**Course Audience: Final MBBS Undergraduates**

**Course Coordinator: Dr.YASODHA**

**Course Faculties with Qualification and Designation:**

**Dr.Ambigai meena. Prof and HOD, OG**

**Dr.Yasodha, Associate Professor, OG**

**Course Curriculum/Topics with schedule (Min of 30 hours)**

	Date	Topic	Time	Hours
1	4.01.2018	Over view of legal aspects	4.00pm -5.00pm	1
2	8.01.2018	MTP act	4.00pm -7.00pm	3
3	20.01.2018	Pre conception techniques	4.00pm -8.00pm	4
4	5.02.2018	Pre natal diagnostic techniques	4.00pm -8.00pm	4
5	16.02.2018	Central supervisory board	4.00pm -8.00pm	4
6	3.03.2018	Genetic counseling centers	4.00pm-8.00pm	4
7	12.03.2018	Appropriate authority and advisory committee	4.00pm -6.00pm	2
8	16.04.2018	Offences and penalties	4.00pm -6.00pm	2
9	26.04.2018	Rape victim examinations	4.00pm - 6.00pm	2
10	3.05.2018	Do 's and DON'T	4.00pm -6.00pm	2
			Total Hours	30

**REFERENCE BOOKS: (Minimum 2)**

**Willaims Obstetrics Edition 21**

**Williams Gynaecology Edition 18**

**Shaw Textbook of Obstetrics - Dutta**

## VALUE ADDED COURSE

- 1. Name of the programme & Code** Legal Aspects , OBGY 8
- 2. Duration & Period** 30 hrs & JANUARY 2018 - JUNE 2018
- 3. Information Brochure and Course Content of Value Added Course** *Enclosed as Annexure- I*
- 4. List of students enrolled** *Enclosed as Annexure- II*
- 5. Assessment procedures:** Multiple choice questions- *Enclosed as Annexure- III*
- 6. Certificate model** *Enclosed as Annexure- IV*
- 7. No. of times offered during the same year:** 1- JANUARY 2018 - JUNE 2018
- 8. Year of discontinuation:** 2019
- 9. Summary report of each program year-wise**

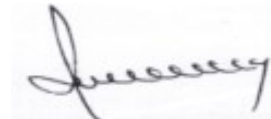
Value Added Course					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	OBGY 8	LEGAL ASPECTS	Dr. YASHODHA	FINAL YEAR MBBS	JANUARY 2018 - JUNE 2018

- 10. Course Feed Back** *Enclosed as Annexure- V*



**RESOURCE PERSON**

ASSISTANT PROFESSOR  
DEPT. OF OBSTETRICS & GYNAEC  
Sri Lakshmi Narayana Institute  
Medical Sciences  
OSUDU, PUDUCHERRY



**COORDINATOR**

**DEAN**  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
OSUDU, AGARAM VILLAGE,  
KODAKKANAM POST,  
PUDUCHERRY - 605 002



# **The Medical Termination Of Pregnancy Act, 1971**

## **(Act No. 34 of 1971)**

*An Act to provide for the termination of certain pregnancies by registered medical practitioners and for matters connected therewith or incidental thereto*

Be it enacted by Parliament in the Twenty-second Year of the Republic of India as follows:

### **1. Short title, extent and commencement.-**

- (1) This Act may be called the Medical Termination of Pregnancy Act, 1971.
- (2) It extends to the whole of India except the State of Jammu and Kashmir.
- (3) It shall come into force on such date as the Central Government may, by notification in the Official Gazette, appoint.

### **2. Definitions.-**In this Act, unless the context otherwise requires,-

- (a) "guardian" means a person having the care of the person of a minor or a lunatic;
- (b) "lunatic" has the meaning assigned to it in Sec.3 of the Indian Lunacy Act, 1912 (4 of 1912) ;
- (c) "minor" means a person who, under the provisions of the Indian Majority Act, 1875 (9 of 1875), is to be deemed not to have attained his majority,
- (d) "registered medical practitioner" means a medical practitioner who possesses any recognized medical qualification as defined in Cl.(h) of Sec. 2 of the Indian Medical Council Act, 1956 (102 of 1956), whose name has been entered in a State Medical Register and who has such experience or training in gynecology and obstetrics as may be prescribed by rules made under this Act.

### **3. When Pregnancies may be terminated by registered medical practitioners.-**

- (1) Notwithstanding anything contained in the Indian Penal Code (45 of 1860), a registered medical practitioner shall not be guilty of any offence under that Code or under any other law for the time being in force, if any pregnancy is terminated by him in accordance with the provisions of this Act.

(2) Subject to the provisions of sub-section (4), a pregnancy may be terminated by a registered medical practitioner,-

(a) where the length of the pregnancy does not exceed twelve weeks if such medical practitioner is,

or

(b) where the length of the pregnancy exceeds twelve weeks but does not exceed twenty weeks, if not less than two registered medical practitioners are.

Of opinion, formed in good faith, that,-

(i) the continuance of the pregnancy would involve a risk to the life of the pregnant woman or of grave injury physical or mental health ; or

(ii) there is a substantial risk that if the child were born, it would suffer from such physical or mental abnormalities as to be seriously handicapped.

Explanation 1.-Where any, pregnancy is alleged by the pregnant woman to have been caused by rape, the anguish caused by such pregnancy shall be presumed to constitute a grave injury to the mental health of the pregnant woman.

Explanation 2.-Where any pregnancy occurs as a result of failure of any device or method used by any married woman or her husband for the purpose of limiting the number of children, the anguish caused by such unwanted pregnancy may be presumed to constitute a grave injury to the mental health of the pregnant woman.

(3) In determining whether the continuance of pregnancy would involve such risk of injury to the health as is mentioned in sub-section (2), account may be taken of the pregnant woman's actual or reasonable foreseeable environment.

(4) (a) No pregnancy of a woman, who has not attained the age of eighteen years, or, who, having attained the age of eighteen years, is a lunatic, shall be terminated except with the consent in writing of her guardian.

(b) Save as otherwise provided in C1.(a), no pregnancy shall be terminated except with the consent of the pregnant woman.

**4. Place where pregnancy may be terminated.**-No termination of pregnancy shall be made in accordance with this Act at any place other than,-

(a) a hospital established or maintained by Government, or

(b) a place for the time being approved for the purpose of this Act by Government.

## **5. Sections 3 and 4 when not to apply.-**

(1) The provisions of Sec.4 and so much of the provisions of sub-section (2) of Sec. 3 as relate to the length of the pregnancy and the opinion of not less than two registered medical practitioner, shall not apply to the termination of a pregnancy by the registered medical practitioner in case where he is of opinion, formed in good faith, that the termination of such pregnancy is immediately necessary to save the life of the pregnant woman.

(2) Notwithstanding anything contained in the Indian Penal Code (45 of 1860), the termination of a pregnancy by a person who is not a registered medical practitioner shall be an offence punishable under that Code, and that Code shall, to this extent, stand modified.

## **6. Power to make rules.-4**

(1) The Central Government may, by notification in the Official Gazette, make rules to carry out the provisions of this Act.

(2) In particular, and without prejudice to the generality of the foregoing power, such rules may provide for all or any of the following matters, namely:

(a) the experience or training, or both, which a registered medical practitioner shall have if he intends

to terminate any pregnancy under this Act ; and

(b) such other matters as are required to be or may be, provided by rules made under this Act.

(3) Every rule made by the Central Government under this Act shall be laid, as soon as may be after it is made,

before each House of Parliament while it is in session for a total period of thirty days which may be

comprised in one session or in two successive sessions, and If, before the expiry of the session which it is so

laid or the session immediately following, both Houses agree in making any modification in the rule or both

Houses agree that the rule should not be made, the rule shall thereafter have effect only in such modified form

or be of no effect, as the case may be; so, however, that any such modification or annulment shall be without

prejudice to the validity of anything previously done under that rule.

## **7. Power to make regulations.-**

(1) The State Government may, by regulations,-

(a) require any such opinion as is referred to in sub-section (2) of Sec. 3 to be certified by a

registered medical practitioner or practitioners concerned in such form and at such time as be specified in such regulations, and the preservation or disposal of such certificates;

(b) require any registered medical practitioner, who terminates a pregnancy to give intimation of

such termination and such other information relating to the termination as maybe specified in such regulations;

(c) prohibit the disclosure, except to such persons and for such purposes as may be specified in

such regulations, of intimations given or information furnished in pursuance of such regulations.

(2) The intimation given and the information furnished in pursuance of regulations made by virtue of C1.(b) of

Sub-section(1) shall be given or furnished, as the case may be, to the Chief Medical Officer of the State..

(3) Any person who wilfully contravenes or wilfully fails to comply with the requirements of any regulation made

under sub-section (1) shall be liable to be punished with fine which may extend to one thousand rupees.

**8. Protection of action taken in good faith.**- No suit for other legal proceedings shall lie against any registered medical practitioner for any damage caused likely to be caused by anything which is in good faith done or intended to be done under this act.

**Pre-Conception & Pre-Natal  
Diagnostic Techniques Act, 1994**

**THE PRE-NATAL DIAGNOSTIC TECHNIQUES  
(REGULATION AND PREVENTION OF MISUSE) ACT, 1994**

(ACT NO. 57 OF 1994)

AND

**THE PRE-NATAL DIAGNOSTIC TECHNIQUES  
(REGULATION AND PREVENTION OF MISUSE) AMENDMENT ACT, 2002**  
(No.14 OF 2003)

*[20th September, 1994]*

*An Act to provide for the prohibition of sex selection, before or after conception, and for regulation of pre-natal diagnostic techniques for the purposes of detecting genetic abnormalities or metabolic disorders or chromosomal abnormalities or certain congenital malformations or sex-linked disorders and for the prevention of their misuse for sex determination leading to female foeticide; and, for matters connected therewith or incidental thereto.*

BE it enacted by Parliament in the Forty-fifth Year of the Republic of India as follows:—

**CHAPTER I  
PRELIMINARY**

1. **Short title, extent and commencement.**- (1) This Act may be called the Pre-conception and Pre-natal Diagnostic Techniques (Prohibition of Sex Selection) Act, 1994.
  - (2) It shall extend to the whole of India except the State of Jammu and Kashmir.
  - (3) It shall come into force on such date as the Central Government may, by notification in the Official Gazette, appoint.
2. **Definitions.**- In this Act, unless the context otherwise requires,—
  - (a) "Appropriate Authority" means the Appropriate Authority appointed under section 17;
  - (b) "Board" means the Central Supervisory Board constituted under section 7;
  - (ba) "conceptus" means any product of conception at any stage of development from fertilization until birth including extra embryonic membranes as well as the embryo or foetus;
  - (bb) "embryo" means a developing human organism after fertilization till the end of eight weeks (fifty-six days);

- (bc) “foetus” means a human organism during the period of its development beginning on the fifty-seventh day following fertilization or creation (excluding any time in which its development has been suspended) and ending at the birth;
- (c) “Genetic Counseling Centre” means an institute, hospital, nursing home or any place, by whatever name called, which provides for genetic counselling to patients;
- (d) “Genetic Clinic” means a clinic, institute, hospital, nursing home or any place, by whatever name called, which is used for conducting pre-natal diagnostic procedures.
- Explanation-* For the purposes of this clause, ‘Genetic Clinic’ includes a vehicle, where ultrasound machine or imaging machine or scanner or other equipment capable of determining sex of the foetus or a portable equipment which has the potential for detection of sex during pregnancy or selection of sex before conception, is used.
- (e) “Genetic Laboratory” means a laboratory and includes a place where facilities are provided for conducting analysis or tests of samples received from Genetic Clinic for pre-natal diagnostic test.
- Explanation-* For the purposes of this clause, ‘Genetic Laboratory’ includes a place where ultrasound machine or imaging machine or scanner or other equipment capable of determining sex of the foetus or a portable equipment which has the potential for detection of sex during pregnancy or selection of sex before conception, is used.
- (f) “Gynaecologist” means a person who possesses a post- graduate qualification in gynaecology and obstetrics;
- (g) “Medical geneticist” includes a person who possesses a degree or diploma in genetic science in the fields of sex selection and pre-natal diagnostic techniques or has experience of not less than two years in such field after obtaining—
- (i) any one of the medical qualifications recognised under the Indian Medical Council Act, 1956 (102 of 1956); or
  - (ii) a post-graduate degree in biological sciences;
- (h) “Pediatrician” means a person who possesses a post-graduate qualification in pediatrics;
- (i) “pre-natal diagnostic procedures” means all gynaecological or obstetrical or medical procedures such as ultrasonography, foetoscopy, taking or removing samples of amniotic fluid, chorionic villi, blood or any other tissue or fluid of a man, or of a woman for being sent to a Genetic Laboratory or Genetic Clinic for conducting any type of analysis or pre-natal diagnostic tests for selection of sex before or after conception;
- (j) “pre-natal diagnostic techniques” includes all pre-natal diagnostic procedures and pre-natal diagnostic tests;
- (k) “pre-natal diagnostic test” means ultrasonography or any test or analysis of amniotic fluid, chorionic villi, blood or any tissue or fluid of a pregnant woman or conceptus conducted to detect genetic or metabolic disorders or chromosomal abnormalities or congenital anomalies or haemoglobinopathies or sex-linked diseases;
- (l) “prescribed” means prescribed by rules made under this Act;
- (m) “registered medical practitioner” means a medical practitioner who possesses any recognised

edical qualification as defined in clause (h) of section 2 of the Indian Medical Council Act, 1956, (102 of 1956.) and whose name has been entered in a State Medical Register;

- (n) "regulations" means regulations framed by the Board under this Act;
- (o) "sex selection" includes any procedure, technique, test or administration or prescription or provision of anything for the purpose of ensuring or increasing the probability that an embryo will be of a particular sex;
- (p) "sonologist or imaging specialist" means a person who possesses any one of the medical qualifications recognized under the Indian Medical Council Act, 1956 or who possesses a post-graduate qualification in ultrasonography or imaging techniques or radiology;
- (q) "State Board" means a State Supervisory Board or a Union territory Supervisory Board constituted under Section 16A;
- (r) "State Government" in relation to Union territory with Legislature means the Administrator of that Union territory appointed by the President under article 239 of Constitution.

## CHAPTER II

### REGULATION OF GENETIC COUNSELLING CENTRES, GENETIC LABORATORIES AND GENETIC CLINICS

3. *Regulation of Genetic Counselling Centres, Genetic Laboratories and Genetic Clinics.*- On and from the commencement of this Act,—
1. no Genetic Counselling Centre, Genetic Laboratory or Genetic Clinic unless registered under this Act, shall conduct or associate with, or help in, conducting activities relating to pre-natal diagnostic techniques;
  2. no Genetic Counselling Centre or Genetic Laboratory or Genetic Clinic shall employ or cause to be employed or take services of any person, whether on honorary basis or on payment who does not possess qualifications as may be prescribed;
  3. no medical geneticist, gynaecologist, paediatrician, registered medical practitioner or any other person shall conduct or cause to be conducted or aid in conducting by himself or through any other person, any pre-natal diagnostic techniques at a place other than a place registered under this Act.
- 3A. *Prohibition of sex-selection*- No person, including a specialist or a team of specialists in the field of infertility, shall conduct or cause to be conducted or aid in conducting by himself or by any other person, sex selection on a woman or a man or on both or on any tissue, embryo, conceptus, fluid or gametes derived from either or both of them.
- 3B. *Prohibition on sale of ultrasound machines, etc., to persons, laboratories, clinics, etc. not registered under the Act.*- No person shall sell any ultrasound machine or imaging machine or scanner or any other equipment capable of detecting sex of foetus to any Genetic Counselling Centre, Genetic Laboratory, Genetic Clinic or any other person not registered under the Act.

### CHAPTER III

#### REGULATION OF PRE-NATAL DIAGNOSTIC TECHNIQUES

4. *Regulation of pre-natal diagnostic techniques.*- On and from the commencement of this Act,—
1. no place including a registered Genetic Counselling Centre or Genetic Laboratory or Genetic Clinic shall be used or caused to be used by any person for conducting pre-natal diagnostic techniques except for the purposes specified in clause (2) and after satisfying any of the conditions specified in clause (3);
  2. no pre-natal diagnostic techniques shall be conducted except for the purposes of detection of any of the following abnormalities, namely:—
    - (i) chromosomal abnormalities;
    - (ii) genetic metabolic diseases;
    - (iii) haemoglobinopathies;
    - (iv) sex-linked genetic diseases;
    - (v) congenital anomalies;
    - (vi) any other abnormalities or diseases as may be specified by the Central Supervisory Board;
  3. no pre-natal diagnostic techniques shall be used or conducted unless the person qualified to do so is satisfied for reasons to be recorded in writing that any of the following conditions are fulfilled, namely:—
    - (i) age of the pregnant woman is above thirty-five years;
    - (ii) the pregnant woman has undergone of two or more spontaneous abortions or foetal loss;
    - (iii) the pregnant woman had been exposed to potentially teratogenic agents such as drugs, radiation, infection or chemicals;
    - (iv) the pregnant woman or her spouse has a family history of mental retardation or physical deformities such as, spasticity or any other genetic disease;
    - (v) any other condition as may be specified by the Central Supervisory Board;

Provided that the person conducting ultrasonography on a pregnant woman shall keep complete record thereof in the clinic in such manner, as may be prescribed, and any deficiency or inaccuracy found therein shall amount to contravention of provisions of section 5 or section 6 unless contrary is proved by the person conducting such ultrasonography;

4. no person including a relative or husband of the pregnant woman shall seek or encourage the conduct of any pre-natal diagnostic techniques on her except for the purposes specified in clause (2).
  5. no person including a relative or husband of a woman shall seek or encourage the conduct of any sex-selection technique on her or him or both.
5. *Written consent of pregnant woman and prohibition of communicating the sex of foetus.*
1. No person referred to in clause (2) of section 3 shall conduct the pre-natal diagnostic procedures unless—

- (a) he has explained all known side and after effects of such procedures to the pregnant woman concerned;
  - (b) he has obtained in the prescribed form her written consent to undergo such procedures in the language which she understands; and
  - (c) a copy of her written consent obtained under clause (b) is given to the pregnant woman.
2. No person including the person conducting pre-natal diagnostic procedures shall communicate to the pregnant woman concerned or her relatives or any other person the sex of the foetus by words, signs or in any other manner.

6. *Determination of sex prohibited.*- On and from the commencement of this Act,—

- (a) no Genetic Counselling Centre or Genetic Laboratory or Genetic Clinic shall conduct or cause to be conducted in its Centre, Laboratory or Clinic, pre-natal diagnostic techniques including ultrasonography, for the purpose of determining the sex of a foetus;
- (b) no person shall conduct or cause to be conducted any pre-natal diagnostic techniques including ultrasonography for the purpose of determining the sex of a foetus;
- (c) no person shall, by whatever means, cause or allow to be caused selection of sex before or after conception.

## CHAPTER IV

### CENTRAL SUPERVISORY BOARD

7. *Constitution of Central Supervisory Board.*-

1. The Central Government shall constitute a Board to be known as the Central Supervisory Board to exercise the powers and perform the functions conferred on the Board under this Act.
2. The Board shall consist of—
  - (a) the Minister in charge of the Ministry or Department of Family Welfare, who shall be the Chairman, *ex-officio*;
  - (b) the Secretary to the Government of India in charge of the Department of Family Welfare, who shall be the Vice-Chairman, *ex-officio*;
  - (c) three members to be appointed by the Central Government to represent the Ministries of Central Government in charge of Women and Child Development, Department of Legal Affairs or Legislative Department in the Ministry of Law and Justice, and Indian System of Medicine and Homoeopathy, *ex-officio*;
  - (d) the Director General of Health Services of the Central Government, *ex-officio*;
  - (e) ten members to be appointed by the Central Government, two each from amongst—
    - (i) eminent medical geneticists;
    - (ii) eminent gynaecologist and obstetrician or expert of *stri-roga or prasuti-tantra*;
    - (iii) eminent paediatricians;
    - (iv) eminent social scientists; and
    - (v) representatives of women welfare organisations;

- (f) three women Members of Parliament, of whom two shall be elected by the House of the People and one by the Council of States;
- (g) four members to be appointed by the Central Government by rotation to represent the States and the Union territories, two in the alphabetical order and two in the reverse alphabetical order:

Provided that no appointment under this clause shall be made except on the recommendation of the State Government or, as the case may be, the Union territory;

- (h) an officer, not below the rank of a Joint Secretary or equivalent of the Central Government, in charge of Family Welfare, who shall be the Member-Secretary, ex-officio.

8. **Terms of office of members.-** (1) The term of office of a member, other than an ex-officio member, shall be,—

- (a) in case of appointment under clause (e) or clause (f) of sub-section (2) of section 7, three years; and
- (b) in case of appointment under clause (g) of the said subsection, one year.

2. If a casual vacancy occurs in the office of any other members, whether by reason of his death, resignation or inability to discharge his functions owing to illness or other incapacity, such vacancy shall be filled by the Central Government by making a fresh appointment and the member so appointed shall hold office for the remainder of the term of office of the person in whose place he is so appointed.
3. The Vice-Chairman shall perform such functions as may be assigned to him by the Chairman from time to time.
4. The procedure to be followed by the members in the discharge of their functions shall be such as may be prescribed.

9. **Meetings of the Board.-**

1. The Board shall meet at such time and place, and shall observe such rules of procedure in regard to the transaction of business at its meetings (including the quorum at such meetings) as may be provided by regulations:

Provided that the Board shall meet at least once in six months.

2. The Chairman and in his absence the Vice-Chairman shall preside at the meetings of the Board.
3. If for any reason the Chairman or the Vice-Chairman is unable to attend any meeting of the Board, any other member chosen by the members present at the meeting shall preside at the meeting.
4. All questions which come up before any meeting of the Board shall be decided by a majority of the votes of the members present and voting, and in the event of an equality of votes, the Chairman, or in his absence, the person presiding, shall have and exercise a second or casting vote.
5. Members other than ex-officio members shall receive such allowances, if any, from the Board as may be prescribed.

10. *Vacancies, etc., not to invalidate proceedings of the Board.*- No act or proceeding of the Board shall be invalid merely by reason of—

- (a) any vacancy in, or any defect in the constitution of, the Board; or
- (b) any defect in the appointment of a person acting as a member of the Board; or
- (c) any irregularity in the procedure of the Board not affecting the merits of the case.

11. *Temporary association of persons with the Board for particular purposes.*

- 1. The Board may associate with itself, in such manner and for such purposes as may be determined by regulations, any person whose assistance or advice it may desire in carrying out any of the provisions of this Act.
- 2. A person associated with it by the Board under sub-section (1) for any purpose shall have a right to take part in the discussions relevant to that purpose, but shall not have a right to vote at a meeting of the Board and shall not be a member for any other purpose.

12. *Appointment of officers and other employees of the Board.*-

- 1. For the purpose of enabling it efficiently to discharge its functions under this Act, the Board may, subject to such regulations as may be made in this behalf, appoint (whether on deputation or otherwise) such number of officers and other employees as it may consider necessary:

Provided that the appointment of such category of officers, as may be specified in such regulations, shall be subject to the approval of the Central Government.

- 2. Every officer or other employee appointed by the Board shall be subject to such conditions of service and shall be entitled to such remuneration as may be specified in the regulations.

13. *Authentication of orders and other instruments of the Board.*- All orders and decisions of the Board shall be authenticated by the signature of the Chairman or any other member authorised by the Board in this behalf, and all other instruments issued by the Board shall be authenticated by the signature of the Member-Secretary or any other officer of the Board authorised in like manner in this behalf.

14. *Disqualifications for appointment as member.*- A person shall be disqualified for being appointed as a member if, he—

- (a) has been convicted and sentenced to imprisonment for an offence which, in the opinion of the Central Government, involves moral turpitude; or
- (b) is an undischarged insolvent; or
- (c) is of unsound mind and stands so declared by a competent court; or
- (d) has been removed or dismissed from the service of the Government or a Corporation owned or controlled by the Government; or
- (e) has, in the opinion of the Central Government, such financial or other interest in the Board as is likely to affect prejudicially the discharge by him of his functions as a member; or
- (f) has, in the opinion of the Central Government, been associated with the use or promotion of pre-natal diagnostic technique for determination of sex or with any sex selection technique.

15. *Eligibility of member for reappointment.*- Subject to the other terms and conditions of service as may be prescribed, any person ceasing to be a member shall be eligible for reappointment as such member.

Provided that no member other than an *ex-officio* member shall be appointed for more than two consecutive terms.

16. *Functions of the Board.* - The Board shall have the following functions, namely:—

- (i) to advise the Central Government on policy matters relating to use of pre-natal diagnostic techniques, sex selection techniques and against their misuse;
- (ii) to review and monitor implementation of the Act and rules made thereunder and recommend to the Central Government changes in the said Act and rules;
- (iii) to create public awareness against the practice of pre-conception sex selection and pre-natal determination of sex of foetus leading to female foeticide;
- (iv) to lay down code of conduct to be observed by persons working at Genetic Counselling Centres, Genetic Laboratories and Genetic Clinics;
- (v) to oversee the performance of various bodies constituted under the Act and take appropriate steps to ensure its proper and effective implementation;
- (vi) any other functions as may be prescribed under the Act.

16A. *Constitution of State Supervisory Board and Union territory Supervisory Board.*-

1. Each State and Union territory having Legislature shall constitute a Board to be known as the State Supervisory Board or the Union territory Supervisory Board, as the case may be, which shall have the following functions:-

- i) to create public awareness against the practice of pre-conception sex selection and pre-natal determination of sex of foetus leading to female foeticide in the State;
- ii) to review the activities of the Appropriate Authorities functioning in the State and recommend appropriate action against them;
- iii) to monitor the implementation of provisions of the Act and the rules and make suitable recommendations relating thereto, to the Board;
- iv) to send such consolidated reports as may be prescribed in respect of the various activities undertaken in the State under the Act to the Board and the Central Government; and
- v) any other functions as may be prescribed under the Act.

2. The State Board shall consist of,-

- a) the Minister in charge of Health and Family Welfare in the State, who shall be the Chairperson, *ex-officio*;
- b) the Secretary in charge of the Department of Health and Family Welfare who shall be the Vice-Chairperson, *ex-officio*;
- c) Secretaries or Commissioners in charge of Departments of Women and Child Development, Social Welfare, Law and Indian System of Medicines and Homoeopathy, *ex-officio*, or their representatives;

- d) Director of Health and Family Welfare or Indian System of Medicines and Homoeopathy of the State Government, *ex-officio*;
  - e) Three women members of Legislative Assembly or Legislative Council;
  - f) Ten members to be appointed by the State Government out of which two each shall be from the following categories:
    - i) eminent social scientists and legal experts;
    - ii) eminent women activists from non-governmental organizations or otherwise;
    - iii) eminent gynaecologists and obstetricians or experts of *stri-roga or prasuti tantra*;
    - iv) eminent paediatricians or medical geneticists;
    - v) eminent radiologists or sonologists;
  - g) an officer not below the rank of Joint Director in charge of Family Welfare, who shall be the Member Secretary, *ex-officio*.
3. The State Board shall meet at least once in four months.
  4. The term of office of a member, other than an *ex-officio* member, shall be three years.
  5. If a vacancy occurs in the office of any member other than an *ex-officio* member, it shall be filled by making fresh appointment.
  6. If a member of the Legislative Assembly or member of the Legislative Council who is a member of the State Board, becomes Minister or Speaker or Deputy Speaker of the Legislative Assembly or Chairperson or Deputy Chairperson of the Legislative Council, she shall cease to be a member of the State Board.
  7. One-third of the total number of members of the State Board shall constitute the quorum.
  8. The State Board may co-opt a member as and when required, provided that the number of co-opted members does not exceed one-third of the total strength of the State Board.
  9. The co-opted members shall have the same powers and functions as other members, except the right to vote and shall abide by the rules and regulations.
  10. In respect of matters not specified in this section, the State Board shall follow procedures and conditions as are applicable to the Board.

## **CHAPTER V**

### **APPROPRIATE AUTHORITY AND ADVISORY COMMITTEE**

17. ***Appropriate Authority and Advisory Committee.***- 1. The Central Government shall appoint, by notification in the Official Gazette, one or more Appropriate Authorities for each of the Union territories for the purposes of this Act.
2. The State Government shall appoint, by notification in the Official Gazette, one or more Appropriate Authorities for the whole or part of the State for the purposes of this Act having regard to the intensity of the problem of pre-natal sex determination leading to female foeticide.

3. The officers appointed as Appropriate Authorities under sub-section (1) or sub-section (2) shall be,—
- (a) when appointed for the whole of the State or the Union territory, consisting of the following three members-
    - i) an officer of or above the rank of the Joint Director of Health and Family Welfare-Chairperson;
    - ii) an eminent woman representing women's organization; and
    - iii) an officer of Law Department of the State or the Union territory concerned;

Provided that it shall be the duty of the State or the Union territory concerned to constitute multi-member State or Union territory level Appropriate Authority within three months of the coming into force of the Pre-natal Diagnostic Techniques (Regulation and Prevention of Misuse) Amendment Act, 2002:

Provided further that any vacancy occurring therein shall be filled within three months of that occurrence.

- (b) when appointed for any part of the State or the Union territory, of such other rank as the State Government or the Central Government, as the case may be, may deem fit.
4. The Appropriate Authority shall have the following functions, namely:—
- (a) to grant, suspend or cancel registration of a Genetic Counselling Centre, Genetic Laboratory or Genetic Clinic;
  - (b) to enforce standards prescribed for the Genetic Counselling Centre, Genetic Laboratory and Genetic Clinic;
  - (c) to investigate complaints of breach of the provisions of this Act or the rules made thereunder and take immediate action;
  - (d) to seek and consider the advice of the Advisory Committee, constituted under sub-section (5), on application for registration and on complaints for suspension or cancellation of registration;
  - (e) to take appropriate legal action against the use of any sex selection technique by any person at any place, suo motu or brought to its notice and also to initiate independent investigations in such matter;
  - (f) to create public awareness against the practice of sex selection or pre-natal determination of sex;
  - (g) to supervise the implementation of the provisions of the Act and rules;
  - (h) to recommend to the CSB and State Boards modifications required in the rules in accordance with changes in technology or social conditions;
  - (i) to take action on the recommendations of the Advisory Committee made after investigation of complaint for suspension or cancellation of registration.
5. The Central Government or the State Government, as the case may be, shall constitute an Advisory Committee for each Appropriate Authority to aid and advise the Appropriate Authority in the discharge of its functions, and shall appoint one of the members of the Advisory Committee to be its Chairman.

- 6 The Advisory Committee shall consist of—
- (a) three medical experts from amongst gynaecologists, obstetricians, paediatricians and medical geneticists;
  - (b) one legal expert;
  - (c) one officer to represent the department dealing with information and publicity of the State Government or the Union territory, as the case may be;
  - (d) three eminent social workers of whom not less than one shall be from amongst representatives of women's organisations.
7. No person who has been associated with the use or promotion of pre-natal diagnostic technique for determination of sex or sex selection shall be appointed as a member of the Advisory Committee.
8. The Advisory Committee may meet as and when it thinks fit or on the request of the Appropriate Authority for consideration of any application for registration or any complaint for suspension or cancellation of registration and to give advice thereon:
- Provided that the period intervening between any two meetings shall not exceed the prescribed period.
9. The terms and conditions subject to which a person may be appointed to the Advisory Committee and the procedure to be followed by such Committee in the discharge of its functions shall be such as may be prescribed.

17A. *Powers of Appropriate Authorities.*- The Appropriate Authority shall have the powers in respect of the following matters, namely:-

- a) summoning of any person who is in possession of any information relating to violation of the provisions of this Act or the rules made thereunder;
- b) production of any document or material object relating to clause (a);
- c) issuing search warrant for any place suspected to be indulging in sex selection techniques or pre-natal sex determination; and
- d) any other matter which may be prescribed.

## CHAPTER VI

### REGISTRATION OF GENETIC COUNSELLING CENTRES, GENETIC LABORATORIES AND GENETIC CLINICS

18. *Registration of Genetic Counselling Centres, Genetic Laboratories or Genetic Clinics.* (1) No person shall open any Genetic Counselling Centre, Genetic Laboratory or Genetic Clinic, including clinic, laboratory or centre having ultrasound or imaging machine or scanner or any other technology capable of undertaking determination of sex of foetus and sex selection, or render services to any of them, after the commencement of the Pre-natal Diagnostic Techniques (Regulation and Prevention of Misuse) Amendment Act, 2002 unless such centre, laboratory or clinic is duly registered under the Act.

2. Every application for registration under sub-section (1), shall be made to the Appropriate Authority in such form and in such manner and shall be accompanied by such fees as may be prescribed.
3. Every Genetic Counselling Centre, Genetic Laboratory or Genetic Clinic engaged, either partly or exclusively, in counselling or conducting pre-natal diagnostic techniques for any of the purposes mentioned in section 4, immediately before the commencement of this Act, shall apply for registration within sixty days from the date of such commencement.
4. Subject to the provisions of section 6, every Genetic Counselling Centre, Genetic Laboratory or Genetic Clinic engaged in counselling or conducting pre-natal diagnostic techniques shall cease to conduct any such counselling or technique on the expiry of six months from the date of commencement of this Act unless such Centre, Laboratory or Clinic has applied for registration and is so registered separately or jointly or till such application is disposed of, whichever is earlier.
5. No Genetic Counselling Centre, Genetic Laboratory or Genetic Clinic shall be registered under this Act unless the Appropriate Authority is satisfied that such Centre, Laboratory or Clinic is in a position to provide such facilities, maintain such equipment and standards as may be prescribed.

19. *Certificate of registration.-*

1. The Appropriate Authority shall, after holding an inquiry and after satisfying itself that the applicant has complied with all the requirements of this Act and the rules made thereunder and having regard to the advice of the Advisory Committee in this behalf, grant a certificate of registration in the prescribed form jointly or separately to the Genetic Counselling Centre, Genetic Laboratory or Genetic Clinic, as the case may be.
2. If, after the inquiry and after giving an opportunity of being heard to the applicant and having regard to the advice of the Advisory Committee, the Appropriate Authority is satisfied that the applicant has not complied with the requirements of this Act or the rules, it shall, for reasons to be recorded in writing, reject the application for registration.
3. Every certificate of registration shall be renewed in such manner and after such period and on payment of such fees as may be prescribed.
4. The certificate of registration shall be displayed by the registered Genetic Counselling Centre, Genetic Laboratory or Genetic Clinic in a conspicuous place at its place of business.

20. *Cancellation or suspension of registration.-*

1. The Appropriate Authority may *suo moto*, or on complaint, issue a notice to the Genetic Counselling Centre, Genetic Laboratory or Genetic Clinic to show cause why its registration should not be suspended or cancelled for the reasons mentioned in the notice.
2. If, after giving a reasonable opportunity of being heard to the Genetic Counselling Centre, Genetic Laboratory or Genetic Clinic and having regard to the advice of the Advisory Committee, the Appropriate Authority is satisfied that there has been a breach of the provisions of this Act or the rules, it may, without prejudice to any criminal action that it may take against such Centre, Laboratory or Clinic, suspend its registration for such period as it may think fit or cancel its registration, as the case may be.

3. Notwithstanding anything contained in sub-sections (1) and (2), if the Appropriate Authority is, of the opinion that it is necessary or expedient so to do in the public interest, it may, for reasons to be recorded in writing, suspend the registration of any Genetic Counselling Centre, Genetic Laboratory or Genetic Clinic without issuing any such notice referred to in sub-section (1).
21. *Appeal.* The Genetic Counselling Centre, Genetic Laboratory or Genetic Clinic may, within thirty days from the date of receipt of the order of suspension or cancellation of registration passed by the Appropriate Authority under section 20, prefer an appeal against such order to—
- (i) the Central Government, where the appeal is against the order of the Central Appropriate Authority; and
  - (ii) the State Government, where the appeal is against the order of the State Appropriate Authority, in the prescribed manner.

## CHAPTER VII OFFENCES AND PENALTIES

22. *Prohibition of advertisement relating to pre-natal determination of sex and punishment for contravention.-*
1. No person, organization, Genetic Counselling Centre, Genetic Laboratory or Genetic Clinic, including clinic, laboratory or centre having ultrasound machine or imaging machine or scanner or any other technology capable of undertaking determination of sex of foetus or sex selection shall issue, publish, distribute, communicate or cause to be issued, published, distributed or communicated any advertisement, in any form, including internet, regarding facilities of pre-natal determination of sex or sex selection before conception available at such centre, laboratory, clinic or at any other place.
  2. No person or organization including Genetic Counselling Centre, Genetic Laboratory or Genetic Clinic shall issue, publish, distribute, communicate or cause to be issued, published, distributed or communicated any advertisement in any manner regarding pre-natal determination or pre-conception selection of sex by any means whatsoever, scientific or otherwise.
  3. Any person who contravenes the provisions of sub-section (1) or sub-section (2) shall be punishable with imprisonment for a term which may extend to three years and with fine which may extend to ten thousand rupees.  
*Explanation.*—For the purposes of this section, “advertisement” includes any notice, circular, label, wrapper or any other document including advertisement through internet or any other media in electronic or print form and also includes any visible representation made by means of any hoarding, wall-painting, signal, light, sound, smoke or gas.
23. *Offences and penalties.-* (1) Any medical geneticist, gynaecologist, registered medical practitioner or any person who owns a Genetic Counselling Centre, a Genetic Laboratory or a Genetic Clinic or is employed in such a Centre, Laboratory or Clinic and renders his professional or technical services to or at such a Centre, Laboratory or Clinic, whether on an honorary basis or otherwise, and who contravenes any of the provisions of this Act or rules made thereunder shall be punishable with

imprisonment for a term which may extend to three years and with fine which may extend to ten thousand rupees and on any subsequent conviction, with imprisonment which may extend to five years and with fine which may extend to fifty thousand rupees.

2. The name of the registered medical practitioner shall be reported by the Appropriate Authority to the State Medical Council concerned for taking necessary action including suspension of the registration if the charges are framed by the court and till the case is disposed of and on conviction for removal of his name from the register of the Council for a period of five years for the first offence and permanently for the subsequent offence.

3. Any person who seeks the aid of a Genetic Counselling Centre, Genetic Laboratory, Genetic Clinic or ultrasound clinic or imaging clinic or of a medical geneticist, gynaecologist, sonologist or imaging specialist or registered medical practitioner or any other person for sex selection or for conducting pre- natal diagnostic techniques on any pregnant women for the purposes other than those specified in sub-section (2) of section 4, he shall, be punishable with imprisonment for a term which may extend to three years and with fine which may extend to fifty thousand rupees for the first offence and for any subsequent offence with imprisonment which may extend to five years and with fine which may extend to one lakh rupees.

4. For the removal of doubts, it is hereby provided, that the provisions of sub-section (3) shall not apply to the woman who was compelled to undergo such diagnostic techniques or such selection.

24. ***Presumption in the case of conduct of pre-natal diagnostic techniques.***- Notwithstanding anything contained in the Indian Evidence Act, 1872, the court shall presume unless the contrary is proved that the pregnant woman was compelled by her husband or any other relative, as the case may be, to undergo pre-natal diagnostic technique for the purposes other than those specified in sub-section (2) of section 4 and such person shall be liable for abetment of offence under sub-section (3) of section 23 and shall be punishable for the offence specified under that section.

25. ***Penalty for contravention of the provisions of the Act or rules for which no specific punishment is provided.***- Whoever contravenes any of the provisions of this Act or any rules made thereunder, for which no penalty has been elsewhere provided in this Act, shall be punishable with imprisonment for a term which may extend to three months or with fine, which may extend to one thousand rupees or with both and in the case of continuing contravention with an additional fine which may extend to five hundred rupees for every day during which such contravention continues after conviction for the first such contravention.

26. ***Offences by companies.***-

1. Where any offence, punishable under this Act has been committed by a company, every person who, at the time the offence was committed was in charge of, and was responsible to the company for the conduct of the business of the company, as well as the company, shall be deemed to be guilty of the offence and shall be liable to be proceeded against and punished accordingly:

Provided that nothing contained in this sub-section shall render any such person liable to any punishment, if he proves that the offence was committed without his knowledge or that he had exercised all due diligence to prevent the commission of such offence.

- . Notwithstanding anything contained in sub-section (1), where any offence punishable under this Act has been committed by a company and it is proved that the offence has been committed with the consent or connivance of, or is attributable to any neglect on the part of, any director, manager, secretary or other officer of the company, such director, manager, secretary or other officer shall also be deemed to be guilty of that offence and shall be liable to be proceeded against and punished accordingly.

*Explanation.*—For the purposes of this section,—

- (a) “company” means any body corporate and includes a firm or other association of individuals, and
- (b) “director”, in relation to a firm, means a partner in the firm.

27. *Offence to be cognizable, non-bailable and non-compoundable.*—Every offence under this Act shall be cognizable, non-bailable and non-compoundable.

28. *Cognizance of offences.*

1. No court shall take cognizance of an offence under this Act except on a complaint made by—
- (a) the Appropriate Authority concerned, or any officer authorised in this behalf by the Central Government or State Government, as the case may be, or the Appropriate Authority; or
- (b) a person who has given notice of not less than fifteen days in the manner prescribed, to the Appropriate Authority, of the alleged offence and of his intention to make a complaint to the court.

*Explanation.*—For the purpose of this clause, “person” includes a social organisation.

2. No court other than that of a Metropolitan Magistrate or a Judicial Magistrate of the first class shall try any offence punishable under this Act.
3. Where a complaint has been made under clause (b) of subsection (1), the court may, on demand by such person, direct the Appropriate Authority to make available copies of the relevant records in its possession to such person.

## **CHAPTER VIII** **MISCELLANEOUS**

29. *Maintenance of records.*

1. All records, charts, forms, reports, consent letters and all other documents required to be maintained under this Act and the rules shall be preserved for a period of two years or for such period as may be prescribed:

Provided that, if any criminal or other proceedings are instituted against any Genetic Counselling Centre, Genetic Laboratory or Genetic Clinic, the records and all other documents of such Centre, Laboratory or Clinic shall be preserved till the final disposal of such proceedings.

2. All such records shall, at all reasonable times, be made available for inspection to the Appropriate Authority or to any other person authorised by the Appropriate Authority in this behalf.

30. *Power to search and seize records, etc. -*

1. If the Appropriate Authority has reason to believe that an offence under this Act has been or is being committed at any Genetic Counselling Centre, Genetic Laboratory or Genetic Clinic or any other place, such Authority or any officer authorised thereof in this behalf may, subject to such rules as may be prescribed, enter and search at all reasonable times with such assistance, if any, as such authority or officer considers necessary, such Genetic Counselling Centre, Genetic Laboratory or Genetic Clinic or any other place and examine any record, register, document, book, pamphlet, advertisement or any other material object found therein and seize and seal the same if such Authority or officer has reason to believe that it may furnish evidence of the commission of an offence punishable under this Act.
2. The provisions of the Code of Criminal Procedure, 1973 (2 of 1974) relating to searches and seizures shall, so far as may be, apply to every search or seizure made under this Act.

31. *Protection of action taken in good faith.*- No suit, prosecution or other legal proceeding shall lie against the Central or the State Government or the Appropriate Authority or any officer authorised by the Central or State Government or by the Authority for anything which is in good faith, done or intended to be done in pursuance of the provisions of this Act.

31A. *Removal of difficulties.*-

1. If any difficulty arises in giving effect to the provisions of the Pre-natal Diagnostic Techniques (Regulation and Prevention of Misuse) Amendment Act, 2002, the Central Government may, by order published in the Official Gazette, make such provisions not inconsistent with the provisions of the said Act as appear to it to be necessary or expedient for removing the difficulty.  
Provided that no order shall be made under this section after the expiry of a period of three years from the date of commencement of the Pre-natal Diagnostic Techniques (Regulation and Prevention of Misuse) Amendment Act, 2002.
2. Every order made under this section shall be laid, as soon as may be after it is made, before each House of Parliament.

32. *Power to make rules.*-

1. The Central Government may make rules for carrying out the provisions of this Act.
2. In particular and without prejudice to the generality of the foregoing power, such rules may provide for—
  - (i) the minimum qualifications for persons employed at a registered Genetic Counselling Centre, Genetic Laboratory or Genetic Clinic under clause (2) of section 3;
  - (ia) the manner in which the person conducting ultrasonography on a pregnant woman shall keep record thereof in the clinic under the proviso to sub-section (3) of section 4;
  - (ii) the form in which consent of a pregnant woman has to be obtained under section 5;
  - (iii) the procedure to be followed by the members of the Central Supervisory Board in the discharge of their functions under sub-section (4) of section 8;

- (iv) allowances for members other than ex-officio members admissible under subsection (5) of section 9;
- (iva) code of conduct to be observed by persons working at Genetic Counselling Centres, Genetic Laboratories and Genetic Clinics to be laid down by the Central Supervisory Board under clause (iv) of Section 16;
- (ivb) the manner in which reports shall be furnished by the State and Union territory Supervisory Boards to the Board and the Central Government in respect of various activities undertaken in the State under the Act under clause (iv) of sub-section (1) of section 16A;
- (ivc) empowering the Appropriate Authority in any other matter under clause (d) of section 17A;
- (v) the period intervening between any two meetings of the Advisory Committee under the proviso to subsection (8) of section 17;
- (vi) the terms and conditions subject to which a person may be appointed to the Advisory Committee and the procedure to be followed by such Committee under sub-section (9) of section 17;
- (vii) the form and manner in which an application shall be made for registration and the fee payable thereof under sub-section (2) of section 18;
- (viii) the facilities to be provided, equipment and other standards to be maintained by the Genetic Counselling Centre, Genetic Laboratory or Genetic Clinic under sub-section (5) of section 18;
- (ix) the form in which a certificate of registration shall be issued under sub-section (1) of section 19;
- (x) the manner in which and the period after which a certificate of registration shall be renewed and the fee payable for such renewal under sub-section (3) of section 19;
- (xi) the manner in which an appeal may be preferred under section 21;
- (xii) the period up to which records, charts, etc., shall be preserved under sub-section (1) of section 29;
- (xiii) the manner in which the seizure of documents, records, objects, etc., shall be made and the manner in which seizure list shall be prepared and delivered to the person from whose custody such documents, records or objects were seized under sub-section (1) of section 30;
- (xiv) any other matter that is required to be, or may be, prescribed.

33. **Power to make regulations.**- The Board may, with the previous sanction of the Central Government, by notification in the Official Gazette, make regulations not inconsistent with the provisions of this Act and the rules made thereunder to provide for—

- (a) the time and place of the meetings of the Board and the procedure to be followed for the transaction of business at such meetings and the number of members which shall form the quorum under sub-section (1) of section 9;
- (b) the manner in which a person may be temporarily associated with the Board under sub-section (1) of section 11;

(c) the method of appointment, the conditions of service and the scales of pay and allowances of the officer and other employees of the Board appointed under section 12;

(d) generally for the efficient conduct of the affairs of the Board.

34. ***Rules and regulations to be laid before Parliament.*** – Every rule and every regulation made under this Act shall be laid, as soon as may be after it is made, before each House of Parliament, while it is in session, for a total period of thirty days which may be comprised in one session or in two or more successive sessions, and if, before the expiry of the session immediately following the session or the successive sessions aforesaid, both Houses agree in making any modification in the rule or regulation or both Houses agree that the rule or regulation should not be made, the rule or regulation shall thereafter have effect only in such modified form or be of no effect, as the case may be; so, however, that any such modification or annulment shall be without prejudice to the validity of anything previously done under that rule or regulation.

(9)

**Bharath Institute of Higher Education and Research**

Sri Lakshmi Narayana Institute of Medical Sciences

Participant list of Value added course: **Legal aspects**

April 2018 – August 2018

Sl.No.	Reg. No.	Name	Signature
1	U15MB311	KRISHNA KUMAR .M	Kris
2	U15MB312	LAKSHMI .N	Lakshmi
3	U15MB313	LEJO SALVIN .G	Lejo Salvin
4	U15MB314	LINDA EVANS.M	Linda Evans
5	U15MB315	MADHAVA SHRIRAMAN .N	Madhava
6	U15MB316	MAHALAKSHMI .M.N	Mahalakshmi
7	U15MB317	MAHESWARI. C	Maheswari
8	U15MB318	MAIKEERTHI .A	Maikeerthi
9	U15MB319	MALAINESAN .E	Malainesan
10	U15MB320	MANIKANDAN . T	Manikandan
11	U15MB321	MANIKANDAN.S	Manikandan S
12	U15MB322	MANO YESHWANTH DEV .M	M. Manoj
13	U15MB323	MOHAN .R	Mohan
14	U15MB324	MOHD MUHSIN SAKEEN -UR-RAHMAN	Muhsin
15	U15MB325	NAFILA SHAHEEN. M	Nafila
16	U15MB326	NAGALAKSHMI. P	Nagalakshmi
17	U15MB327	NAGARJUN .D	Nagarjun
18	U15MB328	NANDINI .R	R. Nandini
19	U15MB329	NARENDIRAN. N	Narendiran. N
20	U15MB330	NAVEEN ANUSH. R	Naveen

**LEGAL ASPECTS IN OBGY**  
**MCQs**

**1. For the medical termination of pregnancy (MTP) of an adult woman in sound health, whose consent is mandatory among the following?**

- (a) Only the woman concerned
- (b) The woman and the father of the unborn
- (c) The woman, her parents and the father of the unborn
- (d) The woman and her in-laws

**2. If the pregnancy of a woman is within the first trimester (within 12 weeks), for medical termination of pregnancy (MTP)**

- a) opinion of one doctor is necessary
- b) opinions of two doctors necessary
- c) opinion of a medical board with more than two doctors is necessary
- d) permission from the local civil court is necessary

**3. If the pregnancy of a woman is beyond 12 weeks and up to 20 weeks, for medical termination of pregnancy (MTP)**

- a) opinion of one doctor is necessary
- b) opinions of two doctors are necessary
- c) opinion of a medical board with more than two doctors is necessary
- d) permission from the local civil court is necessary

**4. The information on whether a specific woman underwent medical termination of pregnancy (MTP) in a hospital in the past can be obtained**

- a) by visiting the hospital and checking the hospital records
- b) by filing an RTI to the hospital by the current husband
- c) by submitting an application from the in-laws' family and paying the necessary fees to the hospital
- d) no one can access the information

**5. In India pre-natal sex determination of an unborn child is legally**

- a) allowed when the woman already has two girl children
- b) allowed when the woman is expecting twin children

- c) allowed when foetal abnormalities and genetic defects are suspected
- d) not allowed at all

**6. According to Indian law, what is the minimum age of a person for employment in a factory?**

- a) 18 years
- b) 21 years
- c) 14 years
- d) 16 years

**7. In order to describe the age-group of a person, several phrases, namely minor, major, child, adolescent, adult, are used. A person of age 15 years can be described as**

- a) minor or adolescent
- b) child or minor
- c) minor
- d) child or adolescent

**8. According to the immoral traffic (prevention) act of 1956, which of the following is not a punishable offence**

- a) keeping or allowing your premises to be used as brothel
- b) an adult earning a living by means of prostitution
- c) inducing a person into prostitution
- d) prostitution in a private place and sufficiently far from any public place

**9. According to the immoral traffic (prevention) act of 1956, on first offence, what is the punishment for allowing your premises to be used for prostitution**

- a) One to Three years imprisonment and fine
- b) Up to Two years imprisonment and fine
- c) Two to Five years imprisonment and fine
- d) No imprisonment but only fine

**10. MTP act.....**

- a) 1987
- b) 1974
- c) 1677
- d) 1997

LEGAL ASPECTS IN OBGY  
MCQs

8

6/10

REG No -  
U15MB320

1. For the medical termination of pregnancy (MTP) of an adult woman in sound health, whose consent is mandatory among the following?

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- (b) The woman and the father of the unborn
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- a) by visiting the hospital and checking the hospital records
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- d) no one can access the information

5. In India pre-natal sex determination of an unborn child is legally

- a) allowed when the woman already has two girl children
- b) allowed when the woman is expecting twin children



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that MANIKANDAN. S has actively participated in the Value Added Course on **LEGAL ASPECTS** held during Jan 2018 – June 2018 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry– 605 502, India.

**Dr. Yasodha**

**RESOURCE PERSON**

ASSISTANT PROFESSOR  
DEPT. OF OBSTETRICS & GYNAECOLOGY  
Sri Lakshmi Narayana Institute of  
Medical Sciences  
OSUDU, PUDUCHERRY.

**COORDINATOR**

**DEAN**  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
OSUDU, AGARAM VILLAGE,  
KODAPAKKAM POST,  
PUDUCHERRY - 605 502



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that NANDINI.R has actively participated in the Value Added Course on **LEGAL ASPECTS** held during Jan 2018 – June 2018 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

**Dr. Yasodha**

**RESOURCE PERSON**

ASSISTANT PROFESSOR  
DEPT. OF OBSTETRICS & GYNAECOLOGY  
Sri Lakshmi Narayana Institute of  
Medical Sciences  
OSUDU, PUDUCHERRY.

**COORDINATOR**

**DEAN**  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
OSUDU, AGARAM VILLAGE,  
KODAPAKKAM POST,  
PUDUCHERRY - 605 502

**Annexure 4**

**Course/Training Feedback Form**

**Course:**

**Date:**

**Name:**

**Reg NO.**

**Department: Obstetrics and Gynaecology**

**Q 1:** Please rate your overall satisfaction with the format of the course:

- a. Excellent    b. Very Good    c. Satisfactory    d. unsatisfactory

**Q 2:** Please rate course notes:

- a. Excellent    b. Very Good    c. Satisfactory    d. unsatisfactory

**Q 3:** The lecture sequence was well planned

- a. Excellent    b. Very Good    c. Satisfactory    d. unsatisfactory

**Q 4:** The lectures were clear and easy to understand

- a. Excellent    b. Very Good    c. Satisfactory    d. unsatisfactory

**Q 5:** Please rate the quality of pre-course administration and information:

- a. Excellent    b. Very Good    c. Satisfactory    d. unsatisfactory

**Q 6:** Any other suggestions:

**Comments:**

**Thank you for taking the time to complete this survey, your comments are much appreciated.**

**OPTIONAL Section:** Name \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

Annexure 4

Course/Training Feedback Form

Course: LEGAL ASPECTS IN OBSTETRICS AND GYNECOLOGY  
Date: 24/01/2019  
Name: LAKSHMI. N  
Reg NO. U15MB312  
Department: Obstetrics and Gynaecology

Q 1: Please rate your overall satisfaction with the format of the course:

a. Excellent    b. Very Good    c. Satisfactory    d. unsatisfactory

Q 2: Please rate course notes:

a. Excellent    b. Very Good    c. Satisfactory    d. unsatisfactory

Q 3: The lecture sequence was well planned

a. Excellent    b. Very Good    c. Satisfactory    d. unsatisfactory

Q 4: The lectures were clear and easy to understand

a. Excellent    b. Very Good    c. Satisfactory    d. unsatisfactory

Q 5: Please rate the quality of pre-course administration and information:

a. Excellent    b. Very Good    c. Satisfactory    d. unsatisfactory

Q 6: Any other suggestions: NIL

Comments:

**Thank you for taking the time to complete this survey, your comments are much appreciated.**

**OPTIONAL Section:** Name \_\_\_\_\_  
Signature \_\_\_\_\_ Date \_\_\_\_\_

Annexure 4

Course/Training Feedback Form

Course: LEGAL ASPECTS IN OBSTETRICS AND GYNECOLOGY  
Date: 25/08/2018  
Name: MOHAN, R  
Reg NO. U15MB323  
Department: Obstetrics and Gynaecology

Q 1: Please rate your overall satisfaction with the format of the course:

a. Excellent    b. Very Good    c. Satisfactory    d. unsatisfactory

Q 2: Please rate course notes:

a. Excellent    b. Very Good    c. Satisfactory    d. unsatisfactory

Q 3: The lecture sequence was well planned

a. Excellent    b. Very Good    c. Satisfactory    d. unsatisfactory

Q 4: The lectures were clear and easy to understand

a. Excellent    b. Very Good    c. Satisfactory    d. unsatisfactory

Q 5: Please rate the quality of pre-course administration and information:

a. Excellent    b. Very Good    c. Satisfactory    d. unsatisfactory

Q 6: Any other suggestions: NIL

Comments:

Thank you for taking the time to complete this survey, your comments are much appreciated.

OPTIONAL Section: Name \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

**Date: 24.06.2018**

**From**

Dr.yasodha  
Assistant Professor,  
Obstetrics and Gynaecology,  
Sri Lakshmi Narayana institute of Medical sciences,  
Bharath Institute of Higher Education and Research,  
Chennai.

Through Proper Channel

**To**

The Dean,  
Sri Lakshmi Narayana institute of Medical Sciences,  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Completion of value-added course: Legal aspects**

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: **Legal aspects** on JAN 2018- JUNE 2018 . We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards



Dr.YASODHA

ASSISTANT PROFESSOR  
DEPT. OF OBSTETRICS & GYNAEC  
Sri Lakshmi Narayana Institute  
Medical Sciences  
OSUDU, PUDUCHERRY

**Encl: Certificates**

**Photographs**

**VALUE ADDED COURSES**

**OBGY 8 LEGAL ASPECTS IN OBSTETRICS AND GYNAECOLOGY**





## Sri Lakshmi Narayana Institute of Medical Sciences

Date: 02.12.2017

From  
DR.V.R Sridhar  
Professor and Head,  
Department of Psychiatry,  
Sri Lakshmi Narayana Institute Of Medical Sciences,  
Bharath Institute Of Higher Education And Research,  
Chennai.

To  
The Dean,  
Sri Lakshmi narayana institute of medical sciences,  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Permission to conduct value-added course: Psychotherapy and various techniques**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: **Psychotherapy and various techniques** on 2/01/2018. We solicit your kind permission for the same. Kind Regards

Dr.V.R. Sridhar

---

### FOR THE USE OF DEANS OFFICE

Names of Committee members for evaluating the course:

The Dean: **Dr. Jayalakshmi**


The HOD: **Dr. Sridhar**

The Expert: **Dr. Arun Seetharaman**. The committee has discussed about the course and is approved.

  
Dean

(Sign & Seal)

**Dr. G. JAYALAKSHMI, BSc., MBBS., DTCD., M.D.,**  
**DEAN**  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agaram, Kudapakkam Post,  
Villanur Commune, Puducherry - 605502.

Subject Expert 

(Sign & Seal)

**Dr. ARUN SEETHARAMAN, MD.,**  
Reg. No: 91440  
**Associate Professor, Psychiatry**  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502.

  
HOD

(Sign & Seal)

**Dr. V. R. SRIDHAR, MD., D.P.M.,**  
Reg. No: 30995  
**Professor & HOD, Psychiatry**  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502.



OFFICE OF THE DEAN

# Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P -II ) dt. 11/07/2011 ]  
[ Affiliated to Bharath University, Chennai - TN ]

## Circular

15.12.2017

**Sub: Organising Value-added Course: Psychotherapy and various techniques**

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research** is organizing “**Psychotherapy and various techniques**”. The course content and registration form is enclosed below.”

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before 30 December, 2017. Applications received after the mentioned date shall not be entertained under any circumstances.

**Dean**

**Dr. G. JAYALAKSHMI, BSC., MBBS., DTC.D., M.D.,  
DEAN**

Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agaram, Kudapakkam Post,  
Villianur Commune, Puducherry - 605502.

Encl: Copy of Course content

## Course Proposal

Course Title: **Psychotherapy and various techniques**

### **Course Objective:**

Introduction  
Psychoanalysis and Psychoanalytic Psychotherapy  
Brief Psychodynamic Psychotherapy  
Group Psychotherapy, Combined Individual and Group Psychotherapy, and Psychodrama  
Family Therapy and Couples Therapy  
Dialectical Behavior Therapy  
Biofeedback  
Cognitive Therapy  
Behavior Therapy

### **Course Outcome:**

**Course Audience: FINAL YEAR STUDENTS of 2018 Batch**

**Course Coordinator: Dr.V.R. Sridhar**

**Course Faculties with Qualification and Designation:**

**1.Dr.V.R.SRIDHAR, Professor & HOD**

**2.Dr.Arun, Assistant Professor**

**Course Curriculum/Topics with schedule (Min of 30 hours)**

SINo	Date	Topic	Resource person	Time	Hours
1.	02.01.2018	Introduction	Dr.Arun	4-5p.m	1
2.	04.01.2018	Psychoanalysis	Dr.Arun	2-3p.m	1
3.	08.01.2018	Psychoanalytic Psychotherapy	Dr.Arun	4-6p.m	2
4.	10.01.2018	Brief Psychodynamic Psychotherapy	Dr.Arun	4-6p.m	2
5.	12.01.2018	Group Psychotherapy	Dr.Arun	4-6p.m	2
6.	16.01.2018	Combined Individual	Dr.Arun	4-5p.m	2
7.	18.01.2018	Group Psychotherapy, and Psychodrama	Dr.Arun	4-5P.M	1
8.	22.01.2018	Family Therapy	Dr.Arun	4-5p.m	1
9.	24.01.2018	Couples Therapy	Dr. Shridhar	4-6p.m	1
10.	26.01.2018	Dialectical Behavior Therapy	Dr.Arun	4-6p.m	2
11.	29.01.2018	Biofeedback	Dr.Arun	4-6p.m	1

12.	31.01.2018	Cognitive Behaviour Therapy	Dr.Arun	4-6p.m	2	
13.	02.02.2018	Pre course and Post Course evaluation, Feedback analysis from Likert scale	Dr.Arun	2-5p.m	3	
		<b>Practical Class I</b>	Dr. Shridhar			
13.	05.02.2018	Cognitive Therapy	Dr. Shridhar	2-3 PM	1	
14.	07.02.2018	Behavior therapy	Dr. Shridhar	2-3 PM	1	
15.	09.02.2018	Hypnotherapy	Dr. Shridhar	2-4 PM	2	
16.	12.02.2018	Psychodrama	Dr. Shridhar	2-4 PM	2	
17.	14.02.2018	Group therapy	Dr. Shridhar	2-4p.m	2	
			<b>Total</b>			30 hrs

**REFERENCE BOOKS:**

- ▶ Comprehensive textbook of psychiatry – Kaplan & Saddock
- ▶ Oxford Textbook Of Psychiatry
- ▶ Synopsis - Kaplan & Saddock

## VALUE ADDED COURSE

### 1. Name of the programme & Code

Various Psychological tests and its application in psychiatry & Psychotherapy and various techniques

### 2. Duration & Period

30 hrs & July– December 2017

### 3. Information Brochure and Course Content of Value Added Courses

*Enclosed as Annexure- I*

### 4. List of students enrolled

*Enclosed as Annexure- II*

### 5. Assessment procedures:

Assessment Evolution by MCQ method - *Enclosed as Annexure- III*

### 6. Certificate model

*Enclosed as Annexure- IV*

### 7. No. of times offered during the same year:

1 times July– December 2017

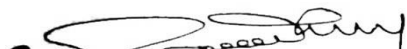
### 8. Year of discontinuation: 2017

### 9. Summary report of each program year-wise

Value Added Course- July– December 2017 & January– June 2018					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	PSYC05	Various Psychological tests and its application in psychiatry	Dr. V.R Sridhar Dr.Arun Seetharaman	Final Year students	15 students July– December 2017

### 10. Course Feed Back

*Enclosed as Annexure- V*



**RESOURCE PERSON**

1. Dr. V.R Sridhar
2. Dr. Arun Seetharaman



**COORDINATOR**

**Dr. V.R Sridhar**

# Techniques of psychotherapy



## PARTICIPANT HAND BOOK

## COURSE DETAILS

<b>Particulars</b>	<b>Description</b>
Course Title	Overview on various psychotherapy techniques
Course Code	PSYC06
Objective	1. Introduction 2. Psychoanalysis and Psychoanalytic Psychotherapy 3. Brief Psychodynamic Psychotherapy 4. Group Psychotherapy, Combined Individual and Group Psychotherapy, and Psychodrama 5. Family Therapy and Couples Therapy 6. Dialectical Behavior Therapy 7. Biofeedback 8. Cognitive Therapy 9. Behavior Therapy
Further learning opportunities	Psychotherapy and its techniques
Key Competencies	On successful completion of the course the students will have skill in doing Psychotherapy and its techniques
Target Student	Final year MBBS Students
Duration	30hrs Every January - June 2018
Theory Session	10hrs
Practical Session	20hrs
Assessment Procedure	Multiple choice questions

## **Psychoanalysis and Psychoanalytic Psychotherapy**

As broadly practiced today, psychoanalytic treatment encompasses a wide range of uncovering strategies used in varied degrees and blends. Despite the inevitable blurring of boundaries in actual application, the original modality of classic psychoanalysis and major modes of psychoanalytic psychotherapy (expressive and supportive) are delineated separately here (Table 28.1-1). Analytical practice in all its complexity resides on a continuum. Individual technique is always a matter of emphasis, as the therapist titrates the treatment according to the needs and capacities of the patient at every moment.

### **Scope of Psychoanalytic Practice: A Clinical Continuum<sup>a</sup>**

Psychoanalysis is virtually synonymous with the renowned name of its founding father, Sigmund Freud (Freud and his theories are discussed in Section 4.1). It is also referred to as “classic” or “orthodox” psychoanalysis to distinguish it from more recent variations known as *psychoanalytic psychotherapy* (discussed below). Psychoanalysis is based on the theory of sexual repression and traces the unfulfilled infantile libidinal wishes in the individual’s unconscious memories. It remains unsurpassed as a method to discover the meaning and motivation of behavior, especially the unconscious elements that inform thoughts and feelings.

## **PSYCHOANALYSIS**

### **Psychoanalytic Process**

The psychoanalytic process involves bringing to the surface repressed memories and feelings by means of a scrupulous unraveling of hidden meanings of verbalized material and of the unwitting ways in which the patient wards off underlying conflicts through defensive forgetting and repetition of the past.

The overall process of analysis is one in which unconscious neurotic conflicts are recovered from memory and verbally expressed, reexperienced in the transference, reconstructed by the analyst, and, ultimately, resolved through understanding. Freud referred to these processes as *recollection*, *repetition*, and *working through*, which make up the totality of remembering, reliving, and gaining insight.

*Recollection* entails the extension of memory back to early childhood events, a time in the distant past when the core of neurosis was

formed. The actual reconstruction of these events comes through reminiscence, associations, and autobiographical linking of developmental events. *Repetition* involves more than mere mental recall; it is an emotional replay of former interactions with significant individuals in the patient's life. The replay occurs within the special context of the analyst as projected parent, a fantasized object from the patient's past with whom the latter unwittingly reproduces forgotten, unresolved feelings and experiences from childhood. Finally, *working through* is both an affective and cognitive integration of previously repressed memories that have been brought into consciousness and through which the patient is gradually set free (cured of neurosis). The analytical course can be subdivided into three major stages (Table 28.1-2).

### **Table 28.1-2**

#### **Stages of Psychoanalysis**

#### **Indications and Contraindications**

In general, all of the so-called *psychoneuroses* are suitable for psychoanalysis. These include anxiety disorders, obsessional thinking, compulsive behavior, conversion disorder, sexual dysfunction, depressive states, and many other nonpsychotic conditions, such as personality disorders. Significant suffering must be present so that patients are motivated to make the sacrifices of time and financial resources required for psychoanalysis. Patients who enter analysis must have a genuine wish to understand themselves, not a desperate hunger for symptomatic relief. They must be able to withstand frustration, anxiety, and other strong affects that emerge in analysis without fleeing or acting out their feelings in a self-destructive manner. They must also have a reasonable, mature superego that allows them to be honest with the analyst.

Intelligence must be at least average, and above all, they must be psychologically minded in the sense that they can think abstractly and symbolically about the unconscious meanings of their behavior.

Many contraindications for psychoanalysis are the flip side of the indications. The absence of suffering, poor impulse control, inability to tolerate frustration and anxiety, and low motivation to understand are all contraindications. The presence of extreme dishonesty or antisocial personality disorder contraindicates analytic treatment. Concrete thinking or the absence of psychological mindedness is another contraindication. Some patients who might ordinarily be psychologically minded are not suitable for analysis because they are in the midst of a major upheaval or life crisis, such as a job loss or a divorce. Serious physical illness can also interfere with a person's ability to invest in a long-term treatment process. Patients of low intelligence generally do not understand the procedure or cooperate in the process. An age

older than 40 years was once considered a contraindication, but today analysts recognize that patients are malleable and analyzable in their 60s or 70s. One  $\square$ nal contraindication is a close relationship with the analyst. Analysts should avoid analyzing friends, relatives, or persons with whom they have other involvements.

### **Goals**

Stated in developmental terms, psychoanalysis aims at the gradual removal of amnesias rooted in early childhood based on the assumption that when all gaps in memory have been  $\square$ lled, the morbid condition will cease because the patient no longer needs to repeat or remain  $\square$ xated to the past. The patient should be better able to relinquish former regressive patterns and to develop new, more adaptive ones, particularly as he or she learns the reasons for his or her behavior. A related goal of psychoanalysis is for the patient to achieve some measure of self-understanding or insight.

Psychoanalytic goals are often considered formidable (e.g., a total personality change), involving the radical reorganization of old developmental patterns based on earlier a $\square$ ects and the entrenched defenses built up against them. Goals may also be elusive, framed as they are in theoretical intrapsychic terms (e.g., greater ego strength) or conceptually ambiguous ones (resolution of the transference neurosis). Criteria for successful psychoanalysis may be largely intangible and subjective and they are best regarded as conceptual endpoints of treatment that must be translated into more realistic and practical terms.

In practice, the goals of psychoanalysis for any patient naturally vary, as do the many manifestations of neuroses. The form that the neurosis takes—unsatisfactory sexual or object relationships, inability to enjoy life, underachievement, and fear of work or academic success, or excessive anxiety, guilt, or depressive ideation—determines the focus of attention and the general direction of treatment, as well as the specific goals. Such goals may change at any time during the course of analysis, especially as many years of treatment may be involved.

### **Major Approach and Techniques**

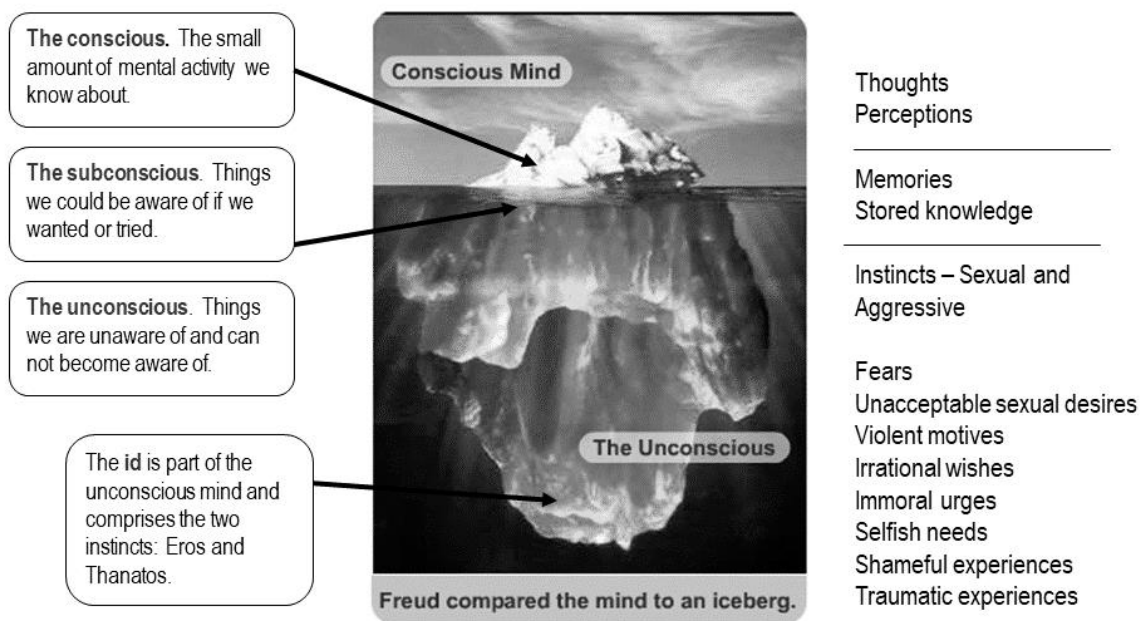
Structurally, *psychoanalysis* usually refers to individual (dyadic) treatment that is frequent (four or  $\square$ ve times per week) and long term (several years). All three features take their precedent from Freud himself.

The dyadic arrangement is a direct function of the Freudian theory of neurosis as an intrapsychic phenomenon, which takes place within the person as instinctual impulses continually seek discharge. Because dynamic con $\square$ icts must be internally resolved if structural personality reorganization is to take place, the individual's memory and perceptions of the repressed past are pivotal.

Freud initially saw patients 6 days a week for 1 hour each day, a routine now reduced to four or five sessions per week of the classic 50-minute hour, which leaves time for the analyst to take notes and organize relevant thoughts before the next patient. Long intervals between sessions are avoided so that the momentum gained in uncovering conflictual material is not lost and confronted defenses do not have time to restrengthen.

Freud's belief that successful psychoanalysis always takes a long time because profound changes in the mind occur slowly still holds. The process can be likened to the fluid sense of time that is characteristic of our unconscious processes. Moreover, because psychoanalysis involves a detailed recapitulation of present and past events, any compromise in time presents the risk of losing pace with the patient's mental life.

## The Unconscious Mind



**Psychoanalytic Setting.** As with other forms of psychotherapy, psychoanalysis takes place in a professional setting, apart from the realities of everyday life, in which the patient is offered a temporary sanctuary in which to ease psychic pain and reveal intimate thoughts to an accepting expert. The psychoanalytic environment is designed to promote relaxation and regression. The setting is usually spartan and sensorially neutral, and external stimuli are minimized.

**USE OF THE COUCH.** The couch has several clinical advantages that are both real and symbolic:

(1) the reclining position is relaxing because it is associated with sleep and so eases the patient's conscious control of thoughts;

(2) it minimizes the intrusive influence of the analyst, thus curbing unnecessary cues;

(3) it permits the analyst to make observations of the patient without interruption; and

(4) it holds symbolic value

for both parties, a tangible reminder of the Freudian legacy that gives credibility to the analyst's professional identity, allegiance, and expertise. The reclining position of the patient with analyst nearby can also generate threat and discomfort, however, as it recalls anxieties derived from the earlier parent-child configuration that it physically resembles. It may also have personal meanings—for some, a portent of dangerous impulses or of submission to an authority figure; for others, a relief from confrontation by the analyst (e.g., fear of use of the couch and overeagerness to lie down may reflect resistance and, thus, need to be analyzed). Although the use of the couch is requisite to analytical technique, it is not applied automatically; it is introduced gradually and can be suspended whenever additional regression is unnecessary or counter-therapeutic.

**FUNDAMENTAL RULE.** The fundamental rule of free association requires patients to tell the analyst everything that comes into their heads—however disagreeable, unimportant, or nonsensical—and to let themselves go as they would in a conversation that leads from “cabbages to kings.” It differs decidedly from ordinary conversation—instead of connecting personal remarks with a rational thread, the patient is asked to reveal those very thoughts and events that are objectionable precisely because of being averse to doing so.

This directive represents an ideal because free association does not arise freely but is guided and inhibited by a variety of conscious and unconscious forces. The analyst must not only encourage free association through the physical setting and a nonjudgmental attitude toward the patient's verbalizations, but also examine those very instances when the flow of associations is diminished or comes to a halt—they are as important analytically as the content of the associations. The analyst should also be alert to how individual patients use or misuse the fundamental rule.

Aside from its primary purpose of eliciting recall of deeply hidden early memories, the fundamental rule reflects the analytical priority placed on verbalization, which translates the patient's thoughts into words so they are not channeled physically or behaviorally. As a direct

concomitant of the fundamental rule, which prohibits action in favor of verbal expression, patients are expected to postpone making major alterations in their lives, such as marrying or changing careers, until they discuss and analyze them within the context of treatment.

**PRINCIPLE OF EVENLY SUSPENDED ATTENTION.** As a reciprocal corollary to the rule that patients communicate everything that occurs to them without criticism or selection, the principle of evenly suspended attention requires the analyst to suspend judgment and to give impartial attention to every detail equally. The method consists simply of making no effort to concentrate on anything specific, while maintaining a neutral, quiet attentiveness to all that is said.

**ANALYST AS MIRROR.** A second principle is the recommendation that the analyst be impenetrable to the patient and, as a mirror, reflect only what is shown. Analysts are advised to be neutral blank screens and not to bring their own personalities into treatment. This means that they are not to bring their own values or attitudes into the discussion or to share personal reactions or mutual conflicts with their patients, although they may sometimes be tempted to do so. The bringing in of reality and external influences can interrupt or bias the patient's unconscious projections. Neutrality also allows the analyst to accept without censure all forbidden or objectionable responses.

**RULE OF ABSTINENCE.** The fundamental rule of abstinence does not mean corporal or sexual abstinence, but refers to the frustration of emotional needs and wishes that the patient may have toward the analyst or part of the transference. It allows the patient's longings to persist and serve as driving forces for analytical work and motivation to change. Freud advised that the analyst carry through the analytical treatment in a state of renunciation. The analyst must deny the patient who is longing for love the satisfaction he or she craves.

### **PSYCHOANALYTIC PSYCHOTHERAPY**

Psychoanalytic psychotherapy, which is based on fundamental dynamic formulations and techniques that derive from psychoanalysis, is designed to broaden its scope. Psychoanalytic psychotherapy, in its narrowest sense, is the use of insight-oriented methods only. As generically applied today to an ever-larger clinical spectrum, it incorporates a blend of uncovering and suppressive measures.

The strategies of psychoanalytic psychotherapy currently range from expressive (insight-oriented, uncovering, evocative, or interpretive) techniques to supportive (relationship-oriented, suggestive, suppressive, or repressive) techniques. Although those two types of methods are

sometimes regarded as antithetical, their precise definitions and the distinctions between them are by no means absolute.

The duration of psychoanalytic psychotherapy is generally shorter and more variable than in psychoanalysis. Treatment may be brief, even with an initially agreed-upon or fixed time limit, or may extend to a less definite number of months or years. Brief treatment is chiefly used for selected problems or highly focused conflict, whereas longer treatment may be applied for more chronic conditions or for intermittent episodes that require ongoing attention to deal with pervasive conflict or recurrent decompensation. Unlike psychoanalysis, psychoanalytic psychotherapy rarely uses the couch; instead, patient and therapist sit face to face. This posture helps to prevent regression because it encourages the patient to look on the therapist as a real person from whom to receive direct cues, even though transference and fantasy will continue. The couch is considered unnecessary because the free-association method is rarely used, except when the therapist wishes to gain access to fantasy material or dreams to enlighten a particular issue.

### **Expressive Psychotherapy**

**Indications and Contraindications.** Diagnostically, psychoanalytic psychotherapy in its expressive mode is suited to a range of psychopathology with mild to moderate ego weakening, including neurotic conflicts, symptom complexes, reactive conditions, and the whole realm of nonpsychotic character disorders, including those disorders of the self that are among the more transient and less profound on the severity-of-illness spectrum, such as narcissistic behavior disorders and narcissistic personality disorders. It is also one of the treatments recommended for patients with borderline personality disorders, although special variations may be required to deal with the associated turbulent personality characteristics, primitive defense mechanisms, tendencies toward regressive episodes, and irrational attachments to the analyst.

**Goals.** The overall goals of expressive psychotherapy are to increase the patient's self-awareness and to improve object relations through exploration of current interpersonal events and perceptions. In contrast to psychoanalysis, major structural changes in ego function and defenses are modified in light of patient limitations. The aim is to achieve a more limited and, thus, select and focused understanding of one's problems. Rather than uncovering deeply hidden and past motives and tracing them back to their origins in infancy, the major thrust is to deal with preconscious or conscious derivatives of conflicts as they became manifest in present interactions. Although insight is sought, it is less extensive; instead of delving to a genetic level, greater emphasis is on clarifying recent dynamic patterns and maladaptive behaviors in

the present.

**Major Approach and Techniques.** The major modus operandi involves establishment of a therapeutic alliance and early recognition and interpretation of negative transference. Only limited or controlled regression is encouraged, and positive transference manifestations are generally left unexplored, unless they are impeding therapeutic progress; even here, the emphasis is on shedding light on current dynamic patterns and defenses.

**Limitations.** A general limitation of expressive psychotherapy, as of psychoanalysis, is the problem of emotional integration of cognitive awareness. The major danger for patients who are at the more disorganized end of the diagnostic spectrum, however, may have less to do with the overintellectualization that is sometimes seen in neurotic patients than with the threat of decompensation from, or acting out of, deep or frequent interpretations that the patient is unable to integrate properly.

### **Supportive Psychotherapy**

Supportive psychotherapy aims at the creation of a therapeutic relationship as a temporary buttress or bridge for the deficient patient. It has roots in virtually every therapy that recognizes the ameliorative effects of emotional support and a stable, caring atmosphere in the management of patients. As a nonspecific attitude toward mental illness, it predates scientific psychiatry, with foundations in 18th-century moral treatment, whereby for the first time patients were treated with understanding and kindness in a humane, interpersonal environment free from mechanical restraints.

Supportive psychotherapy has been the chief form used in the general practice of medicine and rehabilitation, frequently to augment extratherapeutic measures, such as prescriptions of medication to suppress symptoms, rest to remove the patient from excessive stimulation, or hospitalization to provide a structured therapeutic environment, protection, and control of the patient. It can be applied as primary or ancillary treatment. The global perspective of supportive psychotherapy (often part of a combined treatment approach) places major etiological emphasis on external rather than intrapsychic events, particularly on stressful environmental and interpersonal influences on a severely damaged self.

**Goals.** The general aim of supportive treatment is the amelioration or relief of symptoms through behavioral or environmental restructuring within the existing psychic framework. This often means helping the patient to adapt better to problems and to live more

comfortably with his or her psychopathology. To restore the disorganized, fragile, or decompensated patient to a state of relative equilibrium, the major goal is to suppress or control symptomatology and to stabilize the patient in a protective and reassuring benign atmosphere that militates against overwhelming external and internal pressures. The ultimate goal is to maximize the integrative or adaptive capacities so that the patient increases the ability to cope, while decreasing vulnerability by reinforcing assets and strengthening defenses.

**Major Approach and Techniques.** Supportive therapy uses several methods, either singly or in combination, including warm, friendly, strong leadership; partial gratification of dependency needs; support in the ultimate development of legitimate independence; help in developing pleasurable activities (e.g., hobbies); adequate rest and diversion; removal of excessive strain, when possible; hospitalization, when indicated; medication to alleviate symptoms; and guidance and advice in dealing with current issues. This therapy uses techniques to help patients feel secure, accepted, protected, encouraged, safe, and not anxious.

**Limitations.** To the extent that much supportive therapy is spent on practical, everyday realities and on dealing with the external environment of the patient, it may be viewed as more mundane and superficial than depth approaches. Because those patients are seen intermittently and less frequently, the interpersonal commitment may not be as compelling on the part of either the patient or the therapist.

Greater severity of illness (and possible psychoses) also makes such treatment potentially more erratic, demanding, and frustrating. The need for the therapist to deal with other family members, caretakers, or agencies (auxiliary treatment, hospitalization) can become an additional complication, because the therapist comes to serve as an ombudsman to negotiate with the outside world of the patient and with other professional peers. Finally, the supportive therapist must be able to accept personal limitations and the patient's limited psychological resources and to tolerate the often unrewarded efforts until small gains are made.

**CORRECTIVE EMOTIONAL EXPERIENCE.** The relationship between therapist and patient gives a therapist an opportunity to display behavior different from the destructive or unproductive behavior of a patient's parent. At times, such experiences seem to neutralize or reverse some effects of the parents' mistakes. If the patient had overly authoritarian parents, the therapist's friendly, flexible, nonjudgmental, nonauthoritarian—but at times firm and limit setting—attitude gives the patient an opportunity to adjust to, be led by, and identify with a new parent figure. Franz Alexander described this process as a corrective emotional experience. It draws on elements of both psychoanalysis

and psychoanalytic psychotherapy.

## **28.2 Brief Psychodynamic Psychotherapy**

The growth of psychotherapy in general and of dynamic psychotherapies derived from the psychoanalytic framework in particular represents a landmark achievement in the history of psychiatry. Brief psychodynamic psychotherapy has gained widespread popularity, partly because of the great pressure on health care professionals to contain treatment costs. It is also easier to evaluate treatment efficacy by comparing groups of persons who have had short-term therapy for mental illness with control groups than it is to measure the results of long-term psychotherapy. Thus, short-term therapies have been the subject of much research, especially on outcome measures, which have found them to be effective. Other short-term methods include interpersonal therapy (discussed in Section 28.10) and cognitive-behavioral therapy (discussed in Section 28.7).

Brief psychodynamic psychotherapy is a time-limited treatment (10 to 12 sessions) that is based on psychoanalysis and psychodynamic theory. It is used to help persons with depression, anxiety, and posttraumatic stress disorder, among others. There are several methods, each having its own treatment technique and specific criteria for selecting patients; however, they are more similar than different.

In 1946, Franz Alexander and Thomas French identified the basic characteristics of brief psychodynamic psychotherapy. They described a therapeutic experience designed to put

patients at ease, to manipulate the transference, and to use trial interpretations flexibly. Alexander and French conceived psychotherapy as a corrective emotional experience capable

of repairing traumatic events of the past and convincing patients that new ways of thinking, feeling, and behaving are possible. At about the same time, Eric Lindemann established a

consultation service at Massachusetts General Hospital in Boston for persons experiencing a crisis. He developed new treatment methods to deal with these situations and eventually

applied these techniques to persons who were not in crisis, but who were experiencing various kinds of emotional distress. Since then, the field has been influenced by many

workers such as David Malan in England, Peter Sifneos in the United States, and Habib Davanloo in Canada.

### **TYPES**

#### **Brief Focal Psychotherapy (Tavistock–Malan)**

Brief focal psychotherapy was originally developed in the 1950s by the Balint team at the Tavistock Clinic in London. Malan, a member of

the team, reported the results of the therapy. Malan's selection criteria for treatment included eliminating absolute contraindications, rejecting patients for whom certain dangers seemed inevitable, clearly assessing patients' psychopathology, and determining patients' capacities to consider problems in emotional terms, face disturbing material, respond to interpretations, and endure the stress of the treatment. Malan found that high motivation invariably correlated with a successful outcome. Contraindications to treatment were serious suicide attempts, substance dependence, chronic alcohol abuse, incapacitating chronic obsessional symptoms, incapacitating chronic phobic symptoms, and gross destructive or self-destructive acting out.

**Requirements and Techniques.** In Malan's routine, therapists should identify the transference early and interpret it and the negative transference. They should then link the transferences to patients' relationships with their parents. Both patients and therapists should be willing to become deeply involved and to bear the ensuing tension. Therapists should formulate a circumscribed focus and set a termination date in advance, and patients should work through grief and anger about termination. An experienced therapist should allow about 20 sessions as an average length for the therapy; a trainee should allow about 30 sessions. Malan himself did not exceed 40 interviews with his patients.

#### **Time-Limited Psychotherapy (Boston University–Mann)**

A psychotherapeutic model of exactly 12 interviews focusing on a specified central issue was developed at Boston University by James Mann and his colleagues in the early 1970s. In contrast with Malan's emphasis on clear-cut selection and rejection criteria, Mann has not been as explicit about the appropriate candidates for time-limited psychotherapy. Mann considered the major emphases of his theory to be determining a patient's central conflict reasonably correctly and exploring young persons' maturational crises with many psychological and somatic complaints. Mann's exceptions, similar to his rejection criteria, include persons with major depressive disorder that interferes with the treatment agreement, those with acute psychotic states, and desperate patients who need, but cannot tolerate, object relations.

**Requirements and Techniques.** Mann's technical requirements included strict limitation to 12 sessions, positive transference predominating early, specification and strict adherence to a central issue involving transference, positive identification, making separation a maturational event for patients, absolute prospect of termination to avoid development of dependence, clarification of present and past experiences and resistances, active therapists who support and encourage patients, and education of patients through direct information,

reeducation, and manipulation. The conflicts likely to be encountered included independence versus dependence, activity versus passivity, unresolved or delayed grief, and adequate versus inadequate self-esteem.

### **Short-Term Dynamic Psychotherapy (McGill University–Davanloo)**

As conducted by Davanloo at McGill University, short-term dynamic psychotherapy encompasses nearly all varieties of brief psychotherapy and crisis intervention. Patients treated in Davanloo's series are classified as those whose psychological conflicts are predominantly oedipal, those whose conflicts are not oedipal, and those whose conflicts have more than one focus. Davanloo also devised a specific psychotherapeutic technique for patients with severe, long-standing neurotic problems, specifically those with incapacitating obsessive-compulsive disorders and phobias.

Davanloo's selection criteria emphasize evaluating those ego functions of primary importance to psychotherapeutic work: the establishment of a psychotherapeutic focus; the psychodynamic formulation of the patient's psychological problems; the ability to interact emotionally with evaluators; a history of give-and-take relationships with a significant person in the patient's life; the patient's ability to experience and tolerate anxiety, guilt, and depression; the patient's motivations for change, psychological mindedness, and an ability to respond to interpretation and to link evaluators with persons in the present and past. Both Malan and Davanloo emphasized a patient's responses to interpretation as an important selection and prognostic criterion.

**Requirements and Techniques.** The highlights of Davanloo's psychotherapeutic approach are flexibility (therapists should adapt the technique to the patient's needs), control, the patient's regressive tendencies, active intervention to avoid having the patient develop overdependence on a therapist, and the patient's intellectual insight and emotional experiences in the transference. These emotional experiences become corrective as a result of the interpretation.

### **Short-Term Anxiety-Provoking Psychotherapy (Harvard University–Sifneos)**

Sifneos developed short-term anxiety-provoking psychotherapy at the Massachusetts General Hospital in Boston during the 1950s. He used the following criteria for selection: a circumscribed chief complaint (implying a patient's ability to select one of a variety of problems to be given top priority and the patient's desire to resolve the problem in treatment), one meaningful or give-and-take relationship during early childhood, the ability to interact flexibly with an evaluator and to express feelings appropriately, above-average psychological sophistication

(implying not only above-average intelligence but also an ability to respond to interpretations), a specific psychodynamic formulation (usually a set of psychological conflicts underlying a patient's difficulties and centering on an oedipal focus), a contract between therapist and patient to work on the specified focus and the formulation of minimal expectations of outcome, and good to excellent motivation for change, not just for symptom relief.

**Requirements and Techniques.** Treatment can be divided into four major phases: patient-therapist encounter, early therapy, height of treatment, and evidence of change and termination. Therapists use the following techniques during the four phases.

**PATIENT-THERAPIST ENCOUNTER.** A therapist establishes a working alliance by using the patient's quick rapport with, and positive feelings for, the therapist that appear in this phase. Judicious use of open-ended and forced-choice questions enables the therapist to outline and concentrate on a therapeutic focus. The therapist specifies the minimal expectations of outcome to be achieved by the therapy.

**EARLY THERAPY.** In transference, feelings for the therapist are clarified as soon as they appear, a technique that leads to the establishment of a true therapeutic alliance.

**HEIGHT OF THE TREATMENT.** Height of treatment emphasizes active concentration on the oedipal conflicts that have been chosen as the therapeutic focus; repeated use of anxiety-provoking questions and confrontations; avoidance of pregenital characterological issues, which the patient uses defensively to avoid dealing with the therapist's anxiety-provoking techniques; avoidance at all costs of a transference neurosis; repetitive demonstration of the patient's neurotic ways or maladaptive patterns of behavior; concentration on the anxiety-laden material, even before the defense mechanisms have been clarified; repeated demonstrations of parent-transference links by the use of properly timed interpretations based on material given by the patient; establishment of a corrective emotional experience; encouragement and support of the patient, who becomes anxious while struggling to understand the conflicts; new learning and problem-solving patterns; and repeated presentations and recapitulations of the patient's psychodynamics until the defense mechanisms used in dealing with oedipal conflicts are understood.

**EVIDENCE OF CHANGE AND TERMINATION OF PSYCHOTHERAPY.** The final phase of therapy emphasizes the tangible demonstration of change in the patient's behavior outside therapy, evidence that adaptive patterns of behavior are being used, and initiation of talk about terminating the treatment.

## **OVERVIEW AND RESULTS**

The shared techniques of all the brief psychotherapies described above outdistance their differences. They share the therapeutic alliance or dynamic interaction between therapist and patient, the use of transference, the active interpretation of a therapeutic focus or central issue, the repetitive links between parental and transference issues, and the early termination of therapy.

The outcomes of these brief treatments have been investigated extensively. Contrary to prevailing ideas that the therapeutic factors in psychotherapy are nonspecific, controlled studies and other assessment methods (e.g., interviews with unbiased evaluators, patients' selfevaluations) point to the importance of the specific techniques used. The capacity for genuine recovery in certain patients is far greater than was thought. A certain type of patient receiving brief psychotherapy can benefit greatly from a practical working through of his or her nuclear conflict in the transference. Such patients can be recognized in advance through a process of dynamic interaction, because they are responsive, motivated, and able to face disturbing feelings and because a circumscribed focus can be formulated for them. The more radical the technique in terms of transference, depth of interpretation, and the link to childhood, the more radical the therapeutic effects will be. For some disturbed patients, a carefully chosen partial focus can be therapeutically effective.

## **Group Psychotherapy, Combined Individual and Group Psychotherapy, and Psychodrama**

Group psychotherapy is a modality that employs a professionally trained leader who selects, composes, organizes, and leads a collection of members to work together toward the maximal attainment of the goals for each individual in the group and for the group itself. Certain properties present in groups, such as mutual support, can be harnessed in the service of providing relief from psychological suffering and supply peer support to counter isolation experienced by many who seek psychiatric help. Similarly, homogeneously composed small groups are ideal settings for the dissemination of accurate information about a condition shared by group members. Medical illness, substance abuse, and chronic and persistent severe psychiatric conditions, including schizophrenia and major affective disorders, are cases in point. A widely accepted psychiatric treatment modality, group psychotherapy uses therapeutic forces within the group, constructive interactions among members, and interventions of a trained leader to change the maladaptive behaviors, thoughts, and feelings of emotionally distressed

individuals. In an era of increasingly stringent financial constraints, decreasing emphasis on individual psychotherapies, and expanding use of psychopharmacological approaches, more patients have been treated with group psychotherapy than with any other form of verbal therapy. Group therapy is applicable to inpatient and outpatient settings, institutional work, partial hospitalization units, halfway houses, community settings, and private practice. Group psychotherapy is also widely used by those who are not mental health professionals in the adjuvant treatment of physical disorders. The principles of group psychotherapy have also been applied with success in the fields of business and education in the form of training, sensitivity, and role-playing. Group psychotherapy is a treatment in which carefully selected persons who are emotionally ill meet in a group guided by a trained therapist and help one another effect personality change. By using a variety of technical maneuvers and theoretical constructs, the leader directs group members' interactions to bring about changes.

### **CLASSIFICATION**

Group therapy at present has many approaches. Some clinicians work within a psychoanalytic frame of reference. Others use therapy techniques, such as transactional group therapy, which was devised by Eric Berne and emphasizes the here-and-now interactions among group members; behavioral group therapy, which relies on conditioning techniques based on learning theory; Gestalt group therapy, which was created from the theories of Frederick Perls, enables patients to abreact and express themselves fully; and client-centered group psychotherapy, which was developed by Carl Rogers and is based on the nonjudgmental expression of feelings among group members.

### **Comparison of Types of Group Psychotherapy**

#### **PATIENT SELECTION**

To determine a patient's suitability for group psychotherapy, a therapist needs a great deal of information, which is gathered in a screening interview. The psychiatrist should take a psychiatric history and perform a mental status examination to obtain certain dynamic, behavioral, and diagnostic information.

#### **Therapist's Role in Group Therapy**

##### **Authority Anxiety**

Those patients whose primary problem is their relationship to authority and who are extremely anxious in the presence of authority figures may do well in group therapy because they are more comfortable in a group and more likely to do better in a group than in a dyadic (one-to-one) setting. Patients with a great deal of authority anxiety may be blocked, anxious, resistant, and unwilling to verbalize thoughts and

feelings in an individual setting, generally for fear of the therapist's censure or disapproval. Thus, they may welcome the suggestion of group psychotherapy to avoid the scrutiny of the dyadic situation. Conversely, if a patient reacts negatively to the suggestion of group psychotherapy or openly resists the idea, the therapist should consider the possibility that the patient has high peer anxiety.

### **Peer Anxiety**

Patients with conditions such as borderline and schizoid personality disorders who have destructive relationships with their peer groups or who have been extremely isolated from peer group contact generally react negatively or anxiously when placed in a group setting. When such patients can work through their anxiety, however, group therapy can be beneficial.

Robert entered therapy seeking to understand why he was unable to maintain close or lasting relationships. A handsome and successful businessman, he had made a painful and courageous transition away from self-centered, dysfunctional parents early in his life. Although he made good initial impressions in his jobs, he was always puzzled and disappointed when his superiors gradually lost interest in him and his colleagues avoided him. In one-on-one therapy, he was charming and entertaining, but was easily injured by perceived narcissistic slights and would become angry and attacking. Group psychotherapy was suggested when his transference feelings remained intense and therapy was at a seeming impasse. Initially, Robert charmed the group and strove to be the center of attention. Visibly annoyed whenever he felt the group leader was paying more attention to other members, Robert was especially critical and hostile toward older people in the group and displayed little empathy for others. After repeated and forceful confrontations from the group about his antagonistic behavior, he gradually realized that he was repeating childhood patterns in his family of desperately seeking the attention of unloving parents and then entering violent rages when they lost interest. (Courtesy of Normund Wong, M.D.)

### **Diagnosis**

The diagnosis of patients' disorders is important in determining the best therapeutic approach and in evaluating patients' motivations for treatment, capacities for change, and personality structure strengths and weaknesses. Few contraindications exist to group therapy. Antisocial patients generally do poorly in a heterogeneous group setting because they cannot adhere to group standards; but if the group is composed of other antisocial patients, they may respond better to peers than to perceived authority figures. Depressed patients profit from group

therapy after they have established a trusting relationship with the therapist. Patients who are actively suicidal or severely depressed should not be treated solely in a group setting. Patients who are manic are disruptive but, once under pharmacological control, do well in the group setting. Patients who are delusional and who may incorporate the group into their delusional system should be excluded, as should patients who pose a physical threat to other members because of uncontrollable aggressive outbursts.

### **PREPARATION**

Patients prepared by a therapist for a group experience tend to continue in treatment longer and report less initial anxiety than those who are not prepared. The preparation consists of having a therapist explain the procedure in as much detail as possible and answer the patient's questions before the first session.

### **STRUCTURAL ORGANIZATION**

some of the critical tasks that a group therapist must face when organizing a group.

#### **Size**

Group therapy has been successful with as few as 3 members and as many as 15, but most therapists consider 8 to 10 members the optimal size. Interaction may be insufficient with fewer members unless they are especially verbal, and with more than 10 members, the interaction may be too great for the members or the therapist to follow.

#### **Frequency and Length of Sessions**

Most group psychotherapists conduct group sessions once a week. Maintaining continuity in sessions is important. When there are alternate sessions, the group meets twice a week, once with and once without the therapist. Group sessions generally last anywhere from 1 to 2 hours, but the time limit should be constant.

Marathon groups were most popular in the 1970s but are much less common today. In time-extended therapy (marathon group therapy), the group meets continuously for 12 to 72 hours. Enforced interactional proximity and, during the longest time-extended sessions, sleep deprivation break down certain ego defenses, release affective processes, and theoretically promote open communication. Time-extended sessions, however, can be dangerous for patients with weak ego structures, such as persons with schizophrenia or borderline personality disorder.

#### **Homogeneous versus Heterogeneous Groups**

Most therapists believe that groups should be as heterogeneous as possible to ensure maximal interaction. Members with different diagnostic categories and varied behavioral patterns; from all races, social levels, and educational backgrounds; and of varying ages and both sexes

should be brought together. Patients between the ages of 20 and 65 years can be included effectively in the same group. Age differences help in developing parent–child and brother–sister models, and patients have the opportunity to relive and rectify interpersonal difficulties that may have appeared insurmountable.

Both children and adolescents are best treated in groups comprising mostly persons in their own age groups. Some adolescent patients are capable of assimilating the material of an adult group, regardless of content, but they should not be deprived of a constructive peer experience that they might otherwise not have.

### **Open versus Closed Groups**

Closed groups have a set number and composition of patients. If members leave, no new members are accepted. In open groups, membership is more fluid, and new members are taken on whenever old members leave.

## **MECHANISMS**

### **Group Formation**

Each patient approaches group therapy differently and, in this sense, groups are microcosms. Patients use typical adaptive abilities, defense mechanisms, and ways of relating, and when these tactics are ultimately reflected back to them by the group, they learn to be introspective about their personality functioning. A process inherent in group formation requires that patients suspend their previous ways of coping. In entering the group, they allow their executive ego functions—reality testing, adaptation to and mastery of the environment, and perception—to be assumed, to some degree, by the collective assessment provided by the total membership, including the leader.

### **Twenty Therapeutic Factors in Group Psychotherapy**

#### **ROLE OF THE THERAPIST**

Although opinions differ about how active or passive a group therapist should be, the consensus is that the therapist's role is primarily facilitative. Ideally, the group members themselves are the primary source of cure and change. The climate produced by the therapist's personality is a potent agent of change. The therapist is more than an expert applying techniques; he or she exerts a personal influence that taps such variables as empathy, warmth, and respect.

#### **INPATIENT GROUP PSYCHOTHERAPY**

Group therapy is an important part of hospitalized patients' therapeutic experiences. Groups can be organized in many ways on a ward. In a community meeting, an entire inpatient unit meets with all the staff members (e.g., psychiatrists, psychologists, and nurses). In team meetings, 15 to 20 patients and staff members meet; a regular or small group comprising eight to ten patients may meet with one or two

therapists, as in traditional group therapy. Although the goals of each group vary, they all have common purposes: to increase patients' awareness of themselves through their interactions with the other group members, who provide feedback about their behavior; to provide patients with improved interpersonal and social skills; to help the members adapt to an inpatient setting; and to improve communication between patients and staff. In addition, one type of group meeting is attended only by inpatient hospital staff and is meant to improve communication among the staff members and to provide mutual support and encouragement in their day-to-day work with patients. Community meetings and team meetings are more helpful for dealing with patient treatment problems than they are for providing insight-oriented therapy, which is the province of the small-group therapy meeting.

### **Group Composition**

Two key factors of inpatient groups common to all short-term therapies are the heterogeneity of the members and the rapid turnover of patients. Outside the hospital, therapists have large caseloads from which to select patients for group therapy. On the ward, therapists have a limited number of patients to choose from and are further restricted to those patients who are both willing to participate and suitable for a small-group experience. In certain settings, group participation may be mandatory (e.g., in substance abuse and alcohol dependence units), but mandatory attendance does not usually apply in a general psychiatry unit. In fact, most group experiences are more productive when the patients themselves choose to enter them.

More sessions are preferable to fewer. During patients' hospital stays, groups may meet daily to allow interactional continuity and the carryover of themes from one session to the next. A new member of a group can be brought up to date quickly, either by the therapist in an orientation meeting or by one of the members. A newly admitted patient has often learned many details about the small-group program from another patient before actually attending the first session. The less frequently the group sessions are held, the greater the need for a therapist to structure the group and be active in it.

### **Inpatient versus Outpatient Groups**

Although the therapeutic factors that account for change in small inpatient groups are similar to those in the outpatient settings, there are qualitative differences. For example, the relatively high turnover of patients in inpatient groups complicates the process of cohesion. But the fact that all the group members are together in the hospital aids cohesion, as do the therapists' efforts to foster the process. Sharing of information, universalization, and catharsis are the main therapeutic factors at work in inpatient groups. Although insight more likely occurs

in outpatient groups because of their long-term nature, some patients can obtain a new understanding of their psychological makeup within the confines of a single group session. A unique quality of inpatient groups is the patients' extragroup contacts, which are extensive because they live together on the same ward. Verbalizing their thoughts and feelings about such contacts in the therapy sessions encourages interpersonal learning. In addition, conflicts between patients or between patients and staff members can be anticipated and resolved. Twelve former psychiatric inpatients who attended the monthly medication clinic would meet for 1 hour before their individual appointments with the psychiatrist to review their current social situation and medications. All had been treated by the same ward doctor and had known one another while on the inpatient service. The psychiatrist who performed the medication reviews also served as the group leader. Periodically, he was assisted by a staff member who was also familiar with the patients. Coffee was available, and the patients often brought pastries from home. The patients socialized with one another during the hour and frequently exchanged helpful ideas and tips about job opportunities. Those without cars shared rides with other members. The group was open ended and well attended. Most of the patients were single and had a long history of psychotic illness. For most, this meeting was their only opportunity to socialize and be among peers. Frequently, on learning that a member had been rehospitalized, many in the group would visit their colleague on the ward. (Courtesy of Normund Wong, M.D.)

## **SELF-HELP**

### **Group Psychotherapy, Combined Individual and Group Psychotherapy, and Psychodrama**

Group psychotherapy is a modality that employs a professionally trained leader who selects, composes, organizes, and leads a collection of members to work together toward the maximal attainment of the goals for each individual in the group and for the group itself. Certain properties present in groups, such as mutual support, can be harnessed in the service of providing relief from psychological suffering and supply peer support to counter isolation experienced by many who seek psychiatric help. Similarly, homogeneously composed small groups are ideal settings for the dissemination of accurate information about a condition shared by group members. Medical illness, substance

abuse, and chronic and persistent severe psychiatric conditions, including schizophrenia and major affective disorders, are cases in point.

A widely accepted psychiatric treatment modality, group psychotherapy uses therapeutic forces within the group, constructive interactions among members, and interventions of a trained leader to change the maladaptive behaviors, thoughts, and feelings of emotionally distressed individuals. In an era of increasingly stringent financial constraints, decreasing emphasis on individual psychotherapies, and expanding use of psychopharmacological approaches, more patients have been treated with group psychotherapy than with any other form of verbal therapy. Group therapy is applicable to inpatient and outpatient settings, institutional work, partial hospitalization units, halfway houses, community settings, and private practice. Group psychotherapy is also widely used by those who are not mental health professionals in the adjuvant treatment of physical disorders. The principles of group psychotherapy have also been applied with success in the fields of business and education in the form of training, sensitivity, and role-playing. Group psychotherapy is a treatment in which carefully selected persons who are emotionally ill meet in a group guided by a trained therapist and help one another effect personality change. By using a variety of technical maneuvers and theoretical constructs, the leader directs group members' interactions to bring about changes.

### **CLASSIFICATION**

Group therapy at present has many approaches. Some clinicians work within a psychoanalytic frame of reference. Others use therapy techniques, such as transactional group therapy, which was devised by Eric Berne and emphasizes the here-and-now interactions among group members; behavioral group therapy, which relies on conditioning techniques based on learning theory; Gestalt group therapy, which was created from the theories of Frederick Perls, enables patients to abreact and express themselves fully; and client-centered group psychotherapy, which was developed by Carl Rogers and is based on the nonjudgmental expression of feelings among group members.

### **PATIENT SELECTION**

To determine a patient's suitability for group psychotherapy, a therapist needs a great deal of information, which is gathered in a screening interview. The psychiatrist should take a psychiatric history and perform a mental status examination to obtain certain dynamic, behavioral, and diagnostic information.

### **Therapist's Role in Group Therapy**

#### **Authority Anxiety**

Those patients whose primary problem is their relationship to authority and who are extremely anxious in the presence of authority figures

may do well in group therapy because they are more comfortable in a group and more likely to do better in a group than in a dyadic (one-to-one) setting. Patients with a great deal of authority anxiety may be blocked, anxious, resistant, and unwilling to verbalize thoughts and feelings in an individual setting, generally for fear of the therapist's censure or disapproval. Thus, they may welcome the suggestion of group psychotherapy to avoid the scrutiny of the dyadic situation. Conversely, if a patient reacts negatively to the suggestion of group psychotherapy or openly resists the idea, the therapist should consider the possibility that the patient has high peer anxiety.

### **Peer Anxiety**

Patients with conditions such as borderline and schizoid personality disorders who have destructive relationships with their peer groups or who have been extremely isolated from peer group contact generally react negatively or anxiously when placed in a group setting. When such patients can work through their anxiety, however, group therapy can be beneficial.

### **Diagnosis**

The diagnosis of patients' disorders is important in determining the best therapeutic approach and in evaluating patients' motivations for treatment, capacities for change, and personality structure strengths and weaknesses. Few contraindications exist to group therapy. Antisocial patients generally do poorly in a heterogeneous group setting because they cannot adhere to group standards; but if the group is composed of other antisocial patients, they may respond better to peers than to perceived authority figures. Depressed patients profit from group therapy after they have established a trusting relationship with the therapist. Patients who are actively suicidal or severely depressed should not be treated solely in a group setting. Patients who are manic are disruptive but, once under pharmacological control, do well in the group setting. Patients who are delusional and who may incorporate the group into their delusional system should be excluded, as should patients who pose a physical threat to other members because of uncontrollable aggressive outbursts.

### **PREPARATION**

Patients prepared by a therapist for a group experience tend to continue in treatment longer and report less initial anxiety than those who are not prepared. The preparation consists of having a therapist explain the procedure in as much detail as possible and answer the patient's questions before the first session.

### **STRUCTURAL ORGANIZATION**

#### **Size**

Group therapy has been successful with as few as 3 members and as many as 15, but most therapists consider 8 to 10 members the optimal size. Interaction may be insufficient with fewer members unless they are especially verbal, and with more than 10 members, the interaction may be too great for the members or the therapist to follow.

### **Frequency and Length of Sessions**

Most group psychotherapists conduct group sessions once a week. Maintaining continuity in sessions is important. When there are alternate sessions, the group meets twice a week, once with and once without the therapist. Group sessions generally last anywhere from 1 to 2 hours, but the time limit should be constant.

Marathon groups were most popular in the 1970s but are much less common today. In time-extended therapy (marathon group therapy), the group meets continuously for 12 to 72 hours. Enforced interactional proximity and, during the longest time-extended sessions, sleep deprivation break down certain ego defenses, release affective processes, and theoretically promote open communication. Time-extended sessions, however, can be dangerous for patients with weak ego structures, such as persons with schizophrenia or borderline personality disorder.

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### **SELF-HELP GROUPS**

Self-help groups comprise persons who are trying to cope with a specific problem or life crisis and are usually organized with a particular task in mind. Such groups do not attempt to explore individual psychodynamics in great depth or to change personality functioning significantly, but self-help groups have improved the emotional health and well-being of many persons.

A distinguishing characteristic of the self-help groups is their homogeneity. The members have the same disorders and share their experiences—good and bad, successful and unsuccessful—with one another. By so doing, they educate one another, provide mutual support, and alleviate the sense of alienation usually felt by persons drawn to this kind of group.

Self-help groups emphasize cohesion, which is exceptionally strong in these groups. Because the group members have similar problems and symptoms, they develop a strong emotional bond. Each group may have its unique characteristics, to which the members can attribute magical qualities of healing. Examples of self-help groups are Alcoholics Anonymous (AA), Gamblers Anonymous (GA), and Overeaters Anonymous (OA).

The self-help group movement is presently in ascendancy. These groups meet their members' needs by providing acceptance, mutual support, and help in overcoming maladaptive patterns of behavior or states of feeling that traditional mental health and medical professionals have not generally dealt with successfully. Self-help groups and therapy groups have begun to converge. Self-help groups have enabled their members to give up patterns of unwanted behavior; therapy groups have helped their members understand why and how they got to be the way they were or are.

### **COMBINED INDIVIDUAL AND GROUP PSYCHOTHERAPY**

In combined individual and group psychotherapy, patients see a therapist individually and also take part in group sessions. The therapist for the group and individual sessions is usually the same person. Groups can vary in size from 3 to 15 members, but the most helpful size is 8 to 10. Patients must attend all group sessions. Attendance at individual sessions is also important, and failure to attend either group or individual sessions should be examined as part of the therapeutic process.

Combined therapy is a particular treatment modality, not a system by which individual therapy is augmented by an occasional group session or a group therapy in which a participant meets alone with a therapist from time to time. Rather, it is an ongoing plan in which meaningful integration of the group experience with the individual sessions yields reciprocal feedback to help form an integrated therapeutic experience. Although the one-to-one doctor-patient relationship makes a deep examination of the transference reaction possible for some patients, it may not provide other patients with the corrective emotional experiences necessary for therapeutic change. The group gives patients a variety of persons with whom they can have transference reactions. In the microcosm of the group, patients can relive and work through familial and other important influences.

#### **Techniques**

Differing techniques based on varying theoretical frameworks have been used in the combined therapy format. Some clinicians increase the frequency of individual sessions to encourage the emergence of the transference neurosis. In the behavioral model, individual sessions are scheduled regularly, but they tend to be less frequent than in other approaches. Whether patients use a couch or a chair during individual sessions depends on a therapist's orientation. Techniques such as alternate meetings or "after-sessions" without the therapist present may be used. A combined therapy approach called *structured interactional group psychotherapy* has a different group member as the focus of each weekly group session who is discussed in depth by the other members.

#### **Results**

Most workers in the field believe that combined therapy has the advantages of both dyadic and group settings, without sacrificing the qualities of either. Generally, the dropout rate in combined therapy is lower than that in group therapy alone. In many cases, combined therapy appears to bring problems to the surface and to resolve them more quickly than might be possible with either method alone.

### **PSYCHODRAMA**

Psychodrama is a method of group psychotherapy originated by the Viennese-born psychiatrist Jacob Moreno in which personality makeup, interpersonal relationships, conflicts, and emotional problems are explored by means of special dramatic methods. Therapeutic dramatization of emotional problems includes the protagonist or patient, the person who acts out problems with the help of auxiliary egos, persons who enact varying aspects of the patient, and the director, psychodramatist, or therapist, the person who guides those in the drama toward the acquisition of insight.

#### **Roles**

**Director.** The director is the leader or therapist and so must be an active participant. He or she has a catalytic function by encouraging the members of the group to be spontaneous. The director must also be available to meet the group's needs without superimposing his or her values. Of all the group psychotherapies, psychodrama requires the most participation from the therapist.

**Protagonist.** The protagonist is the patient in conflict. The patient chooses the situation to portray in the dramatic scene, or the therapist chooses it if the patient so desires.

**Auxiliary Ego.** An auxiliary ego is another group member who represents something or someone in the protagonist's experience. The auxiliary egos help account for the great range of therapeutic effects available in psychodrama.

**Group.** The members of the psychodrama and the audience make up the group. Some are participants, and others are observers, but all benefit from the experience to the extent that they can identify with the ongoing events. The concept of spontaneity in psychodrama refers to the ability of each member of the group, especially the protagonist, to experience the thoughts and feelings of the moment and to communicate emotion as authentically as possible.

#### **Techniques**

The psychodrama can focus on any special area of functioning (a dream, a family, or a community situation), a symbolic role, an unconscious attitude, or an imagined future situation. Such symptoms as delusions and hallucinations can also be acted out in the group.

Techniques to advance the therapeutic process and to increase productivity and creativity include the soliloquy (a recital of overt and hidden thoughts and feelings), role reversal (the exchange of the patient's role for the role of a significant person), the double (an auxiliary ego acting as the patient), the multiple double (several egos acting as the patient did on varying occasions), and the mirror technique (an ego imitating the patient and speaking for him or her). Other techniques include the use of hypnosis and psychoactive drugs to modify the acting behavior in various ways.

## **ETHICAL AND LEGAL ISSUES**

### **Confidentiality**

Except where disclosure is required by law, the group therapist legally and ethically gives information about the group members to others only after obtaining appropriate patient consent. The therapist is obligated to take appropriate steps to be responsible to society, as well as to patients, when patients pose a danger to themselves or to others. The guidelines for ethics of the American Group Psychotherapy Association state that therapists must obtain specific permission to confer with the referring therapist or with the individual therapist when the patient is in conjoint therapy.

Although the group members, as well as the therapist, should protect the identity of the members and maintain confidentiality, the group members are not legally bound to do so. During the preparation of patients for group psychotherapy, therapists should routinely instruct the prospective members to keep all material discussed in the group confidential. Theoretically, in a legal case, one member of a group can be asked to testify against another, but such a situation has not yet occurred.

A therapist must exercise clinical judgment and caution in placing a patient in a group if he or she thinks that the burdens of maintaining secrets will be too great for some potential members or if a prospective group patient harbors a secret of such magnitude or notoriety that membership in a group would not be wise.

### **Violence and Aggression**

Although reports of violence and aggression are rare, the potential exists that a group member may physically attack another patient or a therapist. The attack may occur within the group or outside the group. The likelihood of such an event can be diminished through the careful selection of group members. Patients with a demonstrated history of assaultive behavior and psychotic patients who pose a potential for violence should not be placed in a group. In institutional settings, in which group therapy is commonly practiced, sufficient safeguards must be in place to discourage any physical danger to others—for example, guards or attendants can act as observers.

## **Sexual Behavior**

For therapists, sexual intercourse with a patient or a former patient is unethical; in many states, such behavior is considered a criminal act.

The issue is complicated in group psychotherapy, however, because members may engage in sexual activities with one another. The issues of pregnancy, rape, and the transmission of acquired immunodeficiency syndrome (AIDS) by group members are open questions. If a patient is injured as a result of sexual activity by group members, the therapist could be held accountable for not preventing such behavior. The therapist should advise prospective group members that each patient is responsible for reporting any sexual contact between members. The therapist cannot anticipate every group sexual encounter or prevent sexual relationships from developing, but he or she is obligated to provide patients with guidelines of acceptable behavior. The therapist should identify sexual, vulnerable, or exploitive patients in the selection and preparation of patients for the group. Sociopathic patients who sexually exploit others should be informed that such behavior is explicitly not acceptable in the group and that such behavior should be verbalized rather than acted out. The group must be conducted in such a way that the therapist does not encourage or tacitly allow sexual activity. Patients with AIDS are encouraged to reveal that they harbor the virus. To protect members if sexual relationships occur, some therapists do not accept patients with AIDS into a group unless they agree to reveal their condition. In those situations, the therapist discusses the issue of AIDS with the patient and the group into which the patient is to be placed.

## **28.4 Family Therapy and Couples Therapy**

### **FAMILY THERAPY**

The family is the foundation on which most societies are built. The study of families in different cultures has been a subject of fascination and scientific interest from viewpoints as diverse as sociology, group dynamics, anthropology, ethnicity, race, evolutionary biology, and, of course, the mental health field. The confluence of information gleaned from family studies has set the backdrop against which the contemporary practice of family therapy has evolved.

Family therapy can be defined as any psychotherapeutic endeavor that explicitly focuses on altering the interactions between or among family members and seeks to improve the functioning of the family as a unit, or its subsystems, and the functioning of individual members of the family. Both family therapy and couple therapy aim at some change in relational functioning. In most cases, they also aim at some other change, typically in the functioning of specific individuals in the family. Family therapy meant to heal a rift between parents and their

adult children is an example of the use of family therapy centered on relationship goals. Family therapy aimed at increasing the family's coping with schizophrenia and at reducing the family's expressed emotion is an example of family therapy aimed at individual goals (in this case, the functioning of the person with schizophrenia), as well as family goals. In the early years of family therapy, change in the family system was seen as being sufficient to produce individual change. More recent treatments aimed at change in individuals, as well as in the family system, tend to supplement the interventions that focus on interpersonal relationships with specific strategies that focus on individual behavior.

### **Indications**

The presence of a relational difficulty is a clear indication for family and couple therapy. Couples and family therapies are the only treatments that have been shown to be efficacious for such problems as marital maladjustment, and other methods, such as individual therapy, have been shown to often have deleterious effects in these situations. Couples and family therapy has also been demonstrated to have a clear and important role in the treatment of numerous specific psychiatric disorders, often as a component within a multimethod treatment.

Of course, as with any therapy, the indications for family and couple therapy are broad and vary from case to case. Family therapy is a therapeutic collage of ideas regarding the underpinnings of family and individual stability and change, psychopathology, and problems in living, as well as relational ethics. Family therapy might better be called *systemically sensitive therapy* and, in this sense, reflects a basic worldview as much as a clinical treatment methodology. For therapists thus inclined, then, all clinical problems involve salient interactional components; thus, some kind of family (or other functionally significant other's) involvement in therapy is always called for, even in treatment that emphasizes individual problems.

An impressive array now exists of common clinical disorders and problems, including child, adolescent, and adult disorders, for which research has demonstrated family or couple treatment methods to be effective. In a few instances, couple and family interventions are probably even the treatment of choice, and for several disorders, the research argues for family intervention to be an essential part of treatment.

### **Techniques**

**Initial Consultation.** Family therapy is familiar enough to the general public for families with a high level of conflict to request it

specifically. When the initial complaint is about an individual family member, however, pretreatment work may be needed. Underlying resistance to a family approach typically includes fears by parents that they will be blamed for their child's difficulties, that the entire family will be pronounced sick, that a spouse will object, and that open discussion of one child's misbehavior will have a negative influence on siblings. Refusal by an adolescent or young adult patient to participate in family therapy is frequently a disguised collusion with the fears of one or both parents.

**Interview Technique.** The special quality of a family interview springs from two important facts. A family comes to treatment with its history and dynamics firmly in place. To a family therapist, the established nature of the group, more than the symptoms, constitutes the clinical problem. Family members usually live together and, at some level, depend on one another for their physical and emotional wellbeing. Whatever transpires in the therapy session is known to all. Central principles of technique also derive from these facts. For example, the therapist must carefully channel the catharsis of anger by one family member toward another. The person who is the object of the anger will react to the attack, and the anger may escalate into violence and fracture relationships, with one or more member withdrawing from therapy. For another example, free association is inappropriate in family therapy because it can encourage one person to dominate a session. Thus, therapists must always control and direct the family interview.

### **Rationale for Family-Life Chronology**

**Frequency and Length of Treatment.** Unless an emergency arises, sessions are usually held no more than once a week. Each session, however, may require as much as 2 hours. Long sessions can include an intermission to give the therapist time to organize the material and plan a response. A flexible schedule is necessary when geography or personal circumstances make it physically difficult for the family to get together. The length of treatment depends both on the nature of the problem and on the therapeutic model. Therapists who use problem-solving models exclusively may accomplish their goals in a few sessions, whereas therapists using growth-oriented models may work with a family for years and may schedule sessions at long intervals.

### **Criteria for Treatment Termination**

#### **Models of Intervention**

Many models of family therapy exist, none of which is superior to the others. The particular model used depends on the training received, the context in which therapy occurs, and the personality of the therapist.

**Psychodynamic-Experiential Models.** Psychodynamic-experiential models emphasize individual maturation in the context of the

family system and are free from unconscious patterns of anxiety and projection rooted in the past. Therapists seek to establish an intimate bond with each family member, and sessions alternate between the therapist's exchanges with the members and the members' exchanges with one another. Clarity of communication and honestly admitted feelings are given high priority. Toward this end, family members may be encouraged to change their seats, to touch each other, and to make direct eye contact. Their use of metaphor, body language, and parapraxes helps reveal the unconscious pattern of family relationships. The therapist may also use family sculpting, in which family members physically arrange one another in tableaux depicting their personal view of relationships, past or present. The therapist both interprets the living sculpture and modifies it in a way to suggest new relationships. In addition, the therapist's subjective responses to the family are given great importance. At appropriate moments, the therapist expresses these responses to the family to form yet another feedback loop of self-observation and change.

**Bowen Model.** Murray Bowen called his model *family systems*, but in the family therapy field it rightfully carries the name of its originator. The hallmark of the Bowen model is persons' differentiation from their family of origin, their ability to be their true selves in the face of familial or other pressures that threaten the loss of love or social position. Problem families are assessed on two levels: the degree of their enmeshment versus the degree of their ability to differentiate and the analysis of emotional triangles in the problem for which they seek help.

An emotional triangle is defined as a three-party system (and many of these can exist within a family) arranged so that the closeness of two members expressed as either love or repetitive conflict tends to exclude a third. When the excluded third person attempts to join with one of the other two or when one of the involved parties shifts in the direction of the excluded one, emotional cross-currents are activated.

The therapist's role is, first, to stabilize or shift the "hot" triangle—the one producing the presenting symptoms—and, second, to work with the most psychologically available family members, individually if necessary, to achieve sufficient personal differentiation so that the hot triangle does not recur. To preserve his or her neutrality in the family's triangles, the therapist minimizes emotional contact with family members.

Bowen also originated the *genogram*, a theoretical tool that is a historical survey of the family, going back several generations.

**Structural Model.** In a structural model, families are viewed as single, interrelated systems assessed in terms of significant alliances

and splits among family members, hierarchy of power (parents in charge of children), clarity and firmness of boundaries between the generations, and family tolerance for one another. The structural model uses concurrent individual and family therapy.

**General Systems Model.** Based on general systems theory, a general systems model holds that families are systems and that every action in a family produces a reaction in one or more of its members. Families have external boundaries and internal rules. Every member is presumed to play a role (e.g., spokesperson, persecutor, victim, rescuer, symptom bearer, nurturer), which is relatively stable, but which member fills each role may change. Some families try to scapegoat one member by blaming him or her for the family's problems (the identified patient). If the identified patient improves, another family member may become the scapegoat. The general systems model overlaps with some of the other models presented, particularly the Bowen and structural models.

### **Modifications of Techniques**

**Family Group Therapy.** Family group therapy combines several families into a single group. Families share mutual problems and compare their interactions with those of the other families in the group. Treatment of schizophrenia has been effective in multiple family groups. Parents of disturbed children may also meet together to share their situations.

**Social Network Therapy.** In social network therapy, the social community or network of a disturbed patient meets in group sessions with the patient. The network includes those with whom the patient comes into contact in daily life, not only the immediate family but also relatives, friends, tradespersons, teachers, and coworkers.

**Paradoxical Therapy.** With the paradoxical therapy approach, which evolved from the work of Gregory Bateson, a therapist suggests that the patient intentionally engage in the unwanted behavior (called the paradoxical injunction) and, for example, avoid a phobic object or perform a compulsive ritual. Although paradoxical therapy and the use of paradoxical injunctions seem to be counterintuitive, the therapy can create new insights for some patients. It is used in individual therapy as well as in family therapy.

**Reframing.** Reframing, also known as *positive connotation*, is a relabeling of all negatively expressed feelings or behavior as positive. When the therapist attempts to get family members to view behavior from a new frame of reference, "This child is impossible" becomes "This child is desperately trying to distract and protect you from what he or she perceives as an unhappy marriage." Reframing is an

important process that allows family members to view themselves in new ways that can produce change.

### **Goals**

Family therapy has several goals: to resolve or reduce pathogenic conflict and anxiety within the matrix of interpersonal relationships; to enhance the perception and fulfillment by family members of one another's emotional needs; to promote appropriate role relationships between the sexes and generations; to strengthen the capacity of individual members and the family as a whole to cope with destructive forces inside and outside the surrounding environment; and to influence family identity and values so that members are oriented toward health and growth. The therapy ultimately aims to integrate families into the large systems of society, extended family, and community groups and social systems, such as schools, medical facilities, and social, recreational, and welfare agencies.

### **COUPLES (MARITAL) THERAPY**

Couples or marital therapy is a form of psychotherapy designed to psychologically modify the interaction of two persons who are in conflict with each other over one parameter or a variety of parameters—social, emotional, sexual, or economic. In couples therapy, a trained person establishes a therapeutic contract with a patient-couple and, through definite types of communication, attempts to alleviate the disturbance, to reverse or change maladaptive patterns of behavior, and to encourage personality growth and development.

Marriage counseling may be considered more limited in scope than marriage therapy: Only a particular familial conflict is discussed, and the counseling is primarily task oriented, geared to solving a specific problem, such as child rearing. Marriage therapy, by contrast, emphasizes restructuring a couple's interaction and sometimes explores the psychodynamics of each partner. Both therapy and counseling stress helping marital partners cope effectively with their problems. Most important is the definition of appropriate and realistic goals, which may involve extensive reconstruction of the union or problem-solving approaches or a combination of both.

### **Types of Therapies**

**Individual Therapy.** In individual therapy, the partners may consult different therapists, who do not necessarily communicate with each other and indeed may not even know each other. The goal of treatment is to strengthen each partner's adaptive capacities. At times, only one of the partners is in treatment; and, in such cases, it is often helpful for the person who is not in treatment to visit the therapist.

The visiting partner may give the therapist data about the patient that may otherwise be overlooked; overt or covert anxiety in the visiting

partner as a result of change in the patient can be identified and dealt with; irrational beliefs about treatment events can be corrected; and conscious or unconscious attempts by the partner to sabotage the patient's treatment can be examined.

**Individual Couples Therapy.** In individual couples therapy, each partner is in therapy, which is either concurrent, with the same therapist, or collaborative, with each partner seeing a different therapist.

**Conjoint Therapy.** In conjoint therapy, the most common treatment method in couples therapy, either one or two therapists treat the partners in joint sessions. Co-therapy with therapists of both sexes prevents a particular patient from feeling ganged up on when confronted by two members of the opposite sex.

**Four-Way Session.** In a four-way session, each partner is seen by a different therapist, with regular joint sessions in which all four persons participate. A variation of the four-way session is the roundtable interview, developed by William Masters and Virginia Johnson for the rapid treatment of sexually dysfunctional couples. Two patients and two opposite-sex therapists meet regularly.

**Group Psychotherapy.** Group therapy for couples allows a variety of group dynamics to affect the participants. Groups usually consist of three to four couples and one or two therapists. The couples identify with one another and recognize that others have similar problems; each gains support and empathy from fellow group members of the same or

## **Dialectical Behavior Therapy**

Dialectical behavior therapy (DBT) is the psychosocial treatment that has received the most empirical support for patients with borderline personality disorder. Put simply, the overarching goal of DBT is to help create a life worth living for patients who often suffer tremendously from chronic and pervasive problems across many areas of their lives. DBT is a type of psychotherapy that was originally developed for chronically self-injurious patients with borderline personality disorder and parasuicidal behavior. In recent years, its use has extended to other forms of mental illness. The method is eclectic, drawing on concepts derived from supportive, cognitive, and behavioral therapies.

Some elements can be traced to Franz Alexander's view of therapy as a corrective emotional experience and other elements from certain Eastern philosophical schools (e.g., Zen).

Patients are seen weekly, with the goal of improving interpersonal skills and decreasing self-destructive behavior using techniques involving advice, metaphor, storytelling, and confrontation, among others. Patients with borderline personality disorder especially are helped to deal with the ambivalent feelings that are characteristic of the disorder. Marsha Linehan, Ph.D., developed the treatment method, based on her theory that such patients cannot identify emotional experiences and cannot tolerate frustration or rejection. As with other behavioral approaches, DBT assumes all behavior (including thoughts and feelings) is learned and that patients with borderline personality disorder behave in ways that reinforce or even reward their behavior, regardless of how maladaptive it is.

### **FUNCTIONS OF DBT**

As described by its originator, there are five essential "functions" in treatment: (1) to enhance and expand the patient's repertoire of skillful behavioral patterns; (2) to improve patient motivation to change by reducing reinforcement of maladaptive behavior, including dysfunctional cognition and emotion; (3) to ensure that new behavioral patterns generalize from the therapeutic to the natural environment; (4) to structure the environment so that effective behaviors, rather than dysfunctional behaviors, are reinforced; and (5) to enhance the motivation and capabilities of the therapist so that effective treatment is rendered. Figure 28.5-1 illustrates how DBT breaks the cycle of problem behavior being used to avoid emotional distress.

### **FIGURE 28.5-1**

How dialectical behavior therapy (DBT) works.

The four modes of treatment in DBT are as follows: (1) group skills training, (2) individual therapy, (3) phone consultations, and (4) consultation team. These are described below. Other ancillary treatments used are pharmacotherapy and hospitalization, when needed.

### **Group Skills Training**

In group format, patients learn specific behavioral, emotional, cognitive, and interpersonal skills. Unlike traditional group therapy, observations about others in the group are discouraged. Rather, a didactic approach, using specific exercises taken from a skills training manual, is used, many of which are geared toward control emotional dysregulation and impulsive behavior.

### **Individual Therapy**

Sessions in DBT are held weekly, generally for 50 to 60 minutes, in which skills learned during group training are reviewed and life events from the previous week are examined. Particular attention is paid to episodes of pathological behavioral patterns that could have been corrected if learned skills had been put into effect. Patients are encouraged to record their thoughts, feelings, and behaviors on diary cards, which are analyzed in the session.

### **Telephone Consultation**

Therapists are available for phone consultation 24 hours per day. Patients are encouraged to call when they feel themselves heading toward some crisis that might lead to injurious behavior to themselves or others. Calls are intended to be brief and usually last about 10 minutes.

### **Consultation Team**

Therapists meet in weekly meetings to review their work with their patients. By doing so, they provide support for one another and maintain motivation in their work. The meetings enable them to compare techniques used and to validate those that are most effective (Table 28.5-1).

### **Table 28.5-1**

### **Consultation Team Agreements in Dialectical Behavior Therapy**

### **RESULTS**

Several studies evaluating the effect of DBT for patients with borderline personality disorder found that such therapy was positive. Patients had a low dropout rate from treatment; the incidence of parasuicidal behaviors declined; self-report of angry affect decreased; and social adjustment and work performance improved. The method is now being applied to other disorders, including substance abuse, eating disorders, schizophrenia, and posttraumatic stress disorder.

### **28.6 Biofeedback**

Biofeedback involves the recording and display of small changes in the physiological levels of the feedback parameter. The display can be visual, such as a big meter or a bar of lights, or auditory. Patients are instructed to change the levels of the parameter, using the feedback from the display as a guide. Biofeedback is based on the idea that the autonomic nervous system can come under voluntary control through

operant conditioning. Biofeedback can be used by itself or in combination with relaxation. For example, patients with urinary incontinence use biofeedback alone to regain control over the pelvic musculature. Biofeedback is also used in the rehabilitation of neurological disorders. The benefits of biofeedback may be augmented by the relaxation that patients are trained to facilitate.

## **THEORY**

Neal Miller demonstrated the medical potential of biofeedback by showing that the normally involuntary autonomic nervous system can be operantly conditioned by use of appropriate feedback. By means of instruments, patients acquire information about the status of involuntary biological functions, such as skin temperature and electrical conductivity, muscle tension, blood pressure, heart rate, and brain wave activity. Patients then learn to regulate one or more of these biological states that affect symptoms. For example, a person can learn to raise the temperature of his or her hands to reduce the frequency of migraines, palpitations, or angina pectoris. Presumably, patients lower the sympathetic activation and voluntarily self-regulate arterial smooth muscle vasoconstrictive tendencies.

## **METHODS**

### **Instrumentation**

The feedback instrument used depends on the patient and the specific problem. The most effective instruments are the electromyogram (EMG), which measures the electrical potentials of muscle fibers; the electroencephalogram (EEG), which measures alpha waves that occur in relaxed states; the galvanic skin response (GSR) gauge, which shows decreased skin conductivity during a relaxed state; and the thermistor, which measures skin temperature (which drops during tension because of peripheral vasoconstriction). Patients are attached to one of the instruments that measures a physiological function and translates the measurement into an audible or visual signal that patients use to gauge their responses. For example, in the treatment of bruxism, an EMG is attached to the masseter muscle. The EMG emits a high tone when the muscle is contracted and a low tone when at rest. Patients can learn to alter the tone to indicate relaxation. Patients receive feedback about the masseter muscle, the tone reinforces the learning, and the condition ameliorates—all of these events interacting synergistically. Many less-specific clinical applications (e.g., treating insomnia, dysmenorrhea, and speech problems; improving athletic performance; treating volitional disorders; achieving altered states of consciousness; managing stress; and supplementing psychotherapy for treating anxiety associated with somatic symptom and related disorders) use a model in which frontalis muscle EMG biofeedback is combined with

thermal biofeedback and verbal instructions in progressive relaxation. Table 28.6-1 outlines some important clinical applications of biofeedback and shows that a wide variety of biofeedback modalities have been used to treat numerous conditions.

### **Table 28.6-1**

#### **Biofeedback Applications**

##### **Relaxation Therapy**

Muscle relaxation is used as a component of treatment programs (e.g., systematic desensitization) or as treatment in its own right (relaxation therapy). Relaxation is characterized by (1) immobility of the body, (2) control over the focus of attention, (3) low muscle tone, and (4) cultivation of a specific frame of mind, described as contemplative, nonjudgmental, detached, or mindful.

Progressive relaxation was developed by Edmund Jacobson in 1929. Jacobson observed that when an individual lies “relaxed,” in the ordinary sense, the following clinical signs reveal the presence of residual tension: respiration is slightly irregular in time or force; the pulse rate, although often normal, is in some instances moderately increased as compared with later tests; voluntary or local reflex activities are revealed in such slight marks as wrinkling of the forehead, frowning, movements of the eyeballs frequent or rapid winking, restless shifting of the head, a limb, or even a finger; and finally, the mind continues to be active, and once started, worry or oppressive emotion will persist.

It is amazing that a faint degree of tension can be responsible for all of this.

Learning relaxation, therefore, involves cultivating a muscle sense. To develop the muscle sense further, patients are taught to isolate and contract specific muscles or muscle groups, one at a time. For example, patients flex the forearm while the therapist holds it back to observe tenseness in the biceps muscle. (Jacobson used the word “tenseness” rather than “tension” to emphasize the patient’s role in tensing the muscles.) Once this sensation is reported, Jacobson would say, “This is your doing! What we wish is the reverse of this—simply not doing.”

Patients are repeatedly reminded that relaxation involves no effort. In fact “making an effort is being tense and therefore is not to relax.” As the session progresses, patients are instructed to let go further and further, even past the point when the body part seems perfectly relaxed.

Patients would work in this fashion with different muscle groups, often over more than 50 sessions. For example, an entire session might be devoted to relaxing the biceps muscle. Another feature of Jacobson’s method was that instructions were given tersely so they would not interfere with a patient’s focus on muscle sensations; suggestions commonly used today (e.g., “*Your arm is becoming limp*”) were avoided.

Patients were also frequently left alone, while the therapist attended to other patients.

In psychiatry, relaxation therapy is mainly used as a component of multifaceted broad-spectrum programs. Its use in desensitization was mentioned previously. Relaxing breathing exercises are often helpful for patients with panic disorder, especially when considered to be related to hyperventilation. In the treatment of patients with anxiety disorders, relaxation can serve as an occasion-setting stimulus (i.e., as a context of safety in which other specific intervention can be confidently tried).

### **Later Adaptation of Progressive Muscular Relaxation**

Joseph Wolpe chose progressive relaxation as a response incompatible with anxiety when designing his systematic desensitization treatment (discussed below). For this purpose, Jacobson's original method was too lengthy to be practical. Wolpe abbreviated the program to 20 minutes during the first six sessions (devoting the remainder of these sessions to other things, such as behavioral analysis). In a later modification of progressive relaxation, patients completed work with all the principal muscle groups in one session. The specific muscle groups and instructions for this type of progressive relaxation are listed in Table 28.6-2. Once patients have mastered this procedure (typically after three sessions), these groups are combined into larger groups. Finally, patients practice relaxation by recall (i.e., without tensing the muscles).

#### **Table 28.6-2**

### **Outline of Initial Progressive Relaxation Session, All Muscle Groups**

#### **Autogenic Training**

Autogenic training is a method of self-suggestion that originated in Germany. It involves the patients directing their attention to specific bodily areas and hearing themselves think certain phrases reflecting a relaxed state. In the original German version, patients progressed through six themes over many sessions. The six areas are listed in Table 28.6-3 along with representative autogenic phrases. Autogenic relaxation is an American modification of autogenic training, in which all six areas are covered in one session.

#### **Table 28.6-3**

### **Sample Autogenic Phrases**

#### **Applied Tension**

Applied tension is a technique that is the opposite of relaxation; applied tension can be used to counteract the fainting response. The treatment extends over four sessions. In the first session, patients learn to tense the muscles of the arms, legs, and torso for 10 to 15 seconds (as if they were bodybuilders). The tension is maintained long enough for a sensation of warmth to develop in the face. The patients then

release the tension, but do not progress to a state of relaxation. The maneuver is repeated five times at half-minute intervals. This method can be augmented with feedback of the patient's blood pressure during the muscle contraction; increased blood pressure suggests that appropriate muscle tension was achieved. The patients continue to practice the technique five times a day. An adverse effect of treatment that sometimes develops is headache. In this case, the intensity of the muscle contraction and the frequency of treatment are reduced.

Patients with blood and injury phobia show a unique, biphasic response when exposed to a phobic stimulus. The first phase is associated with increased heart rate and blood pressure. In the second phase, however, blood pressure suddenly falls and the patient faints. To treat the problem, patients are shown a series of slides that are provocative (e.g., mutilated bodies). They are coached in identifying early warning signs of fainting, such as queasiness, cold sweats, or dizziness, and in applying the learned muscle tension response quickly, contingent on these warning signs. Patients can also perform applied tension while donating blood or watching a surgical operation. The technique of isometric tension raises blood pressure, which prevents fainting.

### **Applied Relaxation**

Applied relaxation involves eliciting a relaxation response in the stressful situation itself. The previous discussion showed that this is not advisable right away because of the possible ironic effects of relaxation. Therefore, patients should first practice relaxation in nonstressful circumstances. The method developed by Lars-Göran Öst and coworkers in Sweden has been proven efficacious for panic disorder and generalized anxiety disorder. Establishing the relaxation response in the patient's natural environment consists of seven phases of one to two sessions each: progressive relaxation, release-only relaxation, cue-controlled relaxation, differential relaxation, rapid relaxation, application training, and maintenance.

### **RESULTS**

Biofeedback, progressive relaxation, and applied tension have been shown to be effective treatment methods for a broad range of disorders.

They form one basis of behavioral medicine in which the patient changes (or learns how to change) behavior that contributes to illness.

They form a basis on which many complementary and alternative medical procedures are effective (e.g., yoga and Reiki) in which relaxation is an important component. Relaxation also informs more mainstream treatments, such as hypnosis.

### **28.7 Cognitive Therapy**

A central feature of the cognitive theory of emotional disorders is its emphasis on the psychological significance of people's beliefs about

themselves, their personal world (including the people in their lives), and their future—the “cognitive triad.” When people experience excessive, maladaptive emotional distress, it is linked to their problematic, stereotypic, biased interpretations pertinent to this cognitive triad of self, world, and future. For example, clinically depressed patients may be prone to believe that they are incapable and helpless and to view others as being judgmental and critical and the future as being bleak and unrewarding. Similarly, patients with anxiety disorders may be apt to see themselves as highly vulnerable, others as more capable, and the future as likely to be characterized by personal disasters.

Although the patient’s viewpoints are flawed and dysfunctional, they nonetheless tend to be perpetuated by cognitive processes that maintain them. Cognitive therapy is a short-term, structured therapy that uses active collaboration between patient and therapist to achieve its therapeutic goals, which are oriented toward current problems and their resolution. Cognitive therapy is used with depression, panic disorder, obsessive-compulsive disorder, personality disorders, and somatoform disorders. Therapy is usually conducted on an individual basis, although group methods are sometimes helpful. A therapist may also prescribe drugs in conjunction with therapy.

The treatment of depression can serve as a paradigm of the cognitive approach. Cognitive therapy assumes that perception and experiencing, in general, are active processes that involve both inspective and introspective data. The patient’s cognitions represent a synthesis of internal and external stimuli. The way persons appraise a situation is generally evident in their cognitions (thoughts and visual images). Those cognitions constitute their stream of consciousness or phenomenal field, which reflects their configuration of themselves, their world, their past, and their future.

Alterations in the content of their underlying cognitive structures affect their affective state and behavioral pattern. Through psychological therapy, patients can become aware of their cognitive distortions. Correction of faulty dysfunctional constructs can lead to clinical improvement.

### **COGNITIVE THEORY OF DEPRESSION**

According to the cognitive theory of depression, cognitive dysfunctions are the core of depression, and affective and physical changes and other associated features of depression are consequences of cognitive dysfunctions. For example, apathy and low energy result from a person’s expectation of failure in all areas. Similarly, paralysis of will stems from a person’s pessimism and feelings of hopelessness. From a cognitive perspective, depression can be explained by the cognitive triad, which explains that negative thoughts are about the self, the

world, and the future.

The goal of therapy is to alleviate depression and to prevent its recurrence by helping patients to identify and test negative cognitions, to develop alternative and more flexible schemas, and to rehearse both new cognitive and behavioral responses. Changing the way a person thinks can alleviate the psychiatric disorder.

### **STRATEGIES AND TECHNIQUES**

Therapy is relatively short and lasts about 25 weeks. If a patient does not improve in this time, the diagnosis should be reevaluated.

Maintenance therapy can be carried out over years. As with other psychotherapies, therapists' attributes are important to successful therapy.

Therapists must exude warmth, understand the life experience of each patient, and be genuine and honest with themselves and with their patients. They must be able to relate skillfully and interactively with their patients. Cognitive therapists set the agenda at the beginning of each session, assign homework to be performed between sessions, and teach new skills. Therapist and patient collaborate actively (Table 28.7-1). The three components of cognitive therapy are didactic aspects, cognitive techniques, and behavioral techniques.

#### **Table 28.7-1**

#### **Cognitive Psychotherapy**

##### **Didactic Aspects**

The therapy's didactic aspects include explaining to patients the cognitive triad, schemas, and faulty logic. Therapists must tell patients that they will formulate hypotheses together and test them over the course of the treatment. Cognitive therapy requires a full explanation of the relation between depression and thinking, affect, and behavior, as well as the rationale for all aspects of treatment. This explanation contrasts with psychoanalytically oriented therapies, which require little explanation.

##### **Cognitive Techniques**

The therapy's cognitive approach includes four processes: eliciting automatic thoughts, testing automatic thoughts, identifying maladaptive underlying assumptions, and testing the validity of maladaptive assumptions.

**Eliciting Automatic Thoughts.** Automatic thoughts, also called *cognitive distortions*, are cognitions that intervene between external events and a person's emotional reaction to the event. For example, the belief that "people will laugh at me when they see how badly I bowl" is an automatic thought that occurs to someone who has been asked to go bowling and responds negatively. Another example is the thought "She doesn't like me" when someone passes in the hall without saying "Hello." Every psychopathological disorder has its own

specific cognitive profile of distorted thought, which, if known, provides a framework for specific cognitive interventions (Table 28.7-2).

### **Table 28.7-2**

#### **Cognitive Profile of Psychiatric Disorders**

**Testing Automatic Thoughts.** Acting as a teacher, a therapist helps a patient test the validity of automatic thoughts. The goal is to encourage the patient to reject inaccurate or exaggerated automatic thoughts after careful examination. Patients often blame themselves when things that are outside their control go awry. The therapist reviews the entire situation with the patient and helps reassign the blame or cause of the unpleasant events. Generating alternative explanations for events is another way of undermining inaccurate and distorted automatic thoughts.

**Identifying Maladaptive Assumptions.** As the patient and therapist continue to identify automatic thoughts, patterns usually become apparent. The patterns represent rules or maladaptive general assumptions that guide a patient's life. Samples of such rules are "In order to be happy, I must be perfect" and "If anyone doesn't like me, I'm not lovable." Such rules inevitably lead to disappointments and failure and, ultimately, to depression (Fig. 28.7-1).

**Testing the Validity of Maladaptive Assumptions.** Testing the accuracy of maladaptive assumptions is similar to testing the validity of automatic thoughts. In a particularly effective test, therapists ask patients to defend the validity of their assumptions. For example, patients may state that they should always work up to their potential, and a therapist may ask "*Why is that so important to you?*" Table 28.7-3 gives examples of some interventions designed to elicit, identify, test, and correct the cognitive distortions that lead to depressive and other painful affects.

### **Table 28.7-3**

#### **Cognitive Errors Derived from Assumptions**

A woman presented for therapy with anger control problems. She had sent a slew of hostile voicemail and e-mail messages to a colleague, had alienated her neighbors with her complaints about noise, and had been asked to leave her bowling league after two physical altercations with members of other teams. A careful review of the patient's thoughts and beliefs surrounding these situations revealed a common denominator of a sense of *mistrust* and *entitlement*. In each situation, she believed that the persons who were the objects of her anger had gone out of their way to mistreat her. Furthermore, she had an exaggerated sense of self-importance represented by beliefs such as, "Nobody has the right to treat me that way," "I shouldn't have to deal with these people and their stupidity," and "I

have to show them they can't ever push me around." To this patient, her anger was justified, as she was trying to defend herself from the misbehavior of others. However, to the outside observer, the patient was a "loose cannon" who took offense at the drop of a hat and whose behavior was outrageous and indefensible. In therapy, the patient at first was not open to viewing her anger problem in the manner just described. However, as she learned to recognize the activation of her schemas of *mistrust* and *entitlement*, she became more willing to consider ways in which she could modify her viewpoints and behaviors. This positive change was facilitated by the therapist's empathic responses to the patient's more credible stories of mistreatment she had received from her family, whose abusive behavior gave her the message that she should never trust anyone and that she should never put up with being mistreated again. (Courtesy of C. F. Newman, Ph.D., and A. T. Beck, M.D.)

### **FIGURE 28.1**

Sample automatic thought record.

#### **Behavioral Techniques**

Behavioral and cognitive techniques go hand in hand; behavioral techniques test and change maladaptive and inaccurate cognitions. The overall purposes of such techniques are to help patients understand the inaccuracy of their cognitive assumptions and learn new strategies and ways of dealing with issues.

Among the behavioral techniques in cognitive therapy are scheduling activities, mastery and pleasure, graded task assignments, cognitive rehearsal, self-reliance training, role playing, and diversion techniques. One of the first things done in therapy is to schedule activities on an hourly basis. Patients keep records of the activities and review them with the therapist. In addition to scheduling activities, patients are asked to rate the amount of mastery and pleasure their activities bring them. Patients are often surprised to learn that they have much more mastery of activities and enjoy them more than they had thought. To simplify the situation and allow miniaccomplishments, therapists often break tasks into subtasks, as in graded task assignments, to show patients that they can succeed. In cognitive rehearsal, patients imagine and rehearse the various steps in meeting and mastering a challenge.

Patients (especially inpatients) are encouraged to become self-reliant by doing such simple things as making their own beds, doing their own shopping, and preparing their own meals. This process is called self-reliance training. Role playing is a particularly powerful and useful technique to elicit automatic thoughts and to learn new behaviors. Diversion techniques are useful in helping patients get through

difficult times and include physical activity, social contact, work, play, and visual imagery.

Imagery or thought stoppage can treat impulsive or obsessive behavior. For instance, patients imagine a stop sign with a police officer nearby or another image that evokes inhibition at the same time that they recognize an impulse or obsession that is alien to the ego.

Similarly, obesity can be treated by having patients visualize themselves as thin, athletic, trim, and well muscled, and then training them to evoke this image whenever they have an urge to eat. Hypnosis or autogenic training can enhance such imagery. In a technique called guided imagery, therapists encourage patients to have fantasies that can be interpreted as wish fulfillments or attempts to master disturbing affects or impulses.

### **EFFICACY**

Cognitive therapy can be used alone in the treatment of mild to moderate depressive disorders or in conjunction with antidepressant medication for major depressive disorder. Studies have clearly shown that cognitive therapy is effective and in some cases is superior or equal to medication alone. It is one of the most useful psychotherapeutic interventions currently available for depressive disorders, and it shows promise in the treatment of other disorders.

Cognitive therapy has also been studied as a way of increasing compliance with lithium (Eskalith) prescription by patients with bipolar I disorder and as an adjunct in treating withdrawal from heroin.

### **28.8 Behavior Therapy**

The term *behavior* in *behavior therapy* refers to a person's observable actions

#### **aBehavior Therapy**

The term *behavior* in *behavior therapy* refers to a person's observable actions and responses. Behavior therapy involves changing the

behavior of patients to reduce dysfunction and to improve quality of life.

Behavior therapy includes a methodology, referred to as *behavior*

*analysis*, for the strategic selection of behaviors to change, and a technology to bring about behavior change, such as modifying antecedents

or consequences or giving instructions. Behavior therapy has not only influenced mental health care, but, under the rubric of behavioral medicine, it has also made inroads into other medical specialties.

Behavior therapy represents clinical applications of the principles developed in learning theory. Behavioral psychology, or behaviorism,

arose in the early 20th century in reaction to the method of introspection that dominated psychology at the time. John B. Watson, the father

of behaviorism, had initially studied animal psychology. This background made it a small conceptual leap to argue that psychology should

concern itself only with publicly observable phenomena (i.e., overt behavior). According to behavioristic thinking, because mental content is not publicly observable, it cannot be subjected to rigorous scientific inquiry. Consequently, behaviorists developed a focus on overt behaviors and their environmental influences.

Today, different behavioral schools continue to share a focus on verifiable behavior. Behavioral views differ from cognitive views in holding that physical, rather than mental, events control behavior. According to behaviorism, mental phenomena or speculations about them are of little or no scientific interest.

## **HISTORY**

As early as the 1920s, scattered reports about the application of learning principles to the treatment of behavioral disorders began to appear, but they had little effect on the mainstream of psychiatry and clinical psychology. Not until the 1960s did behavior therapy emerge as a systematic and comprehensive approach to psychiatric (behavioral) disorders; at that time, it arose independently on three continents.

Joseph Wolpe and his colleagues in Johannesburg, South Africa, used Pavlovian techniques to produce and eliminate experimental neuroses in cats. From this research, Wolpe developed systematic desensitization, the prototype of many current behavioral procedures for the treatment of maladaptive anxiety produced by identifiable stimuli in the environment. At about the same time, a group at the Institute of Psychiatry of the University of London, particularly Hans Jurgen Eysenck and M. B. Shapiro, stressed the importance of an empirical, experimental approach to understanding and treating individual patients, using controlled, single-case experimental paradigms and modern learning theory. The third origin of behavior therapy was work inspired by the research of Harvard psychologist B. F. Skinner. Skinner's students began to apply his operant-conditioning technology, developed in animal-conditioning laboratories, to human beings in clinical settings.

## **SYSTEMATIC DESENSITIZATION**

Developed by Wolpe, systematic desensitization is based on the behavioral principle of counterconditioning, whereby a person overcomes maladaptive anxiety elicited by a situation or an object by approaching the feared situation gradually, in a psychophysiological state that inhibits anxiety. In systematic desensitization, patients attain a state of complete relaxation and are then exposed to the stimulus that elicits the anxiety response. The negative reaction of anxiety is inhibited by the relaxed state, a process called *reciprocal inhibition*. Rather than using actual situations or objects that elicit fear, patients and therapists prepare a graded list or hierarchy of anxiety-provoking scenes

associated with a patient's fears. The learned relaxation state and the anxiety-provoking scenes are systematically paired in treatment. Thus, systematic desensitization consists of three steps: relaxation training, hierarchy construction, and desensitization of the stimulus.

### **Relaxation Training**

Relaxation produces physiological effects opposite to those of anxiety: slow heart rate, increased peripheral blood flow, and neuromuscular stability. A variety of relaxation methods have been developed. Some, such as yoga and Zen, have been known for centuries. Most methods use so-called progressive relaxation, developed by the psychiatrist Edmund Jacobson. Patients relax major muscle groups in a fixed order, beginning with the small muscle groups of the feet and working cephalad or vice versa. Some clinicians use hypnosis to facilitate relaxation or use tape-recorded exercise to allow patients to practice relaxation on their own. Mental imagery is a relaxation method in which patients are instructed to imagine themselves in a place associated with pleasant, relaxed memories. Such images allow patients to enter a relaxed state or experience (as Herbert Benson termed it) the *relaxation response*.

The physiological changes that take place during relaxation are the opposite of those induced by the adrenergic stress responses that are part of many emotions. Muscle tension, respiration rate, heart rate, blood pressure, and skin conductance decrease. Finger temperature and blood flow to the finger usually increase. Relaxation increases respiratory heart rate variability, an index of parasympathetic tone.

### **Hierarchy Construction**

When constructing a hierarchy, clinicians determine all the conditions that elicit anxiety, and then patients create a hierarchy list of 10 to 12 scenes in order of increasing anxiety. For example, an acrophobic hierarchy may begin with a patient's imagining standing near a window on the second floor and end with being on the roof of a 20-story building, leaning on a guard rail and looking straight down. Table 28.8-1 provides an example of a hierarchy construction for fear of water and heights.

#### **Table 28.8-1**

### **Hierarchy Construction (Least Anxious to Most Anxious): Fear of Water and Heights**

#### **Desensitization of the Stimulus**

In the final step, called *desensitization*, patients proceed systematically through the list from the least to the most anxiety-provoking scene while in a deeply relaxed state. The rate at which patients progress through the list is determined by their responses to the stimuli. When patients can vividly imagine the most anxiety-provoking scene of the hierarchy with equanimity, they experience little anxiety in the corresponding real-life situation.

**Adjunctive Use of Drugs.** Clinicians have used various drugs to hasten relaxation, but drugs should be used cautiously and only by clinicians trained and experienced in potential adverse effects. Either the ultrarapidly acting barbiturate sodium methohexital (Brevital) or diazepam (Valium) is given intravenously in subanesthetic doses. If the procedural details are followed carefully, almost all patients find the procedure pleasant, with few unpleasant side effects. The advantages of pharmacological desensitization are that preliminary training in relaxation can be shortened, almost all patients can relax adequately, and the treatment itself seems to proceed more rapidly than without the drugs.

**Indications.** Systematic desensitization works best in cases of a clearly identifiable anxiety-provoking stimulus. Phobias, obsessions, compulsions, and certain sexual disorders have been treated successfully with this technique.

### **THERAPEUTIC-GRADED EXPOSURE**

Therapeutic-graded exposure is similar to systematic desensitization, except that relaxation training is not involved and treatment is usually carried out in a real-life context. This means that the individual must be brought in contact with (i.e., be exposed to) the warning stimulus to learn firsthand that no dangerous consequences will ensue. Exposure is graded according to a hierarchy. Patients afraid of cats, for example, might progress from looking at a picture of a cat to holding one.

### **FLOODING**

Flooding (sometimes called *implosion*) is similar to graded exposure in that it involves exposing the patient to the feared object in vivo; however, there is no hierarchy. Flooding is based on the premise that escaping from an anxiety-provoking experience reinforces the anxiety through conditioning. Thus, clinicians can extinguish the anxiety and prevent the conditioned avoidance behavior by not allowing patients to escape the situation. Clinicians encourage patients to confront feared situations directly, without a gradual buildup, as in systematic desensitization or graded exposure. No relaxation exercises are used, as in systematic desensitization. Patients experience fear, which gradually subsides after a time. The success of the procedure depends on having patients remain in the fear-generating situation until they are calm and feel a sense of mastery. Prematurely withdrawing from the situation or prematurely terminating the fantasized scene is equivalent to an escape, which then reinforces both the conditioned anxiety and the avoidance behavior and produces the opposite of the desired effect. In a variant, called *imaginal flooding*, the feared object or situation is confronted only in the imagination, not in real life. Many

patients refuse flooding because of the psychological discomfort involved. It is also contraindicated when intense anxiety would be hazardous to a patient (e.g., those with heart disease or fragile psychological adaptation). The technique works best with specific phobias.

### **PARTICIPANT MODELING**

In participant modeling, patients learn a new behavior by imitation, primarily by observation, without having to perform the behavior until they feel ready. Just as irrational fears can be acquired by learning, they can be unlearned by observing a fearless model confront the feared object. The technique has been useful with phobic children who are placed with other children of their own age and sex who approach the feared object or situation. With adults, a therapist may describe the feared activity in a calm manner that a patient can identify. Or, the therapist may act out the process of mastering the feared activity with a patient. Sometimes a hierarchy of activities is established, with the least anxiety-provoking activity being dealt with first. The participant-modeling technique has been used successfully with agoraphobia by having a therapist accompany a patient into the feared situation. In a variant of the procedure, called *behavior rehearsal*, real-life problems are acted out under a therapist's observation or direction.

The following is a self-report by a patient with a contamination phobia, who is afraid to touch objects for fear of being infected or contaminated. She describes her reactions.

[The therapist] started touching everything very slowly. I was told to follow behind and touch everything she touched. It was like we were spreading the contamination. She touched doorknobs, light switches, walls, pictures, and woodwork. She opened drawers in each bedroom and touched the contents. She opened closets and touched clothes hanging on the rods. She touched the towels and sheets in the linen closet. She went through the children's rooms, touching dolls, stuffed animals, models, Star Wars figures, Transformers, and books.

[The therapist] kept talking to me quietly and calmly all the time we went along. I had been anxious when we started, but as we continued, my anxiety level decreased. At one point, when I had begun to think the worst was over, she pointed to the attic door and said we were going inside. I said, "No, that's where the mice were." She told me I didn't want to have a place in my home that was off limits.

I agreed but became very anxious. It was very hard for me to go inside. I began touching the boxes too, but I was very upset. Then, she put her hands down on the floor and wanted me to do the same. I said, "I can't. I just can't." [The therapist] said, "Yes you can."

[The therapist] spent several hours with me that day. Before she left, she made a list of things for me to do by myself. Twice a day I

was to go through the house touching everything the way she had done with me. I was to invite a friend of mine who had a pet to come and visit and also friends of my children who had pets. (Courtesy of Rolf G. Jacobs, M.D., and William H. Pelham, M.D.)

### **EXPOSURE TO STIMULI PRESENTED IN VIRTUAL REALITY**

Advances in computer technology have made it possible to present environmental cues in virtual reality for exposure treatment. Beneficial effects have been reported with virtual reality exposure of patients with height phobia, fear of lying, spider phobia, and claustrophobia.

Much experimental work is being done in the field. One model uses an avatar of the patient walking through a crowded supermarket with other avatars (including one of the therapists) as a way of conquering agoraphobia.

### **ASSERTIVENESS TRAINING**

*Assertiveness* is defined as assertive behavior that enables a person to act in his or her own best interest, to stand up for herself or himself without undue anxiety, to express honest feelings comfortably, and to exercise personal rights without denying the rights of others.

Two types of situations frequently call for assertive behaviors: (1) setting limits on pushy friends or relatives and (2) commercial situations, such as countering a sales pitch or being persistent when returning defective merchandise. Early assertiveness training programs tended to define specific behaviors as assertive or nonassertive. For example, individuals were encouraged to assert themselves if somebody got in front of them in a supermarket checkout line. Increasing attention is now given to context, that is, what would be assertive behavior in this situation depends on circumstances.

### **SOCIAL SKILLS TRAINING**

The negative symptoms in patients with schizophrenia constitute behavioral deficits that go beyond difficulties with assertiveness. These patients have inadequate expressive behaviors and inappropriate stimulus control of their social behaviors (i.e., they do not pick up social cues). Similarly, patients with depression often experience a lack of social reinforcement because of a lack of social skills, and social skills training has been found to be efficacious for depression. Patients with social phobia similarly often have not acquired adolescents' social skills. In fact, their social defensive behaviors (e.g., avoiding eye contact, making brief statements, and minimizing self-disclosure) increase the probability of the rejection that they fear.

Social skills training programs for patients with schizophrenia cover skills in the following areas: conversation, conflict management, assertiveness, community living, friendship and dating, work and vocation, and medication management. Each of these skills has several

components. For example, assertiveness skills include making requests, refusing requests, making complaints, responding to complaints, expressing unpleasant feelings, asking for information, making apologies, expressing fear, and refusing alcohol and street drugs. Each component involves specific steps. For example, conflict management includes skills in negotiating, compromising, tactful disagreeing, responding to untrue accusations, and leaving overly stressful situations. A situation in which conflict management skills might be used is when the patient and a friend decide to go to a movie and their choice of movie differs.

Negotiating and compromising, for example, involves the following steps:

1. Explain one's viewpoint briefly.
2. Listen to the other person's viewpoint.
3. Repeat the other person's viewpoint.
4. Suggest a compromise.

At his initial appointment, Phillip described very serious symptoms of obsessive-compulsive disorder (OCD). He was 23 years old and living at home because he was no longer able to work or go to school. His days were consumed with behaviors related to checking, repeating, and hoarding. Phillip was unable to throw away anything—he saved junk mail, used tissues and napkins, old papers and magazines, and any kind of receipt for fear that he might lose something important. Phillip spent many hours checking his trash, his car, and his home to be sure that he had not thrown away anything important. He also checked everything he wrote (e.g., checks, school exams and papers, letters and e-mails) to be sure that he had not made a mistake, and he read and reread books, magazines, and articles to be sure he understood the written material adequately. Phillip worried constantly that he had done something wrong and would disappoint his parents. He was also depressed because he was unable to function well in life, and he had tremendous social anxiety that had plagued him for many years, making it difficult to make and keep friends. By the end of Phillip's second session, his therapist was beginning to get a good idea of the general nature and severity of his symptoms and some of the maintaining factors. However, to plan the treatment in more detail and to get a better idea of how the symptoms occurred during his daily life, she asked Phillip to keep daily records over the next week using a form that she had prepared for him. The form had a place for recording the amount of time he spent doing rituals each morning, afternoon, and evening, as well as another place to record more details about at least one episode of rituals each day (e.g., what was happening before, during, and after the rituals; see

### **Daily Monitoring of Rituals**

## **AVERSION THERAPY**

When a noxious stimulus (punishment) is presented immediately after a specific behavioral response, theoretically, the response is eventually inhibited and extinguished. Many types of noxious stimuli are used: electric shocks, substances that induce vomiting, corporal punishment, and social disapproval. The negative stimulus is paired with the behavior, which is thereby suppressed. The unwanted behavior may disappear after a series of such sequences. Aversion therapy has been used for alcohol abuse, paraphilias, and other behaviors with impulsive or compulsive qualities, but this therapy is controversial for many reasons. For example, punishment does not always lead to the expected decreased response and can sometimes be positively reinforcing. Aversion therapy has been used with good effect in some cultures in the treatment of opioid addicts

### **FIGURE 28.8-1**

Treatment of addicts at Tham Krabok Monastery in Thailand results in a 70 percent success rate, according to its records. The 10-day free treatment begins with a vow to Buddha never to use narcotics again. Then, patients are given an herbal medicine that makes them vomit immediately. (From White PT, Raymer S. The poppy—for good and evil. *National Geographic*. 1985;167:187, with permission.)

## **EYE MOVEMENT DESENSITIZATION AND REPROCESSING**

Saccadic eye movements are rapid oscillations of the eyes that occur when a person tracks an object that is moved back and forth across the line of vision. A few studies have demonstrated that inducing saccades while a person is imagining or thinking about an anxiety-producing event can yield a positive thought or image that results in decreased anxiety. Eye movement desensitization and reprocessing has been used in posttraumatic stress disorders and phobias.

## **POSITIVE REINFORCEMENT**

When a behavioral response is followed by a generally rewarding event, such as food, avoidance of pain, or praise, it tends to be strengthened and to occur more frequently than before the reward. This principle has been applied in a variety of situations. On inpatient hospital wards, patients with mental disorders receive a reward for performing a desired behavior, such as tokens that they can use to purchase luxury items or certain privileges. The process, known as *token economy*, has successfully altered behavior. Table 28.8-3 gives a summary of some clinical applications of behavior therapy.

### **Table 28.8-3**

#### **Some Common Clinical Applications of Behavior Therapy**

Charles was a 70-year-old retired business executive. Throughout his life, his work consumed him. Although he married and had a

family, his job was his primary focus. He went to the office early and came home late. He enjoyed what he did—it was stimulating and made him feel important and useful. But as he got older, his performance was not what it used to be, and he decided it was time to retire. However, his mood was pretty low when he no longer had a job. He did not have the energy to get more involved in his church or to develop other hobbies, so he sat around all day, without any social contacts. His wife and best friend encouraged him to go talk to someone. The therapist suggested that they try behavioral activation. Charles was somewhat skeptical, as it seemed too simple, but he needed to do something. The therapist spent some time with Charles talking about the kinds of activities that used to make him feel good and some of the things he used to enjoy. They then put together a list of things he might be able to do—even if he did not feel much like it—just to see what would happen. The list included looking for volunteer work where he could use his job skills, spending more time with his wife in some of the activities they once had enjoyed (e.g., watching movies, taking walks), and rejuvenating an old hobby from his college days—shing. Charles initially agreed to do some easy activities—go to one movie a week, take one walk a week, and contact his church activity leader about possible volunteer activities. He was surprised to find that even these “baby steps” helped him feel better. He had the chance to talk with other people and began to see that even in retirement, he could find useful and fun things to do. (Courtesy of M. A. Stanley, Ph.D., and D. C. Beidel, Ph.D.)

## **RESULTS**

Behavior therapy has been used successfully for a variety of disorders (Table 28.8-3) and can be easily taught (Table 28.8-4). It requires less time than other therapies and is less expensive to administer. Although useful for circumscribed behavioral symptoms, the method cannot be used to treat global areas of dysfunction (e.g., neurotic conflicts, personality disorders). Controversy continues between behaviorists and psychoanalysts, which is epitomized by Eysenck’s statement: “Learning theory regards neurotic symptoms as simply learned habits; there is no neurosis underlying the symptoms, but merely the symptom itself. Get rid of the symptom and you have eliminated the neurosis.”

Analytically oriented theorists have criticized behavior therapy by noting that simple symptom removal can lead to symptom substitution:

When symptoms are not viewed as consequences of inner conflicts and the core cause of the symptoms

BIHER

SLIMS

**Psychotherapy and various techniques**

<b>Candidate Name</b>		<b>Assessor Name</b>	
<b>Date of Assessment</b>		<b>Assessor Position</b>	

**MULTIPLE CHOICE QUESTIONS**

**Course Code: PSYC06**

**I. ANSWER ALL THE QUESTIONS**

1) Which of the following is not an antidepressant drug?

- a) Tricyclic antidepressants.
- b) Monoamine oxidase inhibitors (MAOIs).
- c) Selective serotonin reuptake inhibitors (SSRIs).
- d) Antinoamine tritase rehibitor (ATRs).

Check your answer

2) Anxiolytic drugs are used to treat:

- a) The symptoms of depression and mood disorder.
- b) The symptoms of anxiety and stress.
- c) The symptoms of psychosis and schizophrenia.
- d) None of the above.

Check your answer

3) What is a major side effect of Prozac?

- a) Loss of sexual desire.
- b) Loss of hair.
- c) Weight loss.
- d) Weight gain.

Check your answer

4) antipsychotics do which of the following?

- a) Alleviate Major positive symptoms (such as thought disorder and hallucinations).
- b) Alleviate Major negative symptoms (such as social withdrawal).
- c) Reducing the burden of institutional care.
- d) All of the above.

Check your answer

5) Beck's Cognitive therapy for depression requires the individual to:

- a) Make an objective assessment of their beliefs.
- b) Keep a dream diary.
- c) Keep a mood diary.
- d) Set attainable life goals.

Check your answer

6) Behaviour analysis is based upon the principles of:

- a) Classical conditioning.
- b) Operant conditioning.
- c) Dream analysis.
- d) All of the above.

Check your answer

7) Behaviour modification is a type of:

- a) Behaviour therapy.

- b) Cognitive behavioural therapy.
- c) Humanistic therapy.
- d) Client centred therapy.

Check your answer

8) Drugs called Benzodiazepines are used to treat:

- a) Depression.
- b) Anxiety disorders.
- c) Schizophrenia.
- d) Mood disorders

Check your answer

9) Client centred therapy is a type of:

- a) Humanistic therapy.
- b) Psychodynamic therapy.
- c) Cognitive therapy.
- d) Behavioural therapy.

Check your answer

10) Which of the following might be considered as the central tenets of Client-Centred Therapy:

- a) Empathy.
- b) Unconditional positive regard.
- c) Congruence.
- d) All of the above.





Jan 2018

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Psychotherapy and various techniques

Candidate Name	SEIANMUGAPRIYA S	Assessor Name	DR. ARUN
Date of Assessment	14.5.2018	Assessor Position	ASSOCIATE PROFESSOR

UNIVERSITY REG NO - U14MB313

MULTIPLE CHOICE QUESTIONS

Course Code: PSYC06

I. ANSWER ALL THE QUESTIONS

1) Which of the following is not an antidepressant drug?

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- b) Monoamine oxidase inhibitors (MAOIs).
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- b) The symptoms of anxiety and stress.
- c) The symptoms of psychosis and schizophrenia.
- d) None of the above.

Check your answer

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AND RESEARCH

Psychotherapy and various techniques

Candidate Name	SHANMUGARAJA.E	Assessor Name	DR. ARUN
Date of Assessment	14.5.2018	Assessor Position	ASSOCIATE PROFESSOR

UNIVERSITY REG NO:- UL4MB312

MULTIPLE CHOICE QUESTIONS

Course Code: PSYC06

7/10

I. ANSWER ALL THE QUESTIONS

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- a) The symptoms of depression and mood disorder.
- b) The symptoms of anxiety and stress.
- c) The symptoms of psychosis and schizophrenia.
- d) None of the above.

Check your answer

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Check your answer

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- c) Reducing the burden of institutional care.
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- a) Make an objective assessment of their beliefs.
- b) Keep a dream diary.
- c) Keep a mood diary.
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VALUE ADDED COURSE STUDENT DETAILS

PSYCHOTHERAPY TECHNIQUES FOR FINAL YEAR STUDENTS

S.No	Register No	Students List	Department	Signature
1	U14MB311	SHALINI. T. C.	Psychiatry	T.C. Shalini
2	U14MB312	SHANMUGA RAJA. A	Psychiatry	Shanmuga Raja A
3	U14MB313	SHANMUHA PRIYA. S	Psychiatry	Shanmuga Priya S
4	U14MB314	SHAREEFA AKHTAR.S	Psychiatry	Shareefa Akhtar S
5	U14MB315	SHEMBIYAN. R.M.	Psychiatry	Shembiyan R.M.
6	U14MB321	SOWWMYA. S	Psychiatry	S. Sowmya
7	U14MB322	SOWMYAMANJA MADHA.I	Psychiatry	Sowmya Manja Madha I
8	U14MB323	SREEDEVI. B	Psychiatry	Sreedevi B
9	U14MB324	SREEPADMA PURUJITH. S.S.	Psychiatry	Sreepadma Purujith S.S.
10	U14MB325	SRI JAYALAKSHMI. A	Psychiatry	Sri Jayalakshmi A
11	U14MB326	SRITATA. S	Psychiatry	Sritata S
12	U14MB327	SRRUTHI. N.M.	Psychiatry	Sruthi N.M.

13	U14MB328	SUBRAMANI. B	Psychiatry	B. Subramani
14	U14MB329	SUDARSHNA. K	Psychiatry	Sudarshna
15	U14MB330	SUKIRTHA. K	Psychiatry	Sukirtha



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This is to certify that SREEDEVI. B has actively participated in the Value Added Course on **Psychotherapy and various techniques** held during January - June 2018 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr. ARUN SEETHARAMAN

**RESOURCE PERSON**

Dr. ARUN SEETHARAMAN, MD.,  
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Sri Lakshmi Narayana Institute of Medical Sciences  
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Dr. V.R. SRIDHAR

**COORDINATOR**

Dr. V. R. SRIDHAR, MD., D.P.M.,  
Reg. No: 30995  
Professor & HOD, Psychiatry  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502.

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Dr. ARUN SEETHARAMAN

RESOURCE PERSON

Dr. ARUN SEETHARAMAN, MD.,  
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Dr. V.R. SRIDHAR

COORDINATOR

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Course Name: **PSYCHOTHERAPY TECHNIQUES**

Subject Code: **PSYC06**

Name of Student: \_\_\_\_\_ Roll No.: \_\_\_\_\_

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					
2	Course contents met with your expectations					
3	Lecturer sequence was well planned					
4	Lectures were clear and easy to understand					
5	Teaching aids were effective					
6	Instructors encourage interaction and were helpful					
7	The level of the course					
8	Overall rating of the course	1	2	3	4	5

*\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory*

Suggestions if any:

Signature



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# SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION AND RESEARCH

## Student Feedback Form

Course Name: PSYCHOTHERAPY & TECHNIQUES

Subject Code: PSYC06

Name of Student: SIVARAJ · S Roll No.: U14MB318

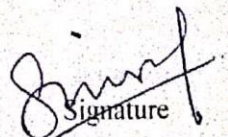
We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance.

SI. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear				✓	
2	Course contents met with your expectations				✓	
3	Lecturer sequence was well planned				✓	
4	Lectures were clear and easy to understand				✓	
5	Teaching aids were effective				✓	
6	Instructors encourage interaction and were helpful				✓	
7	The level of the course					
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 – Outstanding; 4 - Excellent; 3 = Good; 2 – Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Date: 30/6/18

  
Signature



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## Student Feedback Form

Course Name: PSYCHOTHERAPY & TECHNIQUES

Subject Code: PSYC06

Name of Student: SHALINI -T- C Roll No.: U14MB311

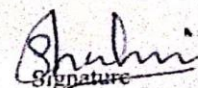
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Suggestions if any:

Date: 30.6.2018

  
Signature



**SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH**

Date: 30-06-2018

From

Dr. V.R.Sridhar  
Professor and Head,  
Department of Psychiatry,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

Through Proper Channel


To

The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Completion of value-added course: Psychotherapy and various techniques**

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: **Psychotherapy and various techniques**. We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.



Kind Regards,

**Dr. V. R. SRIDHAR, MD.,D.P.M.,**  
**Dr. Sridhar** 30995  
Professor & HOD, Psychiatry  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502.

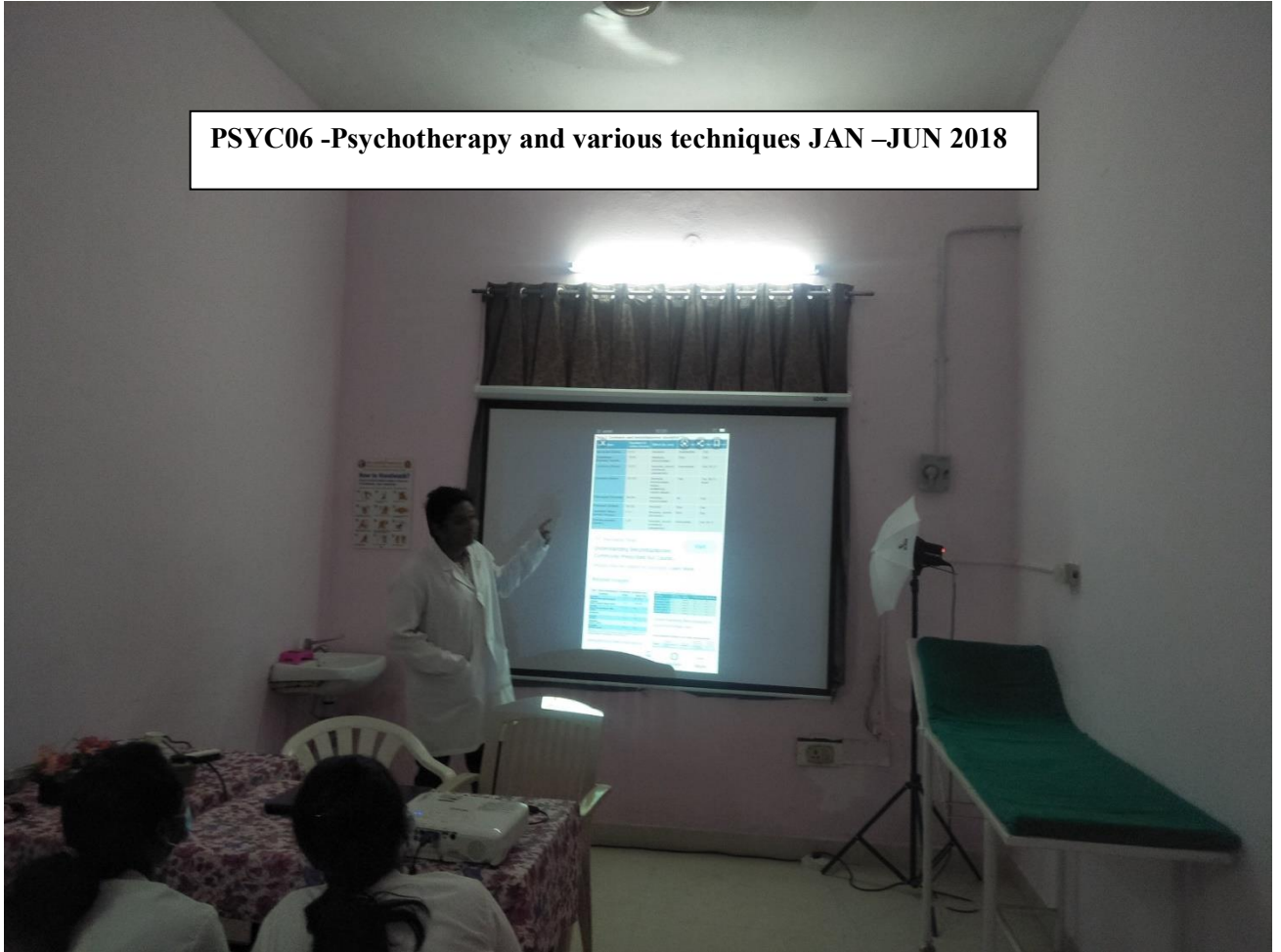
**Encl: Certificates**

**Photographs**



# SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION AND RESEARCH

PSYC06 -Psychotherapy and various techniques JAN –JUN 2018





SLIMS,PONDICHERRY



Date 06/05/18

From

DR.R.CHIDHAMBARAM ,  
Professor and Head,  
Dept.of radio-diagnosis and Imaging Sciences ,  
SLIMS,PONDICHERRY  
Bharath Institute of Higher Education and Research,  
Chennai.

To

The Dean,  
SLIMS  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Permission to conduct value-added course:**

**BASIC ABDOMINAL X-RAY INTERPRETATION**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled:-**BASIC ABDOMINAL X-RAY INTERPRETATION** on 06/05/18. We solicit your kind permission for the same.

Kind Regards

**DR.R.CHIDHAMBARAM**

**FOR THE USE OF DEANS OFFICE**

Names of Committee members for evaluating the course:

The Dean: Dr. Jayalakshmi

The HOD: Dr. R. Chidhambaram.

The Expert: Dr. T. Jothibaron

The committee has discussed about the course and is approved.

Dean

Subject Expert

HOD

(Sign & Seal)

(Sign & Seal)

(Sign & Seal)

**DEAN**

**BIHER**  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
OSUDU, AGARAM VILLAGE,  
KOODAPAKKAM POST,  
PUDUCHERRY - 605 502

DEPARTMENT OF RADIOLOGY  
SRI LAKSHMINARAYANA  
INSTITUTE OF MEDICAL SCIENCE  
PUDUCHERRY - 605 002.

DEPARTMENT OF RADIOLOGY  
SRI LAKSHMINARAYANA  
INSTITUTE OF MEDICAL SCIENCE  
PUDUCHERRY - 605 002.

**SLIMS**

## Course Proposal

**Course Title:** BASIC ABDOMINAL X-RAY INTERPRETATION

**Course Objective:** TO DEMONSTRATE BASIC ABDOMINAL X-RAY INTERPRETATION

**Course Outcome:** BETTER UNDERSTANDING OF BASIC ABDOMINAL X-RAY INTERPRETATION

**Course Audience:** ANY MEDICAL STUDENT  
**Course Coordinator:** PROF.DR.R.CHIDHAMBARAM  
**Course Faculties with Qualification and Designation:**

1. DR.R.CHIDHAMBARAM,MBBS,MDRD.PROF. AND HOD
2. DR.SIVASUBRAMANIYAN,MBBS,DNB,ASST PROFESSOR
3. DR.JYOTI BASU,MBBS,DNB,SENIOR RESIDENT

**Course Curriculum/Topics with schedule (Min of 30 hours)-ENCLOSED**

SINo	Date	Topic	Time	Hours
1	03-01-2018	INTRO	2:00 PM	2 HOUR
2	04-01-2018	INDICATIONS	2:00 PM	2 HOUR
3	05-01-2018	Patient preparation	2:00 PM	2 hour
4	06-01-2018	TECHNIQUE	2:00 PM	2 HOUR
5	07-01-2018	POSITIONING	2:00 PM	2 HOUR
6	08-01-2018	VIEWS	2:00 PM	2 HOUR
7	09-01-2018	QUALITY CHECK	2:00 PM	2 HOUR
8	10-01-2018	STANDARD VIEW	2:00 PM	2 HOUR
9	11-01-2018	RADIOGRAPHIC ANATOMY-1	2:00 PM	2 HOUR
10	12-01-2018	RADIOGRAPHIC ANATOMY-2	2:00 PM	2 HOUR
11	13-01-2018	RADIOGRAPHIC ANATOMY-3	2:00 PM	2 HOUR
12	14-01-2018	Rad.densities	2:00 PM	2 HOUR
13	15-01-2018	Basic Interpretation-1	2:00 PM	2 HOUR
14	16-01-2018	Basic Interpretation-2	2:00 PM	2 HOUR
15	17-01-2018	Basic Interpretation-3	2:00 PM	2 HOUR
			Total Hours	30

BIHER

SLIMS



OFFICE OF THE DEAN

## Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P -II ) dt. 11/07/2011 ]  
[ Affiliated to Bharath University, Chennai - TN ]

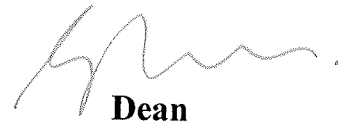
### Circular

19.05.2018

**Sub: Organising Value-added Course:. BASIC ABDOMINAL X-RAY INTERPRETATION**  
reg

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research** is organizing “**BASIC ABDOMINAL X-RAY INTERPRETATION**”. The course content and registration form is enclosed below.”

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before May to June 2018. Applications received after the mentioned date shall not be entertained under any circumstances.



**Dean**

Encl: Copy of Course content

DEAN  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
OSUDU, AGARAM VILLAGE,  
KODAPAKKAM POST,  
PUDUCHERRY - 605 502

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## VALUE ADDED COURSE

**1. Name of the programme & Code :**

**Abdominal x ray interpretation**

**RAD 07**

**2. Duration & Period**

30 hrs & September 2018– January 2019 & February2019 – August 2019

**3. Information Brochure and Course Content of Value Added Courses**

*Enclosed as Annexure- I*

**4. List of students enrolled**

*Enclosed as Annexure- II*

**5. Assessment procedures:**

Multiple choice questions- *Enclosed as Annexure- III*

**6. Certificate model**

*Enclosed as Annexure- IV*

**7. No. of times offered during the same year:**

September 2018– January 2019 & February2019 – August 2019


**8. Year of discontinuation: 2019**


**9. Summary report of each program year-wise**

Value Added Course- September 18 - August 19					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	RAD 07-1	Abdominal xray interpretation	Dr.Jothibasu	MBBS	20 (Sep 18 – Jan 19)
2	RAD 07-2	Abdominal xray interpretation	Dr.Sivasubramaniyan	MBBS	20 (Feb18- Aug-19)

**10. Course Feed Back**

*Enclosed as Annexure- V*

  
**RESOURCE PERSON**  
**BIHER**  
DEPARTMENT OF RADIOLOGY  
SRI LAKSHMINARAYANA  
INSTITUTE OF MEDICAL SCIENCE  
PUDUCHERRY - 605 002.

  
**COORDINATOR**  
**SLIMS**  
DEPARTMENT OF RADIOLOGY  
SRI LAKSHMINARAYANA  
INSTITUTE OF MEDICAL SCIENCE  
PUDUCHERRY - 605 002.




## Sri Lakshmi Narayana Institute of Medical Sciences


Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act. 1956)



### CERTIFICATE OF MERIT

This is to certify that SHENHA has actively participated in the Value Added Course on **BASICS OF ABDOMINAL XRAY INTERPRETATION** held during **September 2018- January 2019** Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry-605 502, India.

  
Dr. T. Jothibas  
RESOURCE PERSON

  
Dr. R. Chidhambaram  
CO-ORDINATOR



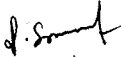
## Sri Lakshmi Narayana Institute of Medical Sciences


Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act. 1956)



### CERTIFICATE OF MERIT

This is to certify that BALACHANDRAN has actively participated in the Value Added Course on **BASICS OF ABDOMINAL XRAY INTERPRETATION** held during **February 2019 - August 2019** Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry-605 502, India.

  
Dr. M. Sivasubramanian  
RESOURCE PERSON

  
Dr. R. Chidhambaram  
CO-ORDINATOR

BIHER

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**VALUE ADDED COURSE**

TOPIC:- Basis of abdominal x ray interpretation

List of Students Enrolled

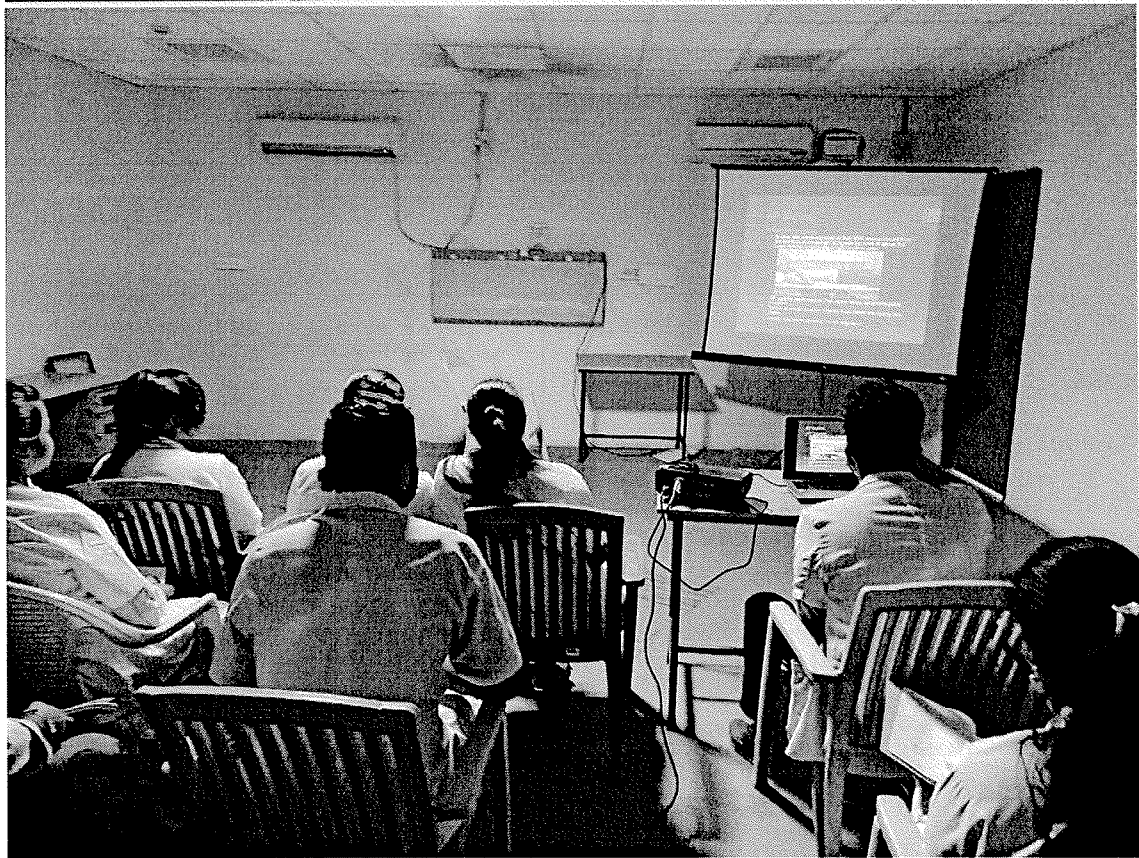
1ST YEAR MBBS STUDENTS			
Sl.NO.	NAME OF THE STUDENT	UNIVERSITY REG. NO.	signature
1	SHAIKH IMRAN SHAIKH NAJIR	U16MB375	<i>Imran</i>
2	SHIKHA SONI	U16MB376	<i>Shikha</i>
3	SINGAMSETTY SANDEEP	U16MB377	<i>Sandeep</i>
4	SINGAMSETTY SRINIVAS	U16MB378	<i>Srinivas</i>
5	SNEHA	U16MB379	<i>Sneha</i>
6	SNEHA SINGH	U16MB380	<i>Sneha</i>
7	NIKITA VERMA	U16MB342	<i>Nikita</i>
8	NISHA AGRAWAL	U16MB344	<i>Nisha</i>
9	NOUNETSHUNUO KELIO	U16MB345	<i>Nounetshunuo</i>
10	PALAYULLA VALAPPIL VARUN	U16MB346	<i>Palayulla</i>
11	PARTHASARATHY .S	U16MB347	<i>Parthasarathy</i>
12	NIKITA VERMA	U16MB342	<i>Nikita</i>
13	GUNTI YAGNA NARAYAN	U16MB296	<i>Gunti</i>
14	HANEESHA PALETI	U16MB297	<i>Haneesha</i>
15	HARIHARAN .J.K	U16MB298	<i>Harihara</i>
16	HARIPRIYA .T	U16MB299	<i>Haripriya</i>
17	HARISHKA.S	U16MB300	<i>Harishka</i>
18	GUNTI YAGNA NARAYAN	U16MB296	<i>Gunti</i>
19	HANEESHA PALETI	U16MB297	<i>Haneesha</i>
20	ASMITHA S.V	U16MB270	<i>Asmitha</i>
21	AVIDI VENKATA SAISUSHMA	U16MB271	<i>Avidi</i>
22	AVIRAL PATPATIA	U16MB272	<i>Aviral</i>
23	BALACHANDRAN	U16MB273	<i>Balachandran</i>
24	BALAJI .S	U16MB274	<i>Balaji</i>
25	BHASKARAN .K.C	U16MB275	<i>Bhaskaran</i>
26	KUNCHAL BALA VENKATA RAMANA RED	U16MB315	<i>Kunchal</i>
27	LAKSHMIPURAM VEDA SREEVIDYA	U16MB316	<i>Lakshmi</i>
28	LOGESH BABU .J.S	U16MB317	<i>Logesh</i>
29	LOKESHWARAN .M	U16MB318	<i>Lokeshwaran</i>
30	MADHUMITHA .R	U16MB319	<i>Madhumitha</i>

RESOURCE PERSON

*[Signature]*

COORDINATOR

*[Signature]*



BIHER

SLIMS

**Student Feedback Form**

Course Name: **BASICS OF ABDOMINAL X-RAY INTERPRETATION**  
 Subject Code: **UICG**  
 Name of Student: **JEFFREY E. PUGH, UICMS243**

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance.

Sl. No	Particulars	1	2	3	4	5
1	Objective of the course is clear					✓
2	Course content met with your expectations					✓
3	Teacher's experience was well planned				✓	
4	Exercises were clear and easy to understand				✓	
5	Teaching aids were effective				✓	
6	Instructor encourage interaction and were helpful				✓	
7	The level of difficulty				✓	
8	Overall rating of the course	1	1	1	1	1

\*Range: 1 - Excellent, 2 - Good, 3 - Satisfactory, 4 - Not Satisfactory

Signature of student:

*Jeffrey E. Pugh*

Date:

**Student Feedback Form**

Course Name: **BASICS OF ABDOMINAL X-RAY INTERPRETATION**  
 Subject Code: **UICG**  
 Name of Student: **JEFFREY E. PUGH, UICMS243**

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance.

Sl. No	Particulars	1	2	3	4	5
1	Objective of the course is clear					✓
2	Course content met with your expectations					✓
3	Teacher's experience was well planned					✓
4	Exercises were clear and easy to understand					✓
5	Teaching aids were effective					✓
6	Instructor encourage interaction and were helpful					✓
7	The level of difficulty					✓
8	Overall rating of the course	1	2	1	1	✓

\*Range: 1 - Excellent, 2 - Good, 3 - Satisfactory, 4 - Not Satisfactory

Suggestions if any:

Good

Date:

BIHER

SLIMS

MCCQ's For Brochure 7 -Abdominal X rays

Student Name: Vijay M Roll no: U16MB397

1. A 65-year-old man presents with acute large bowel obstruction, rectal bleeding and change in bowel habit. What is the most likely cause?

A) Inguinal hernia B) Adhesions C) Volvulus D) Haemorrhoids E) Colonic carcinoma

2. A 65-year-old woman presents with abdominal pain and vomiting. She has had an appendectomy 20 years ago. Small bowel dilatation is observed. What is the most likely cause?

A) Inguinal hernia B) Adhesions C) Volvulus D) Haemorrhoids E) Colonic carcinoma

3. A 4 day old neonate presents with bile stained vomiting. Gastric dilatation is seen on an abdominal radiograph. What is the most likely cause of these abnormalities?

A) Inguinal hernia B) Adhesions C) Volvulus D) Haemorrhoids E) Colonic carcinoma

4. A 35 year old female is highly suspected of pulmonary embolism. A CT pulmonary angiography (CTPA) is considered. Which of the following risks is not relevant?

A) Allergic reaction to media contrast B) Pneumothorax C) Renal failure D) Increased risk of breast cancer E) Radiation damage to bone marrow

5. An MRI of brain is requested for a patient suspected of metastatic cancer. Which of the following pieces of clinical information is a contraindication to MRI?

A) Total hip replacement B) History of previous allergic reaction to iodinated contrast agents C) Sterilization clips D) Previous spinal surgery E) History of a pacemaker

6. A 65 year old man presents with acute large bowel obstruction, rectal bleeding and change in bowel habit. What is the most likely cause?

A) Inguinal hernia B) Adhesions C)  Volvulus D) Haemorrhoids E) Colonic carcinoma

7. A 65 year old woman presents with abdominal pain and vomiting. She has had an appendicectomy 20 years ago. Small bowel dilatation is observed. What is the most likely cause?

A)  Inguinal hernia B) Adhesions C) Volvulus D) Haemorrhoids E) Colonic carcinoma

8. A 4 day old neonate presents with bile stained vomiting. Gastric dilatation is seen on an abdominal radiograph. What is the most likely cause of these abnormalities?

A)  Inguinal hernia B) Adhesions C) Volvulus D) Haemorrhoids E) Colonic carcinoma

9. A 35 year old female is highly suspected of pulmonary embolism. A CT pulmonary angiography (CTPA) is considered. Which of the following risks is not relevant?

A) Allergic reaction to media contrast B) Pneumothorax C) Renal failure D) Increased risk of breast cancer E) Radiation damage to bone marrow

10. An MRI of brain is requested for a patient suspected of metastatic cancer. Which of the following pieces of clinical information is a contraindication to MRI?

A) Total hip replacement B) History of previous allergic reaction to iodinated contrast agents C) Sterilization clips D)  Previous spinal surgery E) History of a pacemaker

BIHER

SLIMS

Date: 06/05/18

From

Dr.R.Chidhambaram  
Professor and Head,  
Department of Microbiology,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

Through Proper

Channel

To

The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

Sub: Completion of value-added course: **BASIC ABDOMINAL X-RAY INTERPRETATION**

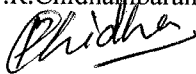
**Dear Sir,**

With reference to the subject mentioned above, the department has conducted the value-added course titled: : **BASIC ABDOMINAL X-RAY INTERPRETATION** for 20 medical students (batch 2) .

We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards,

Dr.R.Chidhambaram



DEPARTMENT OF RADIOLOGY  
SRI LAKSHMINARAYANA  
INSTITUTE OF MEDICAL SCIENCE  
PUDUCHERRY - 605 002.

Encl: Certificates

Photographs

**SRI LAKSHMI NARAYANA**  
**INSTITUTE OF MEDICAL SCIENCES**  
**DEPARTMENT OF RADIOLOGY AND IMAGING SCIENCES**

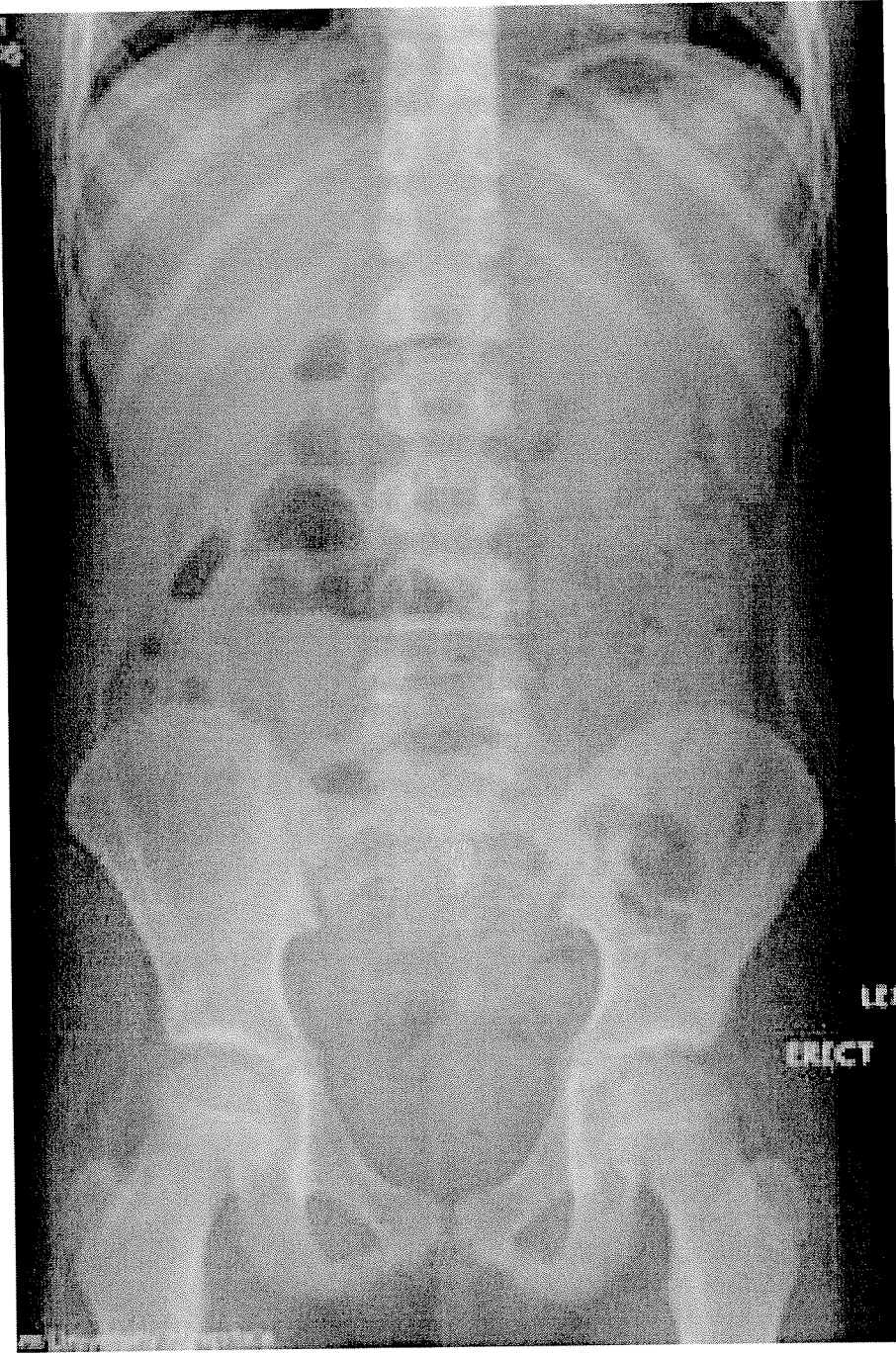
**BASIC OF ABDOMINAL X-RAY INTERPRETATION**

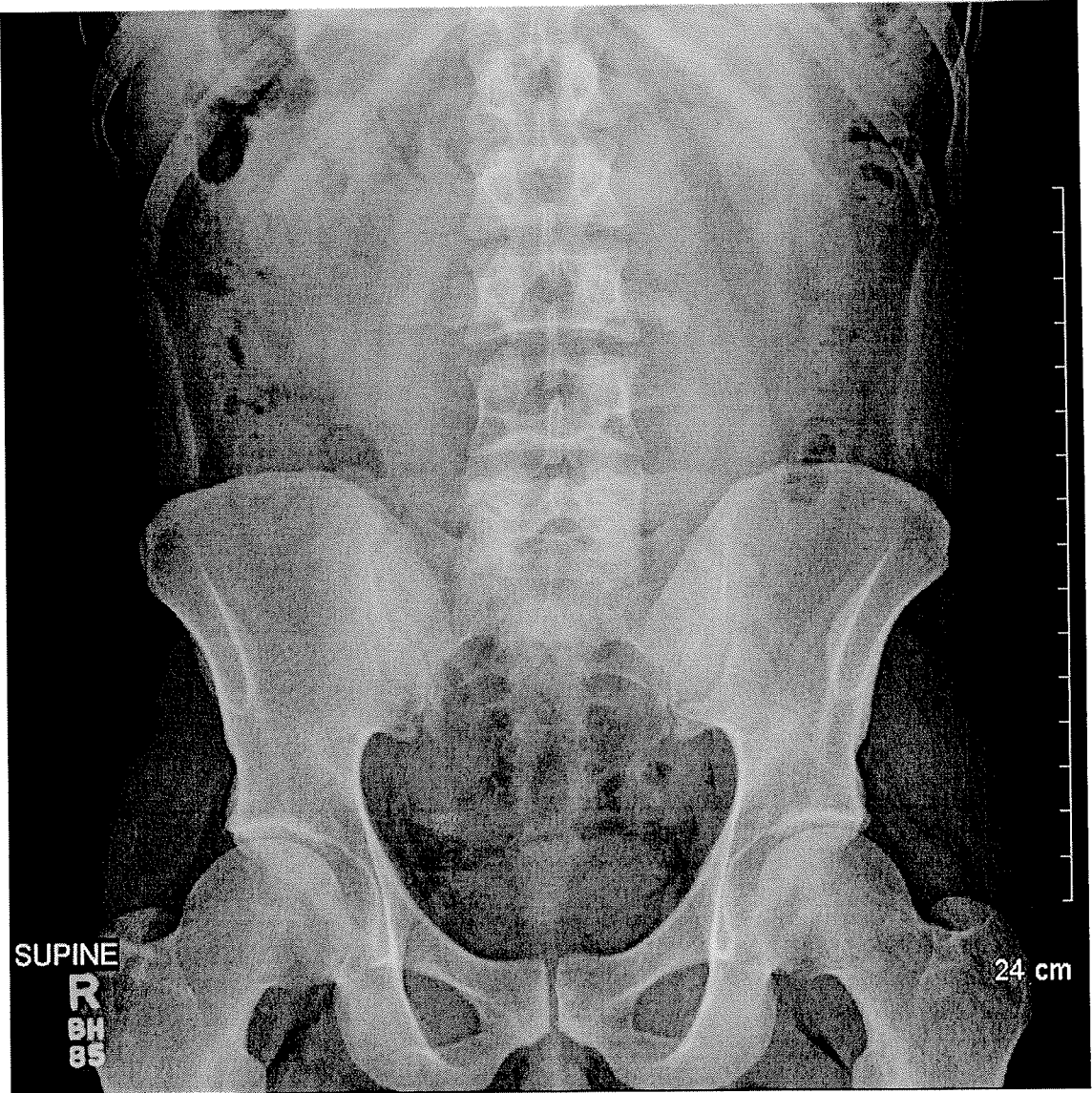
**COURSE CONTENT**

*Basic Views*

*Assessing the quality of film*

*Identifying normal structures*

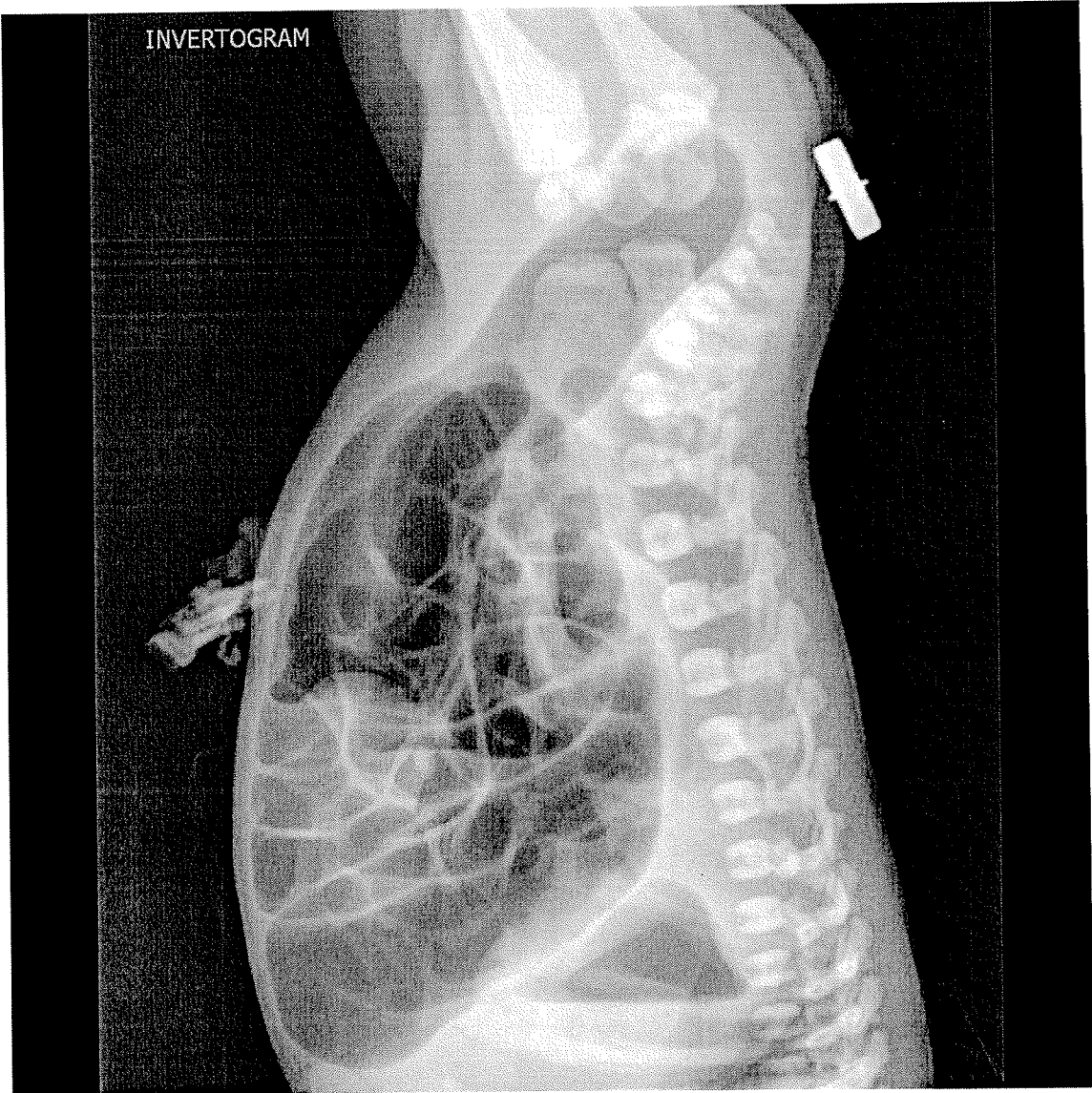


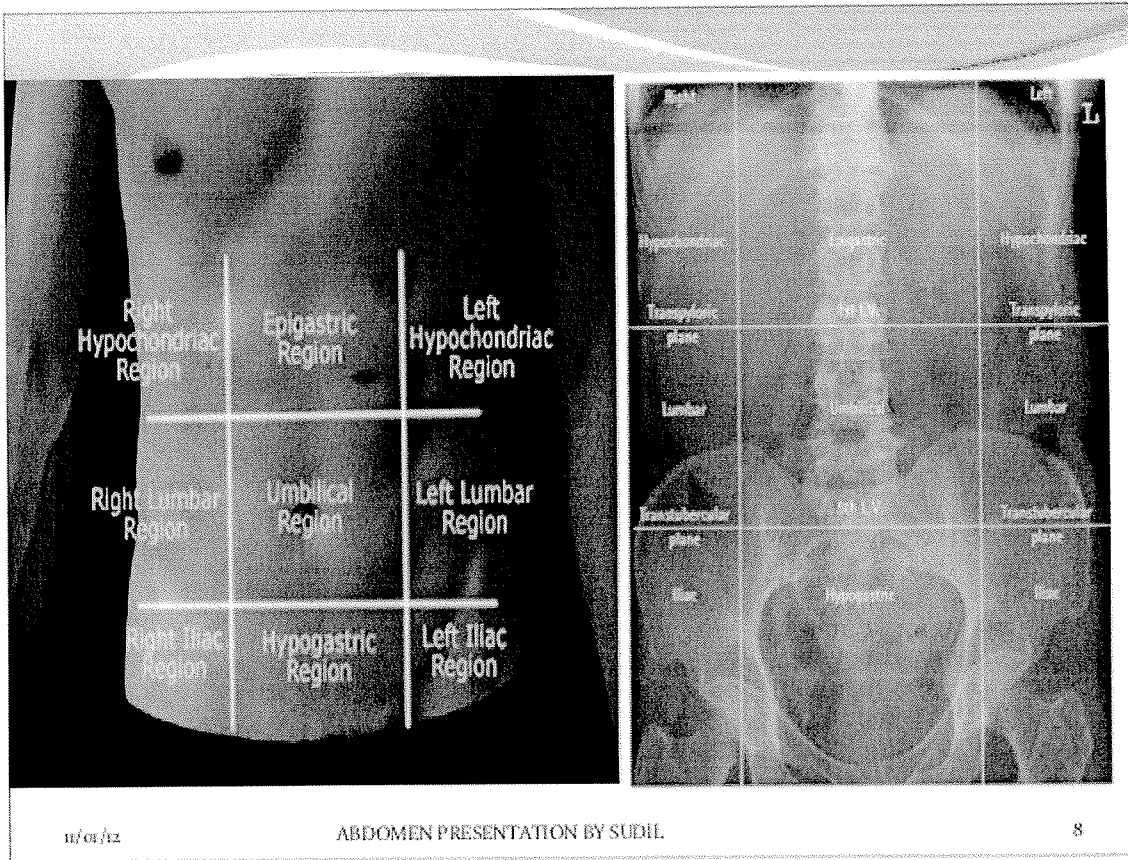


SUPINE  
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85

24 cm

INVERTOGRAM





VENUE:

LECTURE HALL:II

TIME : SAT 2 TO 4 PM.



**Sri Lakshmi Narayana Institute of Medical Sciences**

Date: 03.01.2018

From

Dr.JansiRani  
Professor and Head,  
Department of Biochemistry,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

To

The Dean,  
Sri Lakshmi Narayana Institute of Medical College  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Permission to conduct value-added course: Yoga and wellness**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: Yoga and wellness in Jan to Feb 2018. We solicit your kind permission for the same.

Kind Regards

Dr.JansiRani

---

**FOR THE USE OF DEANS OFFICE**

Names of Committee members for evaluating the course:

The Dean: *[Signature]*, Dr. Jayalakehmi

The HOD: Dr. Jansi Rani

The Expert: Dr. Santhoakumari

The committee has discussed about the course and is approved.

Dean

(Sign & Seal)

*[Signature]*  
Subject Expert

(Sign & Seal)

*[Signature]*  
HOD

(Sign & Seal)

Dr. G. JAYALAKSHMI, BSC., MBBS., DTCD., M.D.  
DEAN  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Ageram Kudapakkam, Post,  
Villanur Commune Puducherry-605 502.

DEPARTMENT OF BIOCHEMISTRY  
Sri Lakshmi Narayana Institute of Medical Sciences  
PONDICHERRY 605 502.

PROFESSOR & HOD  
DEPARTMENT OF BIOCHEMISTRY  
Sri Lakshmi Narayana Institute of Medical Sciences  
PONDICHERRY 605 502



OFFICE OF THE DEAN

# Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P -II ) dt. 11/07/2011 ]  
[ Affiliated to Bharath University, Chennai - TN ]

## Circular

04.01.2018

**Sub: Organising Value-added Course: Yoga and wellness. reg**

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research** is organizing “**Yoga and wellness**”. The course content form is enclosed below.

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution on or before Jan to Feb 2018. Applications received after the mentioned date shall not be entertained under any circumstances.

**Dean**

Dr. G. JAYALAKSHMI, BSC., MBBS  
DEAN  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Ageram Kudapakkam, Post,  
Villanur Commune Puducherry-605 502.

Encl: Copy of Course content

## VALUE ADDED COURSE

### 1. Name of the programme & Code

Yoga and wellness

### 2. Duration & Period

30 hrs & Jan to Feb 2018

### 3. Information Brochure and Course Content of Value Added Courses

*Enclosed as Annexure- I*

### 4. List of students enrolled

*Enclosed as Annexure- II*

### 5. Assessment procedures:

Assessment - *Enclosed as Annexure- III*

### 6. Certificate model

*Enclosed as Annexure- IV*

### 7. No. of times offered during the same year:

1, Jan to Feb 2018

### 8. Year of discontinuation: 2018


### 9. Summary report of each program year-wise


Value Added Course- January to February 2018					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	BIO-07	Yoga and wellness	Dr. JansiRani Dr.Santhosakumari	MBBS	20 students (Jan to Feb 2018)

### 10. Course Feed Back

*Enclosed as Annexure- V*

#### RESOURCE PERSON

1. Dr.JansiRani 

2. Dr.Santhosakumari 

  
COORDINATOR  
Dr.JansiRani

PROFESSOR & HOD  
DEPARTMENT OF BIOCHEMISTRY  
Sri Lakshmi Narayana Institute Of Medical Sciences  
BANGALORE - 560 077

## 1. Course Proposal

Course Title: **Yoga and wellness**

### Course Objective:

1. Overview of yoga and its benefits
2. How was yoga a part and parcel in the life of people's of yesteryears?
3. Yoga, a preventive curer – a future perspective

To sensitise the medical students about the importance of yoga in lending a helping hand to lead the really defined health and adopt it as a part of daily routine.

**Course Outcome: Gained knowledge on “ The YOGA ” – a path to defined health**

**Course Audience: MBBS students of 2017 Batch**

**Course Coordinator: Dr.Jansirani**

**Course Faculties with Qualification and Designation:**

**1.Dr.Jansirani, Professor & HOD**

**2.Dr.Santhosakumari, Assistant Professor**

**Course Curriculum/Topics with schedule (Min of 30 hours)**

SINo	Date	Topic	Time	Hours
1	20.1.2018	Introduction,background.objective	4-5PM	1
2	21.1.2018	Definition of yoga and definition of health	4-5PM	1
3	22.1.2018	History of yoga, including your specific discipline	4-6 PM	2
4	23.1.2018	Spiritual beliefs about yoga	4-6 PM	2
5	24.1.2018	Research into yoga and yoga postures	4-6 PM	2
6	25.1.2018	Common mistakes with specific postures	4-6 PM	2
7	26.1.2018	Age related information about yoga, such as the best yoga for teens or retirees	4-6 PM	2
8	27.1.2018	Calories burnt doing yoga	4-6 PM	2
9	28.1.2018	Information on other ways to improve healthy living	4-6 PM	2
10	29.1.2018	Psychological benefits of a regular yoga practice	4-6 PM	2
11	30.1.2018	Meditation and its types	4-6 PM	2
12	31.1.2018	Yoga and mental health	4-6 PM	2
13	1.2.2018	Four main paths of yoga	4-6 PM	2
14	2.2.2018	Yoga preparation/post-yoga nutrition	4-6 PM	2
15	3.2.2018	Is yoga a religion?	4-6 PM	2
16	4.2.2018	Yoga exercises - 1	4-6 PM	2
17	10.2.2018	Yoga exercises – 2	4-6 PM	2
18	11.2.2018	Yoga exercises – 3	4-6 PM	2
19	12.2.2018	Yoga exercises - 4	4-6 PM	2

		total		36
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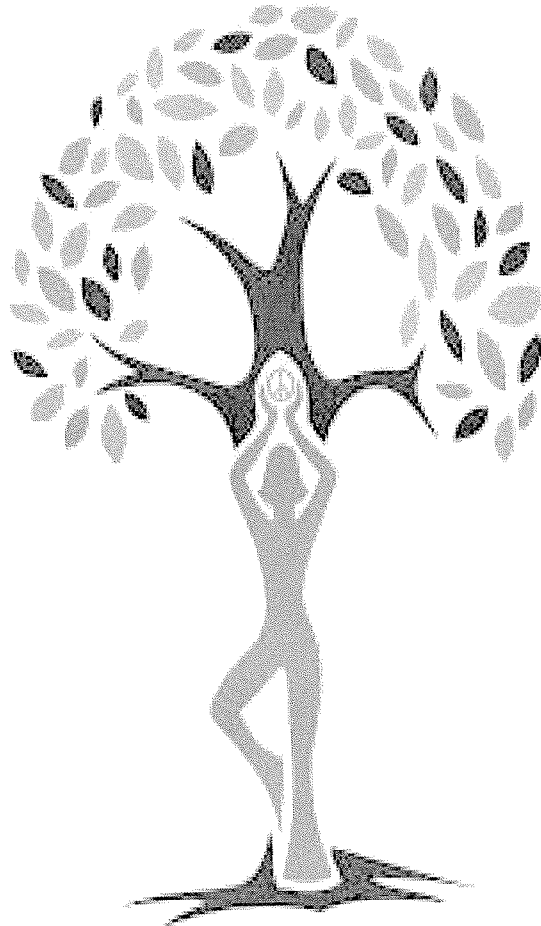
**REFERENCE BOOKS:**

1. Autobiography of yoga
2. Yogasana And Sadhana: Attain Spiritual Peace Through Meditation, Yoga and Asans
3. Internet

**YOGA**

**AND**

**WELLNESS**



**PARTICIPANT'S HANDBOOK**

## YOGA AND WELLNESS

Particulars	Description
Course Title	Yoga and wellness
Course Code	BIO – 07
Topics and content of the course in the Hand book	<ol style="list-style-type: none"> <li>1. Introduction</li> <li>2. Definition of yoga and definition of health</li> <li>3. History of yoga, including your specific discipline</li> <li>4. Spiritual beliefs about yoga</li> <li>5. Research into yoga and yoga postures</li> <li>6. Common mistakes with specific postures</li> <li>7. Age related information about yoga, such as the best yoga for teens or retirees</li> <li>8. Calories burnt doing yoga</li> <li>9. Information on other ways to improve healthy living</li> <li>10. Psychological benefits of a regular yoga practice</li> <li>11. Meditation and its types</li> <li>12. Yoga and mental health</li> <li>13. Four main paths of yoga</li> <li>14. Yoga preparation/post-yoga nutrition</li> <li>15. Is yoga a religion?</li> <li>16. Yoga exercises - 1</li> <li>17. Yoga exercises – 2</li> <li>18. Yoga exercises – 3</li> <li>19. Yoga exercises - 4</li> <li>20. Summary &amp; conclusion</li> </ol>
Advantages of learning and evaluation	<ul style="list-style-type: none"> <li>• Implementation of mental wellbeing among students</li> <li>• Guidance by trained personnel</li> <li>• Better problem handling awareness</li> <li>• Reduces stress</li> </ul>
Further learning Opportunities	<ol style="list-style-type: none"> <li>1. Competency based assessment can be done.</li> <li>2. Boost the self confidence of the students.</li> <li>3. As they are the lifelong learner, the foundation will be laid strong.</li> </ol>

	<p>4. As a responsible person committed to the society they know their roll and contribute to the society.</p> <p>5. Self satisfaction for the student as their performance is evaluated in a transparent method.</p> <p>6. Should be made a mandatory course among students.</p>
Key Competencies	<ul style="list-style-type: none"> <li>• Evaluation by questionnaire method and</li> </ul>
Target Student	I MBBS
Duration	36 hrs , Jan – Feb 2018
Theory Session	28 hrs
Practical Session	8 hrs
Assessment Procedure	Assessment Evaluation by MCQ

Sri Sri Ravi Shankar says, “Yoga is not just exercise and asanas. It is the emotional integration and spiritual elevation with a touch of mystic element, which gives you a glimpse of something beyond all imagination. Yoga creates a balance between the mind, spirit and body and is said to cure unending illnesses like insomnia, asthma, diabetes, hypertension etc

What is Yoga? Yoga literally means "union" and refers to the union of mind and body. Yoga is a holistic practice which emphasizes mind-body connectedness and

involves postures, breathing, and meditation. Yoga is a 5,000 year old practice that began in ancient India. It is receiving growing recognition by Western science and health professionals as a powerful tool for promoting mental and physical well-being. Essentially, yoga is a preventative and cost-effective approach to overall well-being. Yoga is not a religion. Although yoga sometimes interweaves philosophies such as Hinduism or Buddhism, it is not necessary to practice those philosophies in order to practice yoga. It is also not necessary to surrender your own religious beliefs to practice yoga.

Yoga and Psychological Well-Being By now, it's no secret that the regular practice of yoga results in many physical benefits such as improved flexibility, strength, and posture. However, the many psychological benefits of yoga are often overlooked.

### **Psychological benefits of a regular yoga practice:**

- Stress reduction
  - Increased self-awareness
  - Less anxiety and depression
  - Improved concentration
  - Inner peace and calm
  - More positive view of self/others
  - Increased body awareness and acceptance
  - Increased energy and vitality
- Heightened sense of control of one's body and mind
- Decline in self-destructive patterns
  - Improved self-confidence
  - Increased mental clarity
  - Improved reaction time

- Improved learning ability and memory
- Increased ability to be present in the moment
- Greater creativity
- Improved sleep
- Increased emotional stability

The benefits of yoga are intensely interwoven. **“Change your posture and you change the way you breathe. Change your breathing and you change your nervous system. This is one of the great lessons of yoga: Everything is connected...”**

~**Timothy McCall, M.D., author of Yoga as Medicine**

While there are many forms of yoga, the most popular form of yoga in Western culture is Hatha yoga which involves “the three basics of yoga” : postures (called “asanas” in Sanskrit), breathing techniques, and meditation.

**Postures (Asanas)** In yoga, the body is viewed as the outer manifestation of the mind, and the mind can be influenced by altering body posture. The way we carry ourselves influences the way we feel. If a person walks around with his chest collapsed, head down, eyes half open, it likely impossible for this person to feel good about himself. Your perspective on your body, your thoughts, and your whole sense of self can change when you adopt different postures.

Yoga postures strengthen, purify, and balance the endocrine, nervous, and circulatory systems. For example, inverted postures are useful for altering blood flow. Increased blood flow to the brain results in increased availability of oxygen and glucose. This leads to increased production of certain neurotransmitters, which in turn enhances one’s mood and state of well-being.

Yoga postures are a form of meditation in motion, calming the mind and cultivating a state of relaxed but alert concentration. The postures help to release built-up tension and emotional stress, which burrow into the muscles of the body. As the body relaxes, the breath naturally becomes balanced. When the breath comes into balance, the mind relaxes and becomes quiet.

Breathing Shallow breathing can create a state of arousal in the sympathetic nervous system, which can lead to anxiety, panic, and fear. Yoga breathing exercises decrease arousal, which in turn calms and focuses the mind, relaxes the body, oxygenates the blood, soothes anxiety and stress, and promotes clear thinking. The intense concentration and body control involved in breathing exercises help free the mind from mental distractions, worries, and fatigue.

## **Meditation**

Meditation is a type of inward concentration that allows you to focus on your senses, step back from your thoughts and feelings, and perceive each moment as a unique event. It helps us to develop greater calmness, clarity, and insight in facing and embracing life experiences.

### **Two types of meditation techniques:**

- Concentrative meditation uses a word (mantra), object (e.g., candle flame) or a sensation (e.g., breathing) to focus the mind. If your mind begins to drift, you refocus your attention on the word, object, or sensation.
- Mindfulness meditation involves allowing your thoughts, feelings, and images to float through your mind without reacting. In mindfulness, you are simply observing the thoughts and feelings in a detached perspective as "mental events" rather than as aspects of yourself or as necessarily accurate reflections of reality. Through practice, you become more skilled at stepping back and observing without reacting. Mindfulness meditation helps to cultivate a nonjudging selfacceptance, and helps us to recognize that we are not defined by our emotions.

## **Research on Yoga and Mental Health**

- Studies by Richard Davidson, PhD at the University of Wisconsin have found that the prefrontal cortex shows heightened activity in meditators, a finding that has been correlated with greater levels of happiness and better immune function.
- A 2001 study in the Indian Journal of Physiology and Pharmacology showed that participants who practiced yoga consistently for 10 months were less anxious and depressed both during and after their months of yoga practice.

- By improving circulation in the endocrine glands, a consistent yoga practice enhances the functions of hormones that play a primary role in the physiology of depression. This results in a reduction in depression and improved overall mood.
- Controlled studies have demonstrated the beneficial effects of yoga on anxiety states. Regular yoga practice improves functioning of the parasympathetic nervous system that activates the relaxation response.
- Scandinavian researchers measured brain waves before and after a two-hour yoga class and found that alpha waves (relaxation) and theta waves (unconscious memory, dreams, emotions) increased significantly. These results indicate that the brain is deeply relaxed after yoga and that participants have better awareness of their subconscious and emotions.

**“When you practice yoga.....your perspective on your body, your thoughts, and your whole sense of self can change...”**

**~ Jon Kabat-Zinn, Ph.D., internationally known meditation teacher and founder of the Stress Reduction Clinic at the University of Massachusetts Medical Center**

### **Recommendations and Precautions**

- Yoga is not a substitute for psychotherapy or medication. Rather, yoga is recommended as an adjunct to talk therapy or medication to facilitate the process of psychological healing.
- Consult your medical doctor or holistic health care professional (preferably one who is familiar with yoga) prior to performing yoga’s physical postures or beginning any new exercise program.
- Beginners should consider working with a certified yoga instructor to ensure yoga is practiced safely and correctly.

There are four main paths of Yoga: 1.Karma Yoga 2.Bhakti Yoga 3.Raja Yoga 4.Jnana Yoga Each is suited to a different temperament or approach to life. All the paths lead ultimately to the same destination - to union with Brahman or God.

### **KARMA YOGA**

## The Yoga of action

1. Karma Yoga is the Yoga of Action.
2. It is the path chosen primarily by those of an outgoing nature.
3. It purifies the heart by teaching you to act selflessly, without thought of gain or reward.
4. By detaching yourself from the fruits of your actions and offering them up to God, you learn to sublimate the ego

## **BHAKTI YOGA**

This path appeals particularly to those of an emotional nature. 2. The Bhakti Yogi is motivated chiefly by the power of love and sees God as the embodiment of love. 3. Through prayer, worship and ritual he surrenders himself to God, channelling and transmuting his emotions into unconditional love or devotion

## **JNANA YOGA** The Yoga of knowledge or wisdom

1. This is the most difficult path, requiring tremendous strength of will and intellect.
2. Taking the philosophy of Vedanta the Jnana Yogi uses his mind to inquire into its own nature.
3. We perceive the space inside and outside a glass as different, just as we see ourselves as separate from God

## **RAJA YOGA**

Often called the "royal road" it offers a comprehensive method for controlling the waves of thought by turning our mental and physical energy into spiritual energy. 2. Raja Yoga is also called Ashtanga Yoga referring to the eight limbs leading to absolute mental control. The chief practice of Raja Yoga is meditation

8 LIMBS OF RAJA YOGA 1. Yama means restraint and involves following characteristics such as ahimsa (compassion for all), satya (truthfulness), asteya (non-stealing) and brahmacharya (celibacy or regulated sex life) 2. Niyama means

observances and involves: hri (remorse), santosha (contentment), dana(giving alms), astikya (having faith in the guru), ishvarapujana (worshipping the Lord)

Asanas mean postures

4. Pranayama means controlled breathing
5. Pratyahara means withdrawal of senses.
6. Dharana means collection and concentration of the mind.
7. Dhyani means meditation. 8. Samadhi means absorption and is the state of consciousness induced by complete meditation.

It is of the most eclectic type of yoga that uses two basic principles of yoga; asanas and pranayam, to control the prana and chakras of a person to harmonize the body and uplift the mind

2. It aims to regulate a person with a greater level of consciousness
3. Silent affirmations are used in this form of yoga to reach higher awareness

### **ASHTANGA YOGA**

1. Ashtanga Yoga focuses on breathing while doing asanas
2. It involves calm breathing with a series of postures
3. The process produces a lot of sweat, generating heat which purifies organs, improves circulation and also calms the mind
4. Since a lot of muscle contraction is involved in Ashtanga yoga, its sessions always end with Savasana, also known as the corpse pose to loosen the muscles.

### **BIKRAM YOGA**

1. Bikram Yoga is named after Bikram Choudhary who founded this type of yoga. It contains 26 postures that the yogi Bikram selected from Hatha yoga
2. These postures work on every part of the body, rejuvenating every cell
3. Through the sweat, impurities inside the body are flushed out.

## **HATHA YOGA**

1. Hatha yoga was developed as a tool to help meditate
2. This yoga helps the body attain stillness that is involved in the process of meditation
3. This yoga aligns the muscles, skin and bones- specially the spine, so that the universal energy is allowed to flow freely
4. Hatha yoga is called a stress reducing exercise by many
5. Hatha yoga uses Viparita karani also called the reverser position, which involves standing upside down on the head, and using the force of gravity to keep the essence in the head.

## **IYENGAR YOGA**

1. Iyengar Yoga was developed by B K S Iyengar, who passed away recently.
2. Iyengar systematized 200 Yogaasanas and 14 different types of Pranayamas.
3. The asanas of Iyengar yoga allow the use of props to facilitate everyone to perform asanas without difficulty. The student is allowed to perform pranayama only when he has mastered the asanas.
4. The regular practise of asanas and pranayama helps an individual physiologically, mentally, physically and spiritually.

## **KUNDALINI YOGA**



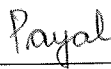

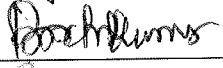


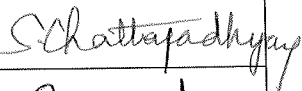
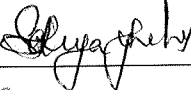


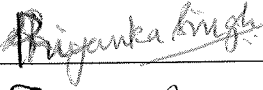
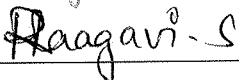
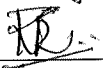






1. Kundalini Yoga was developed more than 50 million years ago in India
2. But it gained prominence in the west through Yogi Bhajan in 1969
3. Kundalini means coiled, and is said to be a power which is coiled up in the lower end of spine

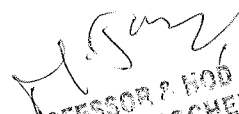
4. Once it is awakened, it empowers its practitioners with extraordinary perceptions and abilities 5. This is one of the different types of yoga that people do not know about, as it not as popular as the rest.

### **POWER YOGA**

1. Power Yoga is more a style yoga, modeled to attract westerners to the concept of yoga
2. Unlike yoga, power yoga doesn't adhere to poses, but is more like a workout. It doesn't involve chanting and meditation
3. Restorative yoga uses props to attain overall relaxation
4. There are many asanas for the overall body, but what is unique to restorative yoga is that some asanas are focused on specific organs of the body.

**STUDENT LIST**  
**DEPARTMENT OF BIOCHEMISTRY**

S.No	Reg No	Name	Signature
1	U17MB341	PANEM SAMIUNNU	
2	U17MB342	PARTHA PRATIM BARUAH	
3	U17MB343	PAYAL MOHITE	
4	U17MB344	POOJALAKSHMI.P	
5	U17MB345	PRACHI KUMARI	
6	U17MB366	SANORITA	
7	U17MB367	SANTOSHKUMAR NK	
8	U17MB368	SAPTARSHI CHATTOPADHYAY	
9	U17MB369	SATHIYA JAINAUB T.S.	
10	U17MB370	SHABAN OS	
11	U17MB352	PRIYANKA KUMARI	
12	U17MB353	PRIYANKA SINGH	
13	U17MB354	RAAGAVI .S	
14	U17MB355	RAHUL RAI	
15	U17MB356	RICHI SWARN	
16	U17MB335	NEHA KUMARI.B	
17	U17MB336	NIDHI SUNIL KRISHNAN	
18	U17MB337	NIJITH KRISHNADHAS RAHAEL	
19	U17MB338	NIKITA VERMA	
20	U17MB339	NILUTPAL DAS	

  
PROFESSOR P. NOD  
DEPARTMENT OF BIOCHEMISTRY  
Sri-Lakshmi Narayana Institute Of Medical Sciences  
#ONDICHERY 605 002

## ANNEXURE III

1. Which day is celebrated as 'International Day of Yoga'?

- (A) June 20
- ~~(B) June 21~~
- (C) June 22
- (D) June 23

2. Who compiled 'Yoga Sutra'?

- (A) Patanjali
- (B) Gheranda
- ~~(C) Svātmarama~~
- (D) None of the above

3. Which of the following is one of the Five Principles of Yoga by Sivanandi?

- (A) Savasana
- (B) Bhakti
- ~~(C) Jnana~~
- (D) Tantra

4. Every Yoga teacher must start the practice session with

- (A) Pranayama
- (B) Asana
- ~~(C) Kriya~~
- (D) Silence

5. What is the main therapeutic benefit of Kapālabhati practice?

- (A) to remove kapha disorders
- (B) to remove pitta disorders
- ~~(C) to remove vāta disorders~~
- (D) to remove vāta-pitta disorders

6. In which disease condition sutraneti is not beneficial according to Hatha Pradeepika?

ANNEXURE III

- (A) Eye related disorder
- (B) Kapāl Shuddhi
- (C) Diseases above the clavicle
- ~~(D) Hyper Acidity~~

**7. The stimulation of parasympathic nervous system causes:**

- ~~A. Increase in Heart rate~~
- B. Increase in Anxiety level
- C. Decrease in Heart rate
- D. Muscles relaxation

**8. The proximate principles of our food are**

- A. Proteins
- B. Minerals
- C. Fats
- ~~D. Vitamins~~

**9. Main Musculo Skeletal disorders are**

- A. Spondylosis
- B. Arthritis
- ~~C. Epilepsy~~
- D. Parkinson's disease

**10. How many limbs of Yoga are mentioned in Siddhasiddhant Paddhati'?**

- (A) 07
- ~~(B) 08~~
- (C) 04
- (D) 03

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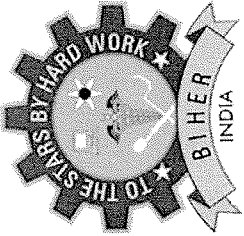
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(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

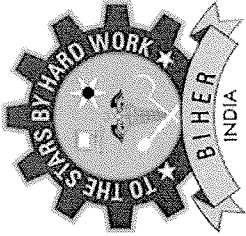
This is to certify that **SANORITA** has actively participated in the Value Added Course on **Yoga and wellness** held during Jan to Feb 2018 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

**Dr. Santhosakumari**

**RESOURCE PERSON**  
PROFESSOR & HOD  
DEPARTMENT OF BIOCHEMISTRY  
Sri Lakshmi Narayana Institute Of Medical Sciences  
PONDICHERY 605 502

**Dr. Jansirani**

**COORDINATOR**  
PROFESSOR & HOD  
DEPARTMENT OF BIOCHEMISTRY  
Sri Lakshmi Narayana Institute of Medical Sciences  
PONDICHERY 605 502



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research

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## CERTIFICATE OF MERIT

This is to certify that **PRIYANKA KUMARI** has actively participated in the Value

Added Course on **Yoga and wellness** held during Jan to Feb 2018 Organized by Sri Lakshmi

Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

**Dr. Santhosakumari**

**RESOURCE PERSON**

PROFESSOR, NCB

DEPARTMENT OF BIOCHEMISTRY

Sri Lakshmi Narayana Institute Of Medical Sciences

PONDICHERRY - 605 502

**Dr. Jansirani**

**COORDINATOR**

PROFESSOR & MOD  
DEPARTMENT OF BIOCHEMISTRY  
Sri Lakshmi Narayana Institute of Medical Sciences  
PONDICHERRY - 605 502

## Course feedback form

Course title:

Date: 31/1/18

Course code: BIO - 07

Department: Biochemistry

S.no	Design of the course	1	2	3	4	5
1	The objective of the course clear to you					✓
2	The course contents met with your expectations					✓
3	The lecture sequence were well planned					
4	The lectures were clear and easy to understand					✓
5	The audiovisual teaching aids were effectively used					
6	The instructor's encouraged interaction and was it helpful					✓
7	The contents were illustrated with examples					✓
8	Overall Rating of the course					✓

\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

  
Signature

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8	Overall Rating of the course				✓	

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Suggestions if any:

  
Signature

Date: 27.02.2018

From

Dr.Jansirani  
Professor and Head,  
Department of Biochemistry,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

Through Proper Channel

To

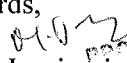
The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Completion of value-added course: Yoga and wellness**

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: Yoga and wellness from Jan to Feb 2018 for 20 students. We solicit your kind action to send certificates for the participants that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards,

  
Dr.Jansirani  
PROFESSOR & HOD  
DEPARTMENT OF BIOCHEMISTRY  
Sri Lakshmi Narayana Institute Of Medical Sciences  
PONDICHERRY 605 002

**Encl: Certificates**

**Photographs**



# Sri Lakshmi Narayana Institute of Medical Sciences

Osudu, Agaram Village, Kudapakkam post, Puducherry – 605 502

Department of Anatomy

Date:01.12.2017

From

Dr.Somashekar. I. Tolanur  
Professor and Head,  
Department of Anatomy,  
Sri Lakshmi Narayana Institute of Medical Sciences  
BIHER  
Puducherry

To

The Dean,  
Sri Lakshmi Narayana Institute of Medical sciences  
BIHER  
Puducherry

**Sub: Permission to conduct value-added course: Embalming techniques**

Dear sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: **Embalming techniques for 1<sup>st</sup>year MBBS students** in february2018. We solicit your kind permission for the same.

Kind Regards

Dr.Somashekar.I,Tolanur  
PROF & HOD OF ANATOMY  
SRI LAKSHMI NARAYANA INSTITUTE OF  
MEDICAL SCIENCES  
Osudu Agaram Village, Kudapakkam post, Puducherry - 605 502

**FOR THE USE OF DEANS OFFICE**

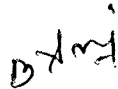
Names of Committee members for evaluating the course:

The Dean: **Dr. Jayalakshmi. G**

The HOD: **Dr. Somashekar. I. Tolanur**

The Expert: **Dr. Anitha. B**

The committee has discussed about the course and is approved.



Dean

Subject Expert



HOD

Dr. G. JAYALAKSHMI B.S. M.B.B.S. D.M.D. (D) FRCR  
DEAN  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
Agaram, Agaram, Kumbakonam Dist  
Villupuram, Tamil Nadu - 613 001

PROF & HOD OF ANATOMY  
SRI LAKSHMI NARAYANA INSTITUTE OF  
MEDICAL SCIENCES  
Villupuram, Agaram Village, Pondicherry-605 001



OFFICE OF THE DEAN

## Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,

PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P-II ) dt. 11/07/2011 ]

[ Affiliated to Bharath University, Chennai - TN ]

### Circular

08.01.2018

#### **Sub: Organising Value-added Course on Embalming techniques . reg**

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, Puducherry affiliated by Bharath Institute of Higher Education and Research is organizing a value added course on “**Embalming techniques**” during February 2018 for 1<sup>st</sup> year MBBS students( 2017-2018). The course content for the same is enclosed below.”

**Dean**

**(Dr. A.Sugumaran)**

DEAN  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
OSUDU, AGARAM VILLAGE,  
KUDAPAKKAM POST,  
PUDUCHERRY - 605 502

Encl: Copy of Course content

## COURSE CONTENT

Particulars	Description
Course Title	Embalming techniques
Course Code	ANA07
Topics and content of the course in the Hand book	<ol style="list-style-type: none"> <li>1. Origin and history of Embalming</li> <li>2. Anatomy act for claiming the body</li> <li>3. Embalming requirements</li> <li>4. Embalming fluids</li> <li>5. Methods of embalming</li> <li>6. Types of embalming</li> <li>7. Precautions taken during embalming</li> </ol>
Advantages of learning and evaluation	<p>Knowledge of embalming</p> <p>Acquire skill in embalming</p>
Further learning Opportunities	Advanced techniques in Embalming
Key Competencies	On successful completion of the course the students will have the knowledge to do embalming
Target Student	1 <sup>st</sup> MBBS
Duration	30 hours February – March 2018
Theory Session	20hrs
Practical Session	10hrs
Assessment Procedure	Short answer questions

# COURSE PROPOSAL

## Course Title:

Embalming techniques

## Course Objective:

1. Definition of embalming
2. Various methods of embalming
3. Ethical considerations during embalming

## Course Outcome:

Knowledge in the field of embalming

**Course Audience:** 1<sup>st</sup> year MBBS

**Course Coordinator:** Dr.Somashekar.I.Tolanur

## Course Faculties with Qualification and Designation:

- 1.Dr. Anitha. B, MD Anatomy, Assistant professor
- 2.Dr. B. Rajesh, Msc ph.d , Professor Anatomy,
- 3.Dr. Santhini.s, MD Anatomy, Assistant professor,

## Course Curriculum/Topics with schedule (Min of 30 hours)

S.No	Date	Topic	Name of the faculty	Time	Hours
1.	03.02.2018	Origin and history of embalming	Dr. Anitha.B	2- 5 pm	3 hours
2.	04.02.2018	Anatomy act for claiming the body	Dr. Anitha.B	10- 1pm	3 hours
3.	10.02.2018	Embalming requirements	Dr. B. Rajesh	2-5 pm	3 hours
4.	11.02.2018	Demonstration	Dr. B.Rajesh	10-1 pm	3 hours
5.	17.02.2018	Embalming fluids	Dr. Shanthini.S	2-5 pm	3 hours
6.	18.02.2018	Practicals	Dr. Shanthini.S	10-1 pm	3 hours
7.	24.02.2018	Methods of embalming	Dr. Anitha.B	2-3 pm	1 hour
8.	24.02.2018	Demonstration of methods of embalming	Dr.Anitha.B	3- 5 pm	2 hours
9.	03.03.2018	Types of embalming	Dr. B.Rajesh	2-3 pm	1 hour
10.	03.03.2018	Practicals	Dr. B. Rajesh	3-5 pm	2 hours
11.	10.03.2018	Phases of embalming	Dr. Anitha.B	2- 3 pm	1 hour
12.	10.03.2018	Precautions during embalming	Dr. Shanthini.S	3-5 pm	2 hour
13.	17.03.2018	Advanced techniques	Dr. Anitha.B	2- 5 pm	3 hours
		<b>Total</b>			30 hrs

## REFERENCE BOOKS:

1. ML. Ajmani , principles and legal aspects of embalming
2. Handbook of histopathological and histochemical techniques

## VALUE ADDED COURSE

### 1. Name of the programme & Code

Embalming techniques

### 2. Duration & Period

30 hrs & February – March 2018

### 3. Information Brochure and Course Content of Value Added Courses

*Enclosed as Annexure- I*

### 4. List of students enrolled

*Enclosed as Annexure- II*

### 5. Assessment procedures:

Short answer question - *Enclosed as Annexure- III*

### 6. Certificate model

*Enclosed as Annexure- IV*

### 7. No. of times offered during the same year:

1 time , February-March2018

### 8. Year of discontinuation: 2019

### 9. Summary report of each program year-wise


Value Added Course- February- March 2018					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	ANA07	Embalming techniques	Dr.Anitha. B Dr. B.Rajesh Dr. Shanthini.S	1 <sup>st</sup> MBBS	20 students February- March2018

### 10. Course Feed Back

*Enclosed as Annexure- V*

#### RESOURCE PERSON,

1. Dr. Anitha.B 

2. Dr. B. Rajesh 

3. Dr. Shanthini.S 

#### COORDINATOR



Dr. Somashekar.I. Tolanur

PROF & HOD OF ANATOMY  
SRI LAKSHMI NARAYANA INSTITUTE OF  
MEDICAL SCIENCES  
Usudu Agaram Village, Pondicherry-605 502

# EMBALMING TECHNIQUES



**PARTICIPANT HAND BOOK**

***Annexure- I***  
**COURSE DETAILS**

<b>Particulars</b>	<b>Description</b>
Course Title	Embalming techniques
Course Code	ANA07
Topics and content of the course in the Hand book	<ol style="list-style-type: none"> <li>1. Origin and history of Embalming</li> <li>2. Anatomy act for claiming the body</li> <li>3. Embalming requirements</li> <li>4. Embalming fluids</li> <li>5. Methods of embalming</li> <li>6. Types of embalming</li> <li>7. Precautions taken during embalming</li> </ol>
Advantages of learning and evaluation	<p>Gain in depth knowledge in embalming Improve the surgical skill</p>
Further learning Opportunities	Advanced techniques in Embalming
Key Competencies	On successful completion of the course the students will have the knowledge about preservation of human body
Target Student	1 <sup>st</sup> MBBS Students

Duration	30hrs
Theory Session	20 hrs
Practical Session	10hrs
Assessment Procedure	Short answer questions

Embalming is defined as “The process of chemically treating the dead human body to reduce the presence and growth of microorganisms, to retard organic decomposition and to restore an acceptable physical appearance.”

*-American Board of Funeral Service Education*

### **Origin and history of Embalming**

Embalming, one of humankind’s longest practiced arts, is a means of artificially preserving the dead human body. Embalming originated in Egypt, it is estimated that it was begun about 3200 BC and continued on until AD 650. According to Egyptian belief preservation of human body was necessary requirement for resurrection. During these 4000 years the embalming techniques had undergone number of variations.

The Egyptian restorative art is extraordinarily done. They restore facial features and also the entire bodily contours. They internally packed the mouth with saw dust to pad out the cheeks. The eyelids were stuffed with linen pads. Then in the abdomen they made the incisions by burrowing under the skin and the packing materials was forced into these channels. For back and limbs separate incisions were made and packed. The packing material most commonly used were resin, linen bandages, mud, sand, saw dust and butter mixed with soda. After the complete covering of the body with a paste of resin and fat the bandages were applied. The bandages varied from 3- 9 inches width and upto 1200 yards in

length. The wrapped mummies were encased and placed in boxes or coffins. Coffins shaped like the human form termed as anthropoid or mummiform. This method was followed for 100 of years till the period of anatomy

A clear trend is emerging from the history of anatomy, whereby use of the bodies of criminals morphed into illegal grave robbing, and this in turn morphed into legal use of unclaimed bodies

### **Anatomy act for claiming the bodies**

Body donation which is requested by a person (himself before death or near relative), carried out by embalmer and bound by a law known as Anatomy Act.

An Act to provide for the supply of unclaimed bodies of deceased and for Donation before death by a person of his body or any part thereof after his death to hospital and medical and teaching institution for therapeutic purpose or for the purpose of medical education or research including anatomical examinations and dissection.

unclaimed body may come to the institution from various source like government hospital, prison, other than government hospital and public place. This will come to the notification of officer incharge , authorized officer and incharge of the institution . When it reached the institution the medical record department intimate to police station. The medical superintendent prepare an advertisement and a passport size photo is taken. Then an advertisement will be given in a newspaper by an authorized officer. They will wait for 7 days. If a relative come to claim the body with proof after thorough investigation the body will be handover to the claimant. If there is no response the body handed over to incharge of the institution. And body will be handover to Anatomy department. If there is doubt regarding cause of death authorized officer takes possession of unclaimed body and request for inquest to the police officer. If any doubt

regarding the person claiming the body as near relative authorized officer should take care of preserving the body, case referred top executive magistrate and the final decision should be made within 2 days.

<b>Certificate of Embalming</b>	
This is to certify that the dead body of late ----- S/D/W of Mr. -----	Dated-----
an/a ----- national , brought to this Department from -----	
where he/ she had died, having been duly embalmed by me and in present condition, it is not a hazard to public health.	
The body after embalming has been handed over to the claimants, who brought it to this department	
Received back the embalmed body	
of late -----	
And 3/5* copies of this certificate	
Signature of the claimant	
With his/her full address	
	Signature of the Faculty Member Official seal
*3 for local transportation / 5 for international transit	

## **Embalming requirements**

For a proper embalming following requirements are needed

Two embalming rooms, a preparation room, a changing room, post embalming room, a waiting room.

### Embalming room

Two in number

Ground floor

At rear of premises

180\*320 square feet

Adequate space

Running water

Well ventilated

Good light

Electrical outlet

Multiple drains



Equipments and furniture for embalming room

Embalming table

2 collecting buckets

Waste container

First aid kit

Surgical instruments

Instrument trolley

Syringes

Forceps- hemostat, dressing

Scissors- curved, straight

Suture needle

Embalming machine

## **Embalming fluids**

Embalming chemicals and fluids should have the following fundamental properties

- 1) Ensure that there is no risk or fear of infection on contact with dead body
- 2) Produce without mutilation, a natural colour and effect on the body, so that a life- like appearance is produced.
- 3) Ensure preservation of the body and the prevention of putrefaction changes
- 4) Prevent contamination with insects and maggots

The embalming fluid consists of following chemicals

- 1) Preservatives
- 2) Germicides
- 3) Buffers
- 4) Wetting agents
- 5) Anticoagulants
- 6) Dyes
- 7) Vehicle
- 8) Perfuming agents

These groups of chemicals are combined in various proportion to produce the arterial, cavity and preinjection fluids.

The following fluids are normally prepared in the practice of embalming.

- 1) Arterial fluid
- 2) Cavity fluid
- 3) Pre injection fluid

Following are the commonly used vessels for embalming

Common carotid artery and internal jugular vein , femoral artery and vein , axillary artery and vein, brachial artery and vein, radial artery

## Incisions

2 types of incision used for embalming .

- 1) Transverse or oblique
- 2) “T” shaped incision or wedge shaped

## Novel techniques

### Plastination



Plastination is invented in the year 1978 in Heidelberg, Germany. The Inventor of this technique is Prof. Gunther Von Hagens . In 1978 they used silicone, in 1980 epoxy and in 1981 polyster were used.

### Thiele's soft fix

It was developed in 1992 by Prof W. Thiel, Institute of Anatomy, Karl Franzens University, Graz, Austria. It is a low-odour embalming technique. In this colour, consistency and transparency of the tissue were very well preserved. Superb flexibility –comparable with fresh tissue.



BIHER

SLIMS

**VALUE ADDED COURSE**  
**Embalming techniques and ANA07**

**List of Students Enrolled – February – March 2018**

1 <sup>st</sup> Year MBBS Student			
Sl. No	Name of the Student	Roll No	Signature
1	AANNIE SHERLINE RAJAM.L	U17MB251	<i>Aannie Sherline</i>
2	AARTHISEKAR . D	U17MB252	<i>Aarthisekar</i>
3	AARYA R BABU	U17MB253	<i>Aarya Babu</i>
4	ABHIJITH.K	U17MB254	<i>Abhiyith</i>
5	ABHISHEIK.J	U17MB255	<i>J. Abhishek</i>
6	ABHISHEK KUMAR VISHWAKARMA	U17MB256	<i>Vishwakarma</i>
7	ADITYA RAI	U17MB257	<i>Aditya Rai</i>
8	ADWIZA RAI	U17MB258	<i>Adwiza Rai</i>
9	AFZAN.M	U17MB259	<i>Afzan M</i>
10	AGARWAL RIDHAM RAJESHBHAI	U17MB260	<i>Agarwal Ridham</i>
11	AISWARYA.S.NAIR	U17MB261	<i>Aiswarya Naik</i>
12	AKANKSHA CHOURASIA	U17MB262	<i>Akanksha</i>
13	AKASH KELOTH	U17MB263	<i>Akash Keloth</i>
14	ALLUVALA ABHILASH	U17MB264	<i>Alluvala Abhilash</i>
15	AMIRTHA RAJENDRA SUVETHAN D	U17MB265	<i>Amirtha Rajendran</i>
16	ANBUMANI PARYMOHAN	U17MB266	<i>Anbumani Pary</i>
17	ANIKET SINHA	U17MB267	<i>Aniket Sinha</i>
18	ANJALI GORAI	U17MB268	<i>Anjali Gorai</i>
19	ANJU RAJ	U17MB269	<i>Anju Raj</i>
20	ANJU RAMESH K.V.	U17MB270	<i>K.V. Anju</i>

**RESOURCE PERSON**1. Dr. Anitha.B *Anitha B*2. Dr. B. Rajes *B. Rajes*3. Dr. Shanthini *Shanthini***COORDINATOR**

Dr. Somashekar.I.Tolanur

*Somashekar*  
**PROF & HOD OF ANATOMY**  
**SRI LAKSHMI NARAYANA INSTITUTE OF**  
**MEDICAL SCIENCES**  
Village, Aadram Village, Pondicherry-605 002



SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH

Annexure - III

VALUE ADDED COURSES

EMBALMING TECHNIQUES

Short answer questions

Course code:ANA07

Answer all the questions

(10x2 = 20)

1. Define Embalming
2. Discuss the methods of Embalming
3. Mention the blood vessels used during embalming procedure
4. Anatomy act for claiming the body
5. Types of Embalming
6. Embalming fluids
7. Embalming in HIV infected body
8. History of Embalming
9. Embalming requirements
10. Newer Techniques of Embalming

19/20

Anju Ramakr KV

U17MB270

Value Added course

Embalming Techniques

Course code  
ARA07

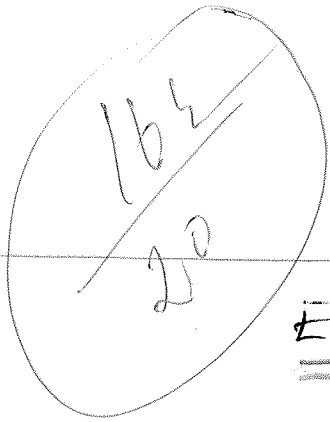
Short Answer Questions

1. Embalming:

Embalming is defined as "the process of chemically treating the dead human body to reduce the presence and growth of microorganism, to retard organic decomposition and to restore an acceptable physical appearance."

2. Methods of embalming

Arterial embalming → Arterial blood is injected into selected artery. After injecting into the artery blood is drained from suitable vein. Blood is also distributed from arch of aorta. After this fluid passes through capillaries and enters tissue spaces.



Value Added Course  
Embalming Techniques

Short Notes

1. Embalming

Embalming is defined as "The process of Chemically treating the dead human body to reduce the presence and growth of micro organism to retard Organic decomposition and to restore an acceptable Physical appearance."

2. Blood vessels used during Embalming

Common carotid artery, femoral artery, femoral vein, Internal jugular vein, Axillary artery and vein, Brachial artery and vein, Radial artery are the arteries commonly used.

## Student Feedback Form

Course Name: Embalming techniques

Subject Code: ANA07

Name of Student: Aarthisekar .D Roll No.: U17MB252

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear				✓	
2	Course contents met with your expectations				✓	
3	Lecturer sequence was well planned				✓	
4	Lectures were clear and easy to understand				✓	
5	Teaching aids were effective				✓	
6	Instructors encourage interaction and were helpful				✓	
7	The level of the course				✓	
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

—

Date: 17.03.2018

*Aarthisekar*

Signature

## Student Feedback Form

Course Name: Embalming techniques

Subject Code: ANA07

Name of Student: Arya Babu .R Roll No.: U17MB 253

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					✓
2	Course contents met with your expectations					✓
3	Lecturer sequence was well planned					✓
4	Lectures were clear and easy to understand					✓
5	Teaching aids were effective					✓
6	Instructors encourage interaction and were helpful					✓
7	The level of the course					✓
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

—

Date: 17.3.2018

*Arya*  
Signature

Date: 20.03.2018

From

Dr. Somashekar.I. Tholanur  
Professor and Head,  
Department of Anatomy,  
Sri Lakshmi Narayana Institute of Medical Sciences  
BIHER  
Puducherry

To

The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences  
BIHER  
Puducherry

**Sub: Completion of value-added course: Embalming techniques**

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: : Embalming techniques held in February 2018 for 1<sup>st</sup> year MBBS Students . We solicit your kind action to send certificates for the participants, whose list is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards,



**Encl: Participants list**

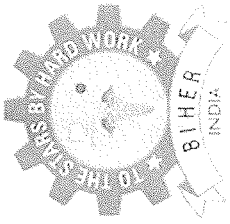
**Photographs**

Dr. Somashekar.I.Tholanur  
**PROF & HOD OF ANATOMY**  
SRI LAKSHMI NARAYANA INSTITUTE OF  
MEDICAL SCIENCES  
Vendur Annam Village, Pondicherry, 605 007

**VALUE ADDED COURSE**  
**EMBALMING TECHNIQUES**  
**PARTICIPANTS LIST**

Sl. No	Name of the Student	Roll No
1	AANNIE SHERLINE RAJAM.L	U17MB251
2	AARTHISEKAR . D	U17MB252
3	AARYA R BABU	U17MB253
4	ABHIJITH.K	U17MB254
5	ABHISHEIK.J	U17MB255
6	ABHISHEK KUMAR VISHWAKARMA	U17MB256
7	ADITYA RAI	U17MB257
8	ADWIZA RAI	U17MB258
9	AFZAN.M	U17MB259
10	AGARWAL RIDHAM RAJESHBHAI	U17MB260
11	AISWARYA.S.NAIR	U17MB261
12	AKANKSHA CHOURASIA	U17MB262
13	AKASH KELOTH	U17MB263
14	ALLUVALA ABHILASH	U17MB264
15	AMIRTHA RAJENDRA SUVETHAN D	U17MB265
16	ANBUMANI PARYMOHAN	U17MB266
17	ANIKET SINHA	U17MB267
18	ANJALI GORAI	U17MB268
19	ANJU RAJ	U17MB269
20	ANJU RAMESH K.V.	U17MB270





# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research

(Approved to be a University under section 12 of the UGC Act, 1956)



## CERTIFICATE OF MERIT

This is to certify that ADITYA RAI has actively participated in the Value Added Course on Embalming Techniques during February – march 2018 Organized by Department of Anatomy, Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

*g Anitha*

(Dr. Anitha. B)

RESOURCE PERSON

*B. Rajesh*

(Dr. B. Rajesh)

RESOURCE PERSON

*Shanthini S*

(Dr. Shanthini.S)

RESOURCE PERSON

*Somashekar I. Tolanur*

(Dr. Somashekar.I.Tolanur)

COORDINATOR

*Sugumar*

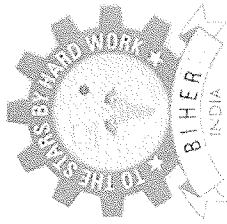
(Dr. A. Sugumar)

DEAN

DEAN

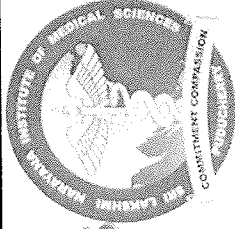
PROF & HOD OF ANATOMY, SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
OSUDU, AGARAM VILLAGE,  
KODAKKAM POST,  
MEDICAL SCIENCES,  
PUDUCHERRY - 605 502

11/03/2018  
Kodakkam Village, Pondicherry-605 502



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
Recognized by University Grants Commission (UGC) Act 1956



## CERTIFICATE OF MERIT

This is to certify that ABHIJITH.K has actively participated in the Value Added Course on Embalming Techniques during February – march 2018 Organized by Department of Anatomy, Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

*B Anitha*

Dr. Anitha. B

RESOURCE PERSON

*B. Rajesh*

Dr. B. Rajesh

RESOURCE PERSON

*Dr. Somashekar.I.Tolanur*

Dr. Somashekar.I.Tolanur

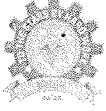
COORDINATOR

*Dr. A.Sugumaran*

Dr. A.Sugumaran

DEAN

DEAN  
PROF & HOD OF ANATOMY SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
OSUDU, AGARAM VILLAGE,  
KODAKKAM POST,  
MEDICAL SCIENCES  
PUDUCHERRY - 605 502  
Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry



**Sri Lakshmi Narayana Institute of Medical Sciences**

**Annexure 1**

Date 18/12/2017

From  
Prof.D.Baba, MS  
Professor and Head,  
Ophthalmology,  
Sri Lakshmi Narayana Institute Of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

To  
The Dean,  
Sri Lakshmi Narayana Institute Of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Permission to conduct value-added course: PENETRATING KERATOPLASTY**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: PENETRATING KERATOPLASTY on JAN-2018 – APR -2018. We solicit your kind permission for the same.

Kind Regards

PROF.D.BABA, MS  
HOD, OPHTHALMOLOGY

---

**FOR THE USE OF DEANS OFFICE**

Names of Committee members for evaluating the course:

The Dean: Prof.K.Balagurunathan, M.S,

The HOD: Prof.D.Baba M.S,

The Expert: Dr.Muthukrishnan DNB,M.S,

The committee has discussed about the course and is approved.

DEAN

Prof.K.BALAGURUNATHAN M.S  
(General surgeon)  
SRI LAKSHMI NARAYANA  
INSTITUTE OF MEDICAL SCIENCES  
OSUDU, PONDICHERRY

Subject Expert

PROFESSOR & HOD  
DEPARTMENT OF OPHTHALMOLOGY,  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
PUDUCHERRY-605 502.



OFFICE OF THE DEAN

# Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P -II ) dt. 11/07/2011 ]  
[ Affiliated to Bharath University, Chennai - TN ]

**Ref. No. SLIMS/Dean Off/VAC / OPH09**

**Date: 18.12.2017**

**From**

The Dean  
Sri Lakshmi Narayana Institute of Medical sciences,  
Pondicherry – 605502

**To**

The Registrar,  
Bharath Institute of Higher Education and Research,  
Chennai - 600073.

Respected Sir

**Sub:** Request for permission and approval of Syllabus for certificate course (Value Added course) for the academic year 2017-2018 - Reg  
**Ref:** Requesting letter received from Departments

\*\*\*\*\*

With reference to the above, herewith forwarding the proposed list of Value-added courses for necessary permission and approval of syllabus to conduct the same.

1. PENETRATING KERATOPLASTY
2. RETINOBLASTOMA

This is for your kind information and needful action.

Thanking you

Yours faithfully

[DEAN]

DEAN  
Prof.K.BALAGURUNATHAN M.S  
(General surgeon)  
SRI LAKSHMI NARAYANA  
INSTITUTE OF MEDICAL SCIENCES  
OSUDU PONDICHERRY

**Encl's:**

1. Requesting letter received from department
2. Syllabus of the course
3. Details of faculty handling course

**Sri Lakshmi Narayana Institute of Medical Sciences,  
Puducherry**

**VALUE ADDED COURSE –**

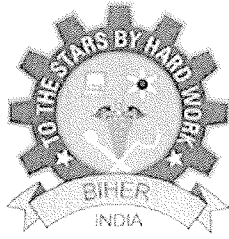
1. PENETRATING KERATOPLASTY
2. RETINOBLASTOMA

**COURSE CO-ORDINATOR DETAILS**

**Faculty Name:** Prof.D.Baba, MS

**Email ID:** ophthalmologyprof@gmail.com

**Mobile number:** 8585485988



# Bharath

INSTITUTE OF HIGHER EDUCATION AND RESEARCH  
(Declared as Deemed - to - be - University under section 3 of UGC Act 1956)

**Ref. No. BHIER/ VAC / OPH09**

**Date: 20.12.2017**

**From**

The Registrar,  
Bharath Institute of Higher Education and Research,  
Chennai - 600073.

**To**

The Dean  
Sri Lakshmi Narayana Institute of Medical sciences,  
Pondicherry – 605502

Sir / Madam,

**Sub:** Approval of Syllabus to conduct certificate course (Value Added course) for the academic year 2017-2018 – Reg.

**Ref:** Ref. No. SLIMS/Dean Off/VAC /OPH09 Dated: 18.12.2017

\*\*\*\*\*

With reference to the above, it is to inform that the proposal submitted to conduct Value Added Course has been accepted and approved by BIHER, council meeting. List of the VAC are mentioned below for the academic year 2017– 2018. The abstract of the VAC course completion detail should be submitted to the Registrar office.

1. PENETRATING KERATOPLASTY
2. RETINOBLASTOMA

Thanking you

Yours faithfully



REGISTRAR



OFFICE OF THE DEAN

**Sri Lakshmi Narayana Institute of Medical Sciences**

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P -II ) dt. 11/07/2011 ]  
[ Affiliated to Bharath University, Chennai - TN ]

**Circular**

21.12.2017

**Sub: Organising Value-added Course: PENETRATING KERATOPLASTY**

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research** is organizing **"PENETRATING KERATOPLASTY"**. The course content and registration form is enclosed below."

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before 30<sup>TH</sup> DEC 2017. Applications received after the mentioned date shall not be entertained under any circumstances.

**Dean**

**DEAN**

Prof.K.BALAGURUNATHAN,M.S  
(General surgeon)  
SRI LAKSHMI NARAYANA  
INSTITUTE OF MEDICAL SCIENCES  
OSUDU PONDICHERRY

Encl: Copy of Course content

## VALUE ADDED COURSE

**1. Name of the programme & Code**

Penetrating Keratoplasty

**2. Duration & Period**

30 hrs & Jan -2018 – Apr -2018

**3. Information Brochure and Course Content of Value Added Courses**

*Enclosed as Annexure- I*

**4. List of students enrolled**

*Enclosed as Annexure- II*

**5. Assessment procedures:**

Multiple choice questions- *Enclosed as Annexure- III*

**6. Certificate model**

*Enclosed as Annexure- IV*

**7. No. of times offered during the same year:**

Jan -2018 – Apr -2018 (1)


**8. Year of discontinuation: 2018**

**9. Summary report of each program year-wise**

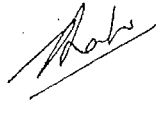
Value Added Course- Jan -2018 – Apr -2018					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	OPH09	Penetrating Keratoplasty	Dr.Muthukrishnan DNB, M.S,	30	2017

**10. Course Feed Back**

*Enclosed as Annexure- V*

  
Dr.Muthukrishnan, DNB, M.S,  
(Asst.Prof)

**RESOURCE PERSON**

  
**Prof. D. Baba, M.S,- HOD  
COORDINATOR**

**PROFESSOR & HOD**  
DEPARTMENT OF OPHTHALMOLOGY,  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
PUDUCHERRY-605 502.

## Annexure 2 – Course Proposal

**Course Title: PENETRATING KERATOPLASTY**

**Course Objective:**

1. Definition of keratoplasty
2. Types of keratoplasty
3. Donor graft preparation
4. Host bed trephination
5. Interrupted & continuous sutures
6. Eye banks and their uses
7. Enucleation of cornea harvesting
8. Storage media

**Course Outcome:** On successful completion of the course the students will be able to understand penetrating keratoplasty, its indications, method of performing the same and follow up in the post operative period.

**Course Audience: MBBS UNDERGRADUATES**

**Course Coordinator: PROF.D.BABA, MS,**

**Course Faculties with Qualification and Designation:**

1. Prof.D.Baba, MS, - HOD Ophthalmology
2. Dr.Muthukrishnan, DNB, M.S,

**Course Curriculum/Topics with schedule (Min of 30 hours)**

SINo	Date	Topic	Time	Hours
1.	10/2/2018	<b>Definition of keratoplasty</b>	4-6PM	2
2.	15/2/2018	<b>Types of keratoplasty</b>	4-7PM	3
3.	22/2/2018	<b>Types of keratoplasty</b>	4-6PM	3
4.	25/2/2018	<b>Donor graft preparation</b>	4-6PM	2
5.	26/2/2018	<b>Donor graft preparation</b>	4-7PM	3
6.	10/3/2018	<b>Host bed trephination</b>	4-7PM	3
7.	13/3/2018	<b>Host bed trephination</b>	4-7PM	3
8.	15/3/2018	<b>Interrupted &amp; continuous sutures</b>	4-6PM	2
9.	17/3/2018	<b>Eye banks and their uses</b>	4-6PM	2
10.	20/3/2018	<b>Eye banks and their uses</b>	4-7PM	3
11.	21/3/2018	<b>Enucleation of cornea harvesting</b>	4-6PM	2

12.	25/3/2018	<b>Storage media</b>	4-6PM	2
			TOTAL HOURS	30

**REFERENCE BOOKS: (Minimum 2)**

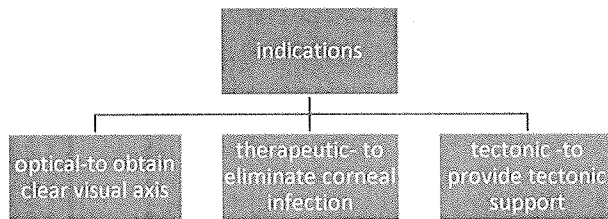
1. JACK J KANSKI clinical ophthalmology a systemic approach-6<sup>th</sup> edition.
2. PARSON'S Diseases of the eye – 19<sup>th</sup> edition

# PENETRATING KERATOPLASTY

Penetrating keratoplasty is the surgical removal of diseased or scarred cornea from the host and replaced with full thickness cornea from the donor.

- von Hippel, in 1886, was the first person to successfully perform a lamellar corneal graft in a human

## INDICATIONS



### Optical indications

1. Pseudophakic or apakic bullous keratopathy
2. Primary corneal endotheliopathies- Fuchs,CHED,PPD
3. Corneal ectasias- keratoconus, keratoglobus
4. Congenital corneal opacities- peters anomaly
5. Acquired corneal scars- post traumatic, post infectious, post viral keratitis
6. Failed grafts corneal dystrophies- macular corneal dystrophy, schnyder crystalline dystrophy if vision deteriorates

### Therapeutic indications

- Non healing infectious keratitis
- Infectious keratitis with perforation
- Post chemical injury with corneal melt

### Tectonic indications

- To reconstruct ocular surface in case of corneal perforations
- Or strengthen the cornea in cases of corneal melts in corneal thinning

## **CONTRAINDICATIONS FOR THE USE OF DONOR TISSUE FOR KERATOPLASTY**

1. Death of unknown cause
2. Death from CNS disease of unknown cause
3. Creutzfeldt Jacob disease
4. SSPE
5. Progressive multifocal leucoencephalopathy
6. Congenital rubella
7. Reyes syndrome
8. Active viral encephalitis
9. Active septicaemia (bacteremia, viremia, fungemia)
10. Active bacterial or fungal endocarditis
11. active viral hepatitis
12. Rabies
13. Active leukemias
14. Acute disseminated lymphomas
15. High risk for HIV infection, HIV patients
16. HEPATITIS B surface antigen positive donors
17. HEPATITIS C seropositive
18. Ocular tumors- malignant melanoma, retinoblastoma
19. Active intraocular inflammation
20. Congenital or acquired disorders of the eye that would preclude a successful outcome for the intended use (e.g., a central donor corneal scar for an intended penetrating keratoplasty, keratoconus, and keratoglobus)
21. e. Pterygia or other superficial disorders of the conjunctiva or corneal surface involving the central optical area of the corneal button

### **Prior intraocular or anterior segment surgery:**

- a. Refractive corneal procedures, e.g., radial keratotomy, lamellar inserts, etc.
- b. Laser photoablation surgery is allowed to be used in cases of tectonic grafting and posterior lamellar procedures

- c. Corneas from patients with anterior segment (e.g., cataract, intraocular lens, glaucoma filtration) surgery may be used if screened by specular microscopy and meet the Eye Bank's endothelial standards
- d. Laser surgical procedures such as argon laser trabeculoplasty and retinal and panretinal photocoagulation do not necessarily preclude use for penetrating keratoplasty but should be cleared by the Medical Director

#### **Specific exclusion criteria for children**

- Children meeting any of the exclusionary criteria listed above for adults should not be accepted as donors
- Children born to mothers with HIV infection or mothers who meet the behavioral or laboratory exclusionary criteria for adult donors
- regardless of their HIV status should not be accepted as donors unless HIV infection can be definitely excluded in the child as follows:
- Children >18 months of age who are born to mothers with or at risk for HIV infection, who have not been breast fed within the last
- 12 months, and whose HIV antibody tests, physical examination, and review of medical records do not indicate evidence of HIV infection can be accepted as donors
- Children <18 months of age who are born to mothers with or at risk for HIV infection or children of mothers with or at risk of HIV
- infection who have been breast fed within the past 12 months should not be accepted as donors regardless of their HIV tests results

#### **Recipient considerations- preoperative evaluation**

- Pre existing pathology

##### **1. Visual potential assessment**

Visual acuity, pupillary reflexes, coexistent pathologies

##### **2. Anterior segment examination:**

- Site, density of corneal scar
- Tear film stability, dry eye
- Corneal sensation
- Ocular surface disorders
- Pre existing pathology

## Pre operative preparation

### 1. Anti infective agents:

Topical 5% povidone iodine drops before surgery

### 2. IOP control:

Ocular compression- with Honans ballon- 30 mm hg for 30 min

Preoperative mannitol

### 3. Anesthesia: peribulbar block with lidocaine and bupivacaine

### 4. Pupil dilation:

2% pilocarpine- to reduce lens damage

Pupil dilation- if planned for cataract extraction

## Surgical procedure

### Globe exposure:

- Appropriate lid speculum- minimal pressure on globe
- Superior and inferior recti suture or
- Corneal traction suture

### Scleral fixation ring:

- Called FLIERINGA RING to prevent globe collapse in aphakic patients
- Sutured 3-4mm from limbus
- Size 17 or 18 mm rings commonly used

### Host cornea marking

- Geometric axis- center of horizontal and vertical diameter of cornea.
- Optical axis- center of pupil – which is slightly nasal
- center marked with gentian violet
- a stained 8 or 12 prong radial marker – to aid in placement of sutures for better alignment and symmetry

IN KERATOCONUS- graft is kept decentered according to the situation of the cone.

### Trephine sizing

trephine size depends on various factors

- Host cornea size

- Pathology size
- Rejection risk
- size < 6.5 mm- high astigmatism,
- And less endothelium transferred which is less favourable in endothelial diseases
- Size > 8.5 mm grafts- increased risk of PAS and hence glaucoma
- Increased risk of graft rejection- as close proximity to limbus
- HOST CORNEA DIAMETER:
- 11.5mm or less- trephine size 7.5 or 7.75mm
- If 12.5mm or more- trephine size 8.25 or 8.5mm is chosen
- Donor graft of same size as host size is considered in cases of keratoconus in order to decrease postoperative myopia.

#### **DONOR TREPHINATION**

- Having decided the size of the graft, the surgeon should remove the donor button before removing the host button.
- removed from a whole globe or more commonly, from a corneoscleral button.
- The corneoscleral button is placed endothelial side up on a Teflon block and trephination is performed with disposable trephines.
- Donor buttons trephined from the posterior corneal surface are slightly smaller in diameter than buttons trephined from the anterior surface.

#### **OVERSIZE DONOR BUTTON BY 0.25MM ?**

- The use of a 0.25 mm oversize in the donor counteracts the smaller graft size produced by endothelial trephination, and produces fairly equivalent matching of the donor and recipient trephination.
- Oversizing by 0.5 mm decreases the risk of postoperative glaucoma but increases the steepness of the graft and myopia
- Donor button –coated with visco for optimal endothelial protection or put in storage media until needed

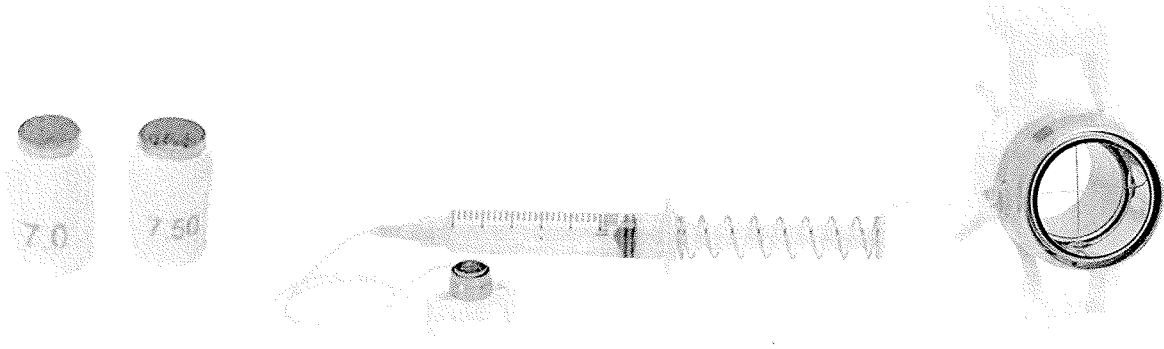
#### **What is The ideal trephination.?**

- is one that produces a central, uniform cut, with vertically aligned edges, while avoiding damage to the intraocular structures.
- Trephination types:

a.)suction-assisted trephines - Baron Hessburg, Hanna, and Krumeich trephination systems.

b.) free-standing, handle-mounted trephines- Troutman Punch and Solan trephine.

Trephines



### Host cornea trephination

- irregular trephination of the host bed and donor are
- important factors in determining the degree of postoperative astigmatism
- Aim of recipient trephination is to ensure a
- **round, regular, and well-centered recipient bed.**
- The surgeon ensures that the trephine is held perpendicular to the cornea and
- centered over it using the previously marked center as a guide.
- The peripheral corneal ring between the blade and the limbus should be even to ensure optimal centration
- In order to stabilize the globe, the assistant exerts mild traction on the recti sutures and slightly uplifts the globe, while the surgeon may

further grasp the limbus with a toothed forceps for additional stability.

• The handle with attached trephine is then gently rotated, with a mild downward compressive force. The cornea is cut by making smooth back-and-forth rotations of the trephine around its axis while applying firm even pressure.

- Excessive downward pressure may result in corneal distortion, leading to an undercut, sloping trephination edge.
- The anterior chamber is entered in a controlled manner, using a sharp blade held at an angle.
- Viscoelastic is then introduced to reform the anterior chamber

- and to discourage prolapse of the iris, lens, and vitreous, as the remaining cornea is excised.

- The corneal excision is then completed with corneal scissors.
- Remnant tags of corneal tissue or Descemet's membrane are carefully trimmed flush with the scissors.
- **Suction systems** : have the advantage of being able to retain the position of the trephine during trephination without undue downwards compression.

#### **Concomitant procedures**

- After the host button has been excised, relevant concomitant
- procedures, such as cataract extraction, IOL implantation,
- anterior vitrectomy, or pupil reconstruction
- Lysis of peripheral anterior synechiae,
- reconstruction of the iris and pupil margin, and IOL lens exchange are done

#### **Suturing of donor corneal tissue**

- A viscoelastic agent is applied into the anterior chamber as well as the edges of the recipient corneal bed just prior to placement of the donor button, so as to protect the endothelium of the donor cornea against contact with other intraocular structures during suturing.
- Using a corneal spatula, the donor cornea is scooped out from the Teflon block and placed over the host bed.
- With a double-toothed forceps, the superior edge of the donor cornea is grasped and the needle of a 10-nylon suture is passed radially through the two tips of this forceps

#### **Placement of cardinal sutures**

- The primary fixation of the graft is usually by four interrupted 10-0 nylon sutures, placed in the four quadrants 90° apart.
- **The second suture at 6 o'clock is particularly important as it determines the final position and symmetric geometry of the donor cornea on the**

**recipient, and helps in minimizing postoperative astigmatism.**

- The remaining 3 and 9 o'clock cardinal sutures are then placed.
- The anterior chamber is reformed with viscoelastic
- Suturing is continued, taking care to ensure even and radial distribution

of the sutures.

**Suturing techniques**

1. Interrupted sutures
2. Continuous / running sutures:
  - torque
  - Anti torque
  - No torque

3. Combined

Continuous and interrupted

suture materials

- 10-0 monofilament nylon- good tensile strength , low tissue reactivity
- 10-0 or 11-0 polypropylene- for continuous suture

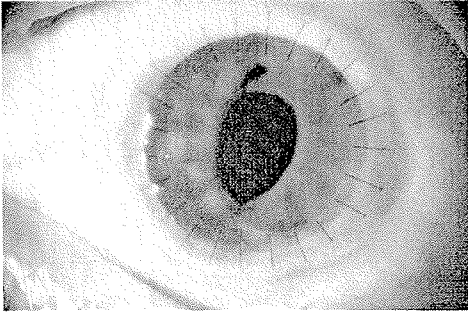
**Interrupted sutures**

Advantages

- Allows selective removal of each suture
- Tight closure of the wound
- Disadvantages: more inflammation and vascularisation because of more knots

Indications

- Vascularisation in host corneal bed
- Multiple failed grafts
- Inflammatory conditions
- Paediatric grafts and therapeutic grafts



### Continuous suturing

Advantages:

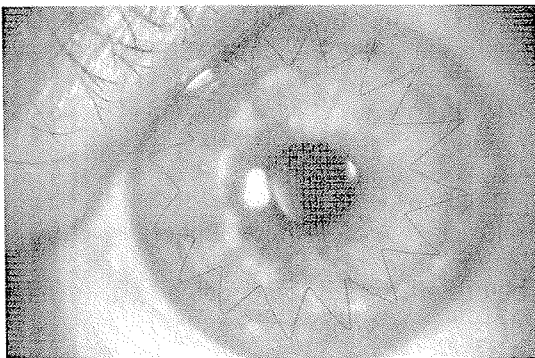
Easy of placement and removal

Enable adjusting suture tension to control astigmatism in early postop period

Disadvantages

- 1.) To be done meticulously- single irregular bite can cause severe astigmatism
- 2.) even if a single loop of the suture should break, tear through, or loosen, it is not unusual to find that several adjacent loops also loosen, leading to significant wound irregularity and astigmatism, or even wound dehiscence that requires surgical repair

Single continuous suture



Double running continuous suture

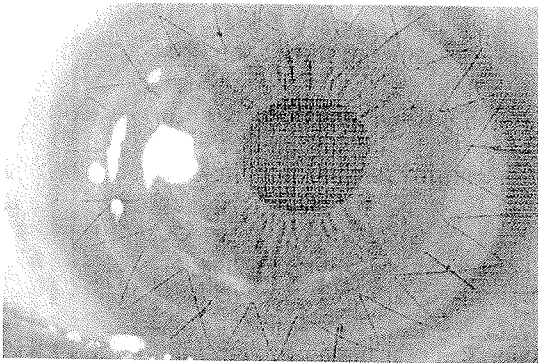
- Double running continuous sutures are used
- when the host bed is uniformly thick and avascular, and the wound is expected to heal evenly, such as in keratoconus or bullous keratopathy.
- Torque effect induced by first suture is counteracted by the other

- Two 10-0 prolene or one 10-0 prolene and one polypropylene can be used

### **Combined interrupted and continuous**

One of the most commonly utilized suture patterns includes 12 interrupted sutures and a 12-bite continuous running suture (CS), although eight interrupted sutures and a 16-bite continuous running suture is also commonly employed .

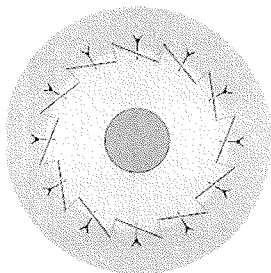
After placement of the four cardinal interrupted sutures, eight additional interrupted sutures are placed with 10-0 nylon suture. After the sutures are trimmed and the knots are buried, the CS is completed



### **Torque**

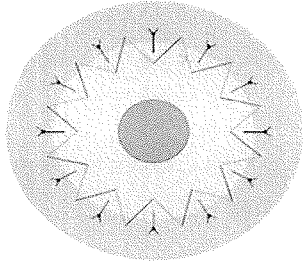
- Torque:

here radial bites are equidistant between each of the interrupted sutures



### Antitorque technique

- Here the apex of each bite in the donor cornea forms an isosceles triangle with each interrupted suture



## Suture depth

- should be passed deeply into the stroma at an equivalent depth
- for both donor and recipient to allow accurate anterior–posterior
- donor–recipient apposition.
- Deep stromal bites are taken at **~80–90% depth**, with care taken not to penetrate Descemet's layer, which would contribute to wound leak at the end of the operation.
- Sutures taken equidistant -0.75mm on both sides
- Extra care should be taken to prevent under- or overriding of the graft.
- All knots should be buried at the donor side.
- particularly important that the donor and recipient edges are aligned properly and that neither an override nor an underide.
  - Poor apposition can interfere with reepithelialization of the graft and may lead to postoperative astigmatism.
  - an intraoperative keratoscope would aid in distributing the tension of the graft by adjusting the tightness of sutures, thereby reducing postoperative astigmatism.

## AC REFORMATION

- At the end of the procedure, the anterior chamber should be
- reformed with viscoelastic substance or saline solution.
- The wound is then checked for water-tightness with a dry sponge.
- The surgery is completed with subconjunctival injections of antibiotics and steroids.

## Postoperative management

During the postoperative period, attention should be focused on

- the clarity of the graft,
- integrity of the wound and sutures,
- status of the ocular surface,
- Amount of anterior chamber activity,
- IOP (increased- d/t inflammation, retained visco or pre-existing glaucoma)
- the presence of signs of infection or rejection.

## **Topical treatment**

- 1.) Broad spectrum antibiotic-few weeks
- 2.) Steroids- 1% predacetate or 0.1% dexamethasone eye drops 2-3 hourly to control inflammation.
  - Continued for 12 months – on low dose steroids to prevent rejection.
  - Follow up- IOP monitoring, cataractous changes
- 3.) Lubricating eye drops:  
to protect the graft and enhance epithelial healing.
- 4.) topical antiglaucoma medications if IOP is high.

## **Immunosuppression for highrisk grafts**

- Especially in repeat grafts
- r/o infections
- **PREDNISOLONE:**  
1mg/kg/day tapered over 3 weeks
- **Cyclosporin A:**
  - Initial dose- 4-5mg/kg/day with maintenance dose of 200-250mcg/ml
  - Ocular side effect : mild epitheliopathy
  - Systemic: hypertension, nephrotoxicity

## **Suture removal**

- Interrupted sutures – can be removed before 6-12 months
- Combined interrupted- at steep meridian- at 3 months
- Continuous sutures after 1 year
- Loose, vascularised sutures can be removed
- Always suture removed from recipient side
- Care taken not to pull the knot though the graft host junction

VALUE ADDED COURSE**PENETRATING KERATOPLASTY****List of Students Enrolled JAN - 2018 – APR -2018**

SL.NO	University Reg.No.	NAME OF THE STUDENTS	SIGNATURE
1	U18MB251	AASHLESHA DHARKAR	Aashleshadharkar
2	U18MB252	ABINAYAVARTHINI N	abinayavarthini
3	U18MB253	ADARSH KUMAR	Adarshkumar
4	U18MB254	AISWARYA PREMRAJ	Aishwaryapremraj
5	U18MB255	AKSHAYA .R	Akshaya .R
6	U18MB256	ALOK PANDA	Alokpanda
7	U18MB257	AMULYA N GOWDA	Amulya ngowda
8	U18MB258	ANINDA CHAKRABORTY	Aninda Chakraborty
9	U18MB259	ANJALI SADHWANI	Anjali
10	U18MB260	ANKU KUMAR	Anku kumar
11	U18MB261	ANNIE WELLY	Annie welly
12	U18MB262	ANTONY ROHAN	Antony rohan
13	U18MB263	ANUPAMA	Anupama
14	U18MB264	AQSA QURESHI	Aqsa qureshi
15	U18MB265	ARSHAD AMIN	Arshadamin
16	U18MB266	ASHIQUE RIFANA M	Ashique Rifana
17	U18MB267	ASHWIN R	Ashwin .R
18	U18MB268	ASHWINI.N	Ashwini .N
19	U18MB269	ASMIT KESHAV	Asmit
20	U18MB270	AVIRAL TYAGI	Aviral tyagi
21	U18MB271	AYUSH JAISWAL	Ayush jaiswal

22	U18MB272	BANDHAM SANKEERTHANA	Bandham
23	U18MB273	BORIS NAMBAM	Borisnambam
24	U18MB274	BUCHHAMMAGARI SOURABH REDDY	Buchhammagari
25	U18MB275	CHARAN VARMA C.A	Charan Varma
26	U18MB276	CHARU SAI	Charusai
27	U18MB277	CHINKA SARAN SAI	Chinka Saran Sai
28	U18MB278	CUTPIECEWALA ALIASGAR MOHAMMED	Cutpiecewala
29	U18MB279	DATTATREYA BHATTACHARJEE	Dattatreya
30	U18MB280	DEBOPRIYA DEY	Debopriya

*Muthukrishnan*  
**DR.V.Muthukrishnan. DNB, M.S,**  
**RESOURCE PERSON**

*Baba*  
**Prof.D.Baba, MS-HOD**

**COORDINATOR**  
**PROFESSOR & HOD**  
 DEPARTMENT OF OPHTHALMOLOGY,  
 SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
 PUDUCHERRY-605 502.



Aashalesha Dharbar  
U18MB281

**SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH**

Annexure - IV

PENETRATING KERATOPLASTY

MULTIPLE CHOICE QUESTIONS

Course Code: OPH09

**I. ANSWER ALL THE QUESTIONS**

**1. Keratoplasty means removal of diseased**

a) Cornea ✓

b) Conjunctiva

c) Sclera

d) Iris

**2. Tectonic Indications includes**

a) Perforated corneal ulcer ✓

b) Scarred cornea

c) Keratoconus

d) Cosmetic reasons

**3. Suturing techniques includes**

a) Continuous sutures

b) Interrupted sutures

c) Continuous & Interrupted sutures

d) All of the above ✓

**4. 1st suture is placed at**

a) 12° clock Position ✓

b) 6° clock position

c) 9° clock position

d) 3° clock position



**SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH**

5. Most important suture which determines the symmetric geometry is at

- a) 12° clock
- b) 6° clock ✓
- c) 3° clock
- d) 9° clock position

6. Corneal Suturing is done with

- a) 2-0-silk
- b) 5-0-vicnyl
- c) 10-0- nylon ✓
- d) 6-0-catgut

7. Corneal sutures are placed at depth of

- a) 50% of cornea
- b) 60% ✓
- c) 10%
- d) 80-90% of corneal thickness

8. Optical Indications includes

- a) PBK
- b) Keratoconus
- c) CHED
- d) All of above ✓

9. Contraindications for donor cornea includes

- a) Rabies
- b) SSPE
- c) Hepatitis
- d) All of above ✓



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AND RESEARCH**

**10. Penetrating keratoplasty involves replacement of**

- a) 50% cornea
- b) Corneal endothelium
- c) Whole cornea ✓
- d) Anterior stroma




## Sri Lakshmi Narayana Institute of Medical Sciences


Affiliated to Bharath Institute of Higher Education & Research  
(As approved by the University Grants Commission of the UGC Act, 1956)



### CERTIFICATE OF MERIT

This is to certify that AASHLESHA DHARKAR (U18MB251) has actively participated in the Value Added Course on PENETRATING KERATOPLASTY held during JAN 2018 TO APR 2018 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

  
Dr. Muthukrishnan,  
DNB, MS, - Asst Professor  
RESOURCE PERSON

  
Prof. D. Baba, M.S,  
Prof & HOD - Ophthal  
COORDINATOR



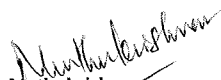
## Sri Lakshmi Narayana Institute of Medical Sciences


Affiliated to Bharath Institute of Higher Education & Research  
(Declared to be University under section 3 of the UGC Act, 1956)



### CERTIFICATE OF MERIT

This is to certify that ABINAYAVARTHINI N (U18MB252) has actively participated in the Value Added Course on PENETRATING KERATOPLASTY held during JAN 2018 TO APR 2018 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

  
Dr. Muthukrishnan,  
DNB, MS, - Asst Professor  
RESOURCE PERSON

  
Prof. D. Baba, MS,  
Prof & HOD - Ophthal  
COORDINATOR

## Student Feedback Form

Course Name: **PENETRATING KERATOPLASTY**

Subject Code: **OPH09**

Name of Student: \_\_\_\_\_ Roll No.: \_\_\_\_\_

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					✓
2	Course contents met with your expectations					✓
3	Lecturer sequence was well planned					✓
4	Lectures were clear and easy to understand					✓
5	Teaching aids were effective					✓
6	Instructors encourage interaction and were helpful					✓
7	The level of the course					✓
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

*Aasholeha Dhurkar*  
Signature

Date:

**Annexure 5**

Date : 29/4/2018

From  
Prof.D.Baba, MS,  
Professor and Head,  
Ophthalmology,  
Sri Lakshmi Narayana Institute Of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

Through Proper Channel

To  
The Dean,  
Sri Lakshmi Narayana Institute Of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Completion of value-added course: PENETRATING KERATOPLASTY**

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: **PENETRATING KERATOPLASTY** for 30students in JAN-APR 2018. We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards

Prof.D.Baba, MS

HOD ,Ophthalmology

**Encl: Certificates**

**Photographs**



**SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES**

**OSSUDU AGARAM VILLAGE; KUDAPAKKAM POST, PONDICHERRY - 605003**

Date **02.01.2018**

From  
Dr. Pammy Sinha  
HOD  
Pathology  
Sri Lakshmi Narayana Institute of Medical Sciences, Puducherry  
Bharath Institute of Higher Education and Research,  
Chennai.

To  
The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences, Puducherry  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Permission to conduct value-added course: Urine analysis**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: Urine analysis on Feb-April 2018. We solicit your kind permission for the same.

Kind Regard

  
Dr. Pammy Sinha

---

**FOR THE USE OF DEANS OFFICE**

Names of Committee members for evaluating the course:

The Dean: Dr. A Sugumaran

The HOD: Dr. Pammy Sinha

The Expert: Dr. Manohar

The committee has discussed about the course and is approved. Dean



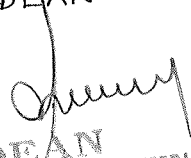
Subject Expert



HOD

DEPARTMENT OF PATHOLOGY  
Sri Lakshmi Narayana Institute Of Medical Sciences  
PONDICHERRY - 605 502.

PROFESSOR & HEAD, DEPT. OF PATHOLOGY  
SRI LAKSHMI NARAYANA INSTITUTE OF  
MEDICAL SCIENCES,  
PUDUCHERRY - 605 502.

DEAN  
  
DEAN  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
OSSUDU, AGARAM VILLAGE,  
KODAPAKKAM POST,  
PUDUCHERRY - 605 502



**SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES**  
**OSSUDU AGARAM VILLAGE; KUDAPAKKAM POST, PONDICHERRY - 605003**

**Circular**

9.1.18

**Sub: Organising Value-added Course: URINE ANALYSIS**

With reference to the above mentioned subject, it is to bring to your notice that **SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES Bharath Institute of Higher Education and Research**, is organising "URINE ANALYSIS" from Feb-April 2018. The course content is enclosed below.

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before 30.1.2018. Applications received after the mentioned date shall not be entertained under any circumstances.

Encl: Copy of Course content.

Dean

DEAN

SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
OSUDU, AGARAM VILLAGE,  
KODAPAKKAM POST,  
PUDUCHERRY - 605 502

## VALUE ADDED COURSE

### **1. Name of the programme & Code**

Urine analysis and PA07

### **2. Duration & Period**

30 hrs & feb-april 2018

### **3. Information Brochure and Course Content of Value Added Courses**

*Enclosed as Annexure- I*

### **4. List of students enrolled**

*Enclosed as Annexure- II*

### **5. Assessment procedures:**

Short notes - *Enclosed as Annexure- III*

### **6. Certificate model**

*Enclosed as Annexure- IV*

### **7.No. of times offered during the same year:**

1 , feb-april 2018

### **8. Year of discontinuation: 2019**

### **9. Summary report of each program year-wise**

Value Added Course- feb-april2018					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year

1	PA07	<b>Urine analysis</b>	DR.A.MANOHAR	2 <sup>ND</sup> MBBS	feb-april 2018
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### 10. Course Feed Back

*Enclosed as Annexure- V*



**RESOURCE PERSON**

DEPARTMENT OF PATHOLOGY  
Sri Lakshmi Narayana Institute Of Medical Sciences  
PONDICHERRY - 605 502.



**COORDINATOR**

PROFESSOR & HEAD, DEPT. OF PATHOLOGY  
SRI LAKSHMI NARAYAN INSTITUTE OF  
MEDICAL SCIENCES,  
PUDUCHERRY - 605 502.

## Course Proposal

Course Title: **Urine analysis**

Course Objective:

1. To enhance the knowledge of urine collection and storage techniques.
2. To impart information of constituents of urine and abnormalities with various examination methods.
3. To assess the performance skill using urine dipstick method.

**Course Outcome: Improvement in knowledge and skills of urine collection & examination.**

**Course Audience: MBBS students of second year.**

**Course Coordinator: Dr.Pammy Sinha**

**Course Faculties with Qualification and Designation:**

**1.Dr.Pammy Sinha, Professor & HOD**

**2.Dr.Manoharan, Assistant Professor**

**3. Dr Barman, Professor**

**4. Dr Ritica C, Assistant Professor**

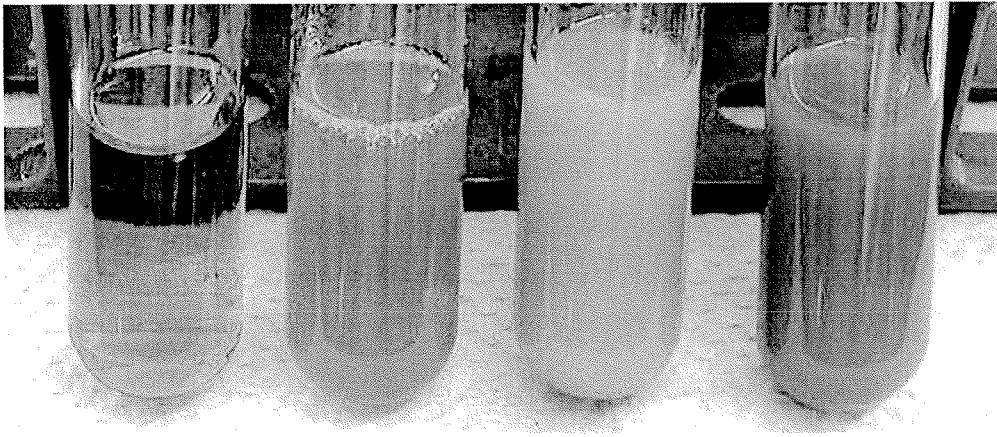
**5. Dr Priyadarshini J, Assistant Professor**

**Course Curriculum/Topics with schedule (Min of 30 hours)**

S l N o	Date	Topic	Resource person	Time	Ho urs
1	3.02.2018	Introduction to urine analysis, Background, Objectives,	Dr Manoharan	4-5p.m	1
2	10.02.2018	Collection of urine	Dr P Barman	2-3p.m	1
3	17.02.2018	Preservation of urine: Lecture and video	Dr Priyadarshini J	4-6p.m	2
4	3.02.2018	Examination of urine : Introduction	Dr Ritica C	4-6p.m	2
5	5.03.2018	Physical examination of urine - I	Dr Manoharan	4-6p.m	2
6	10.03.2018	Physical examination of urine - II	Dr Pammy S	4-5p.m	2
7	31.03.2018	Chemical examination of urine - I	Dr P Barman	4-6P.M	1
8	7.04.2018	Chemical examination of urine - II	Dr Manoharan	4-6p.m	1

9	14.04.2018	Chemical examination of urine - III	Dr Priyadarshini J	4-6p.m	1
10	21.04.2018	Microscopic examination of urine	Dr Pammy S	2-5p.m	3
11	22.04.2018	Dipstick method – lecture and video	Dr Pammy S	2-4p.m	2
		Practical Class I			
13.	24.02.2018	Collection, storage & Examination of urine	Dr Manoharan	2-3p.m	1
14.	17.03.2018	Physical examination of urine	Dr P Barman	2-3p.m	1
15.	24.03.2018	Chemical examination of urine	Dr Manoharan	2-4p.m	2
16.	15.04.2018	Chemical examination of urine	Dr Priyadarshini J	2-4p.m	2
17.	29.04.2018	Microscopic examination of urine, and Dipstick method; Short answers & feedback	Dr Pammy S	2-6p.m	4
		Total			30 hrs

# URINE ANALYSIS



# PARTICIPANT HAND BOOK

## COURSE DETAILS

<b>Particulars</b>	<b>Description</b>
Course Title	Urine analysis
Course Code	PA07
Objective	<ol style="list-style-type: none"> <li><b>1. Collection of urine</b></li> <li><b>2. Preservation of urine</b></li> <li><b>3. Examination of urine</b> <ul style="list-style-type: none"> <li>• <b>Physical examination</b></li> <li>• <b>Chemical examination</b></li> <li>• <b>Microscopic examination</b></li> </ul> </li> <li><b>4. Urine Dipstick</b></li> </ol>
Further learning opportunities	Urine automated techniques
Key Competencies	On successful completion of the course the students will have skill in handling and assessment of urine samples.
Target Student	Second yr <b>MBBS</b> Students
Duration	30hrs feb-april 2018
Theory Session	20hrs
Practical Session	10hrs
Assessment Procedure	Short answers

# URINE ANALYSIS

## Collection of urine

- Early morning sample-qualitative
- Random sample- routine
- 24hrs sample- quantitative
- Midstream sample-UTI
- Post prandial sample-D.M

## Preservation of urine

- Examined within 1-2 hours after voiding.
- If there is delay,specimen should be preserved.
- Preservatives like,
  - Toluene,
  - boric acid
  - formalin
  - Thymol

## Urine examination

- Physical examination
- Chemical examination
- Microscopic examination

## Physical examination

- Volume
- Color
- Odour
- Reaction or urinary pH

- Specific gravity

### ***VOLUME***

Normal volume- 1200 to 2000mL / day.

Polyuria - >2000mL / 24 hr.

Causes of Polyuria.

#### a)PHYSIOLOGICAL

Cold weather

Increased water intake.

#### b)PATHOLOGICAL

Diabetes insipidus

Diabetes mellitus

Chronic progressive renal failure.

Oliguria - <500mL / day.

Causes- Dehydration, hot weather

Renal ischaemia,renal diseases,

Urinary tract obstruction.

Anuria - complete suppression of urine.

- **COLOUR**

Normal urine – Straw yellow.

(urochromes & urobilin)

a)Reddish brown- Increased urobilinogen or porphyrins

b)Bright red – fresh blood.

c)Smoky brown-Blood pigments

d) Brownish yellow or green- Bile pigments

e) Milky white- Chyluria

f) Black – Alkaptonuria

g) Bright orange red – Rifampicin.

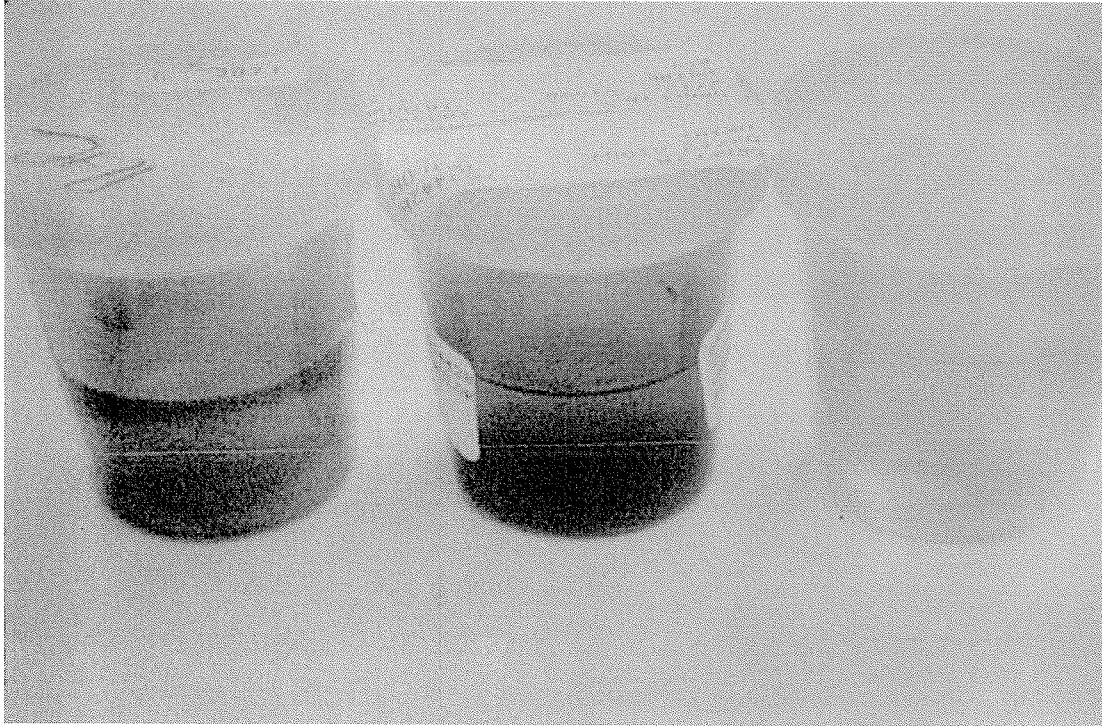


Fig. 1

Physical examination of Colour of urine.

Reaction-pH

Normal pH- 4.6 to 8.0

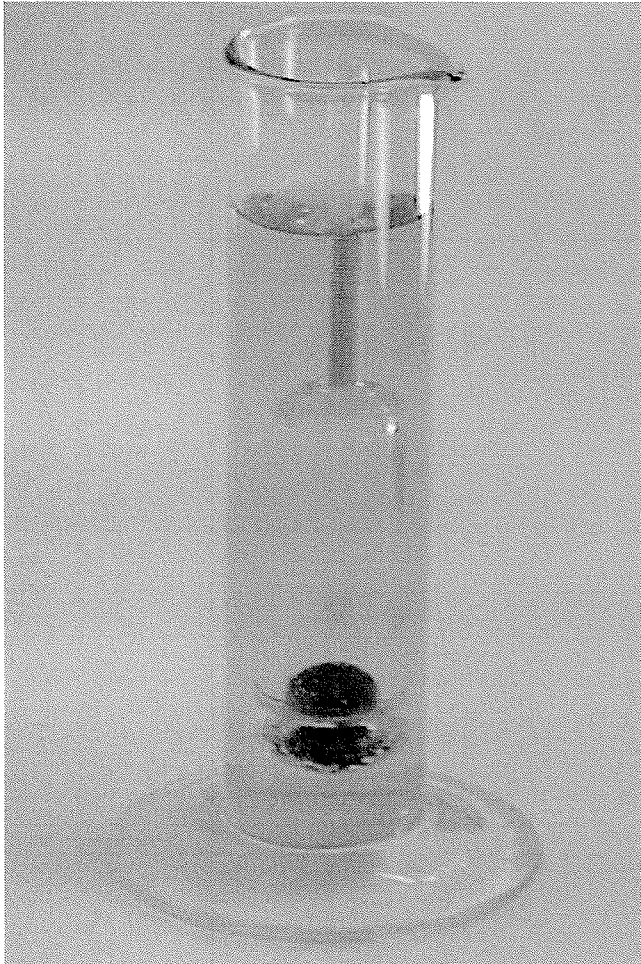
### **SPECIFIC GRAVITY**

Indication of amount of solids in solutions in that urine.

Normal specific gravity- 1.015 to 1.025.

Methods to measure specific gravity.

- Urinometer
- Refractometer



- Reagent strip method.

Fig. 2 : Urinometer

#### CHEMICAL EXAMINATION

Urine is routinely examined for,

- Protein
- Glucose
- Ketones
- Bile Salts
- Bile pigments

- Hemoglobin

Test for Protein

- Heat Test.
- Sulphosalicylic Acid Test.

Tests for proteins

- Test – HEAT & ACETIC ACID TEST
- Principle–proteins are denatured & coagulated on heating to give white cloud precipitate.
- Method–take 2/3 of test tube with urine, heat only the upper part keeping lower part as control.
- Presence of phosphates, carbonates, proteins gives a white cloud formation. Add acetic acid 1-2 drops, if the cloud persists it indicates it is protein(acetic acid dissolves the carbonates/phosphates)

Heat Test

- Results:
- -ve – No Cloudiness
- Trace – Barely visible cloudiness
- 1+ - Cloudiness w/o Granular flocculation
- 2+ - Dense granular cloud w/o flocculation
- 3+ - Dense cloud with marked flocculation
- 4+ - Thick curd like precipitate

SULPHOSALICYCLIC ACID TEST

- PRINCIPLE
- Sulphosalicylic acid precipitates protein with turbidity that is approximately proportional to concentration of protein in a solution
- PROCEDURE
- To 2ml of urine,add equal volume of 3% sulphosalicylic acid.Allow it to stand for 10 minutes.
- 
- RESULTS
- Negative- No cloudiness

- Trace -Cloudiness just visible against dark background(<10mg/dl)
- 1+ -Dense cloudiness (10-50mg/dl)
- 2+ -Cloudiness with granules &flocculation.(50-200mg/dl)
- 3+ - Cloudiness with heavy flocculation(200-500mg/dl)
- 4+ - Cloudiness with flocculation and precipitation (>500mg/dl)

#### Causes of proteinuria

- Prerenal causes-Heavy exercise,Fever,hypertension, multiple myeloma, ecalmpsia
- Renal –acute & chronic glomerulonephritis, Renal tubular dysfunction, Polycystic kidney, nephrotic syndrome
- Post renal- acute & chronic cystitis, tuberculosis cystitis

#### Test for sugar

- **Test**-BENEDICT'S TEST(semiquantitative)
- **Principle**-benedict's reagent contains  $\text{CuSO}_4$ . In the presence of reducing sugars *cupric ions* are converted to *cuprous oxide* which is hastened by heating, to give the color.
- Method- take 5ml of benedict's reagent in a test tube, add 8drops of urine. Boil the mixture.

#### Results

Negative- No change in colour

Trace- pale green and slightly cloudy.

1+ - Definite cloudy green.

2+ - Yellow to orange ppt, supernatant fluid pale blue (<1g/dl)

3+ - Orange to red ppt, supernatant fluid pale blue (1-2g/dl).

4+ -Brick red ppt, supernatant fluid decolourised (>2g/dl)

#### Ketone bodies

- 3 types
- Acetone

- Acetoacetic acid
- $\beta$ -hydroxy butyric acid
- They are products of fat metabolism

#### Rothera's test

- Principle-acetone & acetoacetic acid react with sodium nitroprusside in the presence of alkali to produce purple colour.
- Method- take 5ml of urine in a test tube & saturate it with ammonium sulphate. Then add one crystal of sodium nitroprusside. Then gently add 0.5ml of liquor ammonia along the sides of the test tube.
- Formation of purple coloured ring indicates + test

#### Causes of ketonuria

- Diabetes
- Non-diabetic causes- high fever, starvation, severe vomiting/diarrhoea

#### BILE SALTS

- HAY'S TEST

##### PRINCIPLE

Bile salts reduce surface tension of urine.

##### PROCEDURE

Sprinkle sulphur powder on the surface of test tube containing urine.

##### RESULTS

Sulphur powder sinks-positive for bile salts.

#### BILIRUBIN-Fouchet's Test.

- PRINCIPLE

Bilirubin, when adsorbed on to barium sulphate and treated with ferric chloride and trichloroacetic acid, gives a greenish blue colour.

- PROCEDURE

Add 2.5ml of 10% barium chloride to 10ml of urine. Mix and filter. Unfold the filter paper and spread it on the top of another filter paper. Add 1 drop of Fouchet's reagent.

- RESULTS

Green or blue colour indicates +ve for Bilirubin.

Blood in urine

- **Test-** BENZIDINE TEST
- **Principle-** The peroxidase activity of hemoglobin decomposes hydrogen peroxide releasing nascent oxygen which in turn oxidizes benzidine to give blue color.
- **Method-** mix 2ml of benzidine solution with 2ml of hydrogen peroxide in a test tube. Take 2ml of urine & add 2ml of above mixture. A blue color indicates + reaction.

Causes of hematuria

- **Pre renal-** bleeding diathesis, hemoglobinopathies, malignant hypertension.
- **Renal-** trauma, calculi, acute & chronic glomerulonephritis, renal TB, renal tumors
- **Post renal** – severe UTI, calculi, trauma, tumors of urinary tract

Urine Dipstick

- The squares on the dipstick represent the following components in the urine:
- specific gravity (concentration of urine),
- acidity of the urine (pH),
- protein in the urine (mainly albumin),
- glucose (sugar),
- ketones
- blood
- bilirubin and
- urobilinogen

Fig. 3 : Urine dipstick.





















- The main advantage of dipsticks is that they are

1. convenient,
2. easy to interpret,
3. and cost-effective

The main disadvantage is that the

1. Information may not be very accurate as the test is time-sensitive.
2. It also provides limited information about the urine as it is qualitative test and not a quantitative test.

ANNEXURE II - VALUE ADDED COURSE STUDENT DETAILS - URINE ANALYSIS, PA07, FEB - APRIL 2018

S.No	Register No	Students List	SIGN
1	U17MB296	GANJI KARTHIK	
2	U17MB297	GAUTHAMAN.M	
3	U17MB298	GOKULAVAAANI G K	
4	U17MB299	GOWTHAM BJ	
5	U17MB300	GRANDHI KARISHMA	
6	U17MB301	GREESHMA SHAJI .K	
7	U17MB302	GUDDATI KOTA SATYA SAI NAGA S RAMESH	
8	U17MB303	GURUNATHAN S	
9	U17MB304	HARSH BHARTI	
10	U17MB305	HENRITTA.I	
11	U17MB306	HIYA SAIKIA	
12	U17MB307	HRITHICK MANICKAM R	
13	U17MB308	JAYASHREE SAIKIA	
14	U17MB309	JITHU MOHAN	
15	U17MB310	KAILA PRASANTH KUMAR	
16	U17MB311	KAJAL MISHRA	
17	U17MB312	KAVIYA EV	
18	U17MB313	KAYANAT FARHEEN	
19	U17MB314	KEVIKONO BIO	
20	U17MB315	KEVIN RAHUL.S	



RESOURCE PERSON

COORDINATOR





**SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH**

Annexure - IV

URINE ANALYSIS

SHORT ANSWER QUESTIONS

Course Code: PA0: 7

I. ANSWER ALL THE QUESTIONS

1. Describe physical characteristics of normal urine.
2. Define polyuria.
3. List causes of hematuria.
4. Define principle of Benedict's test.
5. Enlist reagents used in Benedict's solution.
6. Define proteinuria.
7. What are chemical tests to assess proteinuria?
8. What is the function of a urinometer?
9. List advantages of urine dipstick method.
10. What are the tests available for assessing bile salts and pigments in urine ?

# URINE ANALYSIS

Kalyan Prasanth Kumar

Roll No: 30

Total:  $\frac{17}{20}$

## 1) Normal urine:

95% of volume of normal urine is due to water

Organic components:

i) urea ii) urobilinogen iii) uric acid iv) creatinine v) amino acids vi) metabolites of hormones

Inorganic components: contains  $\text{Na}^+$ ,  $\text{K}^+$ ,  $\text{Ca}^{2+}$ ,  $\text{Mg}^{2+}$

anions:  $\text{Cl}^-$ ,  $\text{SO}_4^{2-}$ ,  $\text{HCO}_3^-$ ,  $\text{HPO}_4^-$

Volume:

Average urine production in humans about 1-2

L. Per day

Density: of the urine ranges between 1.003-1.035  $\frac{\text{g}}{\text{cm}^3}$

2) Polyuria: excessive of abnormally large production and passage of urine (>3L per day in adults) frequent micturition accompanying syndrome Diuresis increased production and passage of urine.

## 3) Hematuria.

The presence of blood in the urine: the passage of blood in the urine is always alarming and investigation is warranted.

# URINE Analysis

$$\text{Total} : \frac{15}{20}$$

Kevin

Roll : 3

## D) Normal urine

95% of the urine is composed water and rest is organic compounds.

These include

- urobilinogen

- uric acid

- creatinine

- urea

Inorganic compounds include

$\text{Na}^+$   $\text{K}^+$   $\text{Ca}^{2+}$

Carbonates

sulphates

Volume:

The human produce average 1-2 litres of urine per day.

## Student Feedback Form

Course Name: URINE ANALYSIS

Subject Code: PA07

Name of Student: Kevin R. Roll No.:                     

Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear				✓	
2	Course contents met with your expectations				✓	
3	Lecturer sequence was well planned				✓	
4	Lectures were clear and easy to understand				✓	
5	Teaching aids were effective				✓	
6	Instructors encourage interaction and were helpful				✓	
7	The level of the course				✓	
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

None.

Kevin R.

Signature

Date:

## Student Feedback Form

Course Name: URINE ANALYSIS

Subject Code: PA007

Name of Student: Kaala Praveenth Kumar Roll No.: 210

Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					✓
2	Course contents met with your expectations					✓
3	Lecturer sequence was well planned				✓	
4	Lectures were clear and easy to understand					✓
5	Teaching aids were effective					✓
6	Instructors encourage interaction and were helpful					✓
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\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

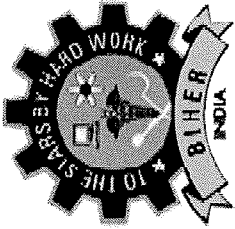
Suggestions if any:

NONE



Signature

Date:



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that Kaila Prasanth Kumar has \_\_\_\_\_

actively participated in the Value Added Course on *Urine analysis* held during FEB-APRIL

2018 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605

502, India.

DEPARTMENT OF PATHOLOGY  
Sri Lakshmi Narayana Institute of Medical Sciences  
PONDICHERRY 605 502.  
**Dr. A. Manoharan**

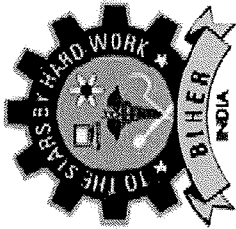
RESOURCE PERSON

Sri Lakshmi Narayana Institute of Medical Sciences  
PONDICHERRY 605 502.  
DEPARTMENT OF PATHOLOGY

**Dr. Pammy Sinha**

COORDINATOR

PROFESSOR & HEAD DEPT. OF PATHOLOGY  
SRI LAKSHMI NARAYANA INSTITUTE OF  
MEDICAL SCIENCES,  
PONDICHERRY - 605 502.



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research

(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that Kevin Rahul S has \_\_\_\_\_

actively participated in the Value Added Course on *Urine analysis* held during FEB-APRIL

2018 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605

502, India.

Dr. A. Manoharan

RESOURCE PERSON

DEPARTMENT OF PATHOLOGY  
Sri Lakshmi Narayana Institute of Medical Sciences  
PONDICHERRY - 605 502.

Dr. Pammy Sinha

COORDINATOR

PROFESSOR & HEAD, DEPT. OF PATHOLOGY  
SRI LAKSHMI NARAYANA INSTITUTE OF  
MEDICAL SCIENCES,  
PUDUCHERRY - 605 502.

Date: 30.04.2018

From

Dr.Pammy Sinha  
Professor and Head,  
Department of Pathology,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

Through Proper Channel

To

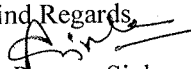
The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Completion of value-added course: Urine Analysis**

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: : Urine analysis on Feb to April 2018 for 20 Bsc MLT students. We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards,

  
Dr.Pammy Sinha

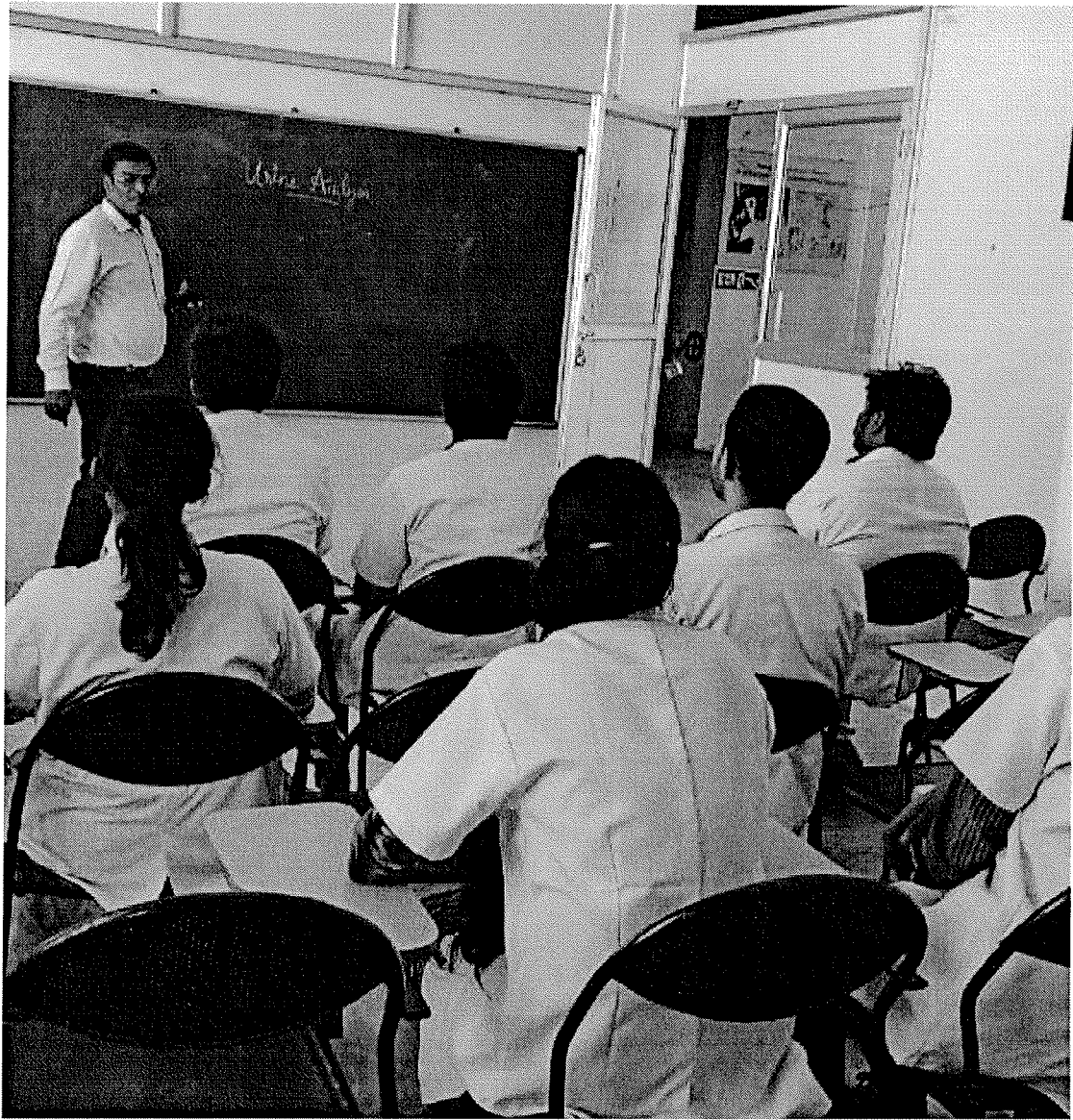
**Dr. PAMMY SINHA**

Reg. No:40334

Professor & HOD, Department of Pathology  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502.

**Encl: Certificates**

**Photographs**





**SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES**  
Osudu, Agaram Village, Koodapakkam post, Puducherry - 605502

Date: 17.01.2018

From  
Dr.G.Somasundaram  
Professor and Head,  
Department of Pharmacology  
Sri Lakshmi Narayana Institute of Medical sciences  
Pondicherry

To  
The Dean,  
Sri Lakshmi Narayana Institute of Medical sciences  
Pondicherry

**Sub: Permission to conduct value-added course:Therapeutic window phenomena**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled:**Therapeutic window phenomena** February to August 2018. We solicit your kind permission for the same.

Kind Regards

Dr.G.Somasundaram

**FOR THE USE OF DEANS OFFICE**

Names of Committee members for evaluating the course:

Dean: Dr.Sugumaran HOD:Dr.G.Somasundaram Expert: Dr.Jaikumar.S Dr.Jayasheela.J

The committee has discussed about the course and is approved.

Dean

Subject Expert

HOD

S. J. S.

**DEAN**  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
OSUDU, AGARAM VILLAGE,  
KOODAPAKKAM POST,  
PUDUCHERRY - 605 502

**PROFESSOR & HOD**  
DEPARTMENT OF PHARMACOLOGY  
Sri Lakshmi Narayana Institute of Medical Sciences,  
PONDICHERRY - 605 502.



OFFICE OF THE DEAN

# Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P -II ) dt. 11/07/2011 ]  
[ Affiliated to Bharath University, Chennai - TN ]

Circular

Date:18.01.2018

## Sub: Organising Value-added Course: Therapeutic Window Phenomena

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical sciences is organizing “**Therapeutic Window Phenomen**” **February to August 2018**. The course content is enclosed below.”

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before **January 31<sup>st</sup> 2018**. Applications received after the mentioned date shall not be entertained under any circumstances.

Dean

**DEAN**  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
OSUDU, AGARAM VILLAGE,  
KODAPAKKAM POST,  
PUDUCHERRY - 605 502

Encl: Copy of Course content.

## Annexure 2 – Course Proposal

**Course Title: Therapeutic window phenomena**

**Course Objective**

1. Introduction
2. Purpose Of Therapeutic Drug Monitoring
3. Measuring Plasma Drug Concentration In Therapeutic Drug Monitoring
4. Analytical Issues In Therapeutic Drug Monitoring
5. Practical Issues In Therapeutic Drug Monitoring
6. Pharmacoeconomic Impact Of Therapeutic Drug Monitoring
7. Pharmacogenetics and TDM
8. Role of clinician in TDM
9. Recognize clinical areas where implementation of TDM may have a positive impact on patient care

**Course Outcome:** TDM plays an important role in the development of safe and effective therapeutic medications and individualization of these medications. Additionally, TDM can help to identify problems with medication compliance among noncompliant patient cases

**Course Audience: 2<sup>nd</sup> Year MBBS Students**

**Course Coordinator: Dr.G.Somasundaram,**

**Course Faculties with Qualification and Designation:** Dr.S.Jaikumar  
Asst.Prof,Dept of Pharmacology  
Dr.J.Jayasheela  
Asst.Prof,Dept of Pharmacology

### Course Curriculum/Topics with schedule (Min of 30 hours)

S No	Date	Topic	Time	Hours
1	13.02.2018	Introduction	4-7 pm	3
2	20.02.2018	Purpose Of Therapeutic Drug Monitoring	4-7 pm	3
3	13.03.2018	Measuring Plasma Drug Concentration In Therapeutic Drug Monitoring	4-7 pm	3
4	20.03.2018	Analytical Issues In Therapeutic Drug Monitoring	4-7 pm	3
5	10.04.2018	Practical Issues In Therapeutic Drug Monitoring	4-7 pm	3
6	15.05.2018	Pharmacoeconomic Impact Of Therapeutic Drug Monitoring	4-7 pm	3
7	12.06.2018	Pharmacogenetics and TDM	3-7 pm	3
8	10.07.2018	Role of clinician in TDM	3-7 pm	3
9	07.08.2018	Recognize clinical areas where implementation of TDM may have a positive impact on patient care	3-7 pm	3
			Total Hours	30

#### REFERENCE BOOKS: (Minimum 2)

Introduction to Therapeutic Drug Monitoring:Pages 1-39Dasgupta, Amitava, PhD

Monitoring Free Drug Concentration: Dasgupta, Amitava, PhD, Pages 41-65

## VALUE ADDED COURSE

**1. Name of the programme & Code**

THERAPEUTIC WINDOW PHENOMENA

**2. Duration & Period**

February to August 2018

**3. Information Brochure and Course Content of Value Added Courses**

*Enclosed as Annexure- I*

**4. List of students enrolled**

*Enclosed as Annexure- II*

**5. Assessment procedures:**

Short answers *Enclosed as Annexure- III*

**6. Certificate model**

*Enclosed as Annexure- IV*

**7.No. of times offered during the same year:**

February – August 2018

**8. Year of discontinuation: 2018**

**9. Summary report of each program year-wise**

Value Added Course- February – August 2018					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	PH06	Therapeutic Window Phenomena	Dr.S.Jaikumar Dr.J.Jayasheela	2 <sup>nd</sup> MBBS	20 (Feb-Aug-18)

**10. Course Feed Back**

*Enclosed as Annexure- V*

**RESOURCE PERSON**

S. S. L. 

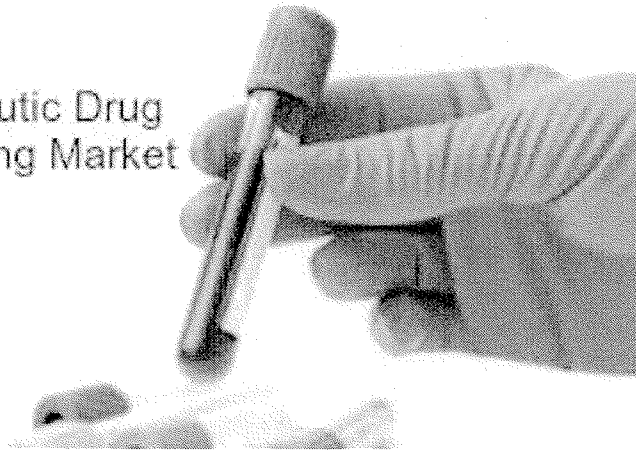
**COORDINATOR**

PROFESSOR & HOD  
DEPARTMENT OF PHARMACOLOGY  
Sri Laxmi Narayana Institute Of Medical Sciences,  
PONDICHERRY - 605 002.

# Therapeutic Window phenomena

Particulars	Description
Course Title	Therapeutic window phenomena
Course Code	PH06
Objective	<ol style="list-style-type: none"> <li>1. Introduction</li> <li>2. Purpose Of Therapeutic Drug Monitoring</li> <li>3. Measuring Plasma Drug Concentration In Therapeutic Drug Monitoring</li> <li>4. Analytical Issues In Therapeutic Drug Monitoring</li> <li>5. Practical Issues In Therapeutic Drug Monitoring</li> <li>6. Pharmacoeconomic Impact Of Therapeutic Drug Monitoring</li> <li>7. Pharmacogenetics and TDM</li> <li>8. Role of clinician in TDM</li> <li>9. Recognize clinical areas where implementation of TDM may have a positive impact on patient care</li> </ol>
Further learning opportunities	TDM plays an important role in the development of safe and effective therapeutic medications and individualization of these medications. Additionally, TDM can help to identify problems with medication compliance among noncompliant patient cases
Key Competencies	On successful completion of the course the students will have skill to interpret the values in therapeutic drug monitoring
Target Student	II MBBS Students
Duration	30hrs Every Feb to Aug 2016
Theory Session	10hrs
Practical Session	20hrs
Assessment Procedure	MCQ

## Therapeutic Drug Monitoring Market



### **INTRODUCTION**

Therapeutic drug monitoring (TDM) is generally defined as the clinical laboratory measurement of a chemical parameter that, with appropriate medical interpretation, will directly influence drug prescribing procedures. Otherwise, TDM refers to the individualization of drug dosage by maintaining plasma or blood drug concentrations within a targeted therapeutic range or window . By combining knowledge of pharmaceutics, pharmacokinetics, and pharmacodynamics, TDM enables the assessment of the efficacy and safety of a particular medication in a variety of clinical settings. The goal of this process is to individualize therapeutic regimens for optimal patient benefit. Traditionally, TDM involves measuring drug concentrations in various biological fluids and interpreting these concentrations in terms of relevant clinical parameters. Clinical pharmacists and pharmacologists use pharmacokinetic principles to assess these interpretations. The science of TDM introduced a new aspect of clinical practice in the 1960s with the

publication of initial pharmacokinetic studies linking mathematical theories to patient outcomes. From there, clinical pharmacokinetics emerged as a discipline in the late 1960s and early 1970s. Pioneers of drug monitoring in the 1970s focused on adverse drug reactions and demonstrated clearly that by constructing therapeutic ranges, the incidence of toxicity to drugs such as digoxin, phenytoin, lithium, and theophylline could be reduced. The emergence of clinical pharmacokinetic monitoring was encouraged by the increasing awareness of drug concentration-response relationships, the mapping of drug pharmacokinetic characteristics, the advent of high-throughput computerization, and advancements in analytical technology. The more recent explosion of pharmacogenetic and pharmacogenomic research has been fuelled by the tremendous amount of genetic data generated by the Human Genome Project (HGP). In 1990, the HGP began its quest to map the complete set of genetic instructions of the human genome consisting of approximately 3.2 billion base pairs encoding up to 100,000 genes located on 23 pairs of chromosomes. Although originally conceived as a 15-yr project, the HGP was essentially completed by 2001. Recent advancements in gene chip technology have ushered in a new era of gene-based medicinal and drug therapies.

## PURPOSE OF THERAPEUTIC DRUG MONITORING

---

Performing TDM requires a multidisciplinary approach. Accurate and clinically meaningful drug concentrations are attainable only by complete collaboration by a TDM team, typically comprised of scientists, clinicians, nurses, and pharmacists. Excellent communication among team members is necessary to ensure that best practices in TDM are achieved.

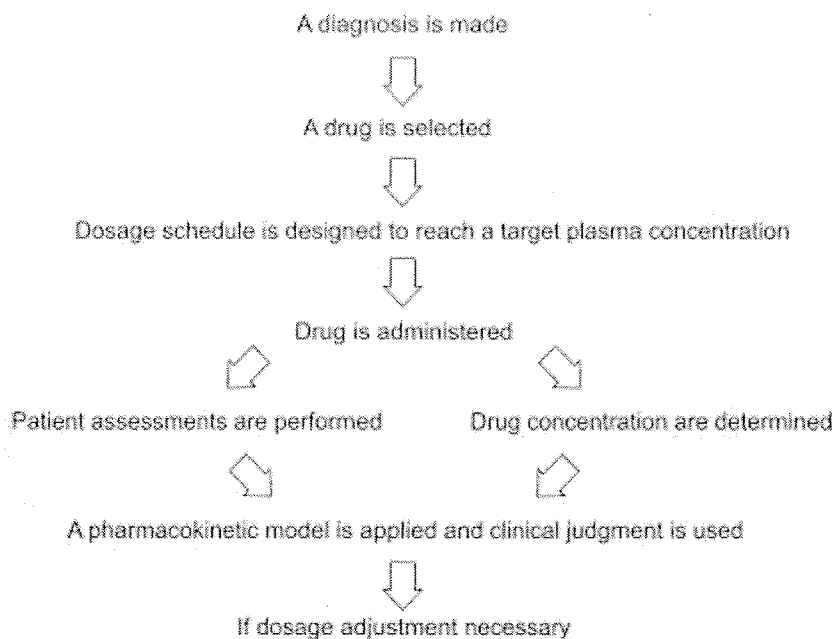


Figure 1

Process for reaching dosage decisions with therapeutic drug monitoring.

The indications for drug monitoring have widened to include efficacy, compliance, drug-drug interactions, toxicity avoidance, and therapy cessation monitoring (Table 1). Plasma drug concentration measurements alone may be helpful in several circumstances, although each indication may not apply equally to every drug. Measuring plasma concentrations may be helpful, however, as a low measurement reflects either poor recent compliance or under treatment. Poor compliance is implicated if the patient is prescribed a dose that is unlikely to be associated with a measured low concentration or if a previous measurement suggested that the plasma concentration should be higher for the given dose. When initiating drug therapy, the physician may find it useful to measure the plasma drug concentration and tailor the dosage to the individual. This directive applies to all drugs, although it is most important for those with narrow therapeutic ranges such as lithium, cyclosporine, and aminoglycoside antibiotics.

Table 1

Indications for requesting plasma drug concentrations

---

Monitoring compliance
Individualizing therapy
during early therapy
during dosage changes
Diagnosing undertreatment
Avoiding toxicity
Monitoring and detecting drug interactions
Guiding withdrawal of therapy

---

If the dosage regimen must be altered for any reason at a later stage of treatment, for example, in patients with renal failure, measuring plasma concentrations again may be helpful. Undertreatment of an established condition may be concluded if a poor clinical response is observed. However, when the drug is being used as prophylaxis, it is impossible to monitor a response. Thus, the physician can select a dosage that will produce a certain target plasma concentration. This dictum applies particularly to lithium in preventing manic-depressive attacks, to phenytoin in preventing fits after neurosurgery or trauma, and to cyclosporine in preventing transplant rejection. In all cases, plasma concentration measurements obtained and scrutinized during the early treatment stages enable the physician to avoid toxic plasma concentrations. In many cases, drug toxicity can be diagnosed clinically. For example, it is relatively easy to recognize acute phenytoin toxicity, and measuring the plasma concentration may not be necessary for diagnosis, although it may be helpful in adjusting the dosage subsequently. On the other hand, digoxin toxicity may mimic certain symptoms of heart disease, and measuring the

plasma concentration in cases in which toxicity is suspected may be helpful in confirming the diagnosis. In a study by Aronson and Hardman measurement of the plasma digoxin concentration in 260 patients treated with digitalis lanata preparations (digoxin, lanatoside C, betamethyl-digoxin) enabled the monitoring of certain outcomes that would not be apparent otherwise. Notably, the important overlap between "toxic" and "nontoxic" plasma concentration values limits use of the method in the diagnosis of digitalis toxicity (Fig. 2) However, in digitalis-treated patients with toxicity associated with digitalis plasma concentrations under 2.0 ng/mL, the method can detect digitalis sensitivity. Aronson and Hardman determined that a dosage selection based on plasma drug concentration assessment led to a decrease of digitalis toxicity to below 4%. This method is not yet widely available. Thus, it should be noted that plasma digoxin concentration measurements should be obtained and evaluated in digitalis-treated patients with borderline renal function, in aged subjects, and in patients with rapid atrial fibrillation who require higher digitalis doses for heart rate control (Fig. 3).

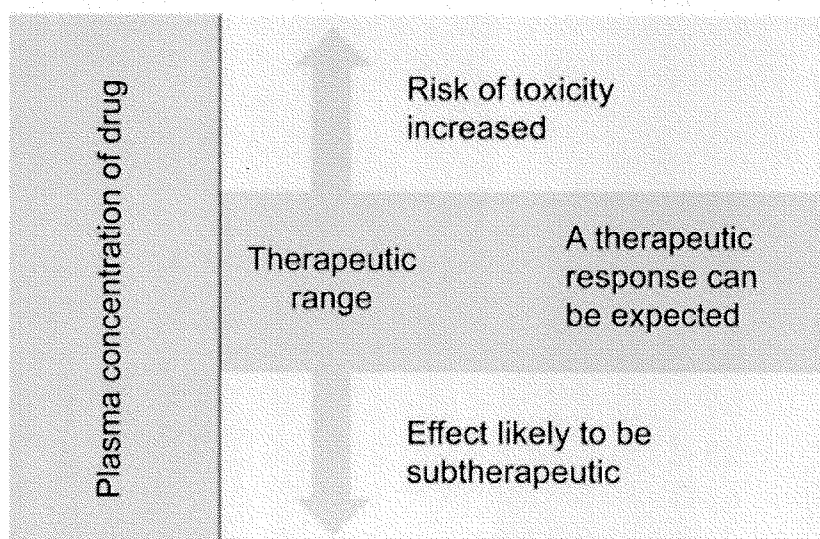
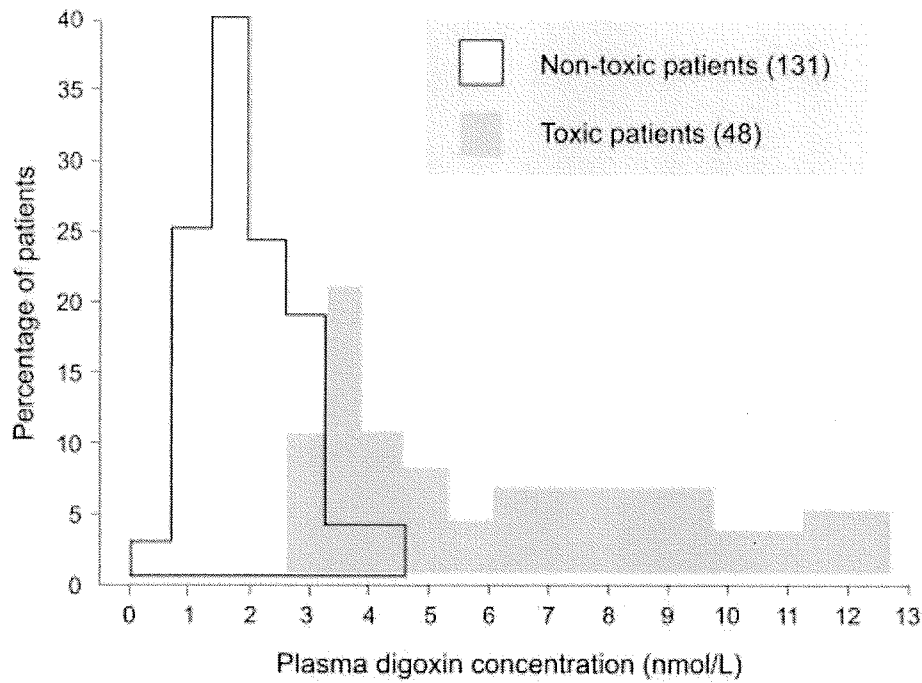


Figure 2

Concept of the therapeutic range [20].



## MEASURING PLASMA DRUG CONCENTRATION IN THERAPEUTIC DRUG MONITORING

The contribution of pharmacokinetic variability to differences in dose requirements can be identified by measuring the drug concentration at steady state and modifying the dose to attain a

desired concentration known to be associated with efficacy. However, there is substantial inter-individual pharmacodynamic variability at a given plasma concentration hence a range of concentrations rather than a single level is usually targeted. For a limited number of drugs for which there is a better relationship between plasma or blood concentration-response than dose-response, the measurement of plasma or blood concentrations has become a valuable surrogate index of drug exposure in the body

Pressures continue within the health care system to provide services at the lowest possible cost. Thus, the role of many drug assay laboratories is to measure the concentration of a therapeutic drug in a blood sample and relate this number to a therapeutic range published in the literature. Therapeutic drug measuring is only one part of TDM that provides expert clinical interpretation of drug concentration as well as evaluation based on pharmacokinetic principles. Expert interpretation of a drug concentration measurement is essential to ensure full clinical benefit. Clinicians routinely monitor drug pharmacodynamics by directly measuring the physiological indices of therapeutic responses, such as lipid concentrations, blood glucose, blood pressure, and clotting. For many drugs, either no measure of effect is readily available, or the method is insufficiently sensitive. Therefore, the process of TDM is predicted on the assumption that a definable relationship exists between dose and plasma or blood drug concentration, and between the blood drug concentration and pharmacodynamic effects. Measuring the plasma drug concentration may guide clinicians to stop treatment under two known circumstances. First, treatment should cease if the plasma digoxin concentration is below the therapeutic range in a patient whose clinical condition is satisfactory so that digoxin withdrawal is unlikely to lead to clinical deterioration. Note that this use of the plasma concentration measurement depends on the concept that there is a lower end to the therapeutic range. This is not true for other drugs,

particularly phenytoin. If there is no response to lithium and the serum concentration is at the upper end of the therapeutic range, then increased dosage is unlikely to be beneficial, and the risk of toxicity is high. Withdrawal of lithium and the use of a different treatment would be justified. Drug concentration measurements are requested to assist the management of a patient's current medication regimen or to screen for a medicine. Procedures may also be implemented to assess whether requests for drug assays are warranted before the assays are actually performed, thereby ensuring the rational utilization of resources. This is often time consuming for senior personnel, but can be cost-effective as it may prevent expensive tests that do not assist either immediate or long-term patient management.

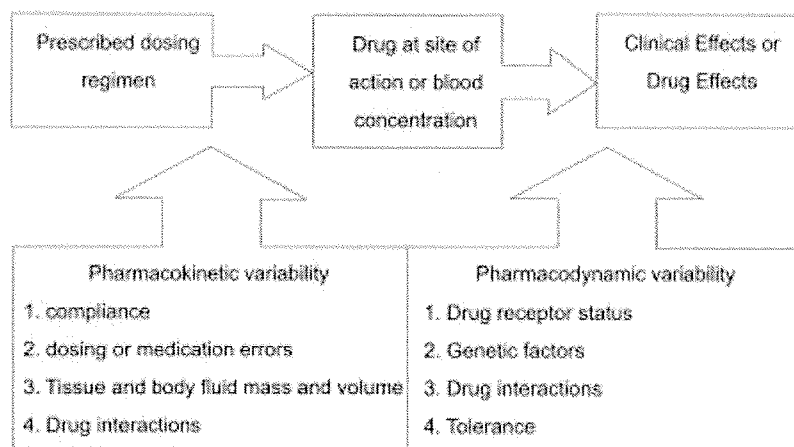


Figure 4

Relationships of pharmacokinetics and pharmacodynamics and factors that affect pharmacokinetic and pharmacodynamic variability

For a small number of drugs, measuring the plasma concentration is helpful in clinical practice. Table 2 presents the criteria that must be satisfied for the drug plasma concentration to be useful

Table 2

Criteria that a drug should satisfy for plasma concentration measurements to be useful

---

Difficulty in interpreting clinical evidence of therapeutic or toxic effects
A good relationship between the plasma drug concentration and the therapeutic or toxic effect, or both
A low toxic: therapeutic ratio
Dose does not metabolize to important active metabolites

---

Even for drugs that fulfill these criteria, some controversy exists about the usefulness of monitoring their plasma concentrations. First, it has been argued that no good evidence demonstrates that targeting plasma concentrations improves the therapeutic outcome and that the therapeutic value of plasma monitoring must be tested. However, these arguments ignore the underlying principle: a stronger relationship exists between plasma concentration and effect than between dose and effect suggesting that it should be possible to improve therapy with a drug by monitoring its plasma concentrations. Second, it is argued that the value of the technique is reduced by problems in defining therapeutic ranges, such as those encountered when conditions alter a drug's pharmacodynamic effects. However, this argument merely emphasizes the need for proper interpretation of plasma drug concentrations under such conditions. Third, some argue that the plasma concentration itself is being treated rather than the patients, and that monitoring is rendered useless by, for example, an inappropriate timing of sampling. We argue that this last point indicates that the information provided by plasma drug concentration monitoring is being misused. There is no justification for routine measurements of plasma drug concentrations.

without a definite purpose. Indeed, routine measurement of the plasma drug concentration without a clear purpose is as irresponsible as obtaining no measurement at all

## SUMMARY

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The use of TDM requires a combined approach encompassing pharmaceutical, pharmacokinetic, and pharmacodynamic techniques and analyses. The appropriate use of TDM requires more than a simple measurement of patient blood drug concentration and a comparison to a target range. Rather, TDM plays an important role in the development of safe and effective therapeutic medications and individualization of these medications. Additionally, TDM can help to identify problems with medication compliance among noncompliant patient cases. When interpreting drug concentration measurements, factors that need to be considered include the sampling time in relation to the dose, the dosage history, the patient's response, and the desired clinical targets. This information can be used to identify the most appropriate dosage regimen to achieve the optimal response with minimal toxicity.

## VALUE ADDED COURSE

### Annexure II

**SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES**  
Participant list of Value added course: Therapeutic window phenomena Feb to AUG 2018

Sl. No	Name of the Student	Register No	Signature
1	PRIYANKA BANDOPADHYAY	U17MB351	Priyanka
2	PRIYANKA KUMARI	U17MB352	Priyanka
3	PRIYANKA SINGH	U17MB353	Priyanka Singh
4	RAAGAVI .S	U17MB354	Raagavi
5	RAHUL RAI	U17MB355	Rahul
6	RICHI SWARN	U17MB356	Swarn
7	RINI DAS	U17MB357	Rini das
8	RISHABH SUMAN	U17MB358	Rishabh
9	RISHIKA	U17MB359	Rishika
10	RISHIRAAJ KAR	U17MB360	Rishiraj
11	RIYA M.A	U17MB361	Riya
12	ROFIQUL ISLAM	U17MB362	Rofiqul
13	ROHAN DAS	U17MB363	Rohan
14	SAKSHI SHARMA	U17MB364	Sakshi
15	SAMYUKTHA	U17MB365	Samyuktha
16	SANORITA	U17MB366	Sanorita
17	SANTOSHKUMAR NK	U17MB367	Santosh
18	SAPTARSHI CHATTOPADHYAY	U17MB368	Saptarshi
19	SATHIYA JAINAUB T.S.	U17MB369	Sathyaj
20	SHABAN OS	U17MB370	Shaban

S. J. S.  
S. J. S.

Somasundar  
PROFESSOR & HOD  
DEPARTMENT OF PHARMACOLOGY  
Sri Lakshmi Narayana Institute Of Medical Sciences  
PONDICHERRY - 605 502

THERAPEUTIC WINDOW PHENOMENA

MCQ

Course Code: PH 06

1. The time period that must elapse between the time of administration of a drug and the time that a serum level can be drawn depends on which of the following pharmacokinetic parameters of that drug? A. Elimination half-life

B. Distribution half-life

C. Clearance

D. Steady-state serum concentration

2. A drug that causes hepatic enzyme induction and increases the metabolism of other drugs is

A. phenobarbital.

B. digoxin.

C. theophylline.

D. lithium

3. A change in the dosing regimen of a patient receiving phenobarbital is made. Phenobarbital has a half-life of 90 hours. The patient receives a dose every 12 hours. To verify that the new dose is appropriate, a sample should be drawn and tested

A. the next morning.

B. after 5 doses have been given.

C. in 4 to 5 days.

D. in about 15 days

4. Serum drug assays typically measure

~~A.~~ total drug (both protein-bound drug and unbound drug).

B. unbound drug only.

C. protein-bound drug only.

D. volume of distribution

5. A patient has a phenytoin concentration of 15 ug/mL. Upon calling the physician with this result, the technologist is informed that the patient appears toxic. Given the nature of phenytoin, which of the following steps will most readily indicate that a total concentration of 15 ug/mL is consistent with toxicity and therefore an analytically correct value?

A. Recheck the analytical run to ensure that all quality control is correct.

~~B.~~ Recheck the result by rerunning a fresh sample from the original collection tube.

C. Request a fresh sample from the patient.

D. Check to see if the patient has a decreased albumin concentration

6. When a drug is being administered on a repeating pattern, steady-state serum drug concentrations are achieved after approximately how many drug half-lives have elapsed?

A. One

B. Two

~~C.~~ Five

D. The number varies with the drug.

7. Ultrafiltration is clinically useful when used for the following:

A. Removal of DLIF and measurement of free phenytoin, free valproic acid, and free digoxin in the presence of Digibind

B. Measurement of free phenytoin, free valproic acid, and free digoxin in the presence of digibind

C. Measurement of free phenytoin and free valproic acid

D. Measurement of free digoxin in the presence of digibind and removal of DLIF

8. Factors that can affect the results of therapeutic drug monitoring include

A. interactions between drugs.

B. accurate documentation of draw times.

C. drug metabolism and elimination.

D. All of the above

9. Which of the following drugs have long distribution phases so that samples must be drawn 6 to 12 hours after a dose?

A. Cyclosporine, carbamazepine

B. Lithium, digoxin

C. Phenytoin, phenobarbital

D. Procainamide, primidone

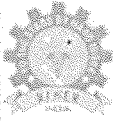
10. The initial peak serum drug concentration achieved after a drug is administered by intravenous bolus is influenced most by which pharmacokinetic parameter?

A. Clearance

B. Elimination half-life

C. Steady-state serum concentration

D. Volume of distribution



## Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UCC Act, 1956)




### CERTIFICATE OF MERIT

This is to certify that Sakshi Sharma has actively participated in the Value Added Course on "Therapeutic window phenomena" held during February to August 2018 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry - 605 002, India.

  
Dr. S. Jai Kumar

Dr. Jayasheela. J

RESOURCE PERSON

  
Dr. Somasundaram

COORDINATOR

DEPARTMENT OF  
POSTGRADUATE MEDICAL EDUCATION  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
PONDICHERRY - 605 002

## Student Feedback Form

Course Name: Therapeutic window phenomena

Subject Code: **PH 06**

Name of Student: Priyanka Bandopadhyay Roll No.: 017MB357

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear				✓	
2	Course contents met with your expectations					/
3	Lecturer sequence was well planned					/
4	Lectures were clear and easy to understand				/	
5	Teaching aids were effective				/	
6	Instructors encourage interaction and were helpful					/
7	The level of the course				/	
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Date: 09.08.2018

From  
G.Somaundaram,  
Department Of Pharmacology,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

Through Proper Channel

To  
The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.


**Sub: Completion of value-added course: Therapeutic Window Phenomena**

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: **Therapeutic Window Phenomena on Feb to Aug 2018**. We solicit your kind action to send certificates for the participants, which is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards

G.Somaundaram

  
PROFESSOR & HOD  
DEPARTMENT OF PHARMACOLOGY,  
Sri Lakshmi Narayana Institute of Medical Sciences,  
PONDICHERRY - 605 002.

**Encl: Certificates**

**Photographs**





# Sri Lakshmi Narayana Institute of Medical Sciences

Osudu, Puducherry-605502

Date : 04.05.2018

From  
V.Senthil kumar  
Professor and Head,  
Dept.of physiology  
SLIMS,  
Bharath Institute of Higher Education and Research,  
Chennai.

To  
The Dean,  
SLIMS  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Permission to conduct value-added course:** Certificate course of Exercise in stress management

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: **Certificate course of Exercise in stress management** on Feb 2018– Apr 2018. We solicit your kind permission for the same.

Kind Regards

DR.V.Senthil kumar

## FOR THE USE OF DEANS OFFICE

Names of Committee members for evaluating the course:


The Dean: DR.Sugumaran Annamalai

The HOD: DR.V.Senthil kumar

Expert :DR.R.Vijayakumar

The committee has discussed about the course and is approved.

  
Dean

  
subject expert  
**Dr. R. VIJAYAKUMAR**  
PROFESSOR IN PHYSIOLOGY  
MEDICAL SCIENCES  
Sri Lakshmi Narayana Institute of Medical Sciences  
Hindu Agaram Village, Pondicherry - 605 502

  
HOD

**DEAN**  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
OSUDU, AGARAM VILLAGE,  
KODAPAKKAM POST,  
PUDUCHERRY - 605 502

**PROFESSOR & HOD**  
DEPARTMENT OF PHYSIOLOGY  
Sri Lakshmi Narayana Institute of Medical Sciences  
PONDICHERRY - 605 502





OFFICE OF THE DEAN

# Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P -II ) dt. 11/07/2011 ]  
[ Affiliated to Bharath University, Chennai - TN ]

## Circular

Date: 17-01-2018

**Sub: Organising Value-added Course: Certificate course of Exercise in stress management -reg**

With reference to the above mentioned subject, it is to bring to your notice that **SLIMS, Bharath Institute of Higher Education and Research**, is organising Certificate course of Exercise in stress management". The course content is enclosed below."

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before Jan 2018. Applications received after the mentioned date shall not be entertained under any circumstances.

  
Dean

Encl: Copy of Course content and Registration form.

**DEAN**  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
OSUDU, AGARAM VILLAGE,  
KODAPAKKAM POST,  
PUDUCHERRY - 605 502



## VALUE ADDED COURSE

### 1. Name of the programme & Code

Certificate course of Exercise in stress management PHYC06

### 2. Duration & Period

30 hrs & Feb 2018– Apr 2018

### 3. Information Brochure and Course Content of Value-Added Courses

*Enclosed as Annexure- I*

### 4. List of students enrolled

*Enclosed as Annexure- II*

### 5. Assessment procedures:

Descriptive questions- *Enclosed as Annexure- III*

### 6. Certificate model

*Enclosed as Annexure- IV*

### 7. No. of times offered during the same year:

1 Feb 2018– Apr 2018

### 8. Year of discontinuation: 2018

### 9. Summary report of each program year-wise

Value Added Course- Feb 2018– Apr 2018					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	PHYC 06	Certificate course of Exercise in stress management	Dr. S.Latha	1 <sup>st</sup> MBBS	20 ( Feb 2018– Apr 2018 )

### 10. Course Feed Back

*Enclosed as Annexure-*



**RESOURCE PERSON**

Dr. R. VIJAYAKUMAR  
PROFESSOR IN PHYSIOLOGY  
SRI LAKSHMI NARAYANA INSTITUTE OF  
MEDICAL SCIENCES  
Osudu Agaram Village, Pondicherry - 605 502



**COORDINATOR**

PROFESSOR & HOD  
DEPARTMENT OF PHYSIOLOGY  
Sri Lakshmi Narayana Institute Of Medical Sciences  
PONDICHERRY - 605 502.



## Annexure -I- Course Proposal

**Course Title:** Certificate course of Exercise in stress management

**Course Objective:** The main objective of the course is to enable the students to know about the stress and their impact on health and the effect of exercise on stress management

**Course Outcome:** On successful completion of the course the students will acquire sufficient information on stress and the role of exercise in stress

**Course Audience:** Ist MBBS students

**Course Coordinator:** DR.V.Senthil kumar

**Course Faculties with Qualification and Designation:**

1. DR.R.Vijayakumar, Ph.D, Professor
2. DR.Premaraja, MD, Assistant professor
3. DR.B.Deivanayagame, MD, Assistant professor

**Course Curriculum/Topics with schedule (Min of 30 hours)**

SINo	Date	Topic	Time	Hours
1.	10/02/18	Stress and its causes	2-5pm	3
2	17/02/18	Stages of stress	2-5pm	3
3	24/02/18	Hypothalamo-hypophysial-adrenal axis	2-5pm	3
4	03/03/18	Cortisol and its effects	2-5pm	3
5	10/03/18	Adverse effect of stress	2-5pm	3
6	17/03/18	Exercise and its types	2-5pm	3
7	24/03/18	Beneficial effects of exercise	2-5pm	3
8	31/03/18	Exercise and stress	2-5pm	3
9	07/04/18	Stress reducing exercises	2-5pm	3
10	14/04/18	Assessment	2-5pm	3
			Total Hours	30

**REFERENCE BOOKS:**

1. Stress physiology-DP.Singh
- 2.A Textbook of Sports & Exercise Physiology- kumar dey



**CERTIFICATE COURSE OF EXERCISE  
IN STRESS MANAGEMENT**



**PARTICIPANT HAND BOOK**



## COURSE DETAILS

Particulars	Description
Course Title	Certificate course of Exercise in stress management PHYC06
Course Code	PHYC06
Duration	30 Hrs , Feb 2018– Apr 2018
Key Competencies	<ol style="list-style-type: none"><li>1. Stress and its causes</li><li>2. Stages of stress</li><li>3. Hypothalamo-hypophysial-adrenal axis</li><li>4. Cortisol and its effects</li><li>5. Adverse effect of stress</li><li>6. Exercise and its types</li><li>7. Beneficial effects of exercise</li><li>8. Exercise and stress</li><li>9. Stress reducing exercises</li></ol>
objectives	On successful completion of the course the students will acquire adequate knowledge on stress and the role of exercise in stress.
Target Student	1st MBBS Students
Assessment Procedure	Descriptive questions based assessment

### Course content

#### Stress:

The threatening or challenging situation is referred to as a “stressor.” When a person encounters a stressor, the body prepares to respond to the challenge or threat. The autonomic nervous and



endocrine systems respond by producing the hormones epinephrine, norepinephrine, and cortisol. The result of this hormone production is a cascade of physiological reactions that make up the stress response.

### **Stages of stress**

Stress triggers a wide range of body changes called General Adaptation Syndrome (GAS) which was also the postulation by Hans Selye (1938). According to Selye (1938), the GAS involves 3 stages;

1. Alarm stage
2. Resistance stage
3. Exhaustion stage

### **Alarm Stage (Fight & Flight Reaction)**

It involves series of immediate responses of body to stress. It mobilizes the body's resources for immediate physical activities. It is short lived. If the stress is mild the body mechanism return to normal, if stress is great enough the body mechanisms may not be able to cope and death may result . If the organism survives, it soon enters the second stage.

### **Resistance Stage**

Though this stage starts slowly, its effects last long and provide body an adaptation towards that stress. This stage allows the body to continue fighting the stressor for a longer period and it increases the rate at which life saving processes occur. Generally the resistance reaction is successful in combating the stress. This stage fails, only if the stress is powerfully noxious.

### **Exhaustion Stage**

Because of the continuous activities of various systems of the body in the first two stages, by the time the stage of exhaustion is reached, there are lots of disturbances in electrolyte and water balance along with non-availability of nutrients to different tissues. Thus, the vital organs cease functioning followed by death.



**Mode of action via sympathetic:**

This produces responses of stage of alarm reaction. The visceral effectors immediately respond. During this stage, there is supply of tremendous amount of glucose and oxygen to the organs (brain, heart and skeletal muscle) which are most active in fighting the stress. This is due to release of adrenaline and nor adrenaline which causes:

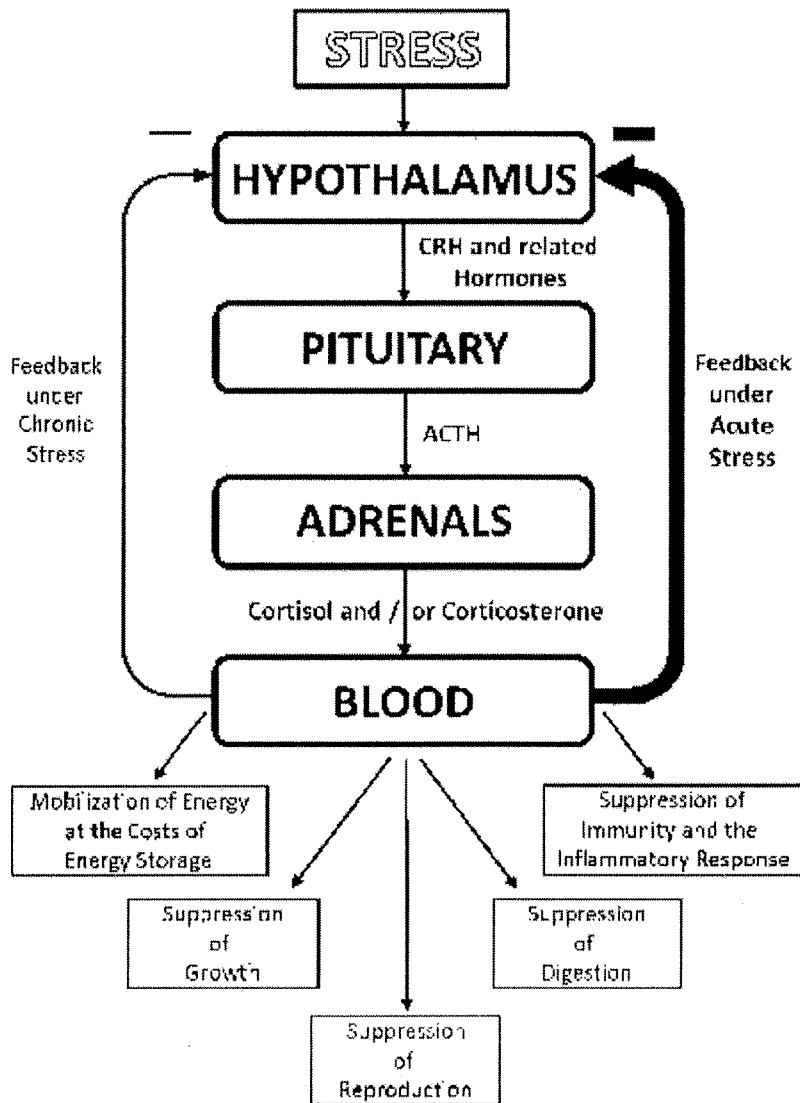
1. Increased rate and force of contraction of heart.
2. Dilation of blood vessels to brain and muscles.
3. Constriction of blood vessels in visceral organs except heart and lungs.
4. Contraction of spleen and discharge of stored blood.
5. Conversion of liver glycogen into glucose.
6. Increased respiratory rate.
7. Reduced secretion of digestive enzymes.

**Hypothalamo-Hypophyseal-Adrenal axis:**

The hypothalamic–pituitary–adrenal axis (HPA axis or HTPA axis) is a complex set of direct influences and feedback interactions among three components: the hypothalamus, the pituitary gland (a pea-shaped structure located below the thalamus), and the adrenal (also called "suprarenal") glands (small, conical organs on top of the kidneys).

These organs and their interactions constitute the HPA axis, a major neuroendocrine system that controls reactions to stress and regulates many body processes, including digestion, the immune system, mood and emotions, sexuality, and energy storage and expenditure. It is the common mechanism for interactions among glands, hormones, and parts of the midbrain that mediate the general adaptation syndrome (GAS). While steroid hormones are produced mainly in vertebrates, the physiological role of the HPA axis and corticosteroids in stress response is so fundamental that analogous systems can be found in invertebrates and monocellular organisms as well.





### Role of cortisol in stress:

Cortisol, a glucocorticoid (steroid hormone), is produced from cholesterol in the two adrenal glands located on top of each kidney. It is normally released in response to events and circumstances such as waking up in the morning, exercising, and acute stress. Cortisol's far-reaching, systemic effects play many roles in the body's effort to carry out its processes and maintain homeostasis.

Cortisol (along with its partner epinephrine) is best known for its involvement in the "fight-or-flight" response and temporary increase in energy production, at the expense of processes that are not required for immediate survival. The resulting biochemical and hormonal imbalances (ideally) resolve due to a hormonally driven negative feedback loop. The following is a typical example of how the stress response operates as its intended survival mechanism



## **Whole-Body Effects of Elevated Cortisol**

### **Blood Sugar Imbalance and Diabetes**

Under stressful conditions, cortisol provides the body with glucose by tapping into protein stores via gluconeogenesis in the liver. This energy can help an individual fight or flee a stressor. However, elevated cortisol over the long term consistently produces glucose, leading to increased blood sugar levels.

Theoretically, this mechanism can increase the risk for type 2 diabetes, although a causative factor is unknown.<sup>1</sup> Since a principal function of cortisol is to thwart the effect of insulin—essentially rendering the cells insulin resistant—the body remains in a general insulin-resistant state when cortisol levels are chronically elevated. Over time, the pancreas struggles to keep up with the high demand for insulin, glucose levels in the blood remain high, the cells cannot get the sugar they need, and the cycle continues.

### **Weight Gain and Obesity**

Repeated elevation of cortisol can lead to weight gain. One way is via visceral fat storage. Cortisol can mobilize triglycerides from storage and relocate them to visceral fat cells (those under the muscle, deep in the abdomen). Cortisol also aids adipocytes' development into mature fat cells. The biochemical process at the cellular level has to do with enzyme control (11-hydroxysteroid dehydrogenase), which converts cortisone to cortisol in adipose tissue. More of these enzymes in the visceral fat cells may mean greater amounts of cortisol produced at the tissue level, adding insult to injury (since the adrenals are already pumping out cortisol). Also, visceral fat cells have more cortisol receptors than subcutaneous fat.

A second way in which cortisol may be involved in weight gain goes back to the blood sugar-insulin problem. Consistently high blood glucose levels along with insulin suppression lead to cells that are starved of glucose. But those cells are crying out for energy, and one way to regulate is to send hunger signals to the brain. This can lead to overeating. And, of course, unused glucose is eventually stored as body fat.



Another connection is cortisol's effect on appetite and cravings for high-calorie foods. Studies have demonstrated a direct association between cortisol levels and calorie intake in populations of women. Cortisol may directly influence appetite and cravings by binding to hypothalamus receptors in the brain. Cortisol also indirectly influences appetite by modulating other hormones and stress responsive factors known to stimulate appetite.

### **Immune System Suppression**

Cortisol functions to reduce inflammation in the body, which is good, but over time, these efforts to reduce inflammation also suppress the immune system. Chronic inflammation, caused by lifestyle factors such as poor diet and stress, helps to keep cortisol levels soaring, wreaking havoc on the immune system. An unchecked immune system responding to unabated inflammation can lead to myriad problems: an increased susceptibility to colds and other illnesses, an increased risk of cancer, the tendency to develop food allergies, an increased risk of an assortment of gastrointestinal issues (because a healthy intestine is dependent on a healthy immune system), and possibly an increased risk of autoimmune disease.

### **Gastrointestinal Problems**

Cortisol activates the sympathetic nervous system, causing all of the physiologic responses previously described. As a rule, the parasympathetic nervous system must then be suppressed, since the two systems cannot operate simultaneously. The parasympathetic nervous system is stimulated during quiet activities such as eating, which is important because for the body to best use food energy, enzymes and hormones controlling digestion and absorption must be working at their peak performance.

Imagine what goes on in a cortisol-flooded, stressed-out body when food is consumed: Digestion and absorption are compromised, indigestion develops, and the mucosal lining becomes irritated and inflamed. This may sound familiar. Ulcers are more common during stressful times, and many people with irritable bowel syndrome and colitis report improvement in their symptoms when they master stress management. And, of course, the resulting mucosal inflammation leads to the increased production of cortisol, and the cycle continues as the body becomes increasingly taxed.



## **Cardiovascular Disease**

As we've seen, cortisol constricts blood vessels and increases blood pressure to enhance the delivery of oxygenated blood. This is advantageous for fight-or-flight situations but not perpetually. Over time, such arterial constriction and high blood pressure can lead to vessel damage and plaque buildup—the perfect scenario for a heart attack. This may explain why stressed-out type A (and the newly recognized type D) personalities are at significantly greater risk for heart disease than the more relaxed type B personalities.

## **Fertility Problems**

Elevated cortisol relating to prolonged stress can lend itself to erectile dysfunction or the disruption of normal ovulation and menstrual cycles. Furthermore, the androgenic sex hormones are produced in the same glands as cortisol and epinephrine, so excess cortisol production may hamper optimal production of these sex hormones.

## **Other Issues**

Long-term stress and elevated cortisol may also be linked to insomnia, chronic fatigue syndrome, thyroid disorders, dementia, depression, and other conditions.

## **Stimulation of Anterior Pituitary and Adrenal Cortex**

This occurs during stage of resistance reaction. Hypothalamus causes activation of adrenal cortex and also the thyroid via anterior pituitary gland by secreting releasing hormones. The pituitary, thyroid and adrenal cortical hormones produce the various responses. The responses are :

1. Gluconeogenesis from fat in liver –by glucocorticoids to provide glucose to brain during emergency as brain cell can only utilize glucose. Moreover, brain cells are not insulin dependent for their uptake and utilization
2. Increased catabolism of carbohydrates stores by catecholamine
3. Reduction of inflammation and sensitization of blood vessels-by glucocorticoids
4. Retention of sodium followed by retention of water and elimination of hydrogen ions –by mineralocorticoids.

## **Adverse effect of stress:**



Stress overtime, causes disease and disability and reduces performance due to physiological changes. The stress response also varies depending on the level of perceived control one has over the stressor <sup>(10)</sup>. If there is a way for one to actively cope with the stressor that is reasonable, then the individual usually perceives more control over the situation. With this uncontrollable type of stressor, there is a more negative reaction with greater productions of cortisol, which can have damaging health effects because of the suppression of immune function.

It is estimated that between 75% and 90% of primary care physician visits are caused by stress-related illnesses. Cardiovascular disease, obesity, diabetes, depression, anxiety, immune system suppression, headaches, back and neck pain, and sleep problems are some of the health problems associated with stress. stress can increase the risk for chronic diseases and other health problems, dealing with chronic conditions and poor health can increase the amount of stress one experiences. Stress also influences behaviors that affect health. Diet choices, sleep habits, and drug use are behaviors that are often negatively affected by stress.

### **Exercise:**

Exercise can be an effective component of a stress management program, and all types of exercise can be beneficial for stress management. Exercise programs consistent with the current recommendations to improve health can be prescribed to manage stress. Fitness professionals should recognize that it might be necessary to refer a client to a psychologist or other health care provider to help develop strategies for managing stressors that produce chronic and acute episodic stress.

### **Health benefits of exercise**

#### **1. Exercise controls weight**

Exercise can help prevent excess weight gain or help maintain weight loss. When you engage in physical activity, you burn calories. The more intense the activity, the more calories you burn.

Regular trips to the gym are great, but don't worry if you can't find a large chunk of time to exercise every day. Any amount of activity is better than none at all. To reap the benefits of



exercise, just get more active throughout your day — take the stairs instead of the elevator or rev up your household chores. Consistency is key.

## **2. Exercise combats health conditions and diseases**

Worried about heart disease? Hoping to prevent high blood pressure? No matter what your current weight is, being active boosts high-density lipoprotein (HDL) cholesterol, the "good" cholesterol, and it decreases unhealthy triglycerides. This one-two punch keeps your blood flowing smoothly, which decreases your risk of cardiovascular diseases.

Regular exercise helps prevent or manage many health problems and concerns, including:

- Stroke
- Metabolic syndrome
- High blood pressure
- Type 2 diabetes
- Depression
- Anxiety
- Many types of cancer
- Arthritis
- Falls

It can also help improve cognitive function and helps lower the risk of death from all causes.

## **3. Exercise improves mood**

Need an emotional lift? Or need to blow off some steam after a stressful day? A gym session or brisk walk can help. Physical activity stimulates various brain chemicals that may leave you feeling happier, more relaxed and less anxious.

You may also feel better about your appearance and yourself when you exercise regularly, which can boost your confidence and improve your self-esteem.

## **4. Exercise boosts energy**



Winded by grocery shopping or household chores? Regular physical activity can improve your muscle strength and boost your endurance.

Exercise delivers oxygen and nutrients to your tissues and helps your cardiovascular system work more efficiently. And when your heart and lung health improve, you have more energy to tackle daily chores.

### **5. Exercise promotes better sleep**

Struggling to snooze? Regular physical activity can help you fall asleep faster, get better sleep and deepen your sleep. Just don't exercise too close to bedtime, or you may be too energized to go to sleep.

### **6. Exercise puts the spark back into your sex life**

Do you feel too tired or too out of shape to enjoy physical intimacy? Regular physical activity can improve energy levels and increase your confidence about your physical appearance, which may boost your sex life.

But there's even more to it than that. Regular physical activity may enhance arousal for women. And men who exercise regularly are less likely to have problems with erectile dysfunction than are men who don't exercise.

## **Exercise and Stress**

Exercise and stress research has typically focused on aerobic exercise. There have been consistent findings that people report feeling calmer after a 20- to 30-minute bout of aerobic exercise, and the calming effect can last for several hours after exercise. Human and animal research indicates that being physically active improves the way the body handles stress because of changes in the hormone responses, and that exercise affects neurotransmitters in the brain such as dopamine and serotonin that affect mood and behaviors.

Exercise can be an effective component of a stress management program for many individuals and should be recommended to help those who are dealing with acute, acute episodic, or chronic stress.



## **STRESS REDUCING EXERCISES:**

### **1. Yoga**

*Why it works to reduce stress:* Yoga postures are a form of strength training, making you more resilient and flexible, which in turn relieves physical tension. It also uses deep breathing, which triggers the body's relaxation response. Studies have shown that yoga reduces blood pressure too. But perhaps yoga's biggest benefit is the mental focus it promotes. Focus is key to stress management.

*How to do it:* Yoga classes that appeal to all ages, temperaments and fitness levels abound at gyms, studios and community colleges. Some classes, such as hatha, are gentler and focus primarily on stress reduction, while others – ashtanga, vinyasa, power, Bikram – are more athletic.

*Why it works to reduce stress:* Derived from an ancient Chinese martial art, tai chi (also known as tai chi chuan) links physical movement to the breath. Often called “meditation in motion,” tai chi promotes a focus on the present – a mental absorption in which everyday worries fall away. Tai chi also increases flexibility and boosts energy, which result in an improved sense of well-being. Other benefits include better balance, more restful sleep and increased cardiovascular fitness.

### **2. Walking**

*Why it works to reduce stress:* It's easy to do and requires no classes or special equipment. Walking frequently can reduce the incidence of many of the stress-related conditions, including cardiovascular disease, high blood pressure and cholesterol, and type 2 diabetes. People with regular walking regimens also report reduced stress levels and a self-confidence that comes from taking an active role in their well-being. “Walking releases tension from the major muscle groups, deepens the breathing and quiets the nervous system,” Migdow says. “It also gets us out into nature, which is relaxing.” *How to do it:* If you're just getting started on walking for exercise, aim for two 10-minute walks a week. After two or three weeks, gradually increase the frequency and duration of your walks. Five or six 30-minute walks a week are usually recommended to maintain health and stress management. To lose weight, you'll have to make



those walks longer when you have time (say, 90 minutes on Sundays) and/or more intense (take a hilly route or ramp up speed). Your breath should be heavy but not labored.

### 3. Gardening

*Why it works to reduce stress:* Gardening is actually a low-impact workout. Weeding alone can burn 200 calories an hour, and more strenuous activities, such as hauling bags of dirt or raking, can shed up to 600 calories an hour. But gardening has the stress-busting bonus of putting you in contact with the earth, which refreshes your spirit.

*How to do it:* Start small. Even one or two herb plants grown on a sunny windowsill can increase your connection to nature.

### 4. Dancing

*Why it works to reduce stress:* Dancing has many physical, mental and even emotional benefits. It's a great workout that improves grace and agility as it raises your heart rate. And researchers have found that people who ballroom dance twice a week have less risk of developing dementia, perhaps because learning new steps challenges your brain too.

Dancing also fosters a sense of community and connection to other people, which lowers stress levels and boosts happiness. *How to do it:* Ballroom, salsa, swing or square – take your pick. You can enroll in a class at a studio such as Arthur Murray or a community center. Many music and dance clubs offer free lessons before evening events.

### Circuit Training

*Why it works to reduce stress:* Circuit training alternates weight-training moves with cardio, with short rests in between. The result is a high-intensity workout that offers the same benefits of longer exercise sessions in less time (30 minutes or less). It's short, sweet and pumps up your body's endorphin level, which improves your mood. Better yet, you don't have to stress about finding lots of time to fit a workout in. *How to do it:* One popular circuit training program is Curves, the national chain that uses musical cues to guide members to switch stations during a 30-minute exercise circuit.

### 8. Pilates

*Why it works to reduce stress:* Pilates is a series of exercises that emphasizes body awareness, core strength and proper alignment. "With its equal focus on strengthening and lengthening



muscles, Pilates creates a physical harmony that simply doesn't allow stress to take hold as easily," says Ellen Barrett, fitness expert and creator of the Pilates DVD *Slim Sculpt*. Like yoga, the mental concentration required for Pilates "zaps you into the moment, leaving little mental space for worrying," Barrett says. Finally, Pilates is known for reducing back and neck pain, another side effect of stress. *How to do it:* Pilates can be performed on a machine known as "The Reformer" – typically available only in Pilates studios – or on a mat on the floor (logically labeled "mat" or "floor" Pilates on gym schedules).

## **Tennis**

A great cardio workout, tennis can prevent many stress-related conditions, such as high blood pressure and heart disease. And because you can't play tennis alone, the sport keeps you connected to others – a key component of stress reduction. "Working out on the tennis court triggers your brain to release endorphins into your body. Those are the biochemicals that produce euphoric feelings of peace and satisfaction," says John Sklare, Life script's Personal Coach and a tennis coach.

## **Assessment Procedure**

Descriptive questions-based assessment after successful completion of theory sessions



# Bharath Institute of Higher Education and Research

## Annexure -II

SLIMS Participant list of Value added course: Certificate course of Exercise in stress management

Feb 2018– Apr 2018

Sl.No	Reg.No	Name of the candidate	Signature
1	U17MB300	GRANDHI KARISHMA	Grandhi Karishma
2	U17MB301	GREESHMA SHAJI .K	Greeshma Shaji K
3	U17MB302	GUDDATI KOTA SATYA SAI NAGA S RAMESH	Guddati Ramesh
4	U17MB303	GURUNATHAN S	Gurunathan S
5	U17MB304	HARSH BHARTI	Harsh Bharti
6	U17MB305	HENRITTA.I	Henritta I
7	U17MB306	HIYA SAIKIA	Hiya Saikia
8	U17MB307	HRITHICK MANICKAM R	Hrithick Manickam R
9	U17MB308	JAYASHREE SAIKIA	Jayashree Saikia
10	U17MB309	JITHU MOHAN	Jithu Mohan
11	U17MB310	KAILA PRASANTH KUMAR	Kaila Prasant Kumar
12	U17MB311	KAJAL MISHRA	Kajal Mishra
13	U17MB312	KAVIYA EV	Kaviya Ev
14	U17MB313	KAYANAT FARHEEN	Kayanat Farheen
15	U17MB314	KEVIKONO BIO	Kevikono Bio
16	U17MB315	KEVIN RAHUL.S	Kevin Rahul S
17	U17MB316	KURRI BHARGAV REDDY	Kurri Bhargav Reddy
18	U17MB317	LALITHA PRIYA.G	Lalitha Priya G
19	U17MB318	MAGESHWAR.G.V	Mageshwar G V
20	U17MB319	MALLI SOHAN	Malli Sohan





**SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH**

**Annexure -III**

**Certificate course of Exercise in stress management**

**DESCRIPTIVE QUESTIONS**

**I. ANSWER ALL THE QUESTIONS**

**ESSAY:**

**2x15=30**

1. Give in detail about the stress reducing exercises
2. Write the effects of elevated cortisol level in stress

**Short answers:**

**4x5=20**

1. What are the different stages of stress
2. Hypothalamo-hypophyseal adrenal axis
3. Explain the mode of action of stress
4. Write the effect of exercise in stress



# Course/Training Feedback Form

## Annexure -V

**Course:** Certificate course of Exercise in stress management

**Date:** Feb 2018– Apr 2018

**Name:** HIYA SAULIA

**Reg NO.** U17MB306

**Department:** Physiology

**Q 1:** Please rate your overall satisfaction with the format of the course:

a.  Excellent   b.  Very Good   c.  Satisfactory   d.  unsatisfactory

**Q 2:** Please rate course notes:

a.  Excellent   b.  Very Good   c.  Satisfactory   d.  unsatisfactory

**Q 3:** The lecture sequence was well planned

a.  Excellent   b.  Very Good   c.  Satisfactory   d.  unsatisfactory

**Q 4:** The lectures were clear and easy to understand

a.  Excellent   b.  Very Good   c.  Satisfactory   d.  unsatisfactory

**Q 5:** Please rate the quality of pre-course administration and information:

a.  Excellent   b.  Very Good   c.  Satisfactory   d.  unsatisfactory

**Q 6:** Any other suggestions:

**Comments:**

**Thank you for taking the time to complete this survey, your comments are much appreciated.**

**OPTIONAL Section:** Name \_\_\_\_\_

Signature Hiya Saulia Date \_\_\_\_\_



Date:16.04.18

From  
DR.V.Senthil kumar  
Dept.of physiology  
SLIMS  
Bharath Institute of Higher Education and Research,  
Chennai.

Through Proper Channel

To  
The Dean,  
SLIMS  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Completion of value-added course: Certificate course of Exercise in stress management**

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: Certificate course of Exercise in stress management on Feb 2018– Apr 2018. We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards

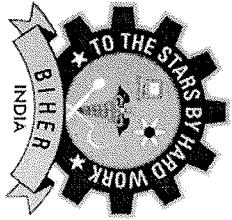
  
DR.V.Senthil kumar

PROFESSOR & HOD  
DEPARTMENT OF PHYSIOLOGY  
Sri Lakshmi Narayana Institute Of Medical Sciences  
PONDICHERRY - 605 002.

**Encl: Certificates**

**Photographs**





# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research

(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that HIYA SAIKIA has actively participated in

the Value Added Course on Certificate course of Exercise in stress management held during

Feb 2018– Apr 2018 Organized by Sri Lakshmi Narayana Institute of Medical Sciences,

Pondicherry- 605 502, India.

Dr. R. Vijayakumar

RESOURCE PERSON

Dr. V. Senthil Kumar

COORDINATOR



**Course:** Certificate course of Exercise in stress management

**Code:** PHYC06





D. NO.

FOR OFFICE USE ONLY

Total Number of pages written including additional sheets

# BHARATH UNIVERSITY

(Declared under Section 3 of the UGC Act 1956)  
CHENNAI - 600 073

## MAIN ANSWER BOOK

DEPARTMENT OF PHYSIOLOGY  
Sri Lalitha Narayana Institute of Medical Sciences  
PONDICHERY - 605 002.

NAME OF THE EXAMINATION : VALUE ADDED COURSE

SUBJECT OF THE EXAMINATION: VAC - PHYSIOLOGY

SECTION / CODE : PHYC 06

DATE OF THE EXAMINATION : 14.04.18

### QUESTION NUMBERS / MARKS

Section	1	2				Sub Total
A	12	12				24
	a	b	c	d	e	
B	5	2	3	2		14
	f	g	h	i	j	
C	a	b	c	d	e	
	f	g	h	i	j	
<b>TOTAL</b>						<b>38</b>

76/100

Total Marks in words SEVENTY SIX

OFFICE USE  
  
BUNDLE No.

Signature of the Examiner *my*

### CANDIDATES TO FILL THIS COLUMN CAREFULLY

REG NO. U17MB306

FOR OFFICE USE ONLY  
D. NO.



## I- Stress reducing Exercises

The stress reducing Exercises are

- Yoga
- walking
- Dancing
- Circuit training
- Pilates
- Tennis
- 

### Yoga :

→ Yoga relieves physical tension. It uses deep breathing which triggers body relaxation.

→ yoga reduces blood pressure

→ It promotes mental focus - focus is a key to stress management.

→ Focus on a present - a mental absorption in which everyday worries fall away.

→ yoga increases flexibility and

and boost energy which result in improved sense of well being. Other benefits include better balance, more restful sleep and increased Cardiovascular fitness.

### Walking:

walking frequently reduces the incidence of many of the stress-related conditions including Cardiovascular disease, high blood pressure and cholesterol and type 2 Diabetes mellitus.

→ People with regular walking reported that reduced stress level and <sup>increase</sup> self confidence.

→ walking releases tension from major muscle groups.

### Dancing:

Dancing have many physical, mental and emotional benefits. It is a great workout that improves grace and equilibrium and raises heart rate.

Dancing fosters a sense of community and connection to the people which lowers stress levels and boosts happiness.

### Circuit Dancing :

Circuit training ~~that~~ alternates weight-training moves with cardio, with short rest in between. The result of high-intensity workout that offers the same benefits of longer exercise sessions in less time. Circuit dancing increases body endorphin level which improves the mood.

### Pilates :

Pilates is a series of exercises that emphasizes body awareness, core strength and proper alignment.

Pilates can be performed on a machine or on a mat on the floor.

## 2. Effects of elevated cortisol level in stress

Stress :

The ~~too~~ threatening or challenging situation is referred to as a stressor. When a person counters a stressor the body prepares to respond to the challenge or threat.

The autonomic nervous and endocrine system respond by producing the hormones epinephrine, nor epinephrine and cortisol. The result of this hormone production is a cascade of physical reactions that make up the stress response.

The Role of cortisol in stress:

Cortisol is involved in fight or flight response and temporary

Increase in energy production.

Whole body effects of elevated cortisol:

(i) Blood sugar imbalance and Diabetes

Cortisol provides the body with glucose via gluconeogenesis in the liver.

Elevated cortisol over the long term consistently produces glucose, leading to increased blood sugar level. When cortisol level are chronically elevated, over time the pancreas struggles to keep up with high demand for insulin. Glucose level in the blood remain high.

Weight gain and obesity

Repeated elevation of cortisol can lead to weight gain. Cortisol cannot mobilize triglycerides from storage and relocate them to visceral fat cells. The biochemical process at the

Cellular level has to do with enzyme  
Cortisol which cortisone to cortisol in  
adipose tissue.

The cortisol increases appetite and  
intake of high calorie foods.

### 3) Immune System Suppression:

Cortisol suppress the immune  
system. ~~So~~ chronic inflammation caused  
by life style factors helps to keep  
cortisol level to increase this leads to  
increased susceptibility to cold and  
other illness, increased risk of cancer,  
the tendency to develop food allergies.

### 4) Gastrointestinal problems:

Cortisol activates sympathetic  
nervous system, parasympathetic system  
is suppressed, this leads to imbalance  
in the <sup>hormone</sup> controlling the digestion and  
absorption.

## Short notes

1. What are the different stages of stress.

- (1) Alarm stage
- 2) Resistance stage
- 3) Exhaustion stage

Alarm stage (Fight or flight response)

→ It involves series of immediate response of body stress.

→ short lived.

→ If stress is mild the body mechanism return to normal.

→ If stress is great enough, the body mechanism may not be able to cope and death may result.

Resistance stage

→ starts slowly

→ provide body an adaptation towards the stress

→ This stage fails if the stress is noxious

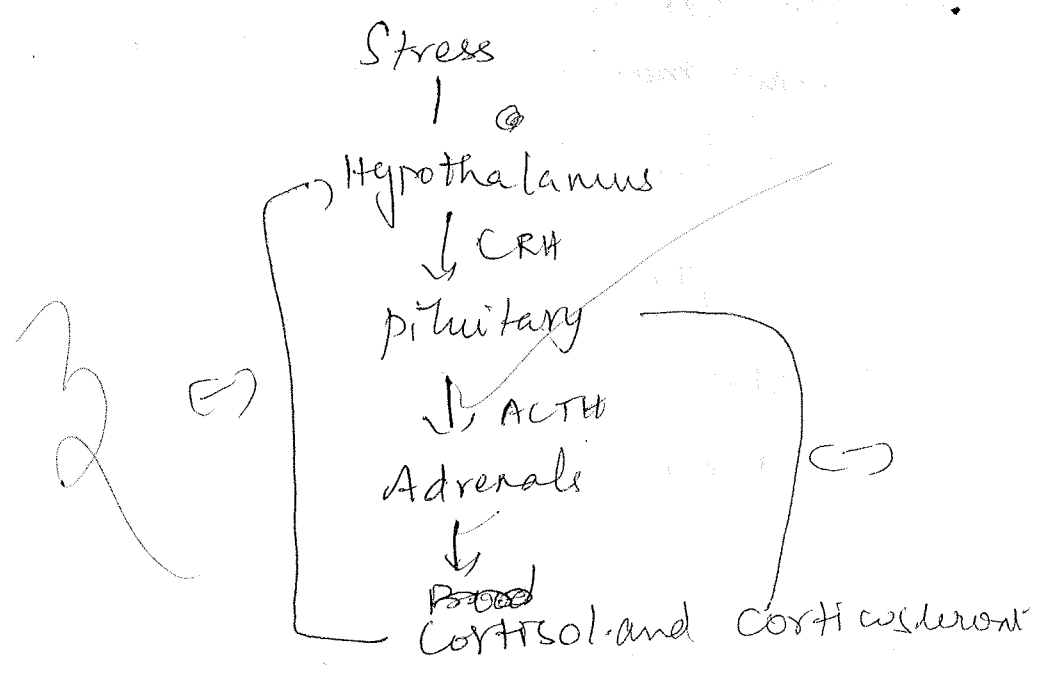
### Exhaustion Stage -

Continuous activities of various systems of body in the first two stages, by the time the stage of exhaustion reached.

→ loss of electrolytes and water balance along with non-availability of nutrients to the different tissues.

→ The vital organs cease functioning followed by death.

### 2. Hypothalamo-pituitary-adrenal axis



3. Explain the mode of action of stress.

Stress increases the cortisol level thro' the Hypothalamo-Hypophysial portal system.

the increased cortisol level leads to

→ mobilization of energy at the cost of energy storage.

→ Suppression of growth

→ Suppression of growth

→ Suppression of reproduction

→ ~~Suppression~~ Suppression of digestion

→ Suppression of immunity and also inflammatory response.

Q. Exercise effects in stress.

Exercise ~~is~~ reduces stress by increasing the blood supply and increases the sleep. Exercise boost energy and improves mood.

The exercise and stress research has typically focused on aerobic exercise.

The people report feeling calmer after a 20-30 minutes of aerobic exercise.

The exercise affects neurotransmitters in the brain such as dopamine and serotonin that affect mood and behaviour.



**Sri Lakshmi Narayana Institute of Medical Sciences**  
OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY – 605 502

Date:06.02.2018.

From  
Dr.S.Rajini  
Professor and Head,  
Department of Community Medicine,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Puducherry

To  
The Dean,  
Sri Lakshmi Narayana Institute of Medical College  
Bharath Institute of Higher Education and Research,  
Puducherry

**Sub: Permission to conduct value-added course: ETHICS AND RESEARCH**

Respected Madam,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: ETHICS AND RESEARCH from March – August 2018. We solicit your kind permission for the same.

Kind Regards

*Rajini*  
PROFESSOR & HOD  
DEPARTMENT OF COMMUNITY MEDICINE  
Sri Lakshmi Narayana Institute Of Medical Sciences  
PONDICHERRY - 605 502.

Head of Department

---



**Sri Lakshmi Narayana Institute of Medical Sciences**  
OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY – 605 502

**FOR THE USE OF DEANS OFFICE**

Names of Committee members for evaluating the course:

The Dean: Dr. Sukumar

The HOD: Dr. Rajini

The Expert: Dr. Kannan Krishnamoorthy

The committee has discussed about the course and is approved.

Resource person

  
**PROFESSOR & HOD**  
**DEPARTMENT OF COMMUNITY MEDICINE**  
Sri Lakshmi Narayana Institute of Medical Sciences  
PONDICHERRY - 605 502

HOD  
(Sign & Seal)

  
**DEAN**  
**DEAN**  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agaram, Villianur Commune, Kudapakkam Post,  
Villianur Cantonment, Puducherry - 605502.

Dean  
(seal & sign)



# Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY – 605 502

## Circular

08.02.2018

### **Sub: Organising Value-added Course: ETHICS AND RESEARCH reg**

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research** is organizing VALUE ADDED COURSE on “ETHICS AND RESEARCH”.

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before March 1<sup>th</sup>,2018 . Applications received after the mentioned date shall not be entertained under any circumstances.



DEAN  
DEAN  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agaram, Villianur Commune, Kudapakkam Post,  
Villianur Commune, Puducherry - 605502.

DEAN

## VALUE ADDED COURSE

### 1. Name of the programme & Code

Ethics in research and PSM01

### 2. Duration & Period

30 hrs & March 2018 – August 2018

### 3. Information Brochure and Course Content of Value Added Courses

*Enclosed as Annexure- I*

### 4. List of students enrolled

*Enclosed as Annexure- II*

### 5. Assessment procedures:

Multiple choice questions- *Enclosed as Annexure- III*

### 6. Certificate model

*Enclosed as Annexure- IV*

### 7. No. of times offered during the same year: 1

### 8. Year of discontinuation:2019

### 9. Summary report of each program year-wise

Value Added Course- March 2018 – August 2018					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	PSM02	Ethics and research	Dr.Kannan.K Dr. Thiruselvakumar.D Dr.Kameshvell.C	III <sup>rd</sup> MBBS	1

### 10. Course Feed Back *Enclosed as Annexure- V*

*D. Srinivasan*

RESOURCE PERSON

*Rajeev*  
PROFESSOR & HOD  
DEPARTMENT OF COMMUNITY MEDICINE  
Sri Lakshmi Narayana Institute Of Medical Sciences  
PONDICHERRY - 605 002

COORDINATOR

## Annexure 1 -Course Proposal

**Course Title:** ETHICS AND RESEARCH

**Course Objective:**

1. Introduction to ETHICS AND RESEARCH
2. Ethical committee
3. Components
4. Project funding
5. Monitoring
6. Evaluation

**Course Outcome:**

**Improvement in their knowledge on ETHICS AND RESEARCH**

**Course Audience:** Pre-Final year students

**Course Coordinator:** Dr.S.Rajini

**Course Faculties with Qualification and Designation:**

**1.Dr.K.Kanan, Assistant Professor**

**2.Dr.C.Kameshvell, Associate Professor**

**3.Dr.Thiruselvakumar,Associate Professor**

**Course Curriculum/Topics with schedule (Min of 30 hours)**

s.no	Date	Topic	Time	Faculties	Hrs
1	08.03.18	Introduction	4-6 PM	Dr.K.Kannan	2hrs
2	15.03.18	Ethics- overview	4-6 PM	Dr.C.Kameshvell	2hrs
3	22.03.18	Issues with ethics	4-6 PM	Dr.K.Kannan	2hrs
4	05.04.18	Ethical committee	4-6 PM	Dr.Thiruselvakumar	2hrs
5	12.04.18	Functions of ethical committee	4-6 PM	Dr.C.Kameshvell	2hrs
6	19.04.18	Research- overview	4-6 PM	Dr.K.Kannan	2hrs
7	03.05.18	Research methods	4-6PM	Dr.Thiruselvakumar	2hrs
8	10.05.18	Importance of research	4-6 PM	Dr.C.Kameshvell	2hrs
9	17.05.18	Advantages of doing a research	4-6 PM	Dr.K.Kannan	2hrs
10	24.05.18	How to do a research study	4-6 PM	Dr.Thiruselvakumar	2hrs
11	07.06.18	Challenges in doing research	4-6 PM	Dr.C.Kameshvell	2hrs
12	14.06.18	Research in clinicals	4-6 PM	Dr.K.Kannan	2hrs
13	19.07.18	Publication	4-6 PM	Dr.Thiruselvakumar	2hrs
14	26.07.18	Exercises	4-6 PM	Dr.K.Kannan	2hrs
15	02.08.18	Summary	4-6 PM	Dr.C.Kameshvell	2hrs
		Total			30 hrs

**REFERENCE BOOK**

1.Aguinis H, Henle CA. Ethics in research. Handbook of research methods in industrial and organizational psychology. 2002;5:34-56.

Resnik DB. What is ethics in research & why is it important. Inideas 2015 Dec 1.

**Ethics and research**

**Brouchure**

NATIONAL ETHICAL GUIDELINES FOR  
BIOMEDICAL AND HEALTH RESEARCH  
INVOLVING HUMAN PARTICIPANTS



INDIAN COUNCIL OF MEDICAL RESEARCH  
2017



INDIAN COUNCIL OF  
MEDICAL RESEARCH  
2018

HANDBOOK  
ON  
NATIONAL ETHICAL GUIDELINES  
FOR BIOMEDICAL AND HEALTH RESEARCH  
INVOLVING HUMAN PARTICIPANTS



INDIAN COUNCIL OF MEDICAL RESEARCH  
2018

Edited & Coordinated by

Dr. Roli Mathur

Scientist 'E' & Head

ICMR Bioethics Unit

NCDIR, Bengaluru

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2018

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Cover page: This is the image of the cover page of National Ethical Guidelines for Biomedical and Health Research Involving Human Participants 2017. This handbook is prepared from this source document in 2018.

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	Standard operating procedures	
	Members of Ethics Advisory Group & Secretariat	



सत्यमेव जयते

**प्रोफेसर बलराम भार्गव**

राष्ट्रपति द्वारा पदमश्री सम्मानित  
एमडी, डीएम, एफआरसीपी (जी.), एफआरसीपी (ई.),  
एफएसीसी, एफएएचए, एफएएमएस,  
एफएनएस, एफएससी

**सचिव, भारत सरकार**

स्वास्थ्य अनुसंधान विभाग  
स्वास्थ्य एवं परिवार कल्याण मंत्रालय  
एवं

महानिदेशक, आई सी एम आर

**Prof. Balram Bhargava**

Awarded Padma Shri by President of India  
MD, DM, FRCP (Glasg.), FRCP (Edin.),  
FACC, FAHA, FAMS, FNAsc, FASc

**Secretary to the Government of India**

Department of Health Research  
Ministry of Health & Family Research

&  
**Director-General, ICMR**



**भारतीय आयुर्विज्ञान अनुसंधान परिषद**

स्वास्थ्य अनुसंधान विभाग  
स्वास्थ्य एवं परिवार कल्याण मंत्रालय  
वी. रामलिंगस्वामी भवन, अंसाारी नगर  
नई दिल्ली - 110 029 (भारत)

**Indian Council of Medical Research**

Department of Health Research  
Ministry of Health & Family Welfare  
V. Ramalingaswami Bhawan, Ansari Nagar  
New Delhi - 110 029 (INDIA)

**FOREWORD**

ICMR released the National Ethical Guidelines for Biomedical and Health Research Involving Human Participants in October 2017 and since then these guidelines have been widely disseminated to sensitize researchers as well as ethics committees about the updated ethical requirements. The guidelines have addressed contemporary and emerging ethical issues in great detail and must be followed by all institutions that are engaged in biomedical and health research in India.

In order to further provide a quick and easy reference of the ethical guidelines, ICMR has prepared a short user friendly handbook on National Ethical Guidelines. It has been prepared in very simple language and captures the essence of the source document "National Ethical Guidelines for Biomedical and Health Research Involving Human Participants, 2017". The handbook will be very handy for use by students, clinicians and scientists and provides salient features of all 12 Sections covering the common ethical issues and concerns which come up in the conduct and review of research.

I hope this handbook will be found to be useful as a ready reference to safeguard the rights, safety and well-being of research participants as well as help to improve the quality of research outcomes. Gandhiji showed the path for protecting human dignity with truth, compassion and sympathy and I am happy that this document released on the pious occasion of Gandhi Jayanti would help to enrich and uphold the ethical conduct of research and will be a tribute to his principles, science and mankind.

*Balram Bhargava*

( Balram Bhargava )

## INTRODUCTION

In October 2017, the Indian Council of Medical Research issued the National Ethical Guidelines for Biomedical and Health Research Involving Human Participants. The purpose of these guidelines is to safeguard the dignity, rights, safety and well-being of the human participants involved in biomedical and health research. These guidelines must be followed by all stakeholders including institutions, ethics committees (ECs), researchers and sponsors/funding agencies.

This handbook provides a quick reference to all 12 sections of the ICMR National Ethical Guidelines, 2017. For complete details this source document may be referred to.

### Scope

The guidelines are applicable to all biomedical, social and behavioural science research for health conducted in India involving human participants, their biological material and data. The PURPOSE of such research should be:

- i. DIRECTED towards enhancing knowledge about the human condition while maintaining sensitivity to the Indian cultural, social and natural environments.
- ii. CONDUCTED under conditions such that no person or persons become mere means for the betterment of others and that human beings who are subjected to any biomedical and/or health research or scientific experimentation are dealt with in a manner conducive to and consistent with their dignity and well-being, under conditions of professional fair treatment and transparency.
- iii. SUBJECTED to a regime of EVALUATION at all stages, i.e., design, conduct and reporting of the results thereof.

# STATEMENT OF GENERAL PRINCIPLES

- 1.1. Every research has some inherent probabilities of harm or risk and thus, protection of research participants and/or communities should be built into the design of the study.
- 1.2. While conducting biomedical and health research, the four basic principles namely; respect for persons (autonomy), beneficence, non-maleficence and justice must guide research in order to protect the dignity, rights, safety and well-being of research participants.
- 1.3. ECs must ensure that the research is conducted in accordance with the basic principles.
- 1.4. The basic principles have been expanded into 12 general principles (Table 1), that are applicable to all biomedical and health research involving human participants or research using their biological material or data.

Table 1: General Principles

1. Principle of Essentiality	7. Principle of Professional Competence
2. Principle of Voluntariness	8. Principle of Maximization of Benefit
3. Principle of Non-exploitation	9. Principle of Institutional Arrangements
4. Principle of Social Responsibility	10. Principle of Transparency & Accountability
5. Principle of Ensuring Privacy & Confidentiality	11. Principle of Totality of Responsibility
6. Principle of Risk Minimization	12. Principle of Environmental Protection

## GENERAL ETHICAL ISSUES

There are some general issues that must be kept in focus during the conduct of biomedical and health research involving human participants (Table 2).

Table 2: General Ethical Issues

Benefit–risk assessment	Informed consent process	Privacy and confidentiality
Distributive justice	Payment for participation	Compensation for research related harm
Ancillary care	Conflict of interest	Selection of vulnerable and special groups as research participants
Community engagement	Post-research access and benefit sharing	

- 2.1. Researchers must protect the dignity, rights, safety and well-being of research participants.
- 2.2. They should have appropriate qualifications, competence in research methodology and be compliant towards the scientific, medical, ethical, legal and social requirements of research.
- 2.3. The researcher, sponsor and EC must conduct a benefit–risk assessment and actively attempt to maximize benefits and minimize risks to participants.
- 2.4. Benefits to the individual, community or society refer to any sort of favourable outcome of the research, whether direct or indirect. The social and scientific value of research should justify the risk, which is the probability of causing discomfort or harm anticipated as physical, psychological, social, economic or legal.
- 2.5. Risk can be categorized as less than minimal risk, minimal risk, minor increase over minimal or low risk and more than minimal or high risk.
- 2.6. The EC must decide about the type of review required (exempted, expedited, full committee) based on the type of risk involved.
- 2.7. The researcher must obtain informed consent from the participant/legally acceptable/authorized representative (LAR) in writing.
- 2.8. Informed consent documents (participant information sheet and informed consent form) should carry the specified elements in simple, layman’s language. These documents should be approved by the EC.

- 2.9. Oral consent/waiver of consent/re-consent may be obtained under certain conditions, after due approval by the EC.
- 2.10. Researcher(s) should safeguard the privacy and confidentiality of participants and research-related data from unauthorized access.
- 2.11. Benefits and burdens of research should be equitably distributed among the participating individuals or communities.
- 2.12. Participants should not be made to pay for research-related expenses incurred beyond routine clinical care. Reimbursement for expenses incurred can be made in cash or kind or both.
- 2.13. The researcher must report all serious adverse events (SAEs) to the EC within 24 hours of knowledge and submit a report on SAE relatedness to research within 14 days.
- 2.14. Research participants who suffer direct physical, psychological, social, legal or economic harm are entitled to financial compensation or other forms of assistance.
- 2.15. It is the responsibility of the sponsor (whether a pharmaceutical company, government or non-governmental organization (NGO), national or international/bilateral/multilateral donor agency/institution) to include insurance coverage or provision for possible compensation for research related injury or harm within the budget.
- 2.16. In investigator initiated/student research, the investigator/institution where the research is conducted becomes the sponsor and must provide compensation for research-related injury through insurance, corpus funds or grants.
- 2.17. Free medical care may be offered as ancillary care for non-research-related conditions or incidental findings if it does not amount to undue inducement as determined by EC.
- 2.18. Policies for declaration and management of financial or non-financial (personal, academic or political) conflict of interest for researchers, EC, institution and sponsor must be implemented by research institutes.
- 2.19. The selection of vulnerable and special groups needs careful consideration, with provisions for additional safeguards and close monitoring.
- 2.20. Engaging with the community from the beginning of research till after its completion helps to improve design and conduct of research and ensures greater responsiveness to health needs. However, every individual participant's consent is essential.
- 2.21. Post-research access and benefit-sharing may be done with individuals, communities and populations, wherever applicable after completion of study.

## RESPONSIBLE CONDUCT OF RESEARCH (RCR)

- 3.1. Major components of RCR are values and policies; planning and conducting research; reviewing and reporting research; responsible authorship and publication aspects.
- 3.2. A research office must be set up to facilitate research, manage grants and provide research oversight.
- 3.3. Institutions must have policies for the protection of participants and should assign responsibilities to stakeholders.
- 3.4. Researchers must follow professional codes of conduct and have personal conviction about ethical requirements.
- 3.5. The following should be established prior to conducting research:
  - Conflict of Interest policies
  - Safeguards for data acquisition, management, sharing and ownership
  - Policies for handling research misconduct including fabrication, falsification and plagiarism
- 3.6. Completed research, irrespective of results, must be published in accordance with the guidelines of the International Committee of Medical Journal Editors (ICMJE).
- 3.7. Clinical studies on human participants should be registered prospectively with the Clinical Trial Registry - India (CTRI). This is mandatory for regulatory trials.
- 3.8. Issues related to ownership, sharing of materials/data, IPR, joint publications, research findings, conflict of interest, commercialization should be addressed in collaborative research.
- 3.9. The ethical framework of international collaborations should be based on equity and equality. Researchers and EC members should be trained to protect the best interests of the country.
- 3.10. In multicentre research, common ethics review by a designated EC can help to reduce time for getting ethical approvals from across the sites and improve coordination among participating sites. However, the local EC must look at site specific concerns and monitor research.

## ETHICAL REVIEW PROCEDURES

- 4.1. ECs must safeguard the dignity, rights, safety and well-being of research participants and review research before initiation.
- 4.2. The EC is responsible for scientific and ethical review of research proposals and should have well defined standard operating procedures (SOPs) for all functions.
- 4.3. Each member of the EC has a defined role and responsibility. EC members should be trained in protection of human research participants, SOP and Good Clinical Practice (GCP) guidelines, and be conversant with relevant ethical guidelines and regulations.

Composition, affiliations and qualifications given in Table: 3

Table 3: Composition, affiliations and qualifications of EC members

Members of EC	Qualifications
Chairperson/ Vice Chairperson (optional) Non-affiliated	<ul style="list-style-type: none"> <li>• A well-respected person from any background with prior experience of having served/serving in an EC</li> </ul>
Member Secretary/ Alternate Member Secretary (optional) Affiliated	<ul style="list-style-type: none"> <li>• Should be a staff member of the institution</li> <li>• Should have knowledge and experience in clinical research and ethics, be motivated and have good communication skills</li> <li>• Should be able to devote adequate time to this activity which should be protected by the institution</li> </ul>
Basic Medical Scientist(s) Affiliated/ non-affiliated	<ul style="list-style-type: none"> <li>• Non-medical or medical person with qualifications in basic medical sciences</li> <li>• In case of EC reviewing clinical trials with drugs, the basic medical scientist should preferably be a pharmacologist</li> </ul>
Clinician(s) Affiliated/ non-affiliated	<ul style="list-style-type: none"> <li>• Should be individual/s with recognized medical qualification, expertise and training</li> </ul>
Legal expert/s Affiliated/ non-affiliated	<ul style="list-style-type: none"> <li>• Should have a basic degree in Law from a recognized university, with experience</li> <li>• Desirable: Training in medical law.</li> </ul>
Social scientist/ philosopher/ ethicist/theologian Affiliated/ non-affiliated	<ul style="list-style-type: none"> <li>• Should be an individual with social/behavioural science/ philosophy/ religious qualification and training and/or expertise and be sensitive to local cultural and moral values. Can be from an NGO involved in health-related activities</li> </ul>
Lay person(s) Non-affiliated	<ul style="list-style-type: none"> <li>• Literate person who has not pursued a medical science/ health related career in the last 5 years</li> <li>• May be a representative of the community and aware of the local language, cultural and moral values of the community</li> <li>• Desirable: involved in social and community welfare activities</li> </ul>

- 4.4. The EC should be multidisciplinary, competent and independent in its functioning with the chairperson and 50% members as non-affiliates.
- 4.5. The quorum for decision-making should have a minimum of five members, including both medical and non-medical or technical/non-technical members with at least one of them as non-affiliated member.
- 4.6. EC members should be aware of local, social and cultural norms and emerging ethical issues.
- 4.7. Larger institutions can have more than one EC while smaller institutions may utilize the services of other institutions under an MoU.
- 4.8. An EC could have subcommittees with additional members, if necessary, e.g., SAE subcommittee or expedited review committee.
- 4.9. The institutional head appoints the EC and acts as the appellate authority.
- 4.10. The EC secretariat should screen proposals for completeness before categorizing as: exempted from review, expedited review or full committee review.
- 4.11. The EC reviews every study protocol for ethical issues as given in Table 4:

Table 4: Ethical issues related to reviewing a protocol

• Social values	• Scientific design and conduct of study
• Benefit–risk assessment	• Selection and recruitment of participants
• Payment for participation	• Protection of privacy and confidentiality
• Community considerations	• Review of informed consent process
• Disclosure of conflict of interest	• Qualification of researchers and adequacy of study sites
• Plans for medical management and compensation for study related injury	

- 4.12. The EC monitors progress of ongoing proposals, reviews SAEs, protocol deviations/ violations, new information and final reports.
- 4.13. An EC office must have space, infrastructure, funds, staff and protected time for the member secretary to coordinate EC functions.
- 4.14. EC documentation should be dated, filed and preserved. Records must be archived for at least 3 years (5 years for regulatory clinical trials) after completion/termination of the study.
- 4.15. ECs should be registered with the relevant authority and should make efforts to seek recognition or accreditation.

# INFORMED CONSENT PROCESS

- 5.1. Voluntary written informed consent should be obtained in an informed consent document (ICD) from each participant to protect each individual's freedom of choice.
- 5.2. Informed consent is a continuous process involving three main components:
  - Providing relevant information to potential participants
  - Ensuring competence and comprehension of the information and
  - Voluntariness of participation

Table 5: Characteristics of an ICD

Elements of an ICD	Additional elements (optional)
1. Statement mentioning that it is research	1. Alternative procedures or treatment
2. Purpose and methods	2. Insurance coverage
3. Duration, frequency, methods	3. Possible stigmatizing condition
4. Benefits to participant, community or others	4. Biological material and data, including:
5. Foreseeable risks, discomfort or inconvenience	i) Current and future uses
6. Confidentiality of records	ii) Period of storage and secondary use
7. Payment/reimbursement for participation	iii) Sharing of data and biological materials
8. Treatment and/or compensation for injury	iv) Right to prevent use of biological sample
9. Freedom to participate/withdraw	v) Provisions to safeguard confidentiality
10. Identity of research team and contact persons	vi) Post-research plan/benefit sharing
	vii) Publication plan/photographs/pedigrees

- 5.3. Researchers should only use the EC approved version of the consent form and its translation in local languages.
- 5.4. Informed consent should be voluntary and be signed by the participant after receiving information, understanding it and discussing with family/friends (if required).

5.5. Verbal/oral consent/waiver of consent/reconsent may be obtained only after approval by the EC. Table 6 gives conditions for granting waiver of consent.

Table 6: Conditions for granting waiver of consent

The EC may grant consent waiver in the following situations:

- research cannot practically be carried out without the waiver and the waiver is scientifically justified;
- retrospective studies, where the participants are de-identified or cannot be contacted;
- research on anonymized biological samples/data;
- certain types of public health studies/surveillance programmes/programme evaluation studies;

- research on data available in the public domain; or
- research during humanitarian emergencies and disasters, when the participant may not be in a position to give consent. Attempt should be made to obtain the participant's consent at the earliest.

5.6. Appropriate ICD should be prepared for differently abled participants.

5.7. In case of research involving children, in addition to parental consent, verbal (7-12 years) or simplified written (>12 – 18 years) assent should also be taken from the participant.

5.8. The LAR's consent is required in case a participant is incompetent (medically or legally).

5.9. Electronic/online consent may be obtained for research involving sensitive topics while safeguarding information and data and also if required for regulatory clinical trials.

5.10. Individual consent is important and required, even if the community gives permission for participation in a research study.

5.11. In studies using deception a true informed consent may lead to modification and may defeat the purpose of research. Such research should be carefully reviewed by the EC before implementation. In such instances, an attempt should be made to debrief the participants/communities after completion of the research.

## VULNERABILITY

Individuals/ groups/ populations are considered vulnerable if they are relatively or absolutely incapable of protecting their own interests because of personal disability; environmental burdens; social injustice; lack of power, understanding or ability to communicate or other reasons. Individuals are considered to be vulnerable if they are:

- Socially, economically or politically disadvantaged and susceptible to exploitation
- Incapable of making a voluntary informed decision for themselves or if their autonomy is compromised temporarily or permanently (e.g., people who are unconscious, differently abled)
- Able to give consent, but their voluntariness or understanding is compromised due to their situational conditions
- Unduly influenced either by the expectation of benefits or fear of retaliation in case of refusal to participate, which may lead them to give consent

- 6.1. Researchers must justify the inclusion/exclusion of a vulnerable population.
- 6.2. A community representative may be invited to EC meetings to make sure the research is responsive to their needs and the informed consent process is appropriate.
- 6.3. Additional precautions should be taken by all stakeholders such as researchers, ECs and sponsors to avoid exploitation of vulnerable participants.
- 6.4. Informed consent process should be well documented and additional measures adopted if required, such as audiovisual/audio recording of assent/consent/reconsent.
- 6.5. Research proposals should undergo review in a full committee meeting.
- 6.6. Protection of privacy and dignity as well as provision of quality health care is required in dealing with vulnerable people, especially the minorities.
- 6.7. Research involving children, in addition, should follow the National Ethical Guidelines for Biomedical Research Involving Children, ICMR, 2017.
- 6.8. Due approvals are needed from competent authorities before entering tribal areas.
- ~~6.9. Research involving cognitively impaired individuals or those with mental illness must be done carefully, especially if there is risk to themselves, to others or suicidal ideation.~~
- 6.10. The EC should carry out the benefit–risk analysis and examine risk minimization strategies.

## CLINICAL TRIALS OF DRUGS AND OTHER INTERVENTIONS

- 7.1. Clinical trials must be conducted in accordance with the Indian GCP guidelines, Declaration of Helsinki, National Ethical Guidelines for Biomedical and Health Research Involving Human Participants (2017), amendments to the Drugs & Cosmetics Act (1940), and Rules (1945) and other applicable regulations and guidelines.
- 7.2. Clinical trial interventions could be of drugs, vaccines, biosimilars, biologics, phytopharmaceuticals, radiopharmaceuticals, diagnostic agents, public health or socio-behavioural interventions, technologies, devices, surgical techniques or traditional systems of medicine, etc.
- 7.3. An investigator should determine if the clinical trial is within the regulatory ambit and if so, all Central Drug Standards and Control Organisation (CDSCO) requirements should be followed.
- 7.4. If students are conducting clinical trials as part of their thesis, guides/and institutions should take the responsibilities of sponsor.
- 7.5. Clinical trials must be prospectively registered with CTRI, which is mandatory for trials under the purview of CDSCO.
- 7.6. ECs should register and follow the quorum requirements specified by CDSCO before reviewing clinical trials on 'new drugs' as per Schedule Y and its amendments.
- 7.7. Patients should not be charged for trial interventions that are added on as part of research.
- 7.8. Ancillary care may be provided to clinical trial participants for non-study/trial related illnesses arising during the period of the trial.
- 7.9. Adverse effects of drugs should be reported in a timely manner.
- 7.10. Institutions must obtain grants, insurance coverage or set up corpus funds to meet the costs related to treatment/management and payment of compensation as decided by EC.
- 7.11. Clinical trials should be scientifically and ethically sound and preclinical studies should precede trials on humans.

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- 7.12. BA/BE studies involving healthy volunteers may pose risks due to adverse effects of drugs and require safeguards.

## Clinical Trials of Drugs and other Interventions

- 7.13. Precautions should be taken to protect participants from harm when a placebo is used.
  - 7.14. Trials on devices should follow the same requirements as for new drugs. Similarly, surgical interventions must also follow the ethical guidelines.
  - 7.15. If a study involves biosimilars, the product quality, preclinical data and bioassay must demonstrate similarity with a reference biologic.
  - 7.16. Clinical trials with stem cells should follow the National Guidelines for Stem Cell Research, 2017.
  - 7.17. Community trials may be conducted to evaluate preventive strategies like mass drug administration.
  - 7.18. Research that involves sexual minorities or intravenous drug users should ensure community engagement for the duration of the project as well as for dissemination of results after completion.
  - 7.19. Research on traditional medicine interventions, such as Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homeopathy (AYUSH) should be conducted in accordance with ethical guidelines, ASU-GCP (Ayurveda, Siddha, Unani GCP) guidelines as well as other applicable regulations.
  - 7.20. Trials using diagnostic agents should follow the same protocols as for trials on new drugs.
  - 7.21. Radioactive materials and X-rays should be used with more precaution in persons who have not completed family.
  - 7.22. Clinical trials among women for contraceptives or if they are pregnant or lactating should involve abundant precautions and care.
  - 7.23. Therapeutic misconception is high in oncology trials; therefore, due care should be taken to address this issue.
  - 7.24. Any product using new technology should be GLP (Good Laboratory Practices), GMP (Good Manufacturing Practices) and GCP compliant, which should be duly approved by appropriate authorities.
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# PUBLIC HEALTH RESEARCH & SOCIAL AND BEHAVIOURAL SCIENCES RESEARCH FOR HEALTH

SECTION 8 & 9

1

- 8.1. Benefits and risks in public health research may not be limited to an individual, but may influence communities, populations and the environment.
- 8.2. Social and behavioural studies must ensure social equity and inter sectionality. Ethical relativism applies to moral diversity among different cultures and societies.
- 8.3. ECs must review different types of research such as programme evaluations, demographic surveillance, registries, implementation research, demonstration projects, community trials, surveys, etc.
- 8.4. Based on specific research, appropriate consent processes may be considered by the EC, such as verbal/oral consent; broad consent; group consent; waiver of consent and re-consent.
- 8.5. Special provisions should be provided in design and execution of research if they are likely to have a potential to exploit socioeconomically deprived people.
- 8.6. Stakeholders (researchers, health providers/ sponsors, Govt. agencies, participants, ECs, institutions, NGOs, etc.) must make every effort to provide post-research public health interventions, use of findings for sustainability of public health action.
- 8.7. The EC may require appropriate experts to address the specific ethical challenges related to socio-behavioural or public health research.
- 8.8. Safety measures should be in place to protect the privacy and confidentiality of research participants and/or research teams in the field collecting sensitive data.
- 8.9. The EC should carefully review studies where the use of deception is necessary to achieve the study objectives for larger public good and consider debriefing after completion of the study.
- 8.10. Support systems such as counselling centres, rehabilitation centres, police protection, etc. should be in place for sensitive studies.
- 8.11. The EC should ensure that the researcher has taken appropriate measures for data security and confidentiality of information and also that disclosure permissions have been taken and appropriate use of the accessed data is stated by the researcher.

<sup>1</sup> This section corresponds to Chapters 8 and 9 of the National Ethical Guidelines for Biomedical and Health Research Involving Human Participants, 2017.

## HUMAN GENETICS TESTING AND RESEARCH

- 10.1. Due to an overlap between genetic research and services, therapeutic misconception is common and ethical, legal and social issues (ELSI) require careful consideration.
- 10.2. Genetic test results have familial/societal implications, therefore, maintaining confidentiality and providing pre- and post-test non-directive counselling by qualified persons is important.
- 10.3. Written consent should be obtained for genetic screening, confirmatory tests, specific interventions, pre-symptomatic testing, next generation sequencing, prenatal or carrier testing, genomic studies, use of embryos/foetal tissue, etc.
- 10.4. Informed consent should explain the nature and complexity of information, choices, implications, data/sample storage, etc.
- 10.5. If identifiable information is being collected for preparing family pedigrees, the members become secondary participants and informed consent should be obtained from each member.
- 10.6. Genetic screening should be purposive, with established provisions for disease management, treatment and counselling.
- 10.7. Genetic test reports of multifactorial/late onset diseases should be communicated carefully to prevent unnecessary worry or fear.
- 10.8. Information about a patient's disease and investigations may not be shared with others.
- 10.9. Screening for late onset diseases should not be done in children, unless there is suitable childhood intervention.
- 10.10. Technology should not be misused for pre-implantation genetic screening, creation of designer babies, sex selection, etc.
- 10.11. Confidentiality must be maintained while using new technologies like chromosomal microarray (CMA), whole exome sequencing, whole genome sequencing, etc.
- 10.12. Publication of pictures, pedigrees or other identifying information about individuals/families requires fresh or re-consent.

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- 10.13. Laboratories offering genetic testing should participate in quality assurance programmes specific to genetic testing.

## BIOLOGICAL MATERIALS, BIOBANKING AND DATASETS

- 11.1. Biological material may be prospectively collected or may be left over from earlier studies or clinical services, e.g. biological fluids, dried blood spots, tissues, organs, etc.
- 11.2. Datasets are collections of health data in disease registers, surveys, surveillance, census, personal records, etc.
- 11.3. Ethical issues such as ownership of samples or data, transfer of biospecimens, custodianship, secondary use, return of results, etc. are important.
- 11.4. Samples/data may be anonymous (unidentified); anonymized (coded reversibly or irreversibly) or identifiable.
- 11.5. Respecting ethnic identity and confidentiality is important in population-based studies/stigmatizing diseases.
- 11.6. Multiple layered consent provides options to allow samples/data to be used for future research. Types of consent include blanket or broad; tiered; specific; delayed; dynamic; waiver; re-consent, etc.
- 11.7. Informed consent should provide information about the commercial value of samples or data, if applicable, with clarity about benefit sharing.
- 11.8. Privacy and confidentiality should be ensured when databases are maintained in electronic/digital formats which are linked by Internet, cloud computing or are associated with big data initiatives.
- 11.9. Material transfer agreement (MTA) should be executed if the biospecimens are likely to be shipped to collaborators within or outside the country.
- 11.10. Data privacy, accuracy, security and legal liability should be clarified if the data is outsourced or sold.
- 11.11. Participants own their biological sample/data and biobanks/institutes are custodians or trustees.
- 11.12. A donor has the right to ask for destruction/withdrawal of collected sample(s).
- 11.13. Datasets and repositories offer huge potential for research as well as commercialization and the EC should review these aspects with caution.

## RESEARCH DURING HUMANITARIAN EMERGENCIES AND DISASTERS

- 12.1. Pre-emptive research preparation can be done much in advance of a future humanitarian emergency by researchers and sponsors. Meticulous documentation and archiving are required to enable future application in similar situations.
- 12.2. Obtaining valid informed consent in an emergency situation is a challenge as the decision-making capacity is compromised in differentiating between reliefs offered and research.
- 12.3. Efforts should be made to protect the identifying information about individuals and communities to prevent stigmatization, ostracization and exploitation by the print and visual media.
- 12.4. Research during humanitarian emergencies and disasters can be reviewed through an expedited review/scheduled or unscheduled meetings and decided on a case-to-case basis.
- 12.5. If an expedited review is done, full ethical review should follow along with careful monitoring by the EC.
- 12.6. In case of an outbreak of infectious diseases, monitored emergency use of unregistered and experimental interventions (MEURI) may be approved with close monitoring.
- 12.7. Ongoing research may have to be suspended. This decision may be taken by researchers with information to the EC.
- 12.8. Prior arrangements about research questions to be addressed in the design, collection of samples, data sharing mechanisms etc. should be made in advance of an expected humanitarian emergency.

## REFERENCE

1. National ethical guidelines for biomedical and health research involving human participants. Indian Council of Medical Research; 2017. Available from: [https://icmr.nic.in/sites/default/files/guidelines/ICMR\\_Ethical\\_Guidelines\\_2017.pdf](https://icmr.nic.in/sites/default/files/guidelines/ICMR_Ethical_Guidelines_2017.pdf) (accessed 20 August 2018).
  2. National ethical guidelines for bio-medical research involving children. Indian Council of Medical Research; 2017. Available from: [https://icmr.nic.in/sites/default/files/guidelines/National\\_Ethical\\_Guidelines\\_for\\_BioMedical\\_Research\\_Involving\\_Children\\_0.pdf](https://icmr.nic.in/sites/default/files/guidelines/National_Ethical_Guidelines_for_BioMedical_Research_Involving_Children_0.pdf) (accessed 20 August 2018).
  3. Good Clinical Practice. New Delhi: Central Drugs Standard Control Organization; 2004. Available from: <http://www.cdsc.nic.in/html/gcp1.html>.
  4. Schedule Y of the Drugs and Cosmetics Act, 1940 as amended in 2005. Available from: [www.cdsc.nic.in](http://www.cdsc.nic.in)
  5. Declaration of Helsinki: ethical principles for medical research involving human subjects. Fortaleza: World Medical Association; 2013. Available from: <https://www.wma.net/wp-content/uploads/2016/11/DoH-Oct2013-JAMA.pdf>
  6. Defining the role of authors and contributors [homepage on the Internet]. International Committee of Medical Journal Editors. Available from: <http://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html>
  7. National Guidelines for Stem cell research, 2017. Available from [www.icmr.nic.in](http://www.icmr.nic.in)
  8. Clinical Trial Registry-India[home page on the Internet]. Available from: [www.ctri.nic.in](http://www.ctri.nic.in)
  9. Guidelines for international collaboration /research projects in health research [home page on the Internet]. Available from: <https://www.icmr.nic.in/content/guidelines>
  10. International guidelines for health related research involving humans. Geneva: Council for International Organizations of Medical Sciences; 2016.
-

# STANDARD OPERATING PROCEDURES (SOPS)

## S. No. List of SOPs

- 1 Writing, Reviewing, Distributing and Amending Standard Operating Procedures for ECs
- 2 Constituting an Ethics Committee
- 3 Confidentiality Agreements
- 4 Conflict of Interest Agreements
- 5 Training Personnel and EC Members
- 6 Selection of Independent Consultants
- 7 Procedures for Allowing a Guest or Observer
- 8 Categorization of Submitted Protocols for Ethics Review
  - a. Initial Full Committee Review of New Research Protocols
  - b. Expedited Review of Research Protocols
  - c. Exemption from Ethics Review of Research Protocols
- 9 Agenda Preparation, Meeting Procedures and Minutes
- 10 Review of New Medical Device Studies
- 11 Review of Resubmitted Protocols
- 12 Review of Protocol Amendments
- 13 Continuing Review of Protocols
- 14 Review of Final Reports
- 15 Review of Serious Adverse Events (SAE) Reports
- 16 Review of Study Completion Reports
- 17 Management of Premature Termination, Suspension, Discontinuation of the Study
- 18 Waiver of Written or Verbal/oral Informed Consent
- 19 Site Monitoring Visits
- 20 Dealing with Participants' Requests and Complaints
- 21 Emergency Meetings
- 22 Communication Records
- 23 Maintenance of Active Study Files
- 24 Archive and Retrieval of Documents

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- 25 Maintaining Confidentiality of EC's Documents
- 26 Reviewing Proposals involving Vulnerable Populations
- 27 Review and Inspection of the EC
- 28 Audio Visual Recording of the Informed Consent Process

# HANDBOOK ON NATIONAL ETHICAL GUIDELINES FOR BIOMEDICAL AND HEALTH RESEARCH INVOLVING HUMAN PARTICIPANTS

Dr. Vasantha Muthuswamy (Chairperson), Former Sr DDG & Head, Division of BMS, ICMR,  
New Delhi and President, Forum for Ethics Review Committees in India (FERCI)

Dr. Nandini K Kumar, Vice-President, Forum for Ethics Review Committees in India (FERCI)

Dr. Narendra K Arora, Executive Director, The INCLEN Trust International, New Delhi

Dr. Urmila Thatte, Prof & Head, Dept of Clinical Pharmacology, Seth GS Medical College, Mumbai

Dr. Vijay Kumar, Scientist 'G' & Head, Division of BMS, ICMR, New Delhi

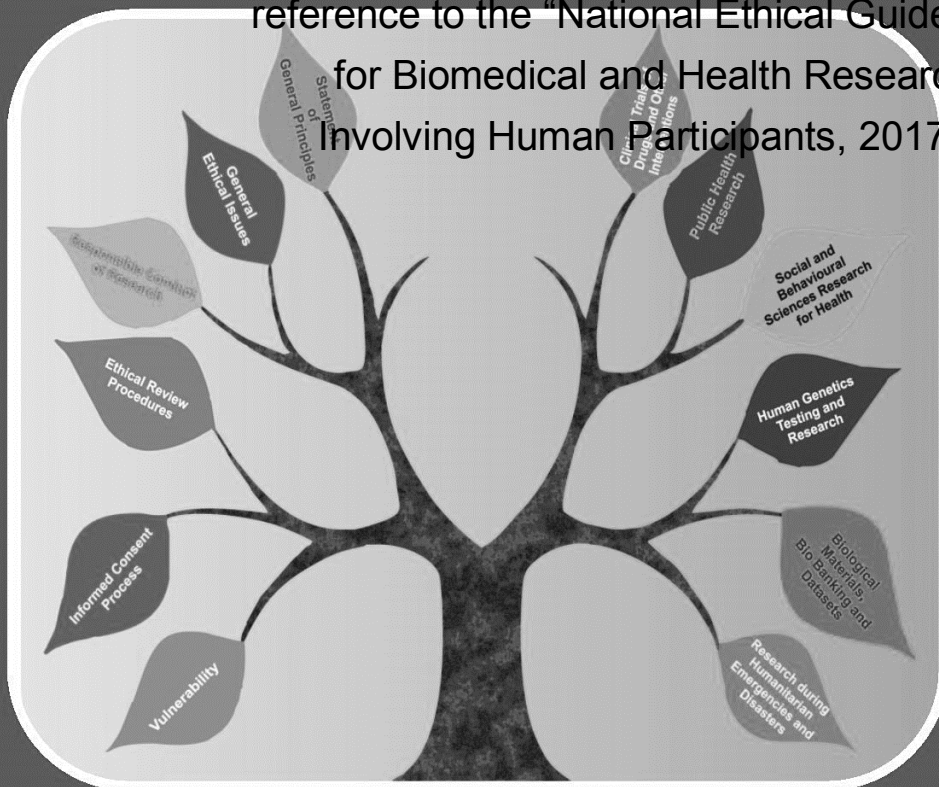
Dr. Roli Mathur (Member Secretary), Scientist 'E' & Head, ICMR Bioethics Unit, NCDIR, Bengaluru

NCDIR Secretariat

Dr. Rajib Kishore Hazam, RA, ICMR Bioethics Unit, NCDIR, Bengaluru

Dr. Kalyani Thakur, RA, ICMR Bioethics Unit, NCDIR, Bengaluru

The aim of this handbook is to provide students, researchers and ethics committees a simplified reference to the “National Ethical Guidelines for Biomedical and Health Research Involving Human Participants, 2017”.



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ICMR Bioethics Unit

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Indian Council of Medical Research  
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Email: [icmr.bioethics@gmail.com](mailto:icmr.bioethics@gmail.com), [www.ncdirindia.org](http://www.ncdirindia.org)

Indian Council of Medical Research  
V. Ramalingaswami Bhawan, Ansari Nagar, New Delhi-110 029

## ANNEXURE –II

SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES

TOPIC: ETHICS AND RESEARCH

SL.NO	STUDENT NAME ADDRESS	SIGNATURE
1	ELAVAZHAGHAN. R.	Elavazhagan R.
2	GANESH. S.	Ganesh S.
3	GAYATHRI.T.	Gayathri T.
4	GNANAKANNAN.G.	Gnanakannan G.
5	HARESH.S.	Hareesh S.
6	HEMA PRIYA.K.	Hemapriya K.
7	INDHUJA. M.	Indhuja M.
8	IREEN SUGITHA RANI.J.	Ireen Sugitha Rani J.
9	JAVEED IBRAHIM.J.	Javeed Ibrahim J.
10	JEEVIHA.R.	Jeeviha R.
11	JENIFER. R.	Jenifer R.
12	JEYABHARATHI.K.	Jeyabharathi K.

### ANNEXURE III

1. What is our general advice with respect to the concept of do no harm?
  - a. So long as you did not set out to harm participants you have nothing to worry about
  - b. Research that involves risk to participants should not be carried out by students
  - c. There are typically no hazards in student research studies.
  - d. None of the above
  
2. Which of the following apply to the use of a briefing sheet or participant information sheet?
  - a. Adult participants must be given the chance to understand the anticipated consequences of taking part in the study.
  - b. Children do not need to know the nature of the study as they are too young to understand.
  - c. Both A and B.
  - d. Neither A nor B.
  
3. What potential barriers to recruiting participants do we advise you to bear in mind when planning your sampling?
  - a. If you wish to work with young children you may need an enhanced Criminal Records Bureau disclosure or equivalent
  - b. Most undergraduate students are discouraged from collecting data in prisons or hospitals because of the additional ethical clearance and background checks required.
  - c. The timeframe for undergraduate projects may be too short to allow external ethical and legal clearances.
  - d. All of the above
  
4. Which of the following corresponds to our advice on ethical approval for your project?
  - a. Your study must be approved in full the first time you submit to the ethics committee, otherwise you will fail the project.
  - b. You must wait for ethics committee approval before beginning data collection.
  - c. Pilot work does not need ethical approval.
  - d. All of the above.
  
5. Which of the following is necessary in obtaining informed consent?
  - a. A description of the statistical analyses that will be carried out
  - b. A description of the purpose of the research
  - c. A description of the reliability and validity of test instruments
  - d. A list of publications that the researcher has had in the last ten years
  
6. Which of the following need(s) to be obtained when doing research with children?
  - a. Informed consent from the parent or guardian

- b. Assent from the child if he or she is capable
- c. Informed consent from the child
- d. Both a and b

7. What is the primary approach that is used by the IRB to assess the ethical acceptability of a research study?

- a. Utilitarianism
- b. Deontology
- c. Ethical skepticism
- d. Comparativeism

8. Ideally, the research participant's identity is not known to the researcher. This is called:

- a. Anonymity
- b. Confidentiality
- c. Deception
- d. Desensitizing

9. There are three basic approaches that people tend to adopt when considering ethical issues in research. Which one of the following is not one of the approaches?

- a. Ethical skepticism
- b. Deontology
- c. Ontology
- d. Utilitarianism

10. IRB is an acronym for which of the following?

- a. Internal Review Board
- b. Institutional Rating Board
- c. Institutional Review Board
- d. Internal Request Board



## SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION AND RESEARCH

### ETHICS & RESEARCH

1. What is our general advice with respect to the concept of do no harm?
  - a. So long as you did not set out to harm participants you have nothing to worry about
  - b. Research that involves risk to participants should not be carried out by students
  - c. There are typically no hazards in student research studies.
  - d. None of the above
  
2. Which of the following apply to the use of a briefing sheet or participant information sheet?
  - a. Adult participants must be given the chance to understand the anticipated consequences of taking part in the study.
  - b. Children do not need to know the nature of the study as they are too young to understand.
  - c. Both A and B.
  - d. Neither A nor B.
  
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  - b. Most undergraduate students are discouraged from collecting data in prisons or hospitals because of the additional ethical clearance and background checks required.
  - c. The timeframe for undergraduate projects may be too short to allow external ethical and legal clearances.
  - d. All of the above
  
4. Which of the following corresponds to our advice on ethical approval for your project?
  - a. Your study must be approved in full the first time you submit to the ethics committee, otherwise you will fail the project.
  - b. You must wait for ethics committee approval before beginning data collection.
  - c. Pilot work does not need ethical approval.
  - d. All of the above.
  
5. Which of the following is necessary in obtaining informed consent?
  - a. A description of the statistical analyses that will be carried out
  - b. A description of the purpose of the research
  - c. A description of the reliability and validity of test instruments
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- b. Deontology
- c. Ontology
- d. Utilitarianism

10. IRB is an acronym for which of the following?

- a. Internal Review Board
- b. Institutional Rating Board
- c. Institutional Review Board
- d. Internal Request Board

ANNEXURE – IV



**Sri Lakshmi Narayana Institute of Medical Sciences**

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



**CERTIFICATE OF MERIT**

This is to certify that **GNANAKANNAN.G** has actively participated in the Value Added Course on **ETHICS AND RESEARCH** held during Mar 2018 – Aug 2018 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

**DR.K. KANNAN MD,  
RESOURCE PERSON,  
ASSOCIATE PROFESSOR**

**DR.S.RAJINI MD,  
COORDINATOR,  
PROFESSOR & HOD,  
DEPT OF COMMUNITY MEDICINE**

**DR.SUGUMARAN MD,  
DEAN, SLIMS**



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that **JEYABHARATHI .K** has actively participated in the Value Added Course on **ETHICS AND RESEARCH** held during Mar 2018 – Aug 2018 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

**DR.K. KANNAN MD,**  
**RESOURCE PERSON,**  
**ASSOCIATE PROFESSOR**

**DR.S.RAJINI MD,**  
**COORDINATOR,**  
**PROFESSOR & HOD,**  
**DEPT OF COMMUNITY MEDICINE**

**DR.SUGUMARAN MD,**  
**DEAN, SLIMS**

Annexure v

Student Feedback Form

Course Name: ETHICS IN RESEARCH

Subject Code: PSM01

Name of Student: Elavazhagan Roll No.: 1

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					✓
2	Course contents met with your expectations					✓
3	Lecturer sequence was well planned					✓
4	Lectures were clear and easy to understand				✓	
5	Teaching aids were effective				✓	
6	Instructors encourage interaction and were helpful				✓	✓
7	The level of the course					✓
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Excellent topics & Deliberation

Date: 02/05/18

  
Signature

### Student Feedback Form

Course Name: ETHICS IN RESEARCH

Subject Code: PSM01

Name of Student: Arpitha - T Roll No.: 3

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

SI. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					✓
2	Course contents met with your expectations				✓	
3	Lecturer sequence was well planned				✓	
4	Lectures were clear and easy to understand				✓	
5	Teaching aids were effective					✓
6	Instructors encourage interaction and were helpful				✓	
7	The level of the course					✓
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

The course enthrals & encourage us to participate in research

  
Signature

Date: 02/05/18



**Sri Lakshmi Narayana Institute of Medical Sciences**  
**OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,**  
**PUDUCHERRY – 605 502**

Date : 03.08.2018

From  
Dr.S.Rajini  
Professor and Head,  
Department of Community Medicine,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

Through Proper Channel

To  
The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Completion of value-added course: ETHICS AND RESEARCH**

Respected sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: First aid management from March 2018 - August 2018 for Pre-final year students. We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards,

**Encl: Photograph**

*Rajini*  
PROFESSOR & HOD  
DEPARTMENT OF COMMUNITY MEDICINE  
Sri Lakshmi Narayana Institute of Medical Sciences  
PONDICHERRY - 605 502





# Sri Lakshmi Narayana Institute of Medical Sciences

Osudu, Agaram Village, Kudapakkam post, Puducherry – 605 502

Department of Anatomy

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Date:02.04.2018

From

Dr. Somashekar. I. Tolanur  
Professor and Head,  
Department of Anatomy,  
Sri Lakshmi Narayana Institute of Medical Sciences  
BIHER  
Puducherry

To


The Dean,  
Sri Lakshmi Narayana Institute of Medical sciences  
BIHER  
Puducherry

**Sub: Permission to conduct value-added course: Anatomy in perfusion technology**

Dear sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: **Anatomy in perfusion technology for 1<sup>st</sup> year MBBS students** in May 2018. We solicit your kind permission for the same.

Kind Regards

  
Dr. Somashekar I. Tolanur  
PROF & HEAD OF ANATOMY  
SRI LAKSHMI NARAYANA INSTITUTE OF  
MEDICAL SCIENCES  
Osudu Agaram Village, Puducherry-605 502

**FOR THE USE OF DEANS OFFICE**

Names of Committee members for evaluating the course:

The Dean: **Dr. Sugumaran. A**

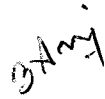
The HOD: **Dr. Somashekar. I. Tolanur**

The Expert: **Dr. Anitha. B**

The committee has discussed about the course and is approved.



Dean



Subject Expert



HOD

**DEAN**  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
OSUDU, ALAKRAM VILLAGE,  
KODADAKKRAM POST,  
BUDUPEETRY - 601 502

**PROF & HOD OF ANATOMY**  
SRI LAKSHMI NARAYANA INSTITUTE OF  
MEDICAL SCIENCES  
13945 Osudu Village, Budupeeetry - 601 502



OFFICE OF THE DEAN

## Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,

PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P -II ) dt. 11/07/2011 ]

[ Affiliated to Bharath University, Chennai - TN ]

### Circular

16.04.2018

**Sub: Organising Value-added Course on Anatomy in perfusion technology.**  
**reg**

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, Puducherry affiliated by Bharath Institute of Higher Education and Research is organizing a value added course on “**Anatomy in perfusion technology**” during **May 2018 for 1<sup>st</sup> year MBBS students( 2017-2018)**. The course content for the same is enclosed below.

**Dean**

**(Dr. Sugumaran. A)**

Encl: Copy of Course content

DEAN  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
OSUDU, AGARAM VILLAGE,  
KUDAPAKKAM POST,  
PUDUCHERRY - 605 502

Encl: Copy of Course content

## COURSE CONTENT

<b>Particulars</b>	<b>Description</b>
Course Title	Anatomy in perfusion technology
Course Code	ANA08
Topics and content of the course in the Hand book	<ol style="list-style-type: none"><li>1. Introduction to respiratory and circulatory system</li><li>2. Introduction to life support equipments</li><li>3. Thoracic cage and intercostal space</li><li>4. Surface anatomy of heart, lung and major blood vessels</li><li>5. Anatomy of lung and pleura</li><li>6. Heart – external and internal features</li><li>7. pericardium</li><li>8. Major blood vessels of heart</li><li>9. Kidney, ureter and urinary bladder – external and internal features</li><li>10. Cardiopulmonary perfusion</li><li>11. Role of perfusionist</li><li>12. Application of Anatomy in perfusion technology</li></ol>
Advantages of learning and	In-depth knowledge of Anatomy and its application

evaluation	
Further learning Opportunities	Advanced techniques in perfusion technology
Key Competencies	On successful completion of the course the students will have skill in handling emergency procedures
Target Student	1 <sup>st</sup> MBBS
Duration	30 hours, May- June 2018
Theory Session	22hrs
Practical Session	8 hrs
Assessment Procedure	Short answer questions

# COURSE PROPOSAL

## **Course Title:**

Anatomy in perfusion technology

## **Course Objective:**

1. Learn gross features of organs
2. Application of anatomical knowledge in perfusion technology
3. knowledge of equipments used in perfusion technology

## **Course Outcome:**

Clear knowledge of anatomy improve the skills during emergency situations

**Course Audience:** 1<sup>st</sup> year MBBS

**Course Coordinator:** Dr. Somashekar. I.Tolanur

## **Course Faculties with Qualification and Designation:**

- 1 .Dr. Anitha. B, MD Anatomy, Assistant professor
2. Dr. B. Rajesh, Msc ph.d , Professor Anatomy,
3. Dr. Shanthini. S, MD Anatomy, Assistant professor

## **Course Curriculum/Topics with schedule (Min of 30 hours)**

Sl No	Date	Topic	Name of the faculty	Time	Hours
1.	01.05.2018	Introduction to Respiratory and circulatory system	Dr. Anitha.B	2- 5 pm	3 hours
2.	05.05.2018	Introduction to life support equipments	Dr. Anitha. B	2-5 pm	3 hours
3.	08.05.2018	Thoracic cage & Intercostal space	Dr. Anitha. B	2-5 pm	3 hours
4.	12.06.2018	Anatomy of Lung and pleura	Dr. B. Rajesh	2-5 pm	3 hours
5.	15.05.2018	Demonstration of Lung and Pleura	Dr. B. Rajesh	2-5 pm	3 hours
6.	19.05.2018	Heart – External and internal features, Pericardium and Major blood vessels of heart	Dr. Shanthini. S	2-5 pm	3 hours
7.	22.05.2018	Demonstration of Heart	Dr.	2-4pm	2

	8		Shanthini. S		hours
8.	22.05.201 8	Kidney, ureter and urinary bladder- External and Internal features	Dr. Shanthini. S	4-5 pm	1 hour
9.	26.05.201 8	Cardiopulmonary perfusion	Dr. Anitha. B	2-5 pm	3 hours
10.	29.05.201 8	Role of perfusionist	Dr. Anitha. B	2-5 pm	3 hours
11.	02.06.201 8	Application of Anatomy in perfusion technology	Dr. Anitha. B	2-5 pm	3 hours
		<b>Total</b>			30 hrs

**REFERENCE BOOKS:**

1. BD Chaurasia's Human Anatomy
2. Vishram Singh Textbook of Anatomy

**VALUE ADDED COURSE**

**1. Name of the programme & Code**

Anatomy in perfusion technology

**2. Duration & Period**

30 hrs & May – June 2018

**3. Information Brochure and Course Content of Value Added Courses**

*Enclosed as Annexure- I*

**4. List of students enrolled**

*Enclosed as Annexure- II*

**5. Assessment procedures:**

Short answer question - *Enclosed as Annexure- III*

**6. Certificate model**

*Enclosed as Annexure- IV*

**7. No. of times offered during the same year:**

1 time , May – June 2018

**8. Year of discontinuation: 2019**

**9. Summary report of each program year-wise**

Value Added Course- Anatomy in perfusion technology-May- June 2018					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	ANA08	Anatomy in perfusion technology	Dr. Anitha.B Dr. B.Rajesh Dr. Shanthini. S	1 <sup>st</sup> MBBS	20 students May- June 2018

**10. Course Feed Back**

*Enclosed as Annexure- V*

**RESOURCE PERSON**

1. Dr. Anitha. B

2. Dr. B. Rajesh

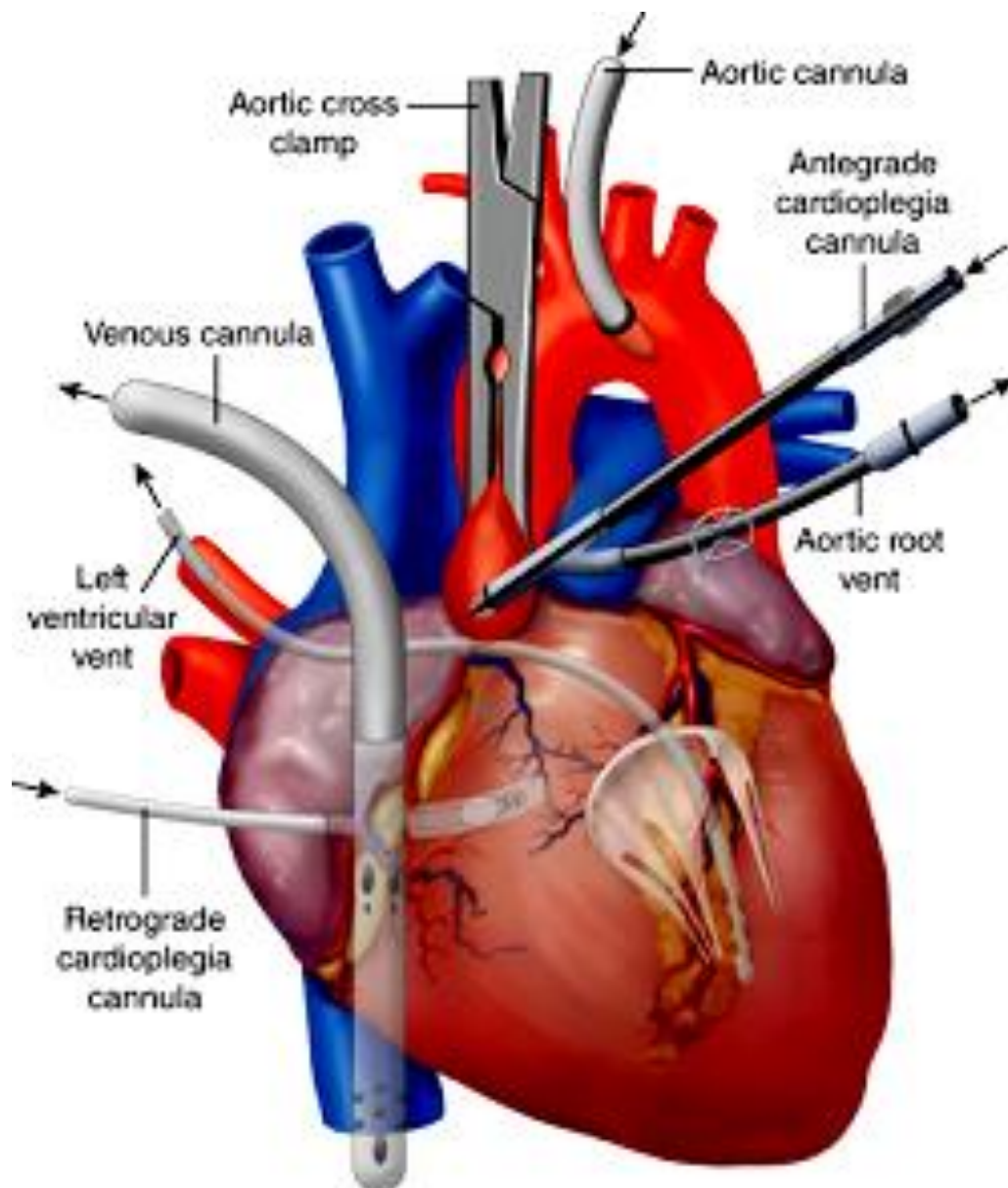
3. Dr. Shanthini

**COORDINATOR**

Dr. Somashekar. I. Tolanur

PROF & HOD OF ANATOMY  
SRI LAKSHMI NARAYANA INSTITUTE OF  
MEDICAL SCIENCES  
Vengalooru Andaram Village, Pondicherry-605 009

# ANATOMY IN PERFUSION TECHNOLOGY



# *Annexure- I*

## **COURSE DETAILS**

<b>Particulars</b>	<b>Description</b>
Course Title	Anatomy in perfusion technology
Course Code	ANA08
Topics and content of the course in the Hand book	<ol style="list-style-type: none"><li>1. Introduction to respiratory and circulatory system</li><li>2. Introduction to life support equipments</li><li>3. Thoracic cage and intercostal space</li><li>4. Surface anatomy of heart, lung and major blood vessels</li><li>5. Anatomy of lung and pleura</li><li>6. Heart – external and internal features</li><li>7. pericardium</li><li>8. Major blood vessels of heart</li><li>9. Kidney, ureter and urinary bladder – external and internal features</li><li>10. cardiopulmonary perfusion</li><li>11. Risk to patient</li><li>12. Role of perfusionist</li><li>13. Application of Anatomy in perfusion technology</li></ol>
Advantages of learning and evaluation	In-depth knowledge of Anatomy and its application
Further learning Opportunities	Functional anatomy

Key Competencies	On successful completion of the course the students will have skill in handling emergency procedures
Target Student	1 <sup>st</sup> MBBS Students
Duration	30 hours, May- June 2018
Theory Session	22 hour
Practical Session	8 hour
Assessment Procedure	Short answer question

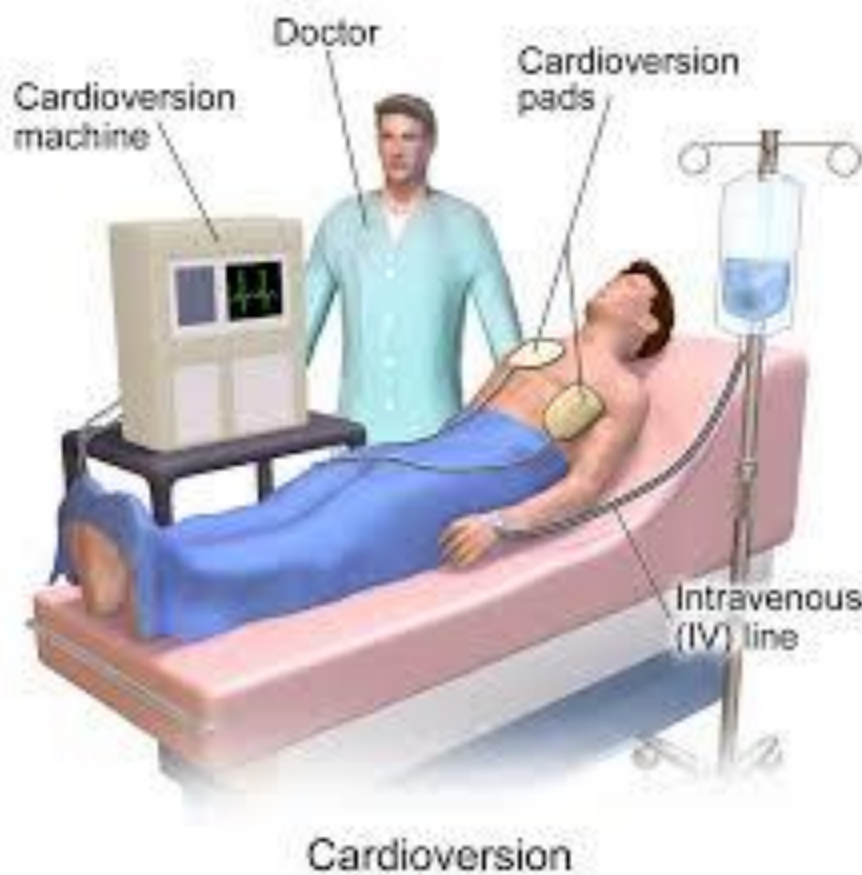
## **Introduction**

Open heart surgery is one of the most highly technical of all modern medical techniques, and includes procedures such as coronary artery bypass grafting, cardiac valve repair or replacement, correction of congenital defects, resection of aneurysms, ablation of abnormal pathways of conduction, etc. It relies on the coordinated interaction of a heart surgeon, an anesthesiologist, several nurses and technicians, and a perfusionist.

The first successful open heart surgery was performed in Philadelphia forty years ago by Dr. John Gibbon, Jr., whose wife, Mary, was his perfusionist. This historical landmark came after two decades of laboratory exploration and perfection of their extracorporeal circuit and its ability to sustain life. Perfusion, the technology which has evolved from those groundbreaking discoveries, controls, supports and maintains the circulation by application of extracorporeal devices.

During open-heart surgery, perfusion (cardiopulmonary bypass - CPB) supplements the functions of the heart and lungs to provide the surgeon with a still, dry operating field. Today, this highly specialized role is performed by individuals conversant in a variety of scientific modalities working in close communication and cooperation with the surgeon. Perfusionists understand the anatomy, pathology, and physiology of the patient, while administering medications, anesthetics, blood, blood components and blood substitutes.

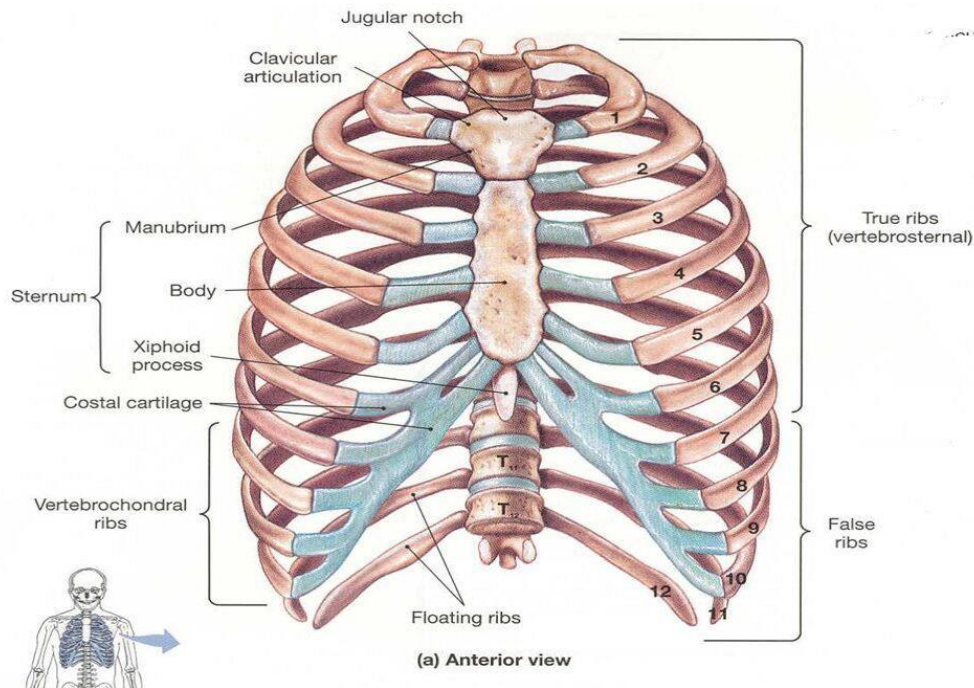
Simultaneously, they operate a highly sophisticated electromechanical device to substitute for the human heart and lungs. Today's perfusionists know and utilize aspects of varied pursuits which include a functional comprehension of machines and motors, electronics and electrical safety, plastics and biocompatibility, drugs and pharmacology, blood and its components, hemodynamics and fluid dynamics, hypothermia and hyperthermia, gas exchange and metabolism, electrolytes and blood compatibility, anticoagulation and anesthesia.



### **Gross Anatomy:**

**Thoracic cage**

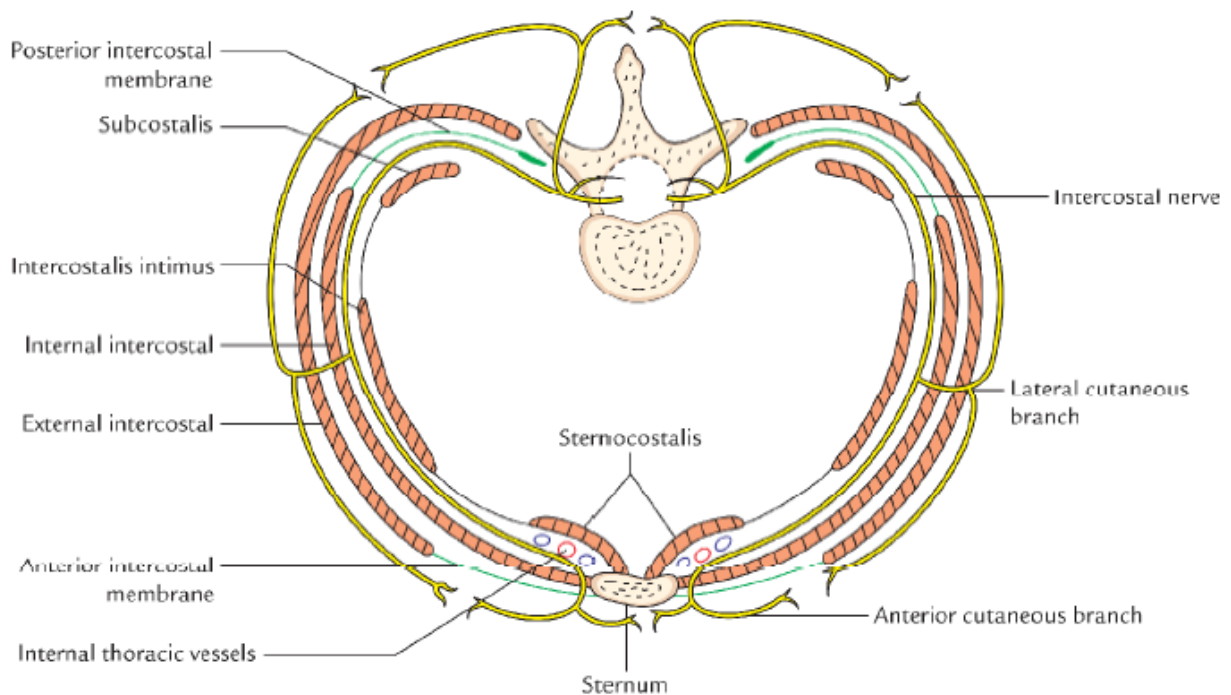
The thoracic cage (human rib cage) is a bony and cartilaginous structure which surrounds the thoracic cavity and supports the pectoral girdle, forming a core portion of the human skeleton.



### Intercostal space and muscles

The intrinsic muscles of the chest wall are the intercostal muscles, subcostalis, transversus thoracis, levatores costarum, serratus posterior superior and serratus posterior inferior. The intercostal muscles occupy each of the intercostal spaces and are named according to their surface relations, i.e. external, internal and innermost. All except levatores costarum are innervated by the adjacent intercostal nerves derived from the ventral rami of the thoracic spinal nerves; levatores costarum are innervated by the dorsal rami of the thoracic spinal nerves. The intrinsic muscles can elevate or depress the ribs, and are active during respiration, particularly forced respiration: their primary action is

believed to be to stiffen the chest wall, preventing paradoxical movement during inspiration .



## Pleura

The right and left pleural cavities are separate compartments on either side of the mediastinum. Each encloses a lung and its associated bronchial tree and vessels, nerves and lymphatics. The walls are formed by a serous membrane, the pleura, arranged as a closed sac.. The lungs do not fill this space in quiet respiration, but move into recesses such as the costodiaphragmatic recess, which separates the costal and diaphragmatic pleura, in deep breathing.

## Lungs

The lungs are the essential organs of respiration. They are situated on either side of the heart . Each lung is free in its pleural cavity, except for its attachment to the heart and trachea at the hilum and pulmonary ligament respectively. The adult right lung usually weighs 625 g, and the left 565 g, but the range of wet

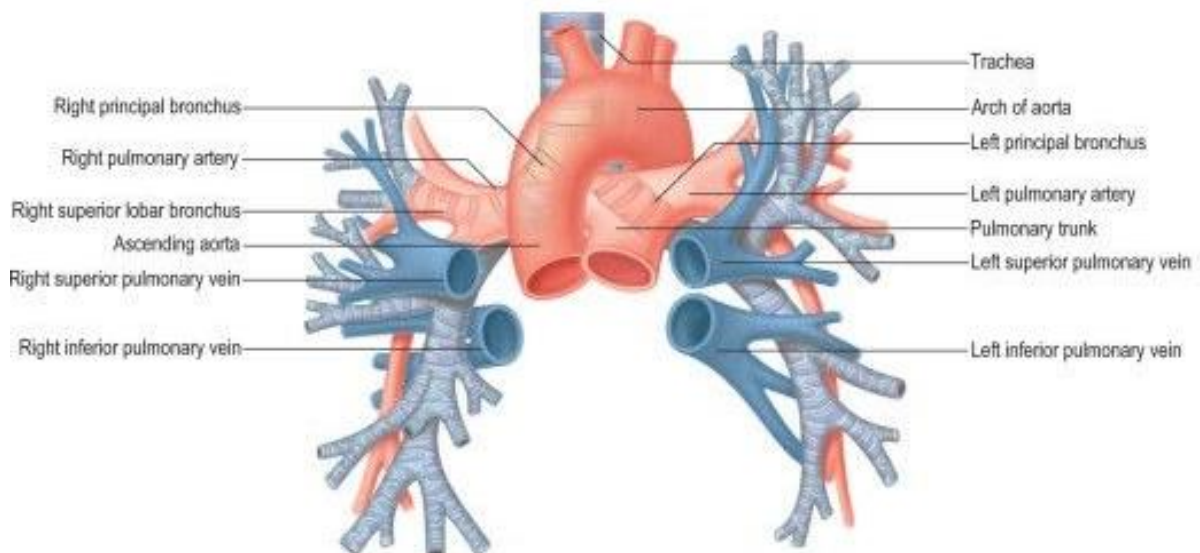
weights is considerable, not least because it reflects the amount of blood or serous fluid contained within the lungs when weighed.

### Pulmonary surface features

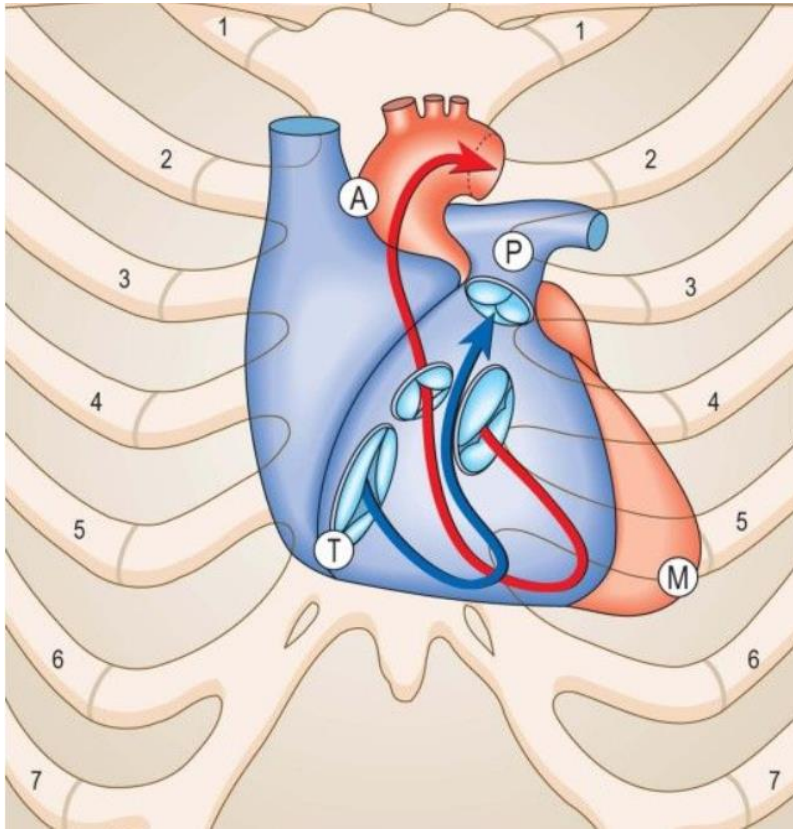
Each lung has an apex, base, three borders and two surfaces. In shape, each lung approximates to half a cone.

### Vascular supply and lymphatic drainage

The lungs have two functionally distinct circulatory pathways. The pulmonary vessels convey deoxygenated blood to the alveolar walls and drain oxygenated blood back to the left side of the heart, and the much smaller bronchial vessels, which are derived from the systemic circulation, provide oxygenated blood to lung tissues that do not have close access to atmospheric oxygen, i.e. those of the bronchi and larger bronchioles.



### Location of heart in thoracic cavity



## PERICARDIUM

The pericardium contains the heart and the juxtacardiac parts of its great vessels. It consists of two components, the fibrous and the serosal pericardium.

### Heart

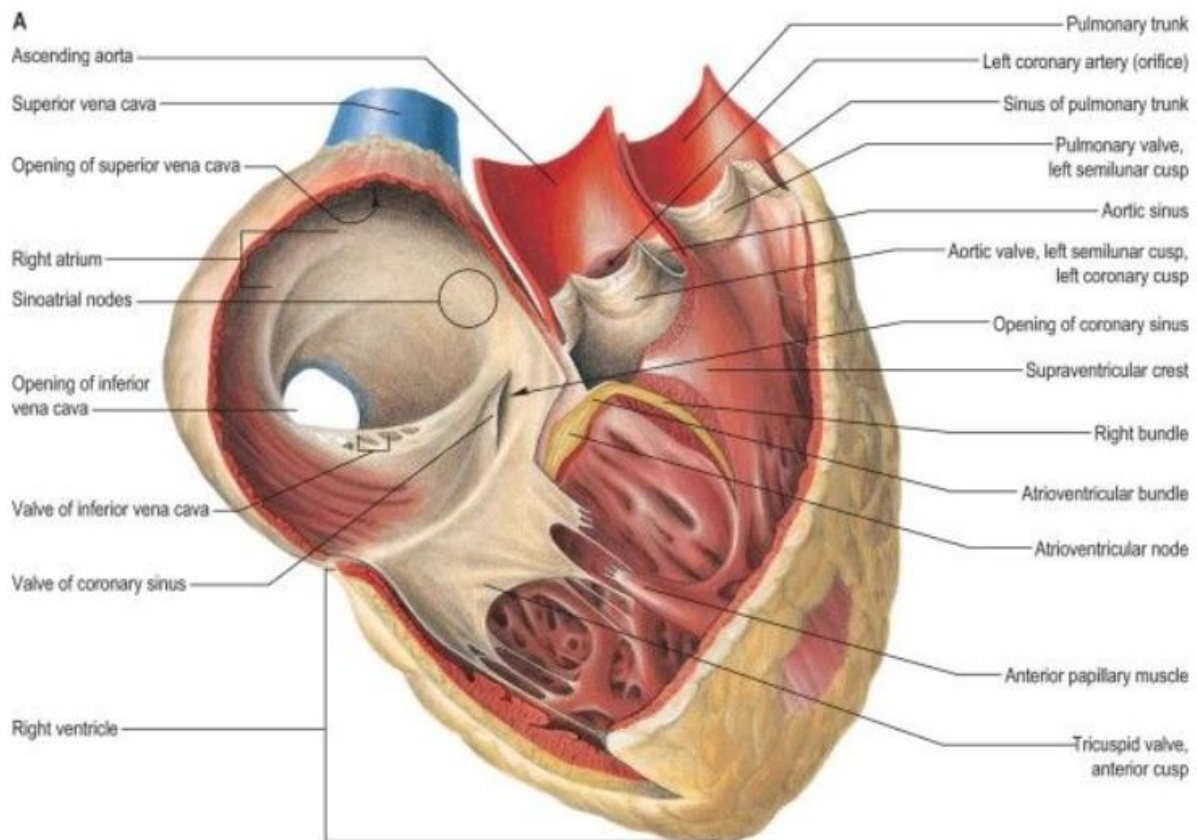
The heart is a pair of valved muscular pumps combined in a single organ (Fig. 56.2A–D). Although the fibromuscular framework and conduction tissues of these pumps are structurally interwoven, each pump (the so-called ‘right’ and ‘left’ hearts) is physiologically separate, and is interposed in series at different points in the double circulation. Despite this functional disposition in series, the two pumps are usually described topographically in parallel.

Of the four cardiac chambers, the two atria receive venous blood as weakly contractile reservoirs for final filling of the two ventricles, which then provide

the powerful expulsive contraction that forces blood into the main arterial trunks.

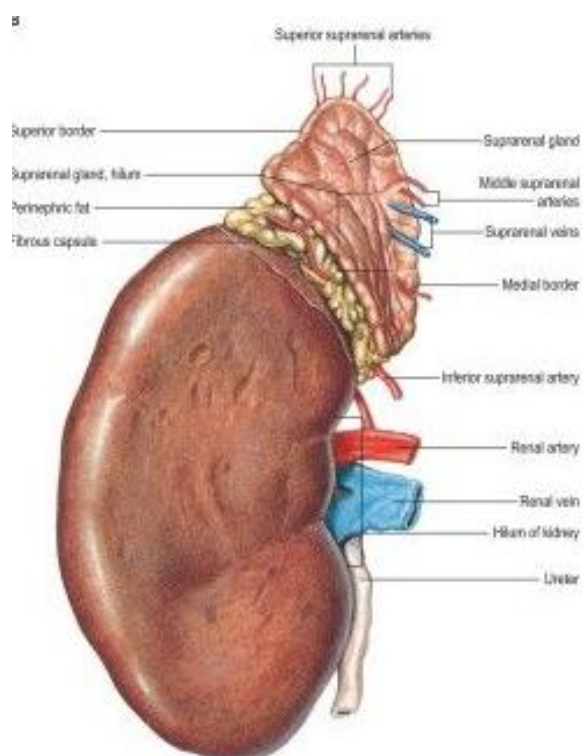
### Cardiac size, shape and external features

The heart is a hollow, fibromuscular organ of a somewhat conical or pyramidal form, with a base, apex and a series of surfaces and 'borders'. Enclosed in the pericardium, it occupies the middle mediastinum between the lungs and their pleural coverings (Fig. 56.1). It is placed obliquely behind the body of the sternum and the adjoining costal cartilages and ribs. Approximately one-third of the mass lies to the right of the midline.



The right and left coronary arteries arise from the ascending aorta in its anterior and left posterior sinuses. The levels of the coronary ostia are variable. The two arteries, as indicated by their name, form an oblique inverted crown, in which an anastomotic circle in the atrioventricular groove is connected by marginal and interventricular (descending) loops intersecting at the cardiac apex. This is, of course, only an approximation. The degree of anastomosis varies and is usually insignificant. The main arteries and major branches are usually subepicardial, but those in the atrioventricular and interventricular grooves are often deeply sited, and occasionally hidden by overlapping myocardium or embedded in it.

## Excretory system



The kidneys excrete the end products of metabolism and excess water. These actions are essential for the control of concentrations of various substances in the body, maintaining electrolyte and water balance approximately constant in the tissue fluids. The kidneys also have endocrine functions, producing and releasing erythropoietin, which affects red blood cell formation; renin, which influences blood pressure; 1,25-di-hydroxycholecalciferol (the metabolically active form of vitamin D), which is involved in the control of calcium absorption and mineral metabolism; and various other soluble factors with metabolic actions.

In the fresh state, the kidneys are reddish-brown. They are situated posteriorly behind the peritoneum on each side of the vertebral column and are surrounded by adipose tissue. Superiorly they are level with the upper border of the 12th thoracic vertebra, inferiorly with the third lumbar vertebra. The right is usually slightly inferior to the left, reflecting its relationship to the liver. The left is a little longer and narrower than the right and lies nearer the median plane. The long axis of each kidney is directed inferolaterally and the transverse axis posteromedially, which means that the anterior and posterior aspects usually described are in fact anterolateral and posteromedial. An appreciation of this orientation is important in percutaneous and endo-urologic renal surgery.

### **Cardio pulmonary perfusion**

Blood pumps propel the blood through the extracorporeal circuit and return it to the total volume of blood in the circuit via suction. Usually, three pumps are used. The arterial pump returns oxygenated blood to the patient and may operate at a flow rate of up to 6 L/ min, depending on the size of the patient. A backup arterial pump is usually provided. The two other pumps in the system are used to generate suction to return blood from the surgical site to the cardiomy reservoir. Since continuous operation is imperative, a backup

battery pack as well as connection to the emergency power system are necessary.

The oxygenator,\* cardiotomy reservoir, arterial filter, and tubing are the disposable components that form the extracorporeal blood circuit for the perfusion. Blood taken from the venae cavae normally flows by gravity to the venous side of the oxygenator where it is oxygenated and its temperature is controlled. This blood flows through the defoamer of the oxygenator to the arterial reservoir of the oxygenator. The arterial blood pump returns the blood to the patient, and then may pass it through a blood line filter before it reaches the patient.

A shunt is incorporated around the blood line filter to permit flow if the filter must be changed. Blood at the surgical site is returned to the patient by suction pumps. Intracardiac suckers return blood to the cardiotomy reservoir where it is filtered and then drained or pumped to the venous side of the oxygenator. Blood from the cardiotomy reservoir may be passed through an additional blood line filter before it is returned to the oxygenator. The tubing set described is usually specified by the perfusionist and made up as a sterile custom pack by the tubing manufacturer

### **Risks to the patient**

One of the greatest risks to the patient during cardiopulmonary bypass is embolism-the inadvertent introduction of air (or other gas or particulate matter) into the patient's circulation. Gross air emboli (1 mL or greater) in the arterial circulation can cause serious injury and death. The effects of smaller emboli are not fully understood

There are several patient and equipment variables that must be controlled and monitored during perfusion. The temperature of the blood in the extracorporeal

circuit is altered to produce hypothermia or normothermia in the patient's body. A heat exchanger is normally incorporated in the oxygenator and water must be delivered to the exchanger at a specified temperature. A mixer is used to proportion the incoming hot and cold water to be delivered to the exchanger. These mixers usually incorporate a thermometer to give temperature readings. Oxygen, used to oxygenate the venous blood, may be delivered from tanks or a central piped oxygen system. A flowmeter and bacteriologic filter are usually incorporated into the oxygen circuit. The oxygen content of the blood may be monitored by blood gas determinations from drawn samples or by using an in-line differential oxygen monitor. Temperature monitors may be used, with probes placed at various points on the patient and/or in the extracorporeal circuit, and the temperature is displayed at the main console. Level detectors may be used to monitor the blood in the oxygenator. These detectors may give audible and visual alarms and may also stop the arterial blood pump if the blood level in the oxygenator is low, in order to avoid pumping air into the patient, or too high to prevent excessive blood in the exsanguinator. Pressure monitors record left atrial, pulmonary artery, and systemic arterial pressures. These monitors may be included in a central console or they may be attached to other pressure monitoring equipment.

### **The role of the perfusionist**

The most important monitor for air or other matter in the extracorporeal circuit that can cause emboli is the perfusionist. Cardiopulmonary perfusion is not a straightforward, predictable, controlled procedure. Constant vigilance by the perfusionist is required, and, if other responsibilities or activities distract the perfusionist during the procedure, the risks to the patient are increased. Some surgical personnel may wrongly assume that the perfusion equipment runs itself once it is set up, and so may ask the perfusionist to perform other tasks during surgery. This is a very dangerous practice, and should be avoided. There have

been many patient injuries or deaths because of operator inattention during the procedure, improper connection of the equipment, or defective equipment. (The arterial pump, operating at 6 L/min, can empty the oxygenator of 1000 cc of blood in 10 seconds. During the short amount of time that the perfusionist may turn away from the machine, air may be allowed to enter the system.] It is possible that many of these incidents could have been prevented had the equipment been thoroughly checked for integrity and proper connection, and had the perfusionist continuously monitored the equipment during the procedure

### **Protocol**

The protocols should describe the procedures for preparing, performing, and concluding bypass. These policies should consider all aspects of the perfusion and should be periodically reviewed and updated. As a minimum, they should address:

- Responsibilities (who does what)
- Surgical protocols
- Anesthesia protocols
- The extracorporeal and cardioplegia circuits
- Equipment selection and use
- Monitoring of coagulation activity, perfusion pressures and rates, suction procedures, acid base balance, blood gases, and temperature

In addition to describing the conduct of normal perfusion, procedures should be described for dealing with emergencies that arise during cardiopulmonary bypass. These include, but are not limited to:

- Air embolism
- Defective extracorporeal component(s)
- Electrical power failure
- Inability to wean from bypass
- Altered hemodynamics
- Excessive blood loss
- Blood damage
- Other clinical manifestations

There should also be protocols describing high risk equipment and recommending supervision during their use. This equipment includes:

- Autotransfusion devices
- Defibrillators
- Intra-aortic balloon pumps
- Plasmapheresis equipment
- Pacemakers

Development and implementation of these protocols will allow better communication and more effective responses from the surgeon, perfusionist, and anesthesiologist during open-heart surgery procedures.

The perfusionist must have access to the perfusion setup and to information on blood pressure and blood chemistry throughout the perfusion. The perfusion setup and pressure monitoring equipment must be in the direct view of the perfusionist. The perfusionist should be able to view the mean arterial and left atrial pressures (value and waveform) while simultaneously viewing the oxygenator, cardiectomy reservoir, arterial blood filter, and extracorporeal tubing. Team perfusion may help prevent or minimize the severity of perfusion problems. Information on blood clotting time and chemistry (pH and electrolytes) and blood gases should be available on a "stat" basis (within 5 minutes). If this cannot be achieved using the hospital lab, the hospital should consider purchasing blood gas equipment for the surgical suite. In some hospitals, perfusionists maintain their own equipment. It is kept in the OR between procedures, and may never be inspected by anyone other than the user. This is not a safe practice. Care of cardiopulmonary perfusion equipment should be part of the hospital's equipment control program. If perfusion is provided by an outside contract service, the hospital should make sure that the equipment is properly maintained. As part of a preventive maintenance program, the following should be considered:

- Complete inventory of all equipment used in perfusion
- Initiation and documentation of inspection (including performance testing), preventive maintenance, and repair of equipment used in perfusion
- Establishment of complete documentation for all equipment in the form of an Equipment Control Record (ECR). This record should include equipment history, operator's and service manuals, maintenance service and repair information, and hazard and recall information.
- All equipment maintenance and repair data should be communicated between biomedical engineering and the perfusion staff periodically to ensure proper preventive maintenance and confidence in equipment performance. All vendor-provided services should be carefully monitored.

## References

1. B.D. Chaurasia's Human Anatomy
2. Vishram singh- Text book of Anatomy
3. Hospital Risk Control Risk Analysis: Cardiopulmonary Perfusion Equipment. Smith bukline. The Journal of Extra-Corporeal Technology. Volume 19, Number 2, Summer 1987

VALUE ADDED COURSE

Anatomy in perfusion technology and ANA08

List of Students Enrolled – May – June 2018

1 <sup>st</sup> Year MBBS Student			
Sl. No	Name of the Student	Roll No	Signature
1	AARTHISEKAR . D	U17MB252	
2	AARYA R BABU	U17MB253	
3	ABHIJITH.K	U17MB254	
4	ABHISHEIK.J	U17MB255	
5	ABHISHEK KUMAR VISHWAKARMA	U17MB256	
6	ADITYA RAI	U17MB257	
7	ADWIZA RAI	U17MB258	
8	AFZAN.M	U17MB259	
9	AGARWAL RIDHAM RAJESHBHAI	U17MB260	
10	AISWARYA.S.NAIR	U17MB261	
11	BHAVYA GUPTA	U17MB281	
12	BRAHMA PRAKASH MISHRA	U17MB282	
13	CHINMAY DODANI	U17MB283	
14	CHRISTO VINCENT.V	U17MB284	
15	CIBIYASHREE.G	U17MB285	
16	DEBIA JERMIN	U17MB286	
17	DEEPIKAA R.D	U17MB287	
18	DHANUSS BHUVAN SRIDARAN	U17MB288	
19	DHIREN.S	U17MB289	
20	DHWANI SOLANKI	U17MB290	

## RESOURCE PERSON

1. Dr. Anitha. B

2. Dr. B. Rajesh

3. Dr. Shanthi.S

## COORDINATOR

Dr. Somashekar.I.Tolanur

PROF & HOD OF ANATOMY  
SRI LAKSHMI NARAYANA INSTITUTE OF  
MEDICAL SCIENCES  
Anga, Angam Villoje, Pandharpur, 425 10.



**SRI LAKSHMI NARAYANA INSTITUTE OF HIGHER EDUCATION  
AND RESEARCH**

**Annexure - III**

**VALUE ADDED COURSES**

**ANATOMY IN PERFUSION TECHNOLOGY**

**Short answer questions**

**Course code:ANA08**

**Answer all the questions**

**(10x2 = 20)**

1. Name the Major blood vessels in the human body
2. Pleural cavity
3. Aorta and its branches
4. Equipments used in perfusion technology
5. Surface landmarks of heart and lung
6. Role of perfusionist
7. External and internal features of heart
8. Renal circulation
9. Risks to patient during perfusion
10. Mechanism of respiration

19  
20  
Value Added course

## Anatomy in Perfusion technology

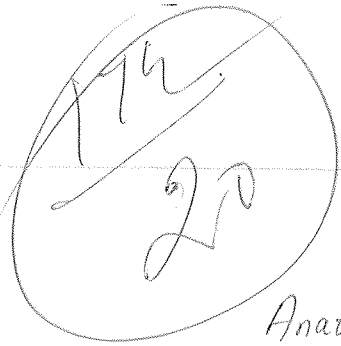
1. Blood vessels in human body
- Aorta
  - common carotid { External &
  - subclavian artery { Internal carotid artery
  - Axillary artery
  - Brachial artery
  - femoral artery
  - Popliteal artery,

2. Pleural cavity
- \* Both Lungs are covered by pleura,
  - \* pleura - is a serous membrane
  - \* 2 layer  $\rightarrow$  parietal & visceral pleura
  - \* Between 2 layers  $\rightarrow$  pleural cavity  
 $\downarrow$   
 contains pleural fluid
  - \* 2 Recesses seen between the layers
    - 1) costo diaphragmatic Recess
    - 2) costo mediastinal recess.

### 3. - Heart:

It has apex, Base, diaphragmatic surface, Anterior surface, Lateral surface.

made up of 4 chambers  $\rightarrow$  Rt atrium, Left atrium, Right ventricle, Left ventricle.



Value Added Course

Anatomy in Perfusion Technology

Short notes

1) Major blood vessels in the human body

1) Aorta is the major blood vessel arising from heart. Aorta gives common carotid artery, subclavian artery, brachiocephalic trunk. Common carotid gives external & internal carotid arteries.

2) Subclavian artery continuous as axillary artery which is continuous as brachial artery.

3) Other arteries are femoral artery, popliteal artery.

2) Pleural cavity

parietal & visceral cover the lung. Pleura made up of 2 layers. pleural cavity filled with pleural fluid. Between the layers there is

3) Role of perfusionist

Cardiopulmonary perfusion is not a straight forward, predictable, controlled procedure. Constant vigilance by the perfusionist is required. Some surgical personnel may wrongly assume that the perfusion equipment runs itself once it is set up, and so may ask the perfusionist to perform other tasks during surgery. This is very dangerous practice, and should be avoided. There have been many injuries (or

## Student Feedback Form

Course Name: Anatomy in perfusion technology

Subject Code: ANA08

Name of Student: Chinnay Dodani Roll No.: UJ-7M B 283

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

SI. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					✓
2	Course contents met with your expectations					✓
3	Lecturer sequence was well planned					✓
4	Lectures were clear and easy to understand					✓
5	Teaching aids were effective					✓
6	Instructors encourage interaction and were helpful					✓
7	The level of the course					✓
8	Overall rating of the course	1	2	3	4	5 ✓

\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Date: 02.06.2018

  
Signature

## Student Feedback Form

Course Name: **Anatomy in perfusion technology**

Subject Code: **ANA08**

Name of Student:           Bhavya Gupta           Roll No.:           U17M0281          

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear				✓	
2	Course contents met with your expectations				✓	
3	Lecturer sequence was well planned				✓	
4	Lectures were clear and easy to understand				✓	
5	Teaching aids were effective					✓
6	Instructors encourage interaction and were helpful					✓
7	The level of the course					✓
8	Overall rating of the course	1	2	3	4	5 ✓

\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Nil

Date:           02.06.2018          

  
Signature

Date: 07.06.2018

From

Dr. Somashekar.I. Tholanur  
Professor and Head,  
Department of Anatomy,  
Sri Lakshmi Narayana Institute of Medical Sciences  
BIHER  
Puducherry

To

The Dean,  
Sri Lakshmi Narayana Institute of Medical Sciences  
BIHER  
Puducherry

**Sub: Completion of value-added course: Anatomy in perfusion technology**

Dear Sir,

With reference to the subject mentioned above, the department of Anatomy has conducted the value-added course titled: : **Anatomy in perfusion technology** for the 1<sup>st</sup> MBBS students during May- June 2018 . We solicit your kind action to send certificates for the participants, whose list is attached with this letter. Also I am attaching the photographs captured during the conduct of the course.

Kind Regards,



Dr. Somashekar. I. Tholanur

**Encl: Participants list**

**Photograph**

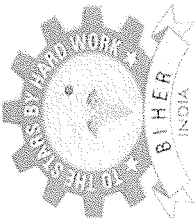
DR. SOMASHEKAR. I. THOLANUR  
SRI LAKSHMI NARAYANA INSTITUTE OF  
MEDICAL SCIENCES  
BIHER, PUDUCHERRY

**VALUE ADDED COURSE**  
**ANATOMY IN PERFUSION TECHNOLOGY**

**Participants list**

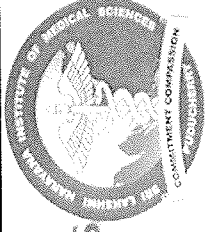
<b>1<sup>st</sup> Year MBBS Student</b>		
<b>Sl. No</b>	<b>Name of the Student</b>	<b>Roll No</b>
1	AARTHISEKAR . D	U17MB252
2	AARYA R BABU	U17MB253
3	ABHIJITH.K	U17MB254
4	ABHISHEIK.J	U17MB255
5	ABHISHEK KUMAR VISHWAKARMA	U17MB256
6	ADITYA RAI	U17MB257
7	ADWIZA RAI	U17MB258
8	AFZAN.M	U17MB259
9	AGARWAL RIDHAM RAJESHBHAI	U17MB260
10	AISWARYA.S.NAIR	U17MB261
11	BHAVYA GUPTA	U17MB281
12	BRAHMA PRAKASH MISHRA	U17MB282
13	CHINMAY DODANI	U17MB283
14	CHRISTO VINCENT.V	U17MB284
15	CIBIYASHREE.G	U17MB285
16	DEBIA JERMIN	U17MB286
17	DEEPIKAA R.D	U17MB287
18	DHANUSS BHUVAN SRIDARAN	U17MB288
19	DHIREN.S	U17MB289
20	DHWANI SOLANKI	U17MB290





# Sri Lakshmi Narayana Institute of Medical Sciences

Approved to Bharath Institute of Higher Education & Research  
by Government of Tamil Nadu under UCC Act 1956



## CERTIFICATE OF MERIT

This is to certify that AFZAN. M has actively participated in the Value Added Course on Anatomy in perfusion technology held during May- June 2018 Organized by Department of Anatomy, Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

*B.A.S*

Dr. Anitha. B

RESOURCE PERSON

*B.Rajesh*

Dr. B. Rajesh

RESOURCE PERSON

*Shanthini.S*

Dr. Shanthini.S

RESOURCE PERSON

*Somashekar.I.Tolanur*

Dr. Somashekar.I.Tolanur

COORDINATOR

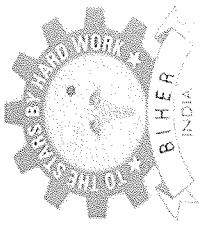
*A. Sugumar*

Dr. A. Sugumar

DEAN

SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
OSUDU-AGARAM VILLAGE,  
POODIPAKAM POST,  
PONDICHERRY - 605 502

PROF & HOD OF ANATOMY  
SRI LAKSHMI NARAYANA INSTITUTE OF  
MEDICAL SCIENCES



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharathidasan University, Higher Education & Research,  
Chennai to be listed in the directory of the UGC & AICTE.



## CERTIFICATE OF MERIT

This is to certify that AISWARYA.S.NAIR has actively participated in the

Value Added Course on Anatomy in perfusion technology held during May- June 2018

Organized by Department of Anatomy, Sri Lakshmi Narayana Institute of Medical

Sciences, Pondicherry- 605 502, India.

*Amey*

Dr. Anitha. B

RESOURCE PERSON

Dr. B. Rajesh

RESOURCE PERSON

*Shanthini S*

Dr. Shanthini.S

RESOURCE PERSON

*Somashekar I.Tolanur*

Dr.Somashekar.I.Tolanur

COORDINATOR

*A Sugumar*

Dr. A. Sugumar

DEAN

SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
OSUDU, AGARAM VILAGE,  
KODAKKAM POST,  
PONDICHERY - 605 502  
SRI LAKSHMI NARAYANA INSTITUTE OF  
MEDICAL SCIENCES



Date-10-04-2018

From  
Dr. K. Harsha Vardhan  
Professor and Head,  
Department of Dermatology,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

To  
The Dean  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Permission to conduct value-added course: Figurative erythemas**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: **Figurative erythemas** on 10-05-2018. We solicit your kind permission for the same.

Kind Regards

Dr. K. Harsha Vardhan

---

**FOR THE USE OF DEANS OFFICE**

Names of Committee members for evaluating the course:

The Dean: Dr. A. Sugumaran

The HOD: Dr. K. Harsha Vardhan

The Expert: Dr. A. Buvanaratchagan

The committee has discussed about the course and is approved.

**DEAN**  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
OSUDU, AGARAM VILLAGE,  
KODAPAKKAM POST,  
PUDUCHERRY - 605 502

Subject Expert

HOD



Date-10-04-2018

From  
Dr. K. Harsha Vardhan  
Professor and Head,  
Department of Dermatology,  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
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SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
OSUDU, AGARAM VILLAGE,  
KODAPAKKAM POST,  
PUDUCHERRY - 605 502

Dr. A. BUVANARATCHAGAN, MD.,  
Reg. No: 37150  
Asso. Professor, Dermatology  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kumbakonam, Puducherry

Subject Expert

PROFESSOR & HEAD  
DEPT. OF DERMATOLOGY  
SRI LAKSHMI NARAYANA INSTITUTE OF  
MEDICAL SCIENCES  
OSUDU, PUDUCHERRY.

HOD



OFFICE OF THE DEAN

## Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P -II ) dt. 11/07/2011 ]  
[ Affiliated to Bharath University, Chennai - TN ]

Circular

17.04.2018

### **Sub: Organising Value-added Course: Figurate erythemas (March 2018 – june 2018)**

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research** is organizing **"Figurate erythemas"**. The course content is enclosed below."

The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before 03-05-2018. Applications received after the mentioned date shall not be entertained under any circumstances.

**DEAN**  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
OSUDU, AGARAM VILLAGE,  
KODAPAKKAM POST,  
PUDUCHERRY - 605 502

Encl: Copy of Course content

## COURSE PROPOSAL

**Course Title:** Figurative erythemas

**Course Objective:** To evaluate various figurative erythema and underlying conditions to second year mbbs students

**Course Outcome:** Completed

**Course Audience:** second year mbbs students

**Course Coordinator:** Dr. K. Harsha Vardhan

**Course Faculties with Qualification and Designation:**

1. Dr. K. Harsha Vardhan

Professor, Department of Dermatology

2. Dr. Buvanaratchagan,

Associate professor, dept of dermatology

**Course Curriculum/Topics with schedule (Min of 30 hours)**

SINo	Date	Topic	Time	Hours	Lecture taken by
1	10-5-18	Introduction	4to 6 pm	2 hours	. Dr. K. Harsha Vardhan
2	15-5-18	Types of figurate erythemas	5 to 7 pm	2 hours	Dr. Buvanaratchagan
3	20-5-18	Erythema gyratum repens	4:30 to6:30 pm	2 hours	Dr. Buvanaratchagan
4	25-5-18	Erythema annulare centrifugum	4to 6 pm	2 hours	Dr. K. Harsha Vardhan
5	30-5-18	Erythema chronicum migrans	5 to 7 pm	2 hours	Dr. Buvanaratchagan
6	3-6-18	Lupus erythematosus	4:30 to6:30 pm	2 hours	Dr. K. Harsha Vardhan
7	6-6-18	Urticaria	4to 6 pm	2 hours	Dr. K. Harsha Vardhan
8	8-6-18	Pityriasis rosea	5 to 7 pm	2 hours	Dr. Buvanaratchagan
9	12-6-18	Erythema multiforme	4:30 to6:30 pm	2 hours	Dr. K. Harsha Vardhan
10	16-6-18	Erythema marginatum	4:30 to6:30 pm	2 hours	Dr. Buvanaratchagan
11	20-6-18	Necrolytic migratory erythema	4to 6 pm	2 hours	Dr. Buvanaratchagan
12	25-6-18	Familial annular erythema	5 to 7 pm	2 hours	Dr. Buvanaratchagan
13	28-6-18	Analysis of erythemas	4:30 to6:30 pm	2 hours	Dr. K. Harsha Vardhan
14	30-6-18	Histology and treatment	4to 6 pm	2 hours	Dr. K. Harsha Vardhan
15	4-7-18	Q&A, MCQs	5 to 7 pm	2 hours	Dr. K. Harsha Vardhan
			Total Hours	30	

### REFERENCE BOOKS:

Rooks textbook of dermatology 9th edition ,

Fitzpatrick 's dermatology in general medicine 8th edition

**ABSTRACT-VALUE ADDED COURSE**

**1. Name of the programme & Code**

Figurate erythemias and DR07

**2. Duration & Period**

30 hrs & March 2018– June 2018

**3. Information Brochure and Course Content of Value Added Courses**

*Enclosed as Annexure- I*

**4. List of students enrolled**

*Enclosed as Annexure- II*

**5. Assessment procedures:**

Multiple choice questions- *Enclosed as Annexure- III*

**6. Course Feed Back**

*Enclosed as Annexure- IV*

**7. No. of times offered during the same**

March 2018– June 2018

**8. Year of discontinuation: 2018**

**9. Summary report of each program year-wise**

Value Added Course- (March 2018– june 18)					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	DR07	Figurate erythemias	Dr. Buvanaratchagan	2nd yr MBBS	15 (March 2018– june 18)

**10. Certificate model**

*Enclosed as Annexure- V*

Dr. Buvanaratchagan

Dr. K. Harsha vardhan

**RESOURCE PERSON**

**COORDINATOR**

## ABSTRACT-VALUE ADDED COURSE

**1. Name of the programme & Code**

Figurate erythemas and DR07

**2. Duration & Period**

30 hrs & March 2018– June 2018

**3. Information Brochure and Course Content of Value Added Courses**

*Enclosed as Annexure- I*

**4. List of students enrolled**

*Enclosed as Annexure- II*

**5. Assessment procedures:**

Multiple choice questions- *Enclosed as Annexure- III*

**6. Course Feed Back**

*Enclosed as Annexure- IV*

**7. No. of times offered during the same**

March 2018– June 2018

**8. Year of discontinuation: 2018**

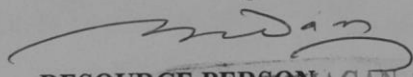
**9. Summary report of each program year-wise**

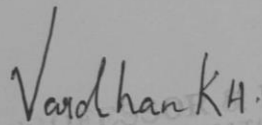
Value Added Course- (March 2018– june 18)					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	DR07	Figurate erythemas	Dr. Buvanaratchagan	2nd yr MBBS	15 (March 2018– june 18)

**10. Certificate model**

*Enclosed as Annexure- V*

Dr. Buvanaratchagan

  
**RESOURCE PERSON**  
DR. A. BUVANARATCHAGAN, MD.  
Reg. No: 37150  
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Dr. K. Harsha vardhan  
HEAD  
DEPT. OF DERMATOLOGY  
SRI LAKSHMI NARAYANA INSTITUTE OF  
MEDICAL SCIENCES  
OSUDU, KUDAPAKKAM, PUDUCHERRY.  
**COORDINATOR**

**ANNEXURE-1**

**Figurate erythemas**



**Participant handbook**

<b>Particulars</b>	<b>Description</b>
Course Title	Figurative erythemas- An overview
Course Code	DR07
Objective	<ol style="list-style-type: none"><li>1. To learn about the clinical features</li><li>2. To learn about the diagnosis</li><li>3. To learn about the treatment</li></ol>

Further learning opportunities	Recent advances in management
Key Competencies	To make a diagnosis and provide adequate treatment
Target Student	2nd MBBS Students
Duration	30hrs march 2018 to June 2018
Theory Session	10hrs
Practical Session	20hrs
Assessment Procedure	Multiple choice questions

## INTRODUCTION

- The figurate erythemas include a variety of eruptions characterized by annular and polycyclic lesions.
- The classical example is erythema annulare centrifugum
- List of figurate erythemas
- Erythema annulare centrifugum
- Erythema gyratum repens
- Erythema chronicum migrans
- Lupus erythematosus
- Urticaria
- Pityriasis rosea
- Erythema multiforme
- Erythema marginatum
- Necrolytic migratory erythema
- Carrier state chronic granulomatous disease

- Hereditary lactate dehydrogenase M-subunit deficiency
- Familial annular erythema
- Annular erythema of infancy

### Erythema annulare centrifugum

- Slowly migratory disease often idiopathic
- EAC appears to have no predilection for either sex or for any age group.
- Suspected triggers include bacterial and candidal infections, autoimmune diseases, menses, pregnancy, and even stress.
- EAC may be coupled with malignant neoplasms, disappearing after treatment of the tumor and often returning as the tumor recurs.



- It must be distinguished from metastatic tumors with an annular pattern.
- EAC begins as erythematous macules or urticarial papules and enlarges by peripheral extension to form ringed, arcuate, or polycyclic figures.
- 
- The lesions spread gradually to form large rings with central clearing, with the edges of the lesions often advancing several millimeters a day.
- After a variable period of time, the lesions disappear, often to be replaced by new ones.
- In the deep form of EAC, there is no scale and the rings are infiltrate

### Histology

- Superficial EAC has epidermal changes of parakeratosis and spongiosis, with a superficial perivascular infiltrate.
- There is minimal papillary dermal edema and no spongiosis.

- The deep form has superficial and deep perivascular infiltrates.
- Histopathology is important in excluding common differentials
- Interface change or mucin helps identify lupus erythematosus
- Plasma cell infiltrate suggests erythema chronicum migrans
- Eosinophils are a possible clue to drug reactions.

### Treatment

- EAC tends to be a chronic disease, which waxes and wanes.
- Only symptomatic relief is available.
- Systemic glucocorticoids usually suppress EAC, but recurrence is common when these drugs are stopped.
- Systemic therapy with antipruritics may help.
- Topical vitamin D analogs, perhaps combined with ultraviolet irradiation, are another option.
- Empiric use of antibiotic, antifungal, or anticandidal agents has sometimes been useful.
- Biologics may represent yet another option.

### Erythema gyratum repens

- This annular erythema is nearly always indicative of internal malignancy
- Numerous serpiginous bands are arranged in a parallel configuration of concentric red swirls over most of the body.
- This presentation is occasionally referred to as a “wood-grained” appearance.
- Even more striking is the relatively rapid rate at w



which lesions

migrate estimated at one centimeter per day.

- A slight scale may be found along the trailing edge of erythema.
- The hands, feet, and face are commonly spared, except for occasional volar hyperkeratosis.

- Ichthyosis is present in many cases.
- Pruritus is universal and may be severe.
- An underlying malignancy is associated with erythema gyratum repens over 80% of the time.
- This distinctive migratory eruption appears 4–9 months before the diagnosis of malignancy in approximately 80% of cases
- In those individuals with erythema gyratum repens who did not have a detectable underlying malignancy; concurrent conditions might be
  - tuberculosis, pregnancy, and bullous dermatoses, among others.
  - The exact etiology of erythema gyratum repens is unknown
  - The tumor may induce a chemical alteration of the normal components of the surrounding tissue.
  - Molecular mimicry ensues as the inflammatory response directed against the tumor cross react
  - Supported by documentation of IgG and C3 deposition at the basement membrane of affected skin and bronchial basement membrane in one case associated with lung cancer.
  - 
  - Migration is rapid in erythema gyratum repens
  - Inflammatory cells and/or fibroblasts may mediate ground substance alterations
  - This may localize the inflammation that orchestrates the movement of the infiltrate in a patterned mode.

### Treatment

- The treatment for erythema gyratum repens is to locate and treat the primary malignancy.
- With adequate control of the cancer the rash usually abates
- The eruption is often treatment resistant, although variable results occur with systemic steroids.
- Topical steroids, vitamin A, and azathioprine have not been beneficial.

The eruption has been known to resolve immediately before death, possibly due to generalized ante mortem immunosuppression

### NECROLYTIC MIGRATORY ERYTHEMA

- It presents as painful, eroded, crusted intertriginous, and facial skin eruption.

- NME is virtually pathognomonic for pancreatic glucagonoma and is present in more than two thirds of patients at the time of tumor diagnosis.
- When the characteristic eruption occurs without underlying pancreatic malignancy the condition is referred to as pseudoglucagonoma syndrome.



- Most of these signs and symptoms can be attributed to the metabolic effects of excess glucagon.

- Amino acid levels are depressed
- With insufficient amino acid epidermal protein deficiency and necrolysis ensues.
- Reduced amino acid levels (histidine and tryptophan) can cause painful, erythematous eroded skin, especially in intertriginous areas in several nutritional disorders
- 
- Glucagon also increases cutaneous levels of arachidonic acid.
- The skin lesions of NME are polymorphous, but erosions and crusts are usually apparent.
- Primary lesions are erythematous patches that eventuate into plaques that develop central bullae
- The blisters erode rapidly, form crust and eventually resolve.
- Pruritus and pain are common symptoms.
- The distribution of NME is characteristic and includes intertriginous areas (groin, perineum, buttocks, and lower abdomen), the central face (especially perioral), and distal extremities.
- Mucosal involvement manifests as angular cheilitis, atrophic glossitis, and stomatitis. Dystrophic nails may accompany the syndrome.
- The features of glucagonoma syndrome are weight loss, sore mouth, diarrhea, weakness, mental status changes, and diabetes mellitus.
- Weight loss is the most common presenting sign.
- Most patients have hyperglycemia and a normochromic normocytic anemia.
- Abnormal liver function is present and serum levels of amino acids, total protein, albumin, and cholesterol are low.
- Pseudoglucagonoma syndrome presents identically, but the  $\alpha$ -cell pancreatic tumor is not present
- Underlying diseases identified in patients with the pseudosyndrome are
  - Liver disease, pancreatitis, celiac sprue, inflammatory bowel disease, acrodermatitis enteropathica, pellagra, and nonpancreatic malignancies

## Histology

- Acute lesions demonstrate a striking degree of epidermal necrosis in the upper layers of the stratum spinosum.
- Neutrophils may be abundant in the necrotic layer and frank separation from the underlying intact epidermis may occur.
- Chronic lesions also show psoriasiform dermatitis with parakeratosis and loss of the granular layer.

## TREATMENT

- The underlying cause for hyperglucagonemia must be addressed.
- For patients with glucagonoma, resection of the tumor is important for symptom relief.
- Measures to correct nutritional deficiencies and glucagon levels have provided relief for

many patients.

- Given the high incidence of venous thromboses, deep vein thrombosis prophylaxis should be instituted.
- Intravenous somatostatin (a glucagon antagonist) has been shown to improve
- Supplementation to correct zinc, amino acid or fatty acid deficiencies is also used

### Erythema chronicum migrans

- EM lesions were reported in 50%–80% of patients with Lyme disease.
  - Definite history of tick bite at the site of the lesion is obtained in only a small proportion of patients.
  - The lesion itself is believed to be the result of the direct presence of the spirochete
  - EM lesions develop within 3–30 days of the tick bite.
- EM may be seen commonly on the lower extremities, inguinal and axillary regions of adults, and on the face in children
  - The skin lesion has an expanding erythema encircling the bite site, with the transition between the central zone and periphery being less well demarcated than between that of the periphery and adjacent skin.

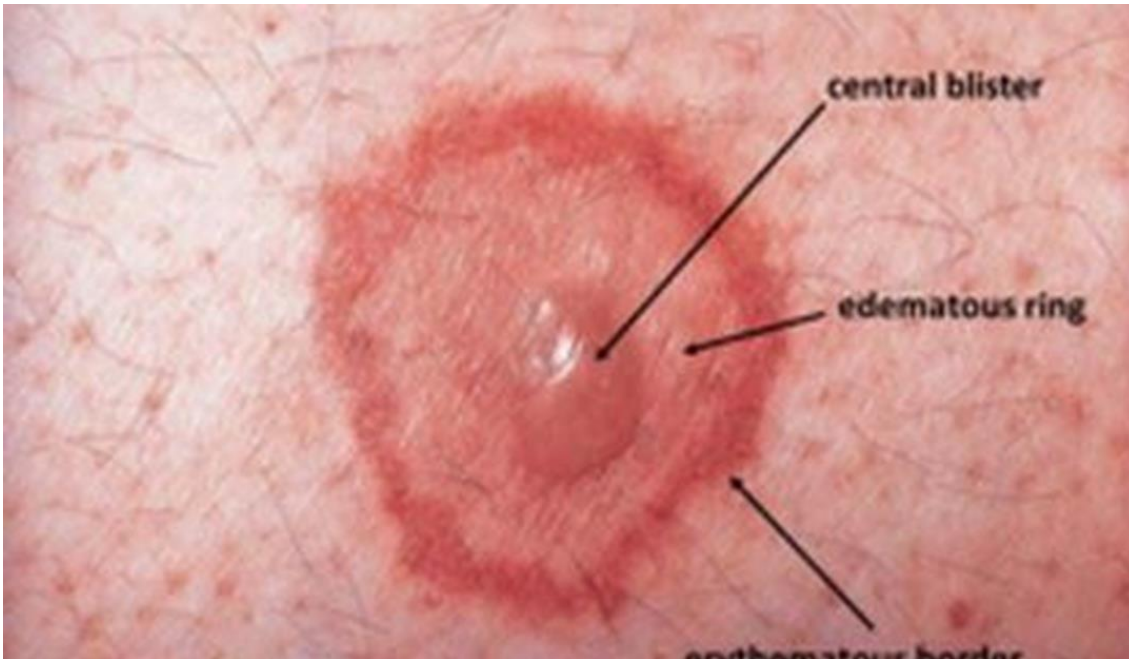


- The border is usually continuous and not patchy.
- Typically described as round, the lesion in reality is more oval with the “long line of the oval parallel to the lines of least skin tension” (Langer lines)
- As migration of the lesion proceeds, distortion of this configuration occurs.
- The center fades after a few weeks leaving only the annular border erythematous
- Multiple EM-like lesions occur in between 1% and 17% of patients.

- The spatial relationship of multiple lesions to the initial lesion indicates that they may be the consequence of hematogenous dissemination.
- Secondary EM lesions number from 2 to more than 80,.
- Lesions are usually asymptomatic and if untreated spontaneously resolve over weeks to months.
- Biopsies of early lesions show papillary dermal edema and a mixed infiltrate of lymphocytes, neutrophils, a few plasma cells, and a few eosinophils.
- Biopsies of older lesions display a variably dense perivascular and interstitial infiltrate of lymphocytes and plasma cells.
- Infiltrate is composed of CD4+ T lymphocytes .
- The diagnosis of EM is typically made on clinical appearance.
- From biopsy specimens, spirochetes, detected using special stains, are best located in the papillary dermis and may be short or elongate at this stage of the disease

## Erythema multiforme

- The skin eruption arises abruptly within 3 days.
- Most occur in a symmetric, acral distribution on the extensor surfaces of the extremities (hands and feet, elbows, and knees), face, and neck, and less frequently on the thighs, buttocks, and trunk.
- The typical lesion is a highly regular, circular, wheal-like erythematous papule or plaque that persists for 1 week or longer.



- It measures from a few millimeters to approximately 3cm and may expand lightly over 24 to 48 hours.
- Although the periphery remains erythematous and edematous, the center becomes violaceous and dark
- Inflammatory activity may regress or relapse in the center, which gives rise to concentric rings of color
  - Often, the center turns purpuric and/or necrotic or transforms into a tense vesicle or bulla.
  - The result is the classic target or iris lesion.
  - According to the proposed classification, typical target lesions consist of at least three concentric components
    - (1) a dusky central disk, or blister;
    - (2) more peripherally, an infiltrated pale ring
    - (3) an erythematous halo.
    - In some patients lesions are livid vesicles overlying a just slightly darker central portion, encircled by an erythematous margin.
    - Larger lesions may have a central bulla and a marginal ring of vesicles (herpes iris of Bateman)
    - Unusual presentations include cases in which recurrent EM in the same patient produces typical target lesions in one instance but plaques in a subsequent event.
    - In some patients lesions are livid vesicles overlying a just slightly darker central portion, encircled by an erythematous margin.
    - Larger lesions may have a central bulla and a marginal ring of vesicles (herpes iris of Bateman)
    - Unusual presentations include cases in which recurrent EM in the same patient produces typical target lesions in one instance but plaques in a subsequent event.
    - In some patients lesions are livid vesicles overlying a just slightly darker central portion, encircled by an erythematous margin.
    - Larger lesions may have a central bulla and a marginal ring of vesicles (herpes iris of Bateman)
    - Unusual presentations include cases in which recurrent EM in the same patient produces typical target lesions in one instance but plaques in a subsequent event

- Mucosal lesions are present in up to 70% of patients
- Predilection sites for mucosal lesions are the lip, on both cutaneous and mucosal sides, non-attached gingivae, and the ventral side of the tongue.
- The hard palate is usually spared, as are the attached gingivae.

## Histology

- Early lesions of EM exhibit lymphocyte accumulation at the dermal–epidermal interface, with exocytosis into the epidermis, lymphocytes attached to scattered necrotic keratinocytes (satellite cell necrosis), spongiosis, vacuolar degeneration of the basal cell layer, and focal junctional and subepidermal cleft formation.
- The papillary dermis may be edematous and contains a dense mononuclear cell infiltrate, which is more abundant in older lesions.
- The vessels are ectatic with swollen endothelial cells; there may be extravasated erythrocytes and eosinophils.
- Immunofluorescence findings are negative or nonspecific.
- In advanced lesions subepidermal blister formation may occur, but necrosis rarely involves the entire epidermis.
- In late lesions, melanophages may be prominent.
- Investigations to document causality are important in cases with frequent recurrences when prevention with long-term antiviral treatment is considered .
- HSV can rarely still be isolated from the initial lesion of labial herpes.
- Amplification of HSV Pol gene from biopsy samples of EM lesions is not done routinely.
- A negative result on serologic testing for HSV may be helpful to exclude the possibility of herpes-associated EM.
- The positive predictive value of the presence of HLA-DQB1\* 0301 is too low to have any clinical value.

## Treatment

- The aims of treatment are to reduce the duration of fever, eruption, and hospitalization.
- The use of systemic corticosteroids seems to shorten the duration of fever and eruption.
- However, the methodology of most studies was poor, with small series often mixing the various forms of idiopathic and virus-associated EM and drug-induced SJS. The use of systemic corticosteroids cannot be recommended.
- Several series indicate that administering anti-HSV drugs for the treatment of established episodes of postherpetic EM is useless.
- When symptomatic, *M. pneumoniae* infection should be treated with antibiotics .
- Liquid antacids, topical glucocorticoids, and local anesthetics relieve symptoms of painful mouth erosions.

## Erythema marginatum

- The dermatologic manifestations of ARF are characteristic but rare.
- Subcutaneous nodules are small, painless, and localized over bony prominences and in tendon sheaths.
- Erythema marginatum begins as an erythematous macule or papule extending outward while the central skin returns to normal.



- The border is pink and serpiginous, is not indurated, and blanches with pressure. Patients are often unaware of its presence.
- Histopathologically, there is a sparse superficial perivascular infiltrate of lymphocytes and neutrophils.
- 

#### Annular erythema of infancy

- The lesions are identical to those of EAC with erythematous, maculopapular lesions enlarging and evolving into variably sized, single or grouped annular plaques localized to the face, trunk and proximal limbs.
- Individual lesions last from two to several days and there may be a cyclical pattern of new lesions appearing every 5–6 weeks.
- The eruption may start in infancy or in teenage years, is self-limiting and has no associated systemic symptoms.
- The appearances are typically the same as in cases of EAC with a dermal perivascular and interstitial lymphocytic infiltrate
- There have been reports of a prominent eosinophilic infiltrate and an associated peripheral blood eosinophilia.



- Heavy intestinal colonization with *Candida albicans*, Epstein–Barr virus and *Malassezia* infections have been documented.
- Presents as polycyclic, annular, erythematous plaques that may expand by up to 2–3 mm per day with central clearing.
- Annular erythema of infancy is self-limiting.
- Investigations include
  - Microscopy and culture of skin scrapings
  - Antinuclear antibodies including antibodies to dsDNA and extractable nuclear antigen (ENA) (Ro, La, Sm and RNP)
  - Electrocardiogram (ECG) and skin biopsy.

Annexure 2

Bharath Institute of Higher Education and Research  
Sri Lakshmi Narayana Institute of Medical Sciences

Participant list of Value-added course: **FIGURATE ERYTHEMAS-DR07**

(March 2018 – June 2018)

2 <sup>nd</sup> Year MBBS Student			Signature
Sl. No	Name of the Student	Reg No	
1	VASIPALLI SUJITHA	U16MB391	Vasipilla Sujitha
2	VENKAT SRI RANGAN.P.B	U16MB392	Venkatsri Rangan
3	VENKATACHALAPATHY .G	U16MB393	Venkata
4	VIDHY ADHARAN.S	U16MB394	Vidya
5	VIGNESH .D	U16MB395	Vignesh
6	VIGNESH .S	U16MB396	Vignesh
7	VIJAY .M	U16MB397	Vijay
8	VINDUJA VIJAY	U16MB398	Vinduja
9	VIPIN SHARMA	U16MB399	Vipin
10	VISALINI .S	U16MB400	Visalini
11	SANDHYA	U16MB371	Sandhya
12	SARA R	U16MB372	Sara
13	SARASWATHI N	U16MB373	Saraswathi
14	SHIKHA SONI	U16MB376	Shikha
15	SNEHA	U16MB379	Sneha

Dr. A. BUVANARATCHAGAN, MD.,  
Dr. Buvanaratchagan  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Indrapakkam, Puducherry-605 002.  
**RESOURCE PERSON**

PROFESSOR & HEAD  
DEPT. OF DERMATOLOGY  
SRI LAKSHMI NARAYANA INSTITUTE OF  
MEDICAL SCIENCES  
Dr. K. Harsha Vardhan  
OSUDU, INDRAPAKKAM, PUDUCHERRY.

**COORDINATOR**

ANNEXURE-3

SRI LAKSHMI NARAYANA INSTITUTE  
OF MEDICAL SCIENCES



**Figurate erythemas** Annexure-III

Multiple choice questions Course code-DR07

Answer all questions

1. Figurate erythemas are shaped?
  - A. ring
  - B. Polygonal
  - C. Quadrilateral
  - D. Rectangular
  
2. Scales in EAC are ?
  - A. Branny
  - B. Trailing
  - C. Miraculous
  - D. Coarse
  
3. EAC stands for ?
  - A. Erythema atrophied centrifugum
  - B. Erythema annular centrifugum
  - C. Elementary annular centrifugum
  - D. Edematic atrophied centrifugum

4. EAC mostly affects?
  - A. Children
  - B. Elderly
  - C. Mid adults
  - D. Younger adults
  
5. Familial annular erythema has what predominance?
  - A. AD
  - B. AR
  - C. X linked dominance
  - D. None
  
6. EAC caused by all except?
  - A. Penicillin
  - B. Candida
  - C. Dermatophytes
  - D. Histoplasma
  
7. EAC related to malignancy is ?
  - A. PEACE
  - B. TEASE
  - C. FEASE
  - D. FEACE
  
8. EAC has ?
  - A. Central crusting
  - B. Peripheral crusting
  - C. Central clearing
  - D. Peripheral clearing
  
9. Treatment of EAC ?
  - A. Calcipotriene
  - B. Tacrolimus
  - C. Uvb
  - D. All of the above
  
10. DD of EAC is ?
  - A. Annular psoriasis
  - B. Annular urticaria
  - C. Tinea corporis
  - D. All of the above



ANNEXURE-3

SRI LAKSHMI NARAYANA INSTITUTE  
OF MEDICAL SCIENCES

**Figurate erythemas** Annexure-III

Multiple choice questions Course code-DR07

Vijay M

Answer all questions

1. Figurate erythemas are shaped?

- A. ring
- B. Polygonal
- C. ~~Quadrilateral~~
- D. ~~Rectangular~~

α



2. Scales in EAC are ?

- A. Branny
- B. Trailing
- C. ~~Miraculous~~
- D. Coarse

α

Vardhan KHA  
7/2/18

3. EAC stands for ?

- A. Erythema atrophied centrifugum
- B. ~~Erythema annular centrifugum~~
- C. Elementary annular centrifugum
- D. Edematic atrophied centrifugum



4. EAC mostly affects?  
A. Children  
B. Elderly  
C. Mid-adults  
~~D. Younger adults~~
5. Familial annular erythema has what predominance?  
~~A. AD~~  
B. AR  
C. X linked dominance  
D. None
6. EAC caused by all except?  
A. Penicillin  
B. Candida  
C. Dermatophytes  
~~D. Histoplasma~~
7. EAC related to malignancy is ?  
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~~C. Uvb~~  
D. All of the above
10. DD of EAC is ?  
A. Annular psoriasis  
B. Annular urticaria  
C. Tinea corporis  
~~D. All of the above~~



ANNEXURE-3

SRI LAKSHMI NARAYANA INSTITUTE  
OF MEDICAL SCIENCES

**Figurate erythemas** Annexure-III

Multiple choice questions Course code-DR07

Vimduja vijay

Answer all questions

1. Figurate erythemas are shaped?

- A. ring
- B. Polygonal
- C. Quadrilateral
- D. Rectangular

10  
10  
Vijayankh  
2/18

2. Scales in EAC are ?

- A. Branny
- B. Trailing
- C. Miraculous
- D. Coarse

3. EAC stands for ?

- A. Erythema atrophied centrifugum
- B. Erythema annular centrifugum
- C. Elementary annular centrifugum
- D. Edematic atrophied centrifugum

4. EAC mostly affects?

- A. Children
- B. Elderly
- C. Mid adults
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5. Familial annular erythema has what predominance?

- A. AD
- B. AR
- C. X linked dominance
- D. None

6. EAC caused by all except?

- A. Penicillin
- B. Candida
- C. Dermatophytes
- D. Histoplasma

7. EAC related to malignancy is ?

- A. PEACE
- B. TEASE
- C. FEASE
- D. FEACE

8. EAC has ?

- A. Central crusting
- B. Peripheral crusting
- C. Central clearing
- D. Peripheral clearing

9. Treatment of EAC ?

- A. Calcipotriene
- B. Tacrolimus
- C. Uvb
- D. All of the above

10. DD of EAC is ?

- A. Annular psoriasis
- B. Annular urticaria
- C. Tinea corporis
- D. All of the above

**Annexure IV**  
**Student Feedback Form**

Course Name: FIGURATE ERYTHEMAS.

Subject Code: **DR07**

Name of Student: \_\_\_\_\_ Roll No.: \_\_\_\_\_

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					
2	Course contents met with your expectations					
3	Lecturer sequence was well planned					
4	Lectures were clear and easy to understand					
5	Teaching aids were effective					
6	Instructors encourage interaction and were helpful					
7	The level of the course					
8	Overall rating of the course	1	2	3	4	5

**\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory**

Suggestions if any:

Date:04-07-2018

Signature

Annexure IV  
**Student Feedback Form**

Course Name: FIGURATE ERYTHEMAS.

Subject Code: DR07

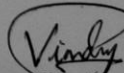
Name of Student: Vindya Vijay Roll No.: 1116MB398

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					✓
2	Course contents met with your expectations					✓
3	Lecturer sequence was well planned					✓
4	Lectures were clear and easy to understand					✓
5	Teaching aids were effective					✓
6	Instructors encourage interaction and were helpful					✓
7	The level of the course					✓
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

  
Signature

Date:04-07-2018

Annexure IV  
**Student Feedback Form**

Course Name: FIGURATE ERYTHEMAS.

Subject Code: DR07

Name of Student: Vijay M. Roll No.: U16MB397

We are constantly looking to improve our classes and deliver the best training to you. Your evaluation comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear				✓	
2	Course contents met with your expectations					✓
3	Lecturer sequence was well planned					✓
4	Lectures were clear and easy to understand					✓
5	Teaching aids were effective					✓
6	Instructors encourage interaction and were helpful					✓
7	The level of the course					✓
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Date:04-07-2018

ANNEXURE-5



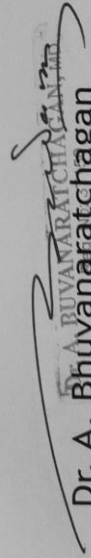
**Sri Lakshmi Narayana Institute of Medical Sciences**

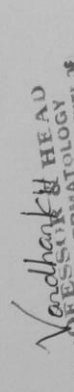
Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



**CERTIFICATE OF MERIT**

This is to certify that VIJAY M has actively participated in the Value Added Course on *Figurative erythemas* held during Mar 2018 - Jun 2018 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

  
**Dr. A. Bhuvanaratchagan**  
Asso. Professor, Dermatology  
RESOURCE PERSON  
Oandu, Kudalpakam, Pondicherry-605 502.

  
**Dr. K. Harsha Vardhan**  
HEAD OF DEPARTMENT OF  
DERMATOLOGY  
MEDICAL SCIENCES  
SRI LAKSHMI NARAYANA  
INSTITUTE OF MEDICAL SCIENCES  
PONDICHERRY.  
OSU COORDINATOR



**Course completion letter**

Date- 09-07-18

From  
Dr. K. Harsha Vardhan  
Department of Dermatology  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

Through Proper Channel

To  
The Dean  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Completion of value-added course: figurate erythemas**

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: **figurate erythemas** on 10-5-18. We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards

Dr. K. Harsha Vardhan

<HOD Sign and Seal>

**Encl: Certificates**

**Photographs**

Course completion letter

Date- 09-07-18

From  
Dr. K. Harsha Vardhan  
Department of Dermatology  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

Through Proper Channel

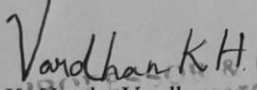
To  
The Dean  
Sri Lakshmi Narayana Institute of Medical Sciences  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Completion of value-added course: figurate erythemas**

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: **figurate erythemas** on 10-5-18. We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards

  
Dr. K. Harsha Vardhan  
HEAD  
DEPARTMENT OF DERMATOLOGY  
SRI LAKSHMI NARAYANA INSTITUTE OF  
MEDICAL SCIENCES  
CHENNAI  
<HOD Sign and Seal>

**Encl: Certificates**

**Photographs**





## Sri Lakshmi Narayana Institute of Medical Sciences

Date 02/05/2018

From  
Dr.K.R.Jothikumar,  
Professor and Head,  
otorhinolaryngology,  
SLIMS  
Bharath Institute of Higher Education and Research,  
Puducherry.

To  
The Dean,  
SLIMS  
Bharath Institute of Higher Education and Research,  
Puducherry.

**Sub: Permission to conduct value-added course: : Hands on experience of Screening infants with OAE reg.**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: Simulation Based Training In Audiology on May 2018 to Aug 2018. We solicit your kind permission for the same.

Kind Regards

Dr.K.R. Jothikumar

---

### FOR THE USE OF DEANS OFFICE

Names of Committee members for evaluating the course:

The Dean:

The HOD:

The Expert:

The committee has discussed about the course and is approved.


Dean 

(Sign&Seal)

**DEAN**  
Prof.K.BALAGURUNATHAN,M.S  
(General surgeon)  
SRI LAKSHMI NARAYANA  
INSTITUTE OF MEDICAL SCIENCES  
OSUDU PONDICHERRY

  
Dr.R. VENKATARAMANAN, MS.  
Reg. No: 72549  
Professor ENT  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502.

SUBJECT EXPERT  
(Sign & Seal)

  
Seal & Signature of the HOD  
PROFESSOR & HOD  
DEPARTMENT OF ENT  
Sri Lakshmi Narayana Institute Of Medical Sciences  
PONDICHERRY - 605 502



OFFICE OF THE DEAN

## Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P-II ) dt. 11/07/2011 ]

[ Affiliated to Bharath University, Chennai - TN ]

**Ref. No. SLIMS/Dean Off/VAC/024**

**Date:03/05/18**

**From**

The Dean  
Sri Lakshmi Narayana Institute of Medical sciences,  
Pondicherry – 605502

**To**

The Registrar,  
Bharath Institute of Higher Education and Research,  
Chennai - 600073.

Respected Sir

**Sub:** Request for permission and approval of Syllabus for certificate course (Value Added course) for the academic year 2017-18 - Reg  
**Ref:** Requesting letter received from Departments  
\*\*\*\*\*

With reference to the above, herewith forwarding the proposed list of Value-added courses for necessary permission and approval of syllabus to conduct the same.

This is for your kind information and needful action.

Thankingyou

Yours faithfully

[DEAN]

**DEAN**  
Prof.K.BALAGURUNATHAN,M.S  
(General surgeon)  
SRI LAKSHMI NARAYANA  
INSTITUTE OF MEDICAL SCIENCES  
OSUDU PONDICHERRY

**Encl's:**

1. Requesting letter received from department
2. Syllabus of thecourse
3. Details of faculty handlingcourse

**Sri Lakshmi Narayana Institute of Medical Sciences,  
Puducherry**

**VALUE ADDED COURSE : Hands on experience of Screening infants with OAE**

**COURSE CO-ORDINATOR DETAILS**

**Faculty Name:** Dr. K.Venkataramanan

**Email ID:**entslims@gmail.com



# Bharath

INSTITUTE OF HIGHER EDUCATION AND RESEARCH  
(Declared as Deemed - to - be - University under section 3 of UGC Act 1956)

**Ref. No. BHIER/ VAC/B-02**

**Date:05.05.2018**

**From**

The Registrar,  
Bharath Institute of Higher Education and Research,  
Chennai - 600073.

**To**

The Dean  
Sri Lakshmi Narayana Institute of Medical sciences,  
Pondicherry – 605502

Sir / Madam,

**Sub:** Approval of Syllabus to conduct certificate course (Value Added course) for the academic year 2017-2018 – Reg.

**Ref:** Ref. No. SLIMS/Dean Off/VAC /024 Dated: 03.05.2018

\*\*\*\*\*

With reference to the above, it is to inform that the proposal submitted to conduct Value Added Course has been accepted and approved by BIHER, council meeting. List of the VAC are mentioned below for the academic year 2017– 2018. The abstract of the VAC course completion detail should be submitted to the Registrar office.

Thanking you

Yours faithfully



REGISTRAR



OFFICE OF THE DEAN

## **Sri Lakshmi Narayana Institute of Medical Sciences**

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P -II ) dt. 11/07/2011 ]  
[ Affiliated to Bharath University, Chennai - TN ]

### **Circular**

07/05/2018

**Sub: Organising Value-added Course:** Hands on experience of Screening infants with OAE reg.

With reference to the above mentioned subject, it is to bring to your notice that SLIMS, **Bharath Institute of Higher Education and Research**, is organising “**Hands on experience of Screening infants with OAE**”. The course content and registration form is enclosed below.

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before 15/05/2018. Applications received after the mentioned date shall not be entertained under any circumstances.

DEAN

**DEAN**  
Prof. K. BALAGURUNATHAN, M.S  
(General surgeon)  
SRI LAKSHMI NARAYANA  
INSTITUTE OF MEDICAL SCIENCES  
OSUDU PONDICHERRY

Encl: Copy of Course content

## VALUE ADDED COURSE

### 1. Name of the programme & Code

Hands on experience of Screening infants with OAE – A value added course for the medical students.  
& ENT 07

### 2. Duration & Period

30 hrs & May 2018-Aug 2018

### 3. Information Brochure and Course Content of Value Added Courses

*Enclosed as Annexure- I*

### 4. List of students enrolled

*Enclosed as Annexure- II*

### 5. Assessment procedures:

Pre test and post test which includes 10 mcqs - *Enclosed as Annexure- III*

### 6. Certificate model

*Enclosed as Annexure- IV*

### 7. No. of times offered during the same year:

1 time May 2018- Aug 2018


### 8. Year of discontinuation:2018

### 9. Summary report of each program year-wise

Value Added Course- May 2018- Aug 2018					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	ENT 07	Hands on experience of Screening infants with OAE	1.Dr.Venkataramanm 2. Dr. Sreedhar.B 3.Dr. kalaiarasi.R	3 <sup>rd</sup> year MBBS students	10 students & 2018

### 10. Course FeedBack

*Enclosed as Annexure- V*



**RESOURCEPERSON**

1. Dr.K.R.Jothikumar
2. Dr.Sreedhar.B



**COORDINATOR**

**Dr.R.Venkataramanan**

## **COURSE PROPOSAL**

### **1. NAME OF THE PROGRAMME**

Hands on experience of Screening infants with OAE– A value added course for the medical students.

### **2. AIM**

Training the students to screen infants with OAE

### **3. OBJECTIVES**

a) To provide hands on training for students in OAE for screening infants

### **4. METHODOLOGY**

Students who are interested in participating in value added course are enrolled and the course is conducted for them during the non college hours for a period of 30 hours from May 2018 – Aug 2018 . This course is conducted every 6 months.

**Course Audience: 3<sup>rd</sup> year MBBS students**

**Course Coordinator: Dr.K.Venkataramanan**

**Course Faculties with Qualification and Designation:**

**1.Dr.K.R. jothikumar**

**2.Dr. Sreedhar.B**

**3.Dr. Kalaiarasi.R**

### Schedule followed during the course

No	Topic	Title	Duration	Date and time
1	Hands on experience of Screening infants with OAE	Introduction on Otoacoustic Emission (OAE)	4hrs	4pm-6pm(19/5/18),4pm-6pm(24/5/18)
		Recording of OAE	4hrs	4pm-6pm(29/5/18),4pm-6pm(4/6/18)
		Lecture on different forms of OAE	5hrs	4pm-6pm(8/6/18),4pm-6pm(15/6/18),4pm-5pm(18/6/18)
		Interpretation of OAE and its limitations	5hrs	4pm-6pm(22/6/18),4pm-6pm(25/6/18),4pm-5pm(30/6/18)
		Demonstration of OAE	6hrs	4pm-6pm(3/7/18),4pm-6pm(10/7/18),4pm-6pm(15/7/18)
		Hands on training of OAE in screening infants and DOPS	6hrs	4pm-6pm(19/7/18),4pm-6pm(26/7/18),4pm-6pm(5/8/18)
		TOTAL	30HRS	

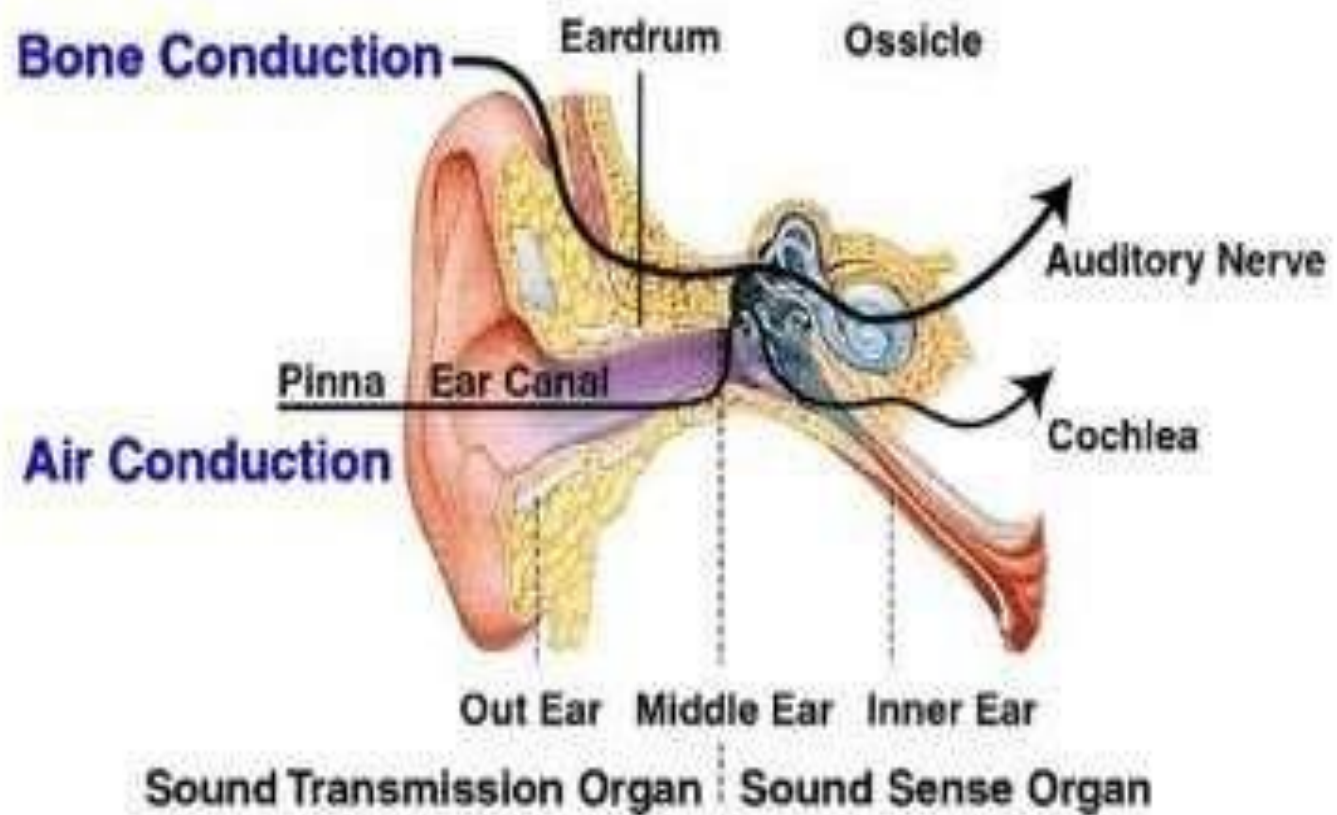
REFERENCE BOOKS: 1) SCOTT BROWN 7th edition

2) ANIRBAN BISWAS 3rd edition

# OTOACOUSTIC EMISSIONS



# HOW DO WE HEAR???



# OAE

- OAEs are low-intensity sounds/acoustic signals that are generated by the cochlea and propagate through the middle ear into the ear canal where they are recorded .
- OAEs are probably not essential to hearing, but rather are the by- product of active processing by the outer-hair cell system.
- They are most probably generated by active mechanical contraction of the outer hair cells, spontaneously or in response to sound.
- OAEs reveal, with considerable sensitivity, the integrity of outer-hair cell function.

# HISTORY


- Having been predicted by Thomas Gold in 1948, its existence was first demonstrated experimentally by David Kemp in 1978 and otoacoustic emissions have since been shown to arise through a number of different cellular and mechanical causes within the inner ear.

“ KEMP ECHOES ”

# **MECHANISM OF OCCURRENCE**

OAEs are considered to be related to the amplification function of the cochlea.

Several lines of evidence suggest that, in mammals, outer hair cells are the elements that enhance cochlear sensitivity and frequency selectivity and hence act as the energy sources for amplification.

Stimulus delivered to the ear  invokes movement of the basilar membrane, which in turn causes the OHCs to move, or be deflected.

When the OHCs move, their stereocilia bend in one direction or the other.

Ions rush in and rush out, changing the membrane potential within the hair cell. The changes in voltage across the plasma membrane lead to OHC length changes (shortening and lengthening), which are called electromotility.

The electromotility of the OHCs has a feedback effect on the basilar membrane, causing it to vibrate. Therefore, the electromotility of the OHCs is thought to be the mechanism which underlies OAEs.

- In addition to vibrating the basilar membrane, the motility of the OHCs causes an amplification of the signal, which is then passed to the IHCs.
- In turn, the IHCs send a signal to the brain and we then "hear."
- The OHC motility allows us to be more sensitive to softer sounds. This is called active processing within the cochlea.
- Without the amplification provided by the OHCs, the IHCs would only be triggered by relatively loud sounds. This is because loud sounds result in larger movements of the basilar membrane, and the IHCs are stimulated directly with little contribution or amplification from the OHCs. This is called passive processing.

# PHYSIOLOGY

- When sound is used to elicit an emission, it is transmitted through the outer ear, where the auditory stimulus is converted from an acoustic signal to a mechanical signal at the tympanic membrane and is transmitted through the middle ear ossicles; the stapes footplate moves at the oval window, causing a traveling wave in the fluid-filled cochlea. The cochlear fluid's traveling wave moves the basilar membrane; each portion of the basilar membrane is maximally sensitive to only a limited frequency range.
- The arrangement is a tonotopic gradient . Regions closest to the oval window are more sensitive to high-frequency stimuli. Regions further away are most sensitive to lower-frequency stimuli. Therefore, for OAEs, the first responses returned and recorded by the probe microphone emanate from the highest-frequency cochlear regions because the travel distance is shorter. Responses from the lower-frequency regions, closer to the cochlear apex, arrive later.

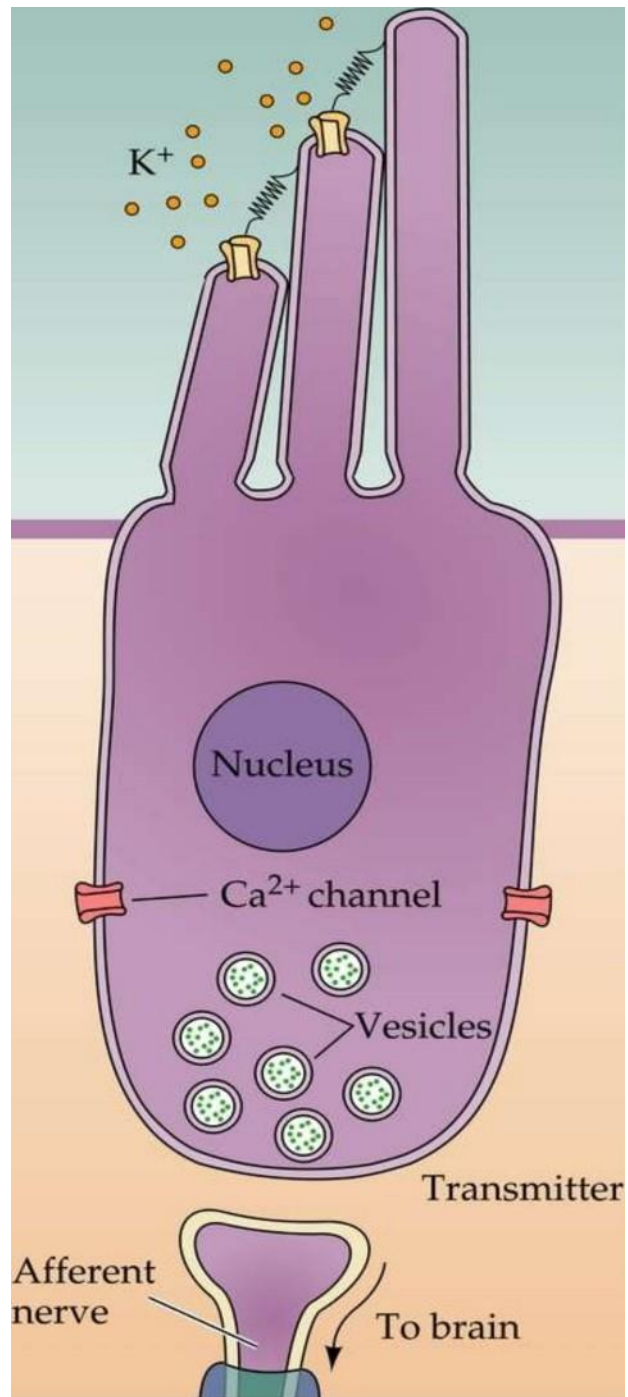
- When the basilar membrane moves, the hair cells are set into motion and an electromechanical response is elicited, while an afferent signal is transmitted and an efferent signal is emitted. The efferent signal is transmitted back through the auditory pathway, and the signal is measured in the outer ear canal. As described above, the responses from the high-frequency region arrive first, progressively followed by responses from lower-frequency regions.

Hair cell bathed in endolymph where electrical potential is +80mV ( due to high K<sup>+</sup>)

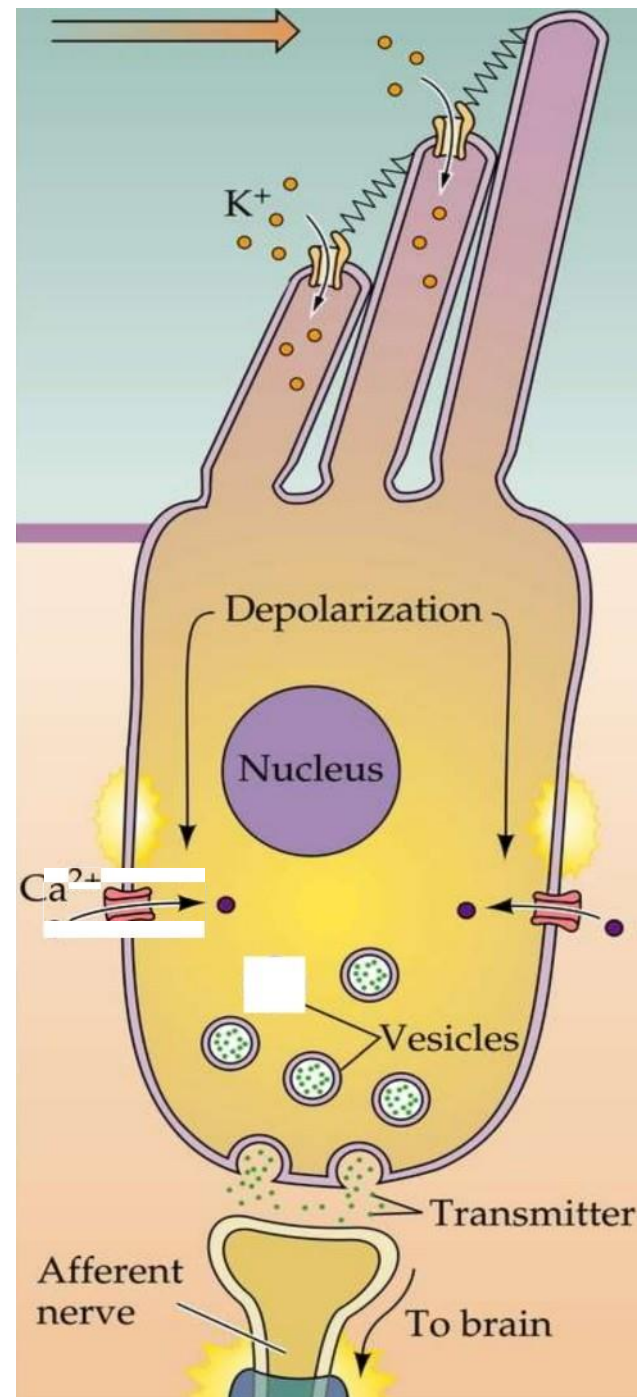
Inside the hair cell potential is – 45mV

Hence when K<sup>+</sup> channels on hair cells open → influx of K<sup>+</sup> into the hair cell from endolymph of scala media → depolarization of hair cell

(A)

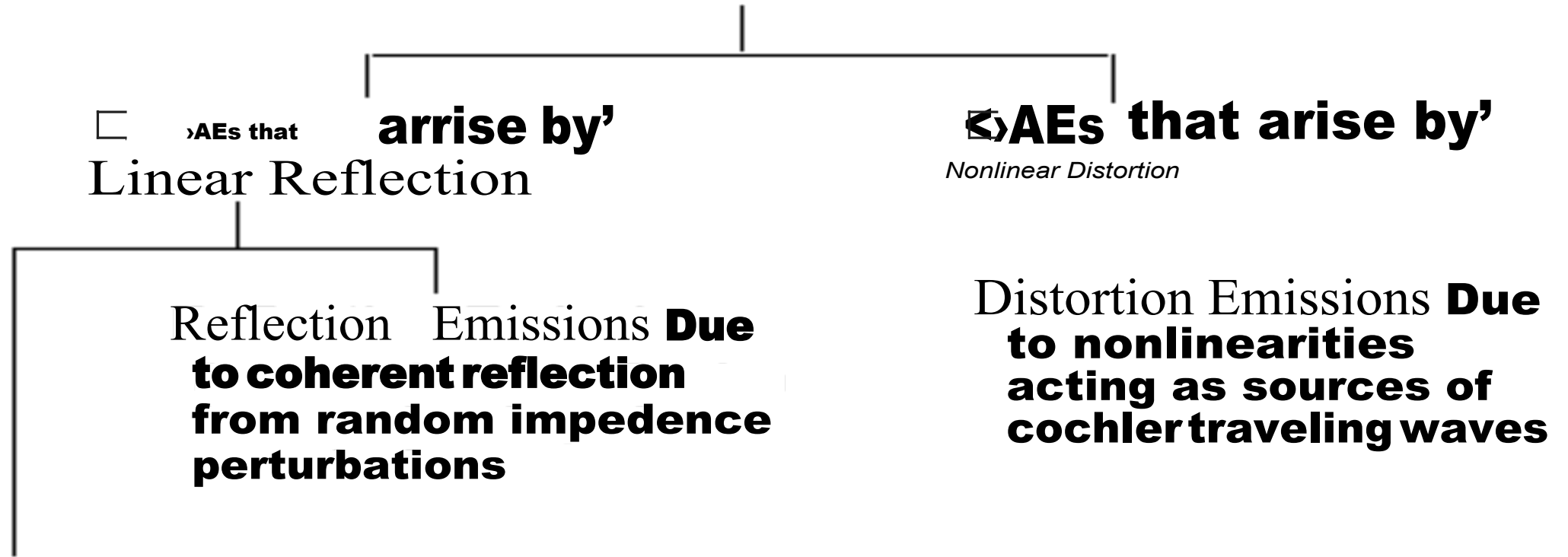


(B)



- **More recent research from Shera, 2004, suggests that "OAEs appear to arise by at least two fundamentally different mechanisms within the cochlea: nonlinear distortion and linear reflection."**
- Shera has constructed a new taxonomy for OAEs based upon what he believes to be their mechanisms of generation.

# Mechanisms of Otoacoustic Emissions



□ OAEs that arise by  
Linear Reflection

◁ OAEs that arise by  
*Nonlinear Distortion*

Reflection Emissions **Due to coherent reflection from random impedance perturbations**

Distortion Emissions **Due to nonlinearities acting as sources of cochlear traveling waves**

*Spontaneous Emissions*

**Due to standing waves caused by multiple internal coherent reflection**

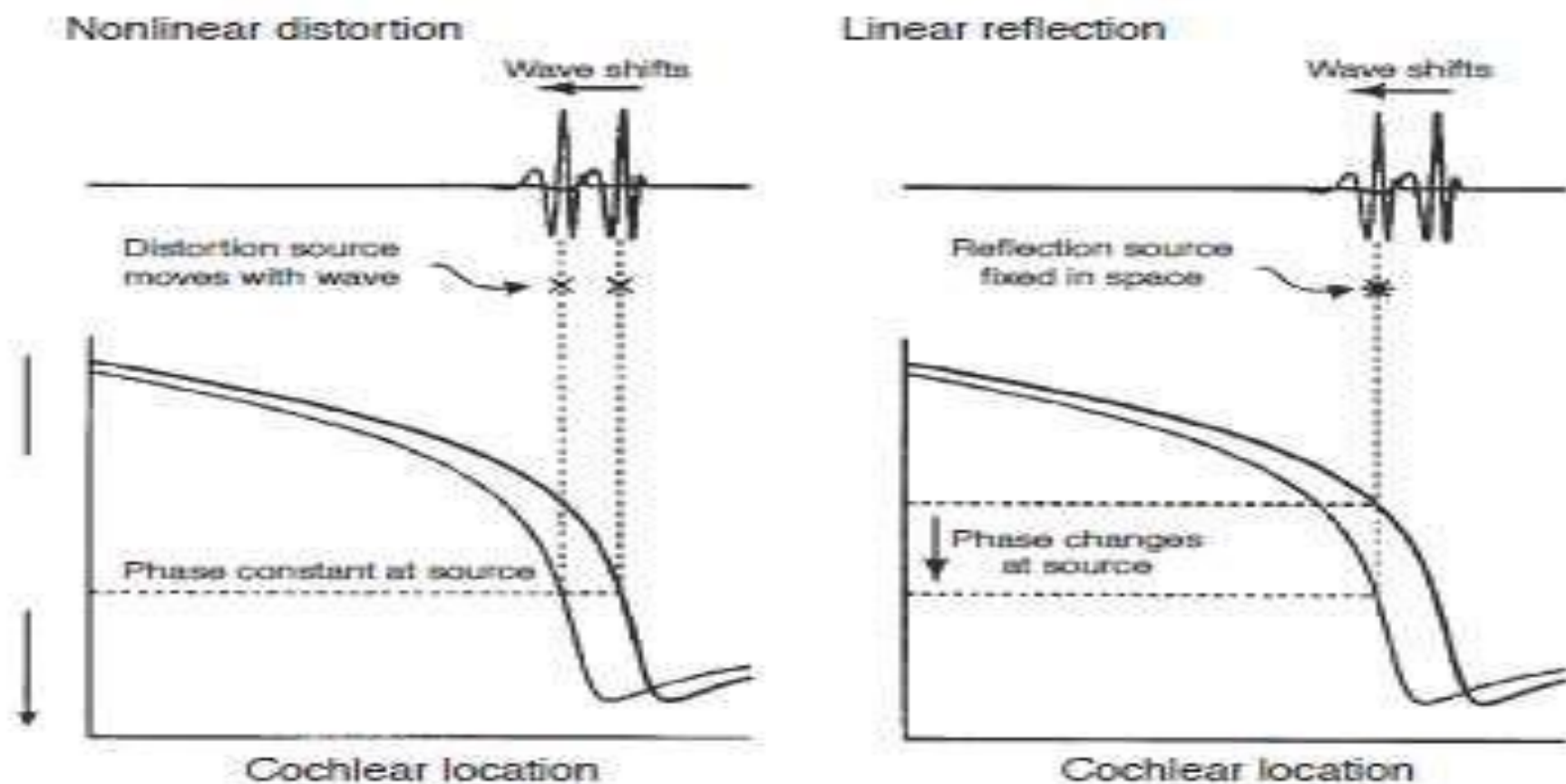


Figure 19.1 Schematic illustrations of the phase behavior for emissions arising from either nonlinear distortion (**left panel**) or coherent linear reflection (**right panel**) mechanisms. In either panel, the  $f_2$  traveling wave at two frequencies is shown, one peaking at a more apical location than the other (*top*) along with the corresponding phase lag versus the distance along the basilar membrane (*bottom*). The phase lag function for the more apical wave lies above that for the more basilar wave. For ease of viewing, the  $f_2$  traveling waves have been exaggerated relative to the size of the stapes, the  $f_1$  traveling waves are not shown, and the distortion and reflection sources are idealized as single points (*asterisks*). As seen in the panel on the left, as  $f_2$  is changed to a higher frequency (more basal), the distortion source moves with the wave; therefore, the phase of the wave at the source remains constant as frequency is increased. In the right panel, as  $f_2$  is changed to a higher frequency, the reflection source remains fixed; therefore, the phase at the source changes rapidly as frequency is increased. (Reprinted with permission from Kalluri R, Shera C. (2001) Distortion-product source unmixing: a test of the two-mechanism model for DPOAE generation. *J Acoust Soc Am.* 25 (2), 86–97; ©2001, American Institute of Physics.)

- Nonlinear distortion emissions are attributed directly to the action of OHCs.
- The source of nonlinear distortion, or “wave- fixed,” emissions is believed to follow the traveling wave envelope of the stimulus (e.g., Shera and Guinan, 1999).
- Therefore, because the shape of the traveling wave does not change significantly as the stimulus is swept in frequency, the phase at any point moving with the traveling wave envelope will not change significantly.
- Thus, nonlinear distortion emissions are characterized by gradual phase changes as the stimulus frequencies are increased.

- Reflection, or “place-fixed,” emissions are characterized by phase that rotates rapidly with changes in stimulus frequency. These emissions are proposed to be the result of the incoming traveling waves scattering off of random impedance perturbations in the mechanics of the cochlea or impedance mismatches present at or near the largest displacement of the traveling wave (e.g., Shera and Guinan, 1999).
- Shera and Guinan (1999) explain the nonlinear behavior of reflection emissions, such as compressive growth functions, as the result of level-dependent amplification of the forward and reverse traveling waves because of the action of the cochlear amplifier. In this way, reflection emissions, although not generated by the action of OHCs, would be acted on by these forces and would, therefore, still be vulnerable to changes in OHC function.

- OAEs measured in the ear canal are thought to be a combination of energy from both mechanisms (Knight and Kemp, 2000; Shera and Guinan, 1999). At this time it is not known whether emissions arising from the two mechanisms might be used differently to provide information about cochlear function.

# OHC IN OAE

- Two hypotheses regarding the OHCs' role in the cochlear amplifier have been explored: Somatic motility of OHCs and nonlinear mechanics of the OHC stereocilia bundle.
- OHCs demonstrate rapid changes in length in response to electrical stimulation (Ashmore, 1987; Brownell et al., 1985).
- “Prestin” is the molecular motor responsible for somatic OHC motility (Zheng et al., 2000).
- Reduced OHC length, absence of OHC motility, and IHC and OHC loss in the basal portion of the cochlea were observed in mice when the prestin gene was deleted.

- OAEs measured in nonmammalian species, whose hair cells are not capable of somatic motility, have been attributed to active hair bundle movements of the hair cell stereocilia (Ricci et al., 2000).

# TYPES

SPONTANEOUS

EVOKED

Transient-evoked OAEs (TEOAEs)

Distortion-product OAEs (DPOAEs)

Stimulus frequency OAEs (SFOAE)

# TYPES OF OAE

- Spontaneous otoacoustic emissions (SOAEs) - Sounds emitted without an acoustic stimulus (ie, spontaneously).
- Transient otoacoustic emissions (TOAEs) or transient evoked otoacoustic emissions (TEOAEs) - Sounds emitted in response to an acoustic stimuli of very short duration; usually clicks but can be tone-bursts.
- Distortion product otoacoustic emissions (DPOAEs) - Sounds emitted in response to 2 simultaneous tones of different frequencies.
- Sustained-frequency otoacoustic emissions (SFOAEs) - Sounds emitted in response to a continuous tone.

# PREREQUISITES

- Unobstructed outer ear canal
- Seal of the ear canal with the probe
- Optimal positioning of the probe
- Absence of middle ear pathology : Pressure equalization (PE) tubes alone probably will not interfere with results. However, if emissions are absent, results should be interpreted with caution.
- Functioning cochlear outer hair cells
- A quiescent patient: Excessive movement or vocalization may preclude recording.
- Relatively quiet recording environment: A sound booth is not required, but a noisy environment may preclude accurate recording.

- Visual inspection, and preferably tympanometric measurement prior to OAEs recordings, will help determine if middle ear and external ear abnormalities might reduce or block acoustic transmission of OAEs from the cochlea to the microphone, and in the case of TEOAEs and DPOAEs, of the evoking sound to the cochlea.
- Reduction of ambient noise picked up by the microphone is achieved by a tight fit of the probe into the ear canal.
- Patient -generated sounds can be minimized by instructing the patient to be still and not to talk during testing.

# PROCEDURE

## Approach Considerations :

- Insert a probe with a soft flexible tip in the ear canal to obtain a seal. Use different probes for neonates and adults; the probes are calibrated differently because of the significant difference in ear canal volume. The smaller ear canal results in a higher effective sound pressure level (SPL), thus a different probe is used to correct for the difference.
- Multiple responses are averaged. All OAEs are analyzed relative to the noise floor; therefore, reduction of physiologic and acoustic ambient noise is critical for good recordings.

- All four types of OAEs are recorded with a sensitive, low noise microphone that is placed in the sealed external ear canal.
- When OAEs are evoked, the sealed probe includes a tube for sound delivery to the ear canal, in addition to the recording microphone.
- **The microphone records all sounds in the ear canal, and these include, in addition to OAEs, the sound evoking the OAEs when TEOAEs or DPOAEs are recorded, as well as other patient-generated and ambient sounds.**



‘SOFT-TIPED PROBE  
(HOCS1FG TRANSDHCEAS)

SMULUS  
GENERATION

SIGNAL  
ANALYSIS



# SPONTANEOUS OAE

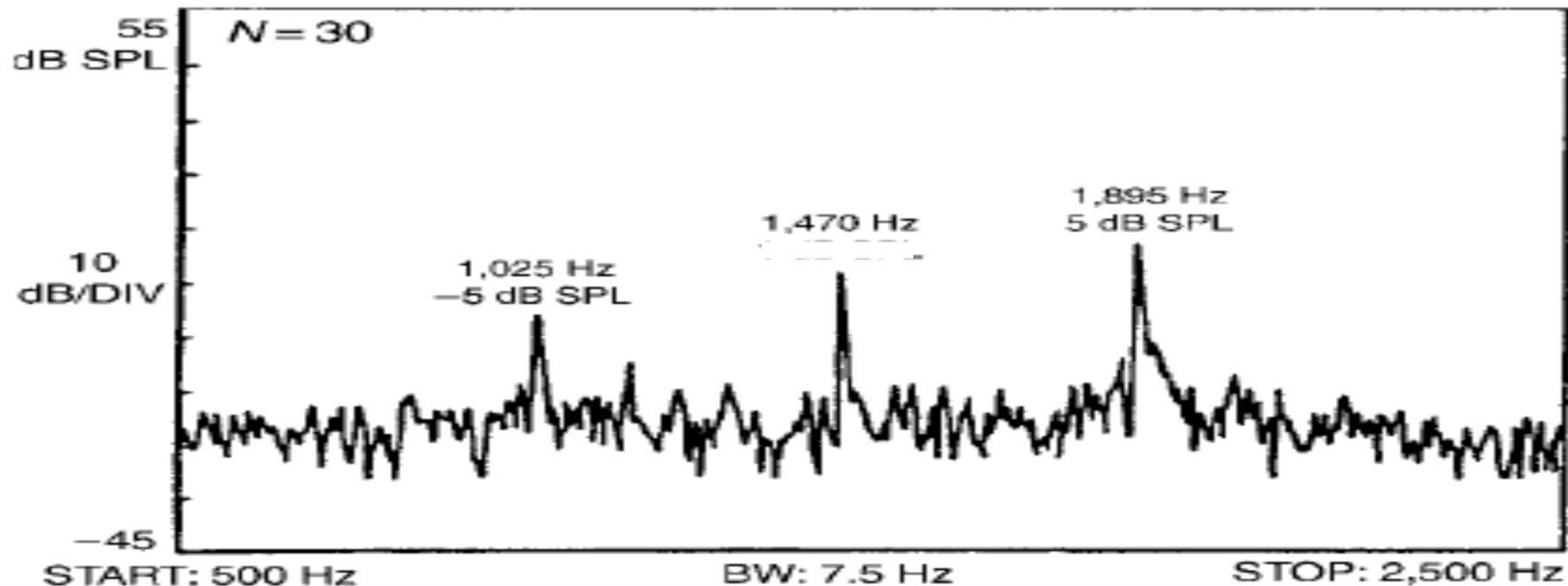
- Spontaneous OAEs (SOAEs) are narrowband signals that occur in the ear canal without the introduction of an eliciting signal.
- Spontaneous emissions are present in over half of all normal-hearing ears and absent in all ears at frequencies where sensorineural hearing loss exceeds approximately 30 dB.
- It appears that SOAEs originate from outer-hair cells corresponding to that portion of the basilar membrane tuned to their frequency.

# SOAE

- A sensitive, low-noise microphone housed in a probe is used to record SOAEs.
- The probe is secured in the external auditory canal with a flexible cuff.
- Signals detected by the microphone are routed to a spectrum analyzer, which provides frequency analysis of the signal.
- Usually the frequency range of interest is sampled several times, and the results are signal averaged to reduce background noise.
- SOAEs, when they occur, appear as peaks of energy along the frequency spectrum.

# SOAE

- This nonevoked response is usually measured in narrow bands (< 30 Hz bandwidth) of frequencies recorded in the external ear canal.
- No stimulus is required.
- Obtain multiple recordings to ensure replicability and to distinguish the response from the noise floor.



**Figure 19.2** An example of SOAEs measured from a normal-hearing human. Three SOAEs are measurable. ("4Iu\*diiat4.\*xzd ttavt€ \*sitlz yriuxzisaicwi\* ficwixz Li\*i\*aL\*ttxm-  
 Martin BL, Whitehead ML, Martin GK (1991) Clinical applications of otoacoustic emissions. *J Speech Hear Res.* 34 (5), 964–981; ©1991, American Speech-Language-Hearing Association.)

# INTERPRETATION

- In general, SOAEs occur in only 40-50% of individuals who have normal hearing.  
For these adults, the range is about 30-60%; in neonates with normal hearing, the range is approximately 25-80%.
- The presence of SOAEs usually is considered a sign of cochlear health, but the absence of SOAEs is not necessarily a sign of abnormality.
- When present in humans, SOAEs usually occur in the 1000- to 2000-Hz region (500-Hz to 7000-Hz frequency range); amplitudes are between 5 and 15 dB SPL.
- SOAEs typically are bilateral rather than unilateral. If unilateral, they are more likely to be present in the right rather than in the left ear. SOAEs occur more often in females than in males (across all ages). (BASED ON STUDIES )

# SOAE

- **Because SOAEs are absent in many ears with normal hearing, clinical applications have not been forthcoming.**
- Efforts to relate SOAEs to tinnitus have revealed a relationship in some, but not many subjects who have both.

## EVOKED OAE

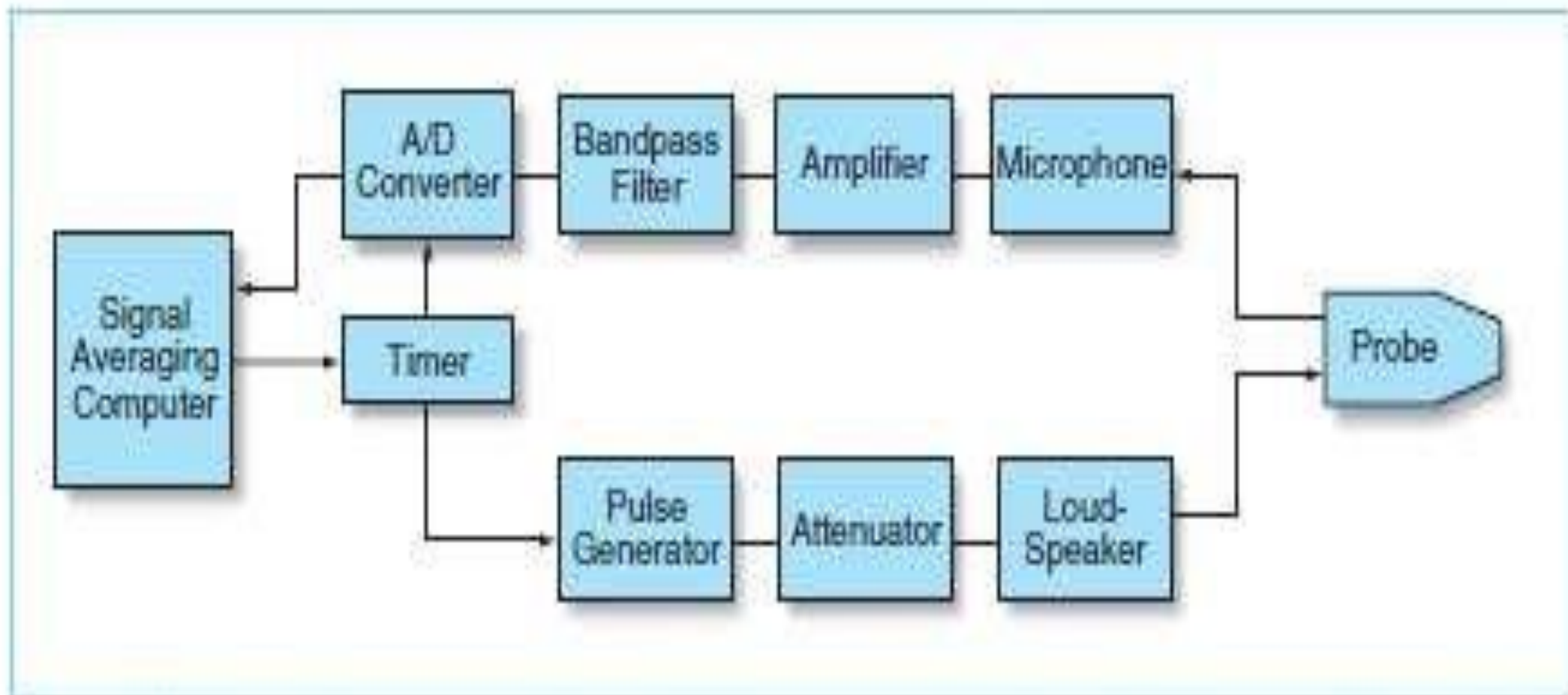
- Evoked OAEs are elicited by a stimulus and occur during and after signal presentation.
- Evoked OAEs bear a close resemblance to the eliciting signal.
- There are several classes of evoked OAEs, two of which have proven to be useful clinically: transient-evoked OAEs (TEOAEs) and distortion-product OAEs (DPOAEs)

# TEOAE

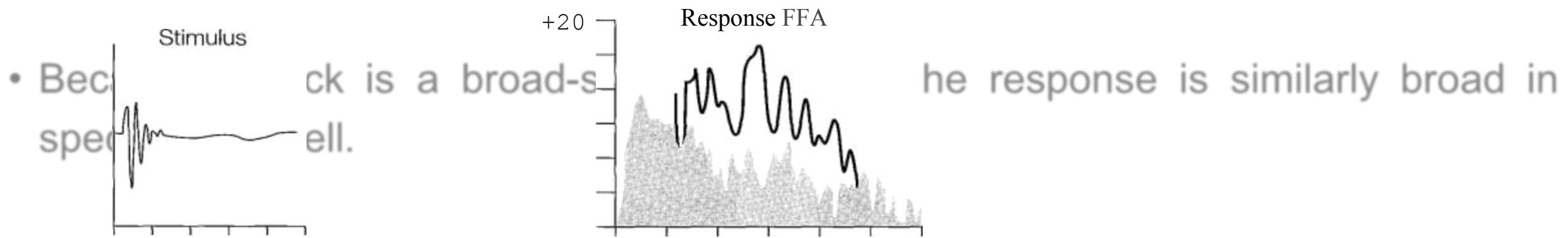
- TEOAEs are elicited with transient signals or clicks.
- Series of click stimuli are presented, usually at an intensity level of about 80-85 dB SPL.
- Output from the microphone is signal averaged, usually within a time window of 20 milliseconds.
- TEOAEs occur about 4 milliseconds following stimulus presentation and continue for about 10 milliseconds.

# TEOAE

- In humans, a delay between stimulus offset and onset of the evoked emissions varies between 4 ms, for high frequencies, and 20 ms for low frequencies.
- This temporal separation helps in visual identification and separation of the transient -evoked emissions from the stimulus that evoked them, that is also recorded.
- Thus, TEOAEs are typically presented as an amplitude/time plot of the acoustic waveform recorded from the ear canal.
- TEOAEs greater than 20 dB sound pressure level (SPL) can be recorded from newborns, while responses from children and adults range between 10 and 15 dB SPL.



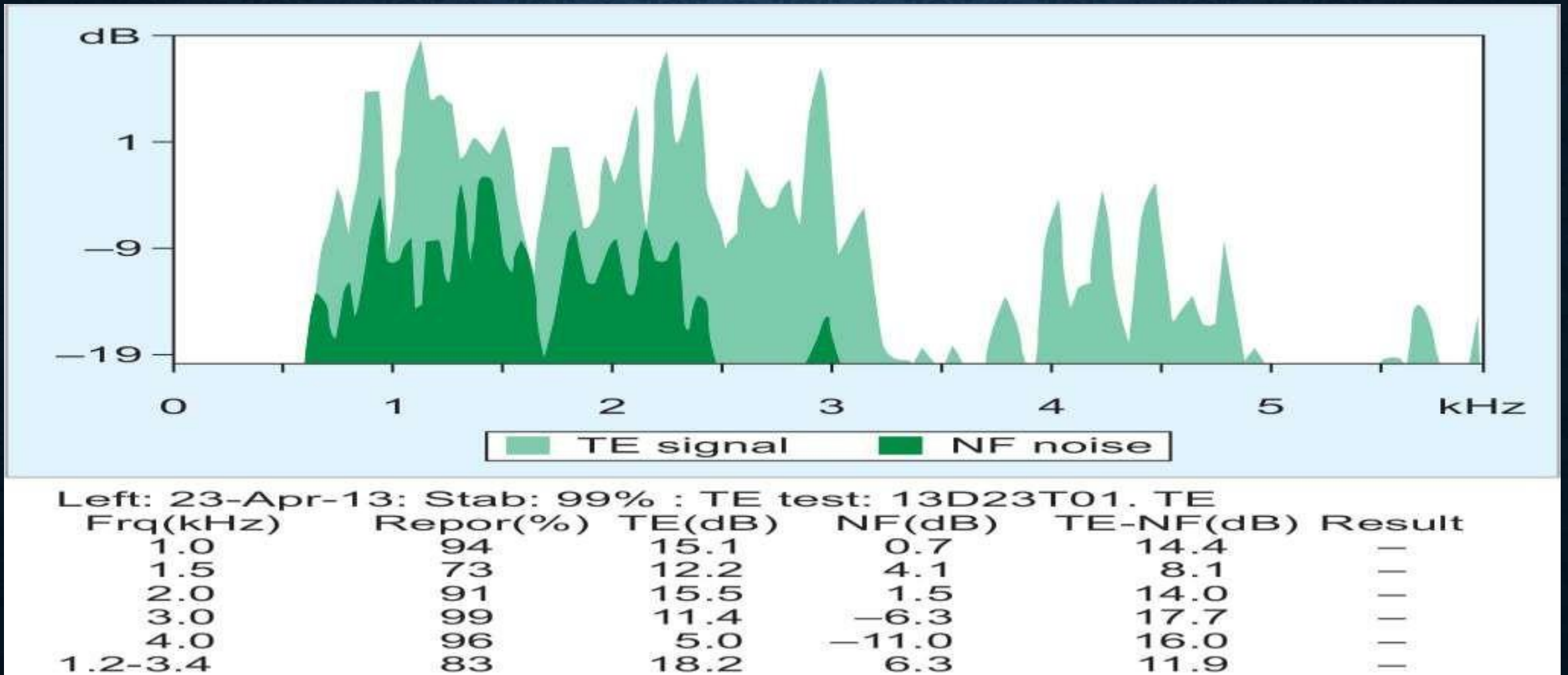
**FIGURE 9-11** Schematic representation of the instrumentation used to elicit and measure transient-evoked OAEs.



- By convention, these waveforms are subjected to spectral analysis, the results of which are often shown in a graph depicting the amplitude-versus-frequency components of the emission.
- One important aspect of TEOAE analysis is the reproducibility of the response. This similarity or reproducibility of successive samples of a response is expressed as a percentage, with 100% being identical.

- If the magnitude of the emission exceeds the magnitude of the noise, and if the reproducibility of the emission exceeds a predetermined level, then the emission is said to be present.

- TEOAEs are recorded in the range of 250–4000 Hz for children and from 500 to 6000 Hz for adults at a stimulus level of approximately 80 dB SPL.
- TEOAE results may be confounded by the presence of background noise and are not utilized as often as DPOAEs due to this phenomenon.
- These emissions are recorded between stimulus presentations; therefore, TEOAEs evaluate the outer hair cell status in a resting state.



**Fig. 2.12:** Transient emissions recorded from 1000 to 4000 Hz. Note that the reproducibility percentage is higher than 70% at all frequencies and the TE-NF (transient emission-noise floor) ratio is of sufficient amount (10 dB for adults, 15–20 dB for children, at all frequencies.<sup>30</sup> This TEOAE test would be considered a “pass” overall. GREEN COLOR – NOISE FLOOR )

## RESULT (NORMAL)

- TE (dB) > -3dB SPL
- TE - NF > +3dB SPL

# TEOAE

- Advantages

- Reliable
- Fast

- Disadvantages

- Poor at higher frequencies
- TEOAE results may be confounded by the presence of background noise

# DPOAE

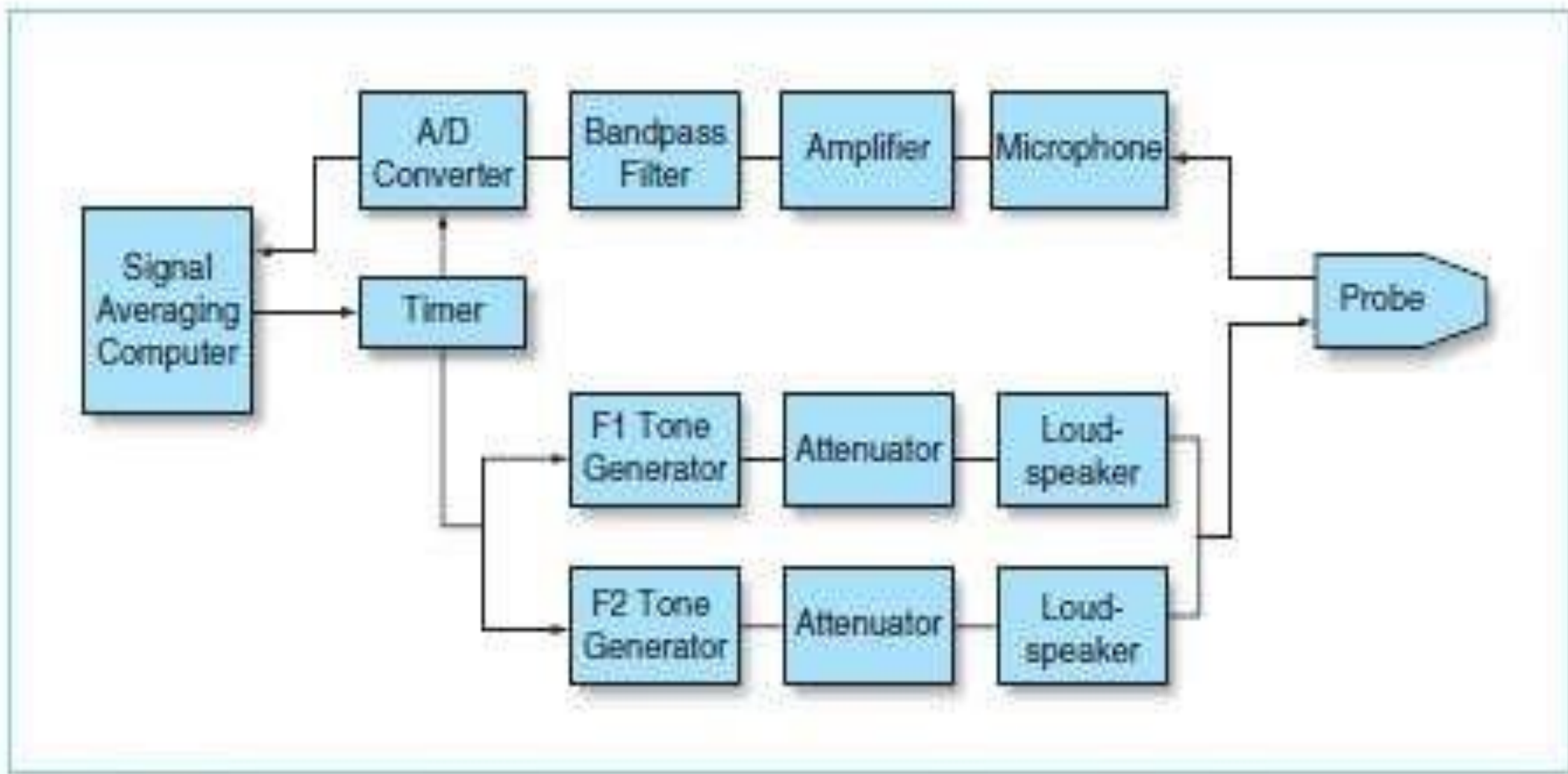
DPOAEs occur as a result of nonlinear processes in the cochlea.

When two tones are presented to the cochlea, distortion occurs in the form of other tones that are not present in the two-tone eliciting signals.

- These distortions are combination tones, or harmonics, that are related to the eliciting tones in a predictable mathematical way.
- The two tones used to elicit the DPOAE are, by convention, designated  $f_1$  and  $f_2$ .
- The most robust distortion product occurs at the frequency represented by the equation  $2f_1 - f_2$ .

- The primary tones ( $f_1$  and  $f_2$ ) are separated in frequency within one-third octave (typically  $f_2 = f_1 \times 1.2$ ) and the distortion product is then typically at a frequency of  $2f_1 - f_2$  (the cubic-difference tone).
- DPOAEs are also found at other frequencies (e.g.  $f_2 - f_1$ ,  $2f_2 - f_1$ ,  $3f_1 - 2f_2$ ), but  $2f_1 - f_2$  has most often been used because it is the largest.
- Because DPOAEs are separated in frequency from the eliciting stimuli, they can be recorded in the presence of the stimulating tones and separated from them by spectral analysis.

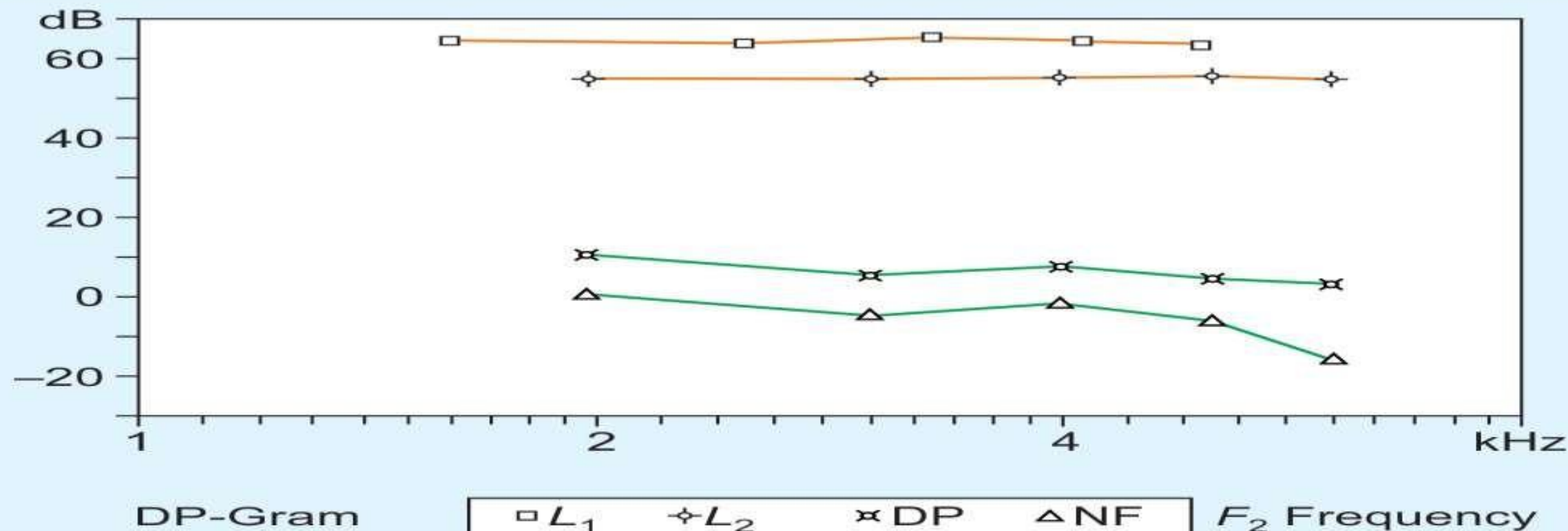
- Although they are reliably recorded from all normal humans, their magnitude is very small (5-15 dB SPL), approximately 60-70 dB below the level of the stimuli used to evoke them. DPOAEs are attributed to nonlinearity of motion of the outer hair cells, particularly at low stimulus levels.
- Because the  $2f_1 - f_2$  DPOAEs have been shown to originate from the region of the cochlea that maximally responds to the primary tones, DPOAEs are typically presented in a magnitude/frequency plot, in which frequency is determined by  $f_2$  (at low levels) or the geometric mean of  $f_1$  and  $f_2$ , and magnitude is determined for the DPOAEs at the  $2f_1 - f_2$  frequency bin. Such a plot is called a DP-gram and it has been shown to correlate with the functional integrity of the cochlea.



**FIGURE 9-13** Schematic representation of the instrumentation used to elicit and measure distortion-product OAEs.

- DPOAEs are typically depicted as the amplitude of the distortion product ( $2f_1 - f_2$ ) as a function of frequency of the  $f_2$  tone.
- If the amplitude exceeds the background noise, the emission is said to be present.
- If an emission is present, it is likely that the outer-hair cells are functioning in the frequency region of the  $f_2$  tone.

- In a clinical setting, the primary tones used to elicit the OAEs are typically in a frequency ratio of 1.1 to 1.3; and the levels may be equal or may be separated by 10 dB.
- For example, the first row of frequencies and levels shown in Figure 2.14 below are  $F1 = 4922$  Hz and  $F2 = 6000$  Hz ( $F1:F2$  ratio = 1.2) and the levels are separated by 9.9 dB ( $L1 = 63.8$  dB and  $L2 = 54.9$  dB). The cubic distortion product should be observed at 3884 Hz.
- This test measures responses from narrow regions of the cochlea when the outer hair cells are active. DPOAEs are most reliable when recorded in the frequency range from 750 to 16,000 Hz.



Left: 10-Nov-11: Pass: 2-6 kHz Screen, 3/5 for Pass: 11K10D01.OAE

$L_1$ (dB)	$L_2$ (dB)	$F_1$ (Hz)	$F_2$ (Hz)	GM(Hz)	DP(dB)	NF(dB)	DP-NF(dB)	Result
63.8	54.9	4922	6000	5434	4.9	-16.2	19.1	Pass
64.9	55.6	4125	5016	4549	4.4	-6.4	10.8	Pass
65.7	55.4	3281	3984	3616	7.5	-1.6	9.1	Pass
64.3	55.2	2484	3000	2730	5.1	-4.8	9.9	Pass
64.8	55.1	1594	1969	1771	10.4	0.6	9.8	Pass

Fig. 2.14: Distortion product emissions recorded from 2000 to 6000 Hz. Note the  $L_1$  and  $L_2$  values are 65 and 55 dB, respectively. The output shown above also reports the geometric mean (GM) of  $F_1$  and  $F_2$ , which is a value in between the  $F_1$  and  $F_2$ . Note the DP-NF ratio is well above 6 dB at all frequencies and the DP itself is above -6 dB. This patient would be considered to have “passed” the test.

## RESULT (NORMAL)

- DP (dB) > -6dB SPL
- DP - NF > +6dB SPL

- A determination of a “pass” versus “refer” depends on the protocol employed by each clinical setting and/or recording instrument.
- For DPOAEs many audiologists will accept a reproducibility rate of anywhere from 50% to 70% for an emission to be considered present, in addition to the ratio of emission over noise floor. The program employed for recording DPOAEs generates a wave reproducibility value that is expressed as a percentage.
- The closer this reproducibility value is to the preset determining value, the stronger the emission.

# DPOAE

- Generally present when hearing thresholds are below 50dB.

DPOAEs can test higher frequencies than TEOAEs, making them more sensitive to the frequency area affected first.

# DPOAE v/s TEOAE

- DPOAEs allow greater frequency specificity and can be used to record at higher frequencies than TEOAEs. Therefore, DPOAEs may be as particularly useful for early detection of cochlear damage as they are for ototoxicity and noise-induced damage. Reliability of DPOAEs is greatest above 1000 Hz.
- For infant hearing screening, both DPOAEs and TEOAEs are used. TEOAEs have been used clinically for a longer period and are more established regarding association with behavioral audiometric thresholds.
- Depending on the methodology employed, DPOAEs often can be recorded in individuals with mild- to-moderate hearing losses for whom TEOAEs are absent; however, the accuracy of DPOAEs in estimating actual hearing sensitivity is not fully resolved (research continues in this area).

## SUSTAINED/STIMULUS-FREQUENCY OTOACOUSTIC EMISSIONS

- SFOAEs are responses recorded to a continuous tone.
- Because the stimulus and the emission overlap in the ear canal, the recording microphone detects both.
- Therefore, interpretation depends on reading a complicated series of ripples in the recording.
- At present, SFOAEs are not used clinically.

# PTA VS OAE

- Pure-tone (PT) audiometry measures throughout the outer ear, middle ear, cochlea, cranial nerve (CN) VIII, and central auditory system.
- OAEs measure only the peripheral auditory system, which includes the outer ear, middle ear, and cochlea. The response only emanates from the cochlea, but the outer and middle ear must be able to transmit the emitted sound back to the recording microphone.
- OAEs cannot be used to fully describe an individual's auditory thresholds, but they can help question or validate other threshold measures (eg, in suspected functional [feigned] hearing loss), or they can provide information about the site of the lesion.

➤ Nonpathologic problems that can cause absence of OAEs :

- Poor probe tip placement or poor seal: Most current equipment alerts clinicians to these problems.
- Cerumen occluding the canal or blocking a probeport.
- Debris and foreign objects in the outer ear canal.
- Vernix caseosa in neonates: This is common immediately after birth.
- Uncooperative patient: Usually, recordings simply are not obtained.

## ➤ Pathologic problems that can cause absence of

OAEs :

Outer ear :

- Stenosis
- Otitis Externa
- Polyp

Tympanic membrane : Perforation of the eardrum (PE tubes do not necessarily prevent good recordings.)

## Middle ear :

- Otosclerosis
- Middle ear disarticulation
- Cholesteatoma
- Bilateral otitis media : Even in the presence of normal cochlear function, OAEs generally are absent in the presence of otitis media.

OAE testing is best conducted after the otitis media has cleared. If the patient cannot be tested later, when the otitis has cleared, no harm exists in attempting to record OAEs.

If OAEs are present (as in a very small percentage of patients with otitis media), that information could be useful. If they are absent (as in most patients with otitis media), no conclusions about cochlear function can be drawn.

Cochlea :

Exposure to ototoxic medication or noise exposure (including music):  
OAE changes may precede threshold changes in the conventional frequency range.

Any other cochlear pathology.

Conditions that do not affect OAEs :

CN VIII pathology: If CN VIII pathology also affects the cochlea (eg, vestibular schwannoma that decreases cochlear vascular supply), OAEs are affected.

Central auditory disorder

Conditions that elicit abnormal OAEs and normal behavioral thresholds :

Tinnitus : OAEs may be abnormal in the frequency region of the tinnitus.

Excessive noise exposure (may cause increase or decrease in amplitude): No clear correlation to noise-induced threshold changes is noted.

Ototoxicity

Vestibular pathology

Conditions that elicit normal OAEs and abnormal behavioral thresholds :

Functional hearing loss

Attention deficits

Autism

Possibly, inner hair cell damage but normal outer hair cells (reported for animals but no human reports yet)

**Auditory neuropathy:** This includes central auditory nervous system dysfunction and CN VIII auditory dysfunction.

# APPLICATIONS

- The primary purpose of otoacoustic emission (OAE) tests is to determine cochlear status, specifically hair cell function.
- This information can be used to

screen hearing (particularly in neonates, infants, or individuals with developmental disabilities).

partially estimate hearing sensitivity within a limited range.

differentiate between the sensory and neural components of sensorineural hearing loss.

test for functional (feigned) hearing loss.

The information can be obtained from patients who are sleeping or even comatose because no behavioral response is required.

# APPLICATIONS

Otoacoustic emissions are clinically important because they are the basis of a simple, non-invasive test for hearing defects in newborn babies and in children who are too young to cooperate in conventional hearing tests. The primary screening tool is a test for the presence of a click-evoked OAE.

## OAEs in Patients with Tinnitus :

Tinnitus has been theorized to originate in both the cochlea (LePage, 1995) and the central auditory system (Reyes et al., 2002). In select patients, the frequency of perceived tinnitus can coincide with a patient's recorded spontaneous OAE (SOAE) frequencies; however, this is not true for everyone, and generally speaking, the relationship between tinnitus and SOAEs has not been found statistically significant (Ceranic et al., 1998).

The relationships between tinnitus and DPOAE and TEOAE are even less clear. Ceranic and colleagues (1998) reported that in patients with tinnitus, OAEs are not easily detectable or are abnormal at the tinnitus frequency region, even in patients with normal hearing.

- Another study reported that in comparison to otologically normal subjects (patients without tinnitus), DPOAE amplitudes were consistently reduced among tinnitus patients, even if the patient had audiometrically normal hearing. The decrement in DPOAEs among tinnitus patients was most pronounced in the 4000-7000 Hz region (Shiomi et al., 1997); however, this is not always the case.
- Rosanowski and colleagues (1997) divided tinnitus patients into those with hearing loss and those without, and they found no consistent TEOAE results between the two groups.

- The relationships between otoacoustic emissions and tinnitus have been explored. Several studies suggest that in about 6% to 12% of normal-hearing persons with tinnitus and SOAEs, the SOAEs are at least partly responsible for the tinnitus.
- Studies have found that some subjects with tinnitus display oscillating or ringing EOAEs, and in these cases, it is hypothesized that the oscillating EOAEs and tinnitus are related to a common underlying pathology rather than the emissions being the source of the tinnitus.

- With conflicting results, it is not prudent to conclude that OAEs give objective evidence of tinnitus; more research in this area is needed.
- Perhaps the most promising area for the use of OAEs with patients with tinnitus is in the area of tinnitus monitoring.
- Recording OAEs before, during, and after tinnitus retraining therapy may show objective improvements in addition to subjective reports.

## ➤ OAEs in NIHL :

OAEs can be used to provide objective confirmation of cochlear dysfunction in patients with normal audiograms.

Similarities between the hearing losses in musicians and industrial workers confirm that excessive exposure to music can affect the ear as much as industrial noise exposure (Hall, 2000).

OAE findings can be associated with cochlear frequency specificity; therefore, difficulty hearing can be confirmed with OAEs, even in the presence of a normal audiogram.

OAEs can provide an early and reliable warning sign of cochlear dysfunction due to noise/music exposure before any problem is evident on the audiogram.

- Studies have found that exposure to noise can cause a decline in OAE responses.
- Studies have revealed that hearing thresholds and OAE results were significantly lower among the workers who were exposed to higher levels of noise.
- It has been found that DPOAE's have provided the most information for detecting mild hearing loss in high frequencies when compared to transient evoked otoacoustic emissions (TEOAE). This is an indication that DPOAE's can help with detecting an early onset of noise-induced hearing loss.

## ➤ Ototoxicity Monitoring :

- Over the past decade, three main approaches have emerged for monitoring the effects of ototoxic medications: basic audiologic assessment, high frequency audiometry (HFA; 10-18 kHz), and OAEs .
- Ototoxic drugs exert their effect on OHC function (although not solely on OHCs), and OAEs are OHC dependent. With ototoxicity, OAEs have been shown to decrease simultaneously with changes in HFA thresholds and before changes appear in the conventional audiometric frequencies .

- Although both TEOAEs and DPOAEs can be used to monitor the effects of ototoxic medications, DPOAEs have some distinct advantages over TEOAEs.

DPOAEs test higher frequencies than TEOAEs, making them more sensitive to the frequency area affected first.

DPOAEs can be recorded in the presence of more hearing loss than TEOAEs. Therefore, if a hearing loss already exists, that patient is still able to be monitored (so long as their hearing loss is not too great), which means DPOAEs can monitor more people.

DPOAEs can provide some indication of degree and configuration of the hearing loss .

- During ototoxicity monitoring, the patient should have OAE testing completed at baseline and before each administration of the ototoxic medication.
- A logical question about using OAEs to monitor for ototoxicity is what constitutes a significant change in OAE amplitude from one test session to another. Although reports vary, there is no agreed upon universal dB SPL amount that indicates a "significant change" from one test session to the next.
- 
- A change of 2.4 dB was reported as a significant decrease by Stavroulaki et al. (2002). Clinical experience suggests that changes of 3-6 dB SPL from one test session to the next (while all other test parameters are held constant, or an attempt at that is made) are generally accepted as significant and indicate a change in cochlear function.

- OAEs are a good clinical choice in monitoring for ototoxicity because they are quick, which is important for testing children as well as a population who may not feel well due to therapies.
- OAEs are cost efficient.
- Because they can show a change in cochlear function before it appears on the audiogram, further testing can be avoided unless OAE testing suggests a need.
- The biggest limitation to OAEs for this population is that they are very sensitive to middle ear dysfunction, which is common in children and in those who are immuno-compromised.
- Although OAEs are being employed for ototoxicity monitoring, they are rarely used in isolation. A change in OAEs from one test session to the next is a strong indicator for the need for more conventional and HFA testing.

## ➤ Using OAEs in Differential Diagnoses :

OAEs arise from the peripheral auditory system; therefore, a logical conclusion is that they will be present in cases of retrocochlear pathology. In most cases this is true; however, neoplasms in the internal auditory canal and/or posterior fossa may impinge on the internal auditory artery and compromise blood flow to the cochlea. This will affect the presence of OAEs.

Among various studies, the proportion of patients with retrocochlear pathology showing normal OAEs is about 20% (Hall, 2000). Probably the most common use of OAEs in the diagnosis of retrocochlear pathologies is in the diagnosis of auditory neuropathy (also called auditory dysynchrony or auditory neuropathy spectrum disorder (ANSND)).

# AUDITORY NEUROPATHY

The advent of otoacoustic emissions (OAE) recordings opened a new area of auditory investigation in auditory neuropathy.

Classic auditory neuropathy is characterized by the presence of OAEs or enlarged cochlear microphonics, abnormal auditory brainstem response (ABR) findings, and, often, absent or abnormal behavioral responses to sound.

OAEs may be absent and an auditory neuropathy still may exist if concomitant cochlear disorder is present. Also OAEs may often disappear over time in auditory neuropathy patients.

Following conditions may be associated with pediatric auditory neuropathy :

- Hyperbilirubinemia
- Neurodegenerative diseases
- Neurometabolic diseases
- Demyelinating diseases
- Hereditary motor sensory neuropathologies (eg, Charcot-Marie-Tooth diseases with deafness)
- Inflammatory neuropathy
- Hydrocephalus
- Severe and/or pervasive developmental delay
- Ischemic-hypoxic neuropathy
- Encephalopathy
- Meningitis
- Cerebral palsy

➤ OAEs and Meniere's Disease :

Patients with Meniere's disease can essentially be divided into four categories.

- Van Hufflen et al. (1998) reported that in patients with little hearing loss, OAEs are present, which is expected.
- When patients have pure-tone thresholds greater than 60 dB HL, OAEs are absent, which is again expected.
- In patients with Meniere's disease who have hearing thresholds in the intermediate range (30 to 60 dB HL), two categories of patients emerge: patients with relatively large OAEs and patients without measurable emissions. It is this intermediate group that warrants further discussion.
- In patients with hearing loss of 25-30 dB or greater, OAEs should clearly be absent. However, several studies and authors have recorded OAEs with normal or even greater than expected amplitude values, even with thresholds exceeding 30 dB HL (van Hufflen et al., 1998).

- It has been hypothesized that these different patterns of OAEs in patients with Meniere's may be a reflection of more than one specific site of lesion (Hall, 2000).
- It is possible that for these patients with audiometric hearing losses greater than 30 dB HL and present OAEs that the audiometric data is not reflecting OHC activity. Rather, the presence of OAEs in these patients suggests that the OHCs have been spared and the poor hearing thresholds are IHC dysfunction or a disruption at the level of the afferent synapses to IHC and OHC (Hall, 2000).

- Another possibility to explain this phenomenon is that these findings may be a reflection of the various stages in the pathophysiological mechanism involved in Meniere's disease (van Hufflen et al., 1998).
- In other words, the damage from the Meniere's has not yet reached the OHCs.
- Van Hufflen et al. also demonstrated in their 1998 study that OAEs in the contralateral ear with normal hearing in patients with Meniere's disease had smaller OAE amplitudes than persons with normal hearing. They hypothesized that this could indicate an early manifestation of bilateral Meniere's disease.

## ➤ OAEs and intraoperative monitoring :

- Although not a new concept, using OAEs in the operating room is probably not a common practice in many places.
- However, OAEs can be used to monitor the cochlear function in CP angle tumour (Eg: acoustic neuroma) resection surgery.
- When using OAEs for any reason in the operating room, keep in mind that room noise and electrical artifact could interfere with collection.
- Microcoagulation of small vessels, tumour debulking, compression / stretch of internal auditory canal contents etc. affected OAE.

## ➤ OAEs and hearing aid fittings :

- The concept behind this lies in the ability of OAEs to identify regions of the cochlea with damage, which can assist in programming a hearing aid.
- When OAEs are absent, we assume hearing loss of greater than about 25 dB HL at the frequency where the emission is absent. In difficult to test patients, or any patient for which we cannot obtain audiometric threshold data, the absence of an OAE gives us some idea of hearing levels.
- In conjunction with ABR, we can use this data to program amplification for these patients.
- Absent OAEs in conjunction with audiometric thresholds of 70 dB HL or greater can be an indicator of a cochlear dead region, which in turn can influence the hearing aid selection and programming.

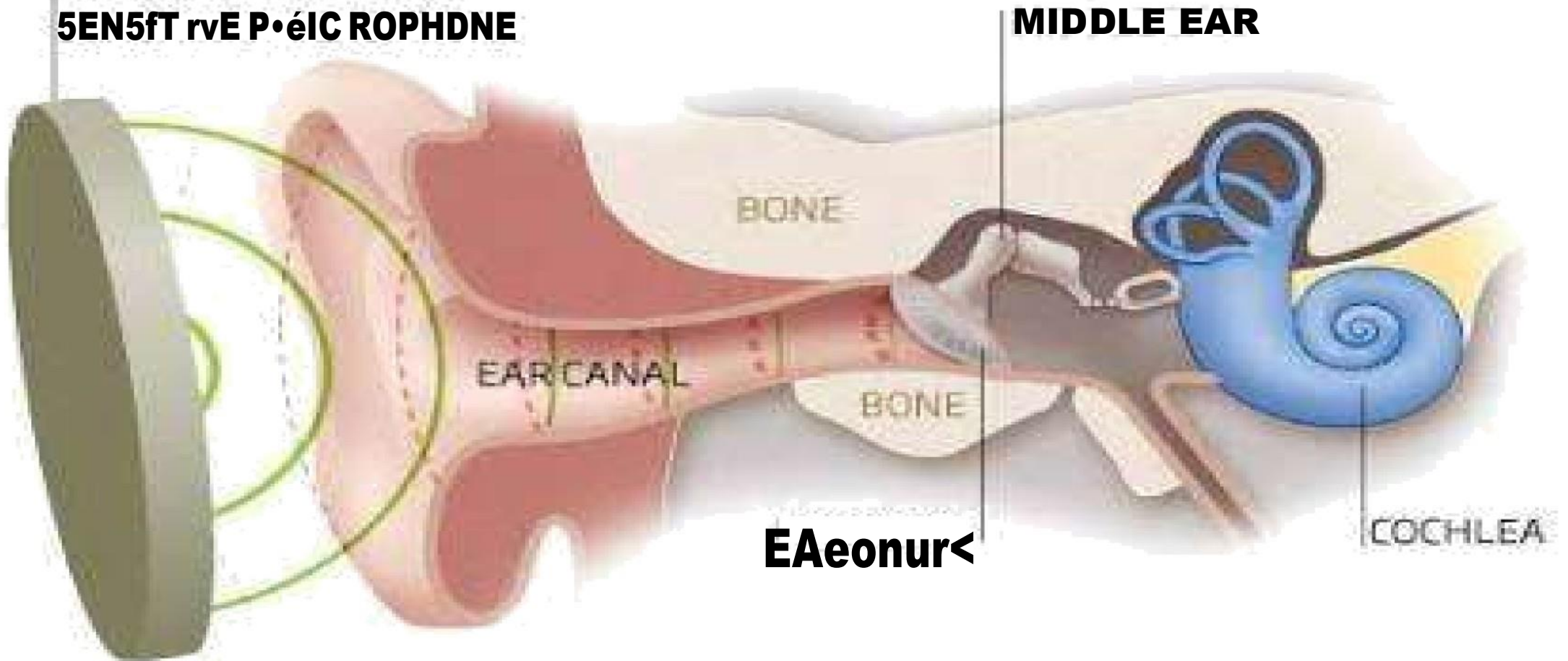
# BIOMETRIC IMPORTANCE :

- In 2009, Stephen Beeby of The University of Southampton led research into utilizing otoacoustic emissions for biometric identification.
- Devices equipped with a microphone could detect these subsonic emissions and potentially identify an individual, thereby providing access to the device, without the need of a traditional password.
- It is speculated, however, that colds, medication, trimming one's ear hair, or recording and playing back a signal to the microphone could subvert the identification process.

## Ear identification scan

A series of clicks played into the ear generates a faint but distinctive sound in return, which varies according to the unique internal shape of the person's ear

3D Ear Scan AND 3D Ear Scan -  
3D Ear Scan - 3D Ear Scan



Although OAEs in the cochlea may all be alike, each person's unique middle ear system and external ear change the characteristics of the OAE.

Thus, an individual's OAE may be used as an "acoustic fingerprint" to unlock that person's phone or iPod!

“ BETTER THAN KEEPING PATTERN AND NUMBERS TO LOCK THE  
SCREEN AND FORGETTING IT ”

# ADVANTAGES

- OAEs indicate that OHC function is normal, which, in most cases, correlates with normal hearing sensitivity.
- OAE testing is objective and does not require a behavioral response from a patient. Thus, it is also used to rule out functional hearing loss.
- Noninvasive .
- Easy to do and quick.
- Provides rapid results.
- OAE also tells us to some extent that the conductive mechanism of the ear is functioning properly. This includes proper forward and reverse transmission, no blockage of the external auditory canal, normal tympanic membrane movement, and a functioning impedance matching system.

# LIMITATIONS

OAE testing does not evaluate the inner hair cells (IHC), nVIII, ascending central auditory pathway, or auditory processing function.

Surrounding sounds can distort readings .

False negatives – middle & external ear pathology.

Presence of OAE doesn't guarantee a normal neural pathway, confirmation of which again needs BERA.

???????

- Proper Relationship between OAE and TINNITUS ?
- OAE and hearing loss in Meniere's disease ?

**Annexure 5**  
**Bharath Institute of Higher Education and Research**  
SLIMS

1	U15MB275	DEVANAND .M
2	U15MB276	DEVANATHAN. R
3	U15MB277	DHANA PRIYA .P
4	U15MB278	DHANALAKSHMI. M
5	U15MB279	DHANUSH .R
6	U15MB280	DHANUSH KODALI
7	U15MB281	DHIVYA KUMARI .P
8	U15MB282	DIVYA .S
9	U15MB283	DIVYA DHARSHINI .N
10	U15MB284	EVANGELINE PRETTY .G

ANNEXURE 3  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL  
SCIENCES  
PUDUCHERRY

TOPIC: otoacoustic emission (ENT 07)

STUDENT NAME:

UNIVERSITY NO:

1. Screening test for neonates in icu:

- a. Transient evoked OAE      b. Distortion product OAE  
c. Automated OAE              d. ASSR

2. Otoacoustic emission are done when following is damaged

- a. Outer hair cells      b. Reissner's membrane  
c. Inner hair cells      d. Otolithic membrane

3. True statement about OAE

- a. Spontaneous OAE is absent in 50% normal individuals  
b. Absent in retro cochlear lesion  
c. Absent in hearing loss less than 30 dB  
d. All of the above

4. OAE arise from

- a. Inner hair cells              b. Outer hair cell  
c. Both inner and outer      d. Macula

5. Initial screening test for new born hearing disorder

- a. ABR                              b. OAE  
c. Free field audiometer      d. Visual reinforcement audiometer

6. In neonate the most sensitive audiometric screening is

- a. Electrocochleography      b. OAE      c. BERA      d. Tympanometry

7. True about otoacoustic emission

- a. are by product of inner hair cells  
b. are by product of outer hair cells  
c. used as a screening test of hearing in new born  
d. useful in ototoxicity monitoring

8. If OAE are absent the result is mentioned as :

- a. pass                              b. fail  
c. absent                          d. refer

9. all of the features are of cochlear hearing loss except
- a. SISI test is positive
  - b. Speech discrimination is highly impaired
  - c. OAE absent
  - d. Damage to the inner and outer hair cell

10. best time for hearing assessment in infants
- a. during 1st month
  - b. 3-6 month
  - c. 6-9 months
  - d. 9-12 months

PRE TEST

7

6. In neonate the most sensitive audiometric screening is  
a. electrococheagrphy b. OAE c. BERA d. Tymhanomtery

7. true about oto acoustic emission

a. are by product of inner hair cells

b. are by product of outer hair cells

c. used as a screening test of hearing in new born

d. useful in ototoxicity monitoring

8. If OAE are absent the result is mention as :

a. pass b. fail

c. absent d. refer

9. all of the features are of cochlear hearing loss except

a. SISI test is positive

b. speech discrimination is highly impaired

c. OAE absent

d. Damage to the inner and outer hair cell

10. best time for hearing assessment in infants

a. during 1st month

b. 3-6 month

c. 6-9 months

d. 9-12 months

ANNEXURE 3

SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES

PUDUCHERRY

TOPIC: otoacoustic emission (ENT 07)

STUDENT NAME: Dhanush R

UNIVERSITY NO: UISM B279.

1. Screening test for neonates in icu:

- a. Transient evoked OAE     b. Distortion product OAE  
 c. Automated OAE         d. ASSR

5

2. Otoacoustic emission are done when following is damaged

- a. Outer hair cells     b. Reissner's membrane  
 c. Inner hair cells     d. Otolithic membrane

3. True statement about OAE

- a. Spontaneous oae is absent in 50% normal individuals  
 b. Absent in retro cochlear lesion  
 c. Absent in hearing loss less than 30 db  
 d. All of the above

4. OAE arise from

- a. Inner hair cells         b. Outer hair cell  
 c. Both inner and outer     d. Macula

5. Initial screening test for new born hearing disorder

- a. ABR                       b. OAE  
 c. Free field audiometer     d. Visual reinforcement audiometer

6. In neonate the most sensitive audiometric screening is  
a. electrococheargraphy ~~b. OAE~~ c. BERA d. Tymhanomtery

7. true about oto acoustic emission

a. are by product of inner hair cells

~~b. are by product of outer hair cells~~

X c. used as a screening test of hearing in new born

d. useful in ototoxicity monitoring

8. If OAE are absent the result is mention as :

a. pass ~~b. fail~~

X c. absent ~~d. refer~~

9. all of the features are of cochlear hearing loss except

~~a. SISI test is positive~~

b. Speech discrimination is highly impaired

X c. OAE absent

d. Damage to the inner and outer hair cell

10. best time for hearing assessment in infants

~~a. during 1st month~~

b. 3-6 month

c. 6-9 months

d. 9-12 months

ANNEXURE 3

SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES

PUDUCHERRY

TOPIC: otoacoustic emission (ENT 07)

STUDENT NAME: Divya . S

UNIVERSITY NO: VISM B282.

4

1. Screening test for neonates in icu:

- a. Transient evoked OAE      b. Distortion product OAE  
 c. Automated OAE              d. ASSR

2. Otoacoustic emission are done when following is damaged

- a. Outer hair cells      b. Reissner's membrane  
 c. Inner hair cells      d. Otolithic membrane

3. True statement about OAE

- a. Spontaneous oae is absent in 50% normal individuals  
b. absent in retro cochlear lesion  
c. Absent in hearing loss less than 30 db  
d. All of the above

4. OAE arise from

- a. Inner hair cells              b. Outer hair cell  
 c. Both inner and outer      d. Macula

5. Initial screening test for new born hearing disorder

- a. ABR                              b. OAE  
c. Free field audiometer      d. Visual reinforcement audiometer

POST TEST

7

6. In neonate the most sensitive audiometric screening is  
a. electrococheagrophy ~~b. OAE~~ c. BERA d. Tymhanomtery

7. true about oto acoustic emission

- a. are by product of inner hair cells
- ~~b.~~ b. are by product of outer hair cells
- c. used as a screening test of hearing in new born
- d. useful in ototoxicity monitoring

8. If OAE are absent the result is mention as :

- a. pass
- b. fail
- c. absent
- ~~d.~~ d. refer

9. all of the features are of cochlear hearing loss except

- a. SISI test is positive
- b. Speech discrimination is highly impaired
- c. OAE absent
- d. Damage to the inner and outer hair cell

10. best time for hearing assessment in infants

- a. during 1st month
- b. 3-6 month
- c. 6-9 months
- d. 9-12 months

9

ANNEXURE 3

SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
PUDUCHERRY

TOPIC: otoacoustic emission (ENT 07)

STUDENT NAME: Divya -S

UNIVERSITY NO: UICMB282

1. Screening test for neonates in icu:

- a. Transient evoked OAE     ~~b. Distortion product OAE~~  
c. Automated OAE             d. ASSR

2. Otoacoustic emission are done when following is damaged

- ~~a. Outer hair cells~~     b. Reissner's membrane  
c. inner hair cells     d. otolithic membrane

3. True statement about OAE

- ~~a. spontaneous oae is absent in 50% normal individuals~~  
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5. Initial screening test for new born hearing disorder

- a. ABR                     ~~b. OAE~~  
c. Free field audiometer     d. Visual reinforcement audiometer

6. In neonate the most sensitive audiometric screening is  
~~a. electrococheagrophy~~ b.OAE c.BERA d.Tymhanomtery

7. true about oto acoustic emission  
a. are by product of inner hair cells  
b. are by product of outer hair cells  
~~c. used as a screening test of hearing in new born~~  
d. useful in ototoxicity monitoring

8. If OAE are absent the result is mention as :  
a. pass            b. fail  
c. absent        ~~d. refer~~

9. all of the features are of cochlear hearing loss except  
a. SISI test is positive  
~~b. Speech discrimination is highly impaired~~  
c. OAE absent  
d. Damage to the inner and outer hair cell

10. best time for hearing assessment in infants  
~~a. during 1st month~~            b. 3-6 month  
c. 6-9 months                    d. 9-12 months

7

ANNEXURE 3

SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES

PUDUCHERRY

TOPIC: otoacoustic emission (ENT 07)

STUDENT NAME: Dhanush R

UNIVERSITY NO: UISM B279.

1. Screening test for neonates in icu:

- a. Transient evoked OAE     ~~b. Distortion product OAE~~  
c. Automated OAE             d. ASSR

2. Otoacoustic emission are done when following is damaged

- ~~a. Outer hair cells~~     b. Reissner's membrane  
c. inner hair cells     d. otolithic membrane

3. True statement about OAE

- ~~a. spontaneous oae is absent in 50% normal individuals~~  
~~b. absent in retro cochlear lesion~~  
~~c. Absent in hearing loss less than 30 db~~  
d. All of the above

4. OAE arise from

- a. Inner hair cells             ~~b. Outer hair cell~~  
c. Both inner and outer     d. Macula

5. Initial screening test for new born hearing disorder

- ~~a. ABR~~                             b. OAE  
~~c. Free field audiometer~~     d. Visual reinforcement audiometer



## Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



### CERTIFICATE OF MERIT

This is to certify that \_\_\_\_\_ has actively participated in the Value Added Course on Hands on experience of Screening infants with OAE held during May 2018 – Aug 2018 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr.K.R.Jothikumar  
RESOURCE PERSON

Dr.R.Venkataramanan  
COORDINATOR



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that Dr.Dhanapriya.P(U15MB277) has actively participated in the Value Added Course on Hands on experience of Screening infants with OAE held during May 2018 – Aug 2018 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr.K.R.Jothikumar

RESOURCE PERSON

Dr.R.Venkataramanan

COORDINATOR

**Course/Training Feedback Form**  
**Student Feedback Form**

Course Name: Hands on experience of Screening infants with OAE

Subject Code: **ENT07**

Name of Student: \_\_\_\_\_ Roll No.: \_\_\_\_\_

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					
2	Course contents met with your expectations					
3	Lecturer sequence was well planned					
4	Lectures were clear and easy to understand					
5	Teaching aids were effective					
6	Instructors encourage interaction and were helpful					
7	The level of the course					
8	Overall rating of the course	1	2	3	4	5

*\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory*

Suggestions if any:

**ANNEXURE 5**

**Course/Training Feedback Form**

**Student Feedback Form**

Course Name: Hands on experience of Screening infants with OAF:

Subject Code: EN107

Name of Student: P. DIANA PRIMA Roll No.: U1519B277

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear		✓			
2	Course contents met with your expectations	✓				
3	Lecturer sequence was well planned			✓		
4	Lectures were clear and easy to understand			✓		
5	Teaching aids were effective	✓				
6	Instructors encourage interaction and were helpful		✓			
7	The level of the course			✓		
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Annexure 5

Course/Training Feedback Form

Student Feedback Form

Course Name: Hands on experience of Screening infants with OAE

Subject Code: ENT07

Name of Student: M. DHANALAKSHMI Roll No.: V15MB278

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl NO	Particulars	1	2	3	4	5
1	Objective of the course is clear		/			
2	Course contents met with your expectations			/		
3	Lecturer sequence was well planned		/			
4	Lectures were clear and easy to understand			/		
5	Teaching aids were effective				/	
6	Instructors encourage interaction and were helpful				/	
7	The level of the course					/
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Overall, it was good

ANNEXURE 6

Date : 15/08/2018

From  
Dr.K.R. Jothikumar,  
Dept of Otorhinolaryngology,  
SLIMS  
Bharath Institute of Higher Education and Research,  
Puducherry.

Through Proper Channel

To  
The Dean,  
SLIMS,  
Bharath Institute of Higher Education and Research,  
Puducherry.

**Sub: Completion of value-added course: Hands on experience of Screening infants with OAE**  
reg.

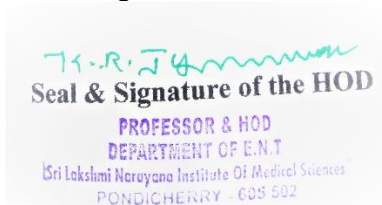
Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: **Hands on experience of Screening infants with OAE** on May 2018 to Aug 2018. We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards

Dr.K.R.Jothikumar

<HOD Sign and Seal>







## Sri Lakshmi Narayana Institute of Medical Sciences

Date:12.04.2018

N From  
DR.Senthil kumar,  
Professor and Head,  
Department of Physiology,  
SLIMS  
Bharath Institute of Higher Education and Research,  
Chennai.

To  
The Dean,  
SLIMS  
Bharath Institute of Higher Education and Research,  
Chennai.

### **Sub: Permission to conduct value-added course: CERTIFICATE COURSE ON NERVE CONDUCTION STUDY AND ITS APPLICATION**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: Certificate course on nerve conduction study and its application on December 2019. We solicit your kind permission for the same.

Kind Regards

Dr.Senthil kumar

### **FOR THE USE OF DEANS OFFICE**

Names of Committee members for evaluating the course:

The Dean: *Dr. Jayalakshmi*

The HOD: *Dr. Senthilkumar*

The Expert: *Dr. B. Deivanayagame*

The committee has discussed about the course and is approved.

Dean

(Sign & Seal)

**DEAN**

Subject Expert

(Sign & Seal)

*B. Deivanayagame*

HOD

(Sign & Seal)

**PROFESSOR & HOD**

**DEPARTMENT OF PHYSIOLOGY**

Sri Lakshmi Narayana Institute of Medical Sciences  
PONDICHERRY - 605 002.

SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
OSUDU, AGARAM VILLAGE,  
KODAPAKKAM POST,  
PUDUCHERRY - 605 502

**Circular**


19.04.2018

**Sub: Organising Value-added Course: reg CERTIFICATE COURSE ON NERVE CONDUCTION STUDY AND ITS APPLICATION**

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research**, is organising “**\_certificate course on nerve conduction study and its application**

”. The course content and registration form is enclosed below.”

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before may . Applications received after the mentioned date shall not be entertained under any circumstances.

  
**DEAN** Dean  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
OSUDU, AGARAM VILLAGE,  
KODAPAKKAM POST,  
PUDUCHERRY - 605 502

## Course Proposal

**Course Title:** certificate course on nerve conduction study and its application

**Course Objective:** 1. To apply knowledge of Neuroanatomy with obtained nerve conduction test results  
2. To differentiate nerve and muscle pathology

**Course Outcome:** Demonstrate knowledge of peripheral nerve and muscle anatomy and physiology.

**Course Audience:** Medical undergraduates

**Course Coordinator:**Dr.B.Deivanayagame

**Course Faculties with Qualification and Designation:**

1.Dr.Senthil kumar

2.Dr.B.Deivanayagame

**Course Curriculum/Topics with schedule (Min of 30 hours)**

S. No	Date	Topic	Time	Hours
1	05.05.2018	Introduction		2hrs
2	11.06.2018	Medical uses		2hrs
3	14.06.2018	Interpretation of nerve conduction study		2hrs
4	16.06.2018	Factors affecting nerve conduction velocity		2hrs
5	18.06.2018	Physio clinical significance of nerve conduction study		2hrs
6	19.06.2018	Precautions		2hrs
7	20.06.2018	Motor nerve conduction		2hrs
8	22.06.2018	Sensory nerve conduction		2hrs
9	24.06.2018	Procedure and normal values		2hrs
10	26.06.2018	complications		
11	01.07.2018	Repetitive nerve stimulation		2hrs
12	03.07.2018	Protocol for evaluating nerve conduction study		2hrs
13.	04.07.2018	Artifacts and technical errors		2hrs
14.	06.07.2018	Cardinal rules of nerve conduction study		2hrs
15	08.07.2018	Summary and recommendations		2hrs
			Total Hours	30

**REFERENCE BOOKS:**

1. *Principles of clinical electromyography case studies*. Baltimore: Lippincott Williams & Wilkins, 1998

2. Binnie C, Cooper R, Mauguière F, et al. *Clinical neurophysiology Vol 1 & 2*,

Elsevier 2004. ▶ A reference text covering all aspects of clinical neurophysiology including nerve conduction studies. Primarily aimed towards those training in clinical neurophysiology.

## VALUE ADDED COURSE

**1. Name of the programme & Code**

Certificate course on Nerve conduction study and its application

**2. Duration & Period**

30 hrs & may 2018– july2018

**3. Information Brochure and Course Content of Value Added Courses**

*Enclosed as Annexure- I*

**4. List of students enrolled**

*Enclosed as Annexure- II*

**5. Assessment procedures:**

Multiple choice questions- *Enclosed as Annexure- III*

**6. Certificate model**

*Enclosed as Annexure- IV*

**7. No. of times offered during the same year:**

30 hrs & May 2018– July2018

**8. Year of discontinuation: 2018**

**9. Summary report of each program year-wise**

Value Added Course –may 2018-july 2018					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	PHYC07	Nerve conduction study and its application	Dr. B.Deivanayagame	1 <sup>st</sup> MBBS	20 (May 18 – July 2018 )

**10. Course Feed Back**

*Enclosed as Annexure- V*

**RESOURCE PERSON**

*VSC*

**COORDINATOR**

PROFESSOR & HOD  
DEPARTMENT OF PHYSIOLOGY  
Sri Lakshmi Narayana Institute Of Medical Sciences  
PONDICHERRY - 605 002.

## ANNEXURE 1

Nerve conduction study and its application



**PARTICIPANT HAND BOOK**

## COURSE DETAILS

Particulars	Description
Course Title	Overview of Nerve conduction study and its application
Course Code	PHYC07
Objective	<ol style="list-style-type: none"><li>1.Introduction</li><li>2.Medical uses</li><li>3. Sensory nerve conduction</li><li>4. Motor nerve conduction</li><li>5. Repetitive nerve stimulation</li><li>6. Technique</li><li>7. Procedure and normal values</li><li>8. Precautions</li><li>9. Interpretation of nerve conduction</li><li>10. artifacts and technical errors</li><li>11. Protocol for evaluating nerve conduction study</li><li>12. factors affecting nerve conduction velocity</li><li>13.patient risk and complications</li><li>14.Cardinal rules of nerve conduction study</li><li>15.Summary and recommendations</li></ol>
Further learning opportunities	Other electrophysiological studies
Key Competencies	On successful completion of the course the students should acquire the skill to understand the appropriate clinical indication and interpret NCS in adult population
Target Student	1st MBBS Students \
Duration	30hrs Every September 2018-december 2018
Theory Session	10hrs
Practical Session	20hrs
Assessment Procedure	Multiple choice questions

## **Introduction:**

A **nerve conduction study (NCS)** is a medical diagnostic test commonly used to evaluate the function, especially the ability of electrical conduction, of the motor and sensory nerves of the human body. These tests may be performed by medical specialists such as clinical neurophysiologists, physical therapists, chiropractors, physiatrists (physical medicine and rehabilitation physicians), and neurologists who subspecialize in electrodiagnostic medicine. In the United States, neurologists and physiatrists receive training in electrodiagnostic medicine (performing needle electromyography (EMG) and NCSs as part of residency training and in some cases acquire additional expertise during a fellowship in clinical neurophysiology, electrodiagnostic medicine, or neuromuscular medicine.

Nerve conduction studies (NCS), together with the needle electrode examination (NEE), constitute the electrodiagnostic examination. For most neuromuscular diagnostic problems, the NCS are the initial probe into the peripheral nervous system. The findings from the NCS will dictate what muscles must be studied during the subsequent NEE. Usually a complete electrodiagnostic impression depends upon the findings of both the NCS and the NEE, but only the NCS can confirm the presence of entrapment mononeuropathies, demyelinating neuropathies, and defects of neuromuscular junction (NMJ) transmission.

Responses can be recorded along peripheral motor and sensory axons.

Characteristics of the responses include the amplitude, duration, latency, and velocity of responses. From these parameters, patterns of nerve pathology can be identified, including axon loss, demyelination, and conduction block. Although there are no specific NCS features of myopathy, muscle fiber loss and muscle fiber inexcitability affect the amplitude of motor responses. With NMJ transmission defects, specific abnormalities on NCS are identified.

**Generation of an Action Potential** An electrical stimulus applied to a sensory or motor nerve fiber opens voltage-gated sodium channels in the nerve fiber membrane, leading to sodium influx and local depolarization of the membrane. If the threshold of depolarization is reached, a self-sustaining electrical impulse is generated at that site, termed an "action potential". The action potential is

propagated along the nerve fiber by sequentially depolarizing the membrane in both directions from the original point of stimulation. The Sensory Nerve Action Potential (SNAP) The electrical field generated around a propagated action potential can be measured at some distance from the nerve fiber itself, but the size of the recorded response drops off as a square of the distance between the generator and the recording electrodes. When a group of nerve fiber action potentials are being propagated simultaneously in a nerve trunk, the electrical fields of the potentials summate in the surrounding area, known as the volume conductor. The SNAP is recorded from tin disc electrodes placed on the skin over the nerve trunk, either proximal or distal to the stimulation point of the nerve. It represents the summation of action potentials from all recordable nerve fibers in the volume conductor. Measurable features of a SNAP include the amplitude, duration, latency, and configuration (figure 1). SNAP amplitudes range from 5 to over 200 microvolts, depending on the particular nerve trunk being studied. Normally the SNAP is a triphasic waveform with an initial positive deflection, because the propagated depolarization along the nerve trunk approaches the recording electrode from the stimulation site. The Compound Muscle Action Potential (CMAP) With motor NCS, stimulation is applied at distal and proximal sites along a nerve trunk. Recording of the resulting action potential occurs with surface electrodes overlying a muscle belly innervated by the stimulated nerve. Since the active recording electrode overlies a muscle belly, the recorded response is a compound muscle action potential (CMAP), not a nerve action potential. The CMAP represents a summation in the volume conductor of all the individual muscle fiber action potentials activated by the stimulus and within the pick up territory of the active recording electrode. Normally, the CMAP is a biphasic waveform with an initial negative deflection (figure 2). This configuration results from placement of the active recording electrode at the motor point of the muscle belly, where the muscle fibers are initially depolarized and their action potentials are generated. Displacement of the active recording electrode off the motor point will result in an initial positive deflection in the recorded CMAP due to volume conduction of the muscle fiber action potentials from the motor point to the electrode. The CMAP is measured in millivolts, compared to microvolts for a sensory action potential, because the size of an action potential is proportional to the diameter of the excitable tissue from which it is derived

**Medical uses :** Nerve conduction studies along with needle electromyography measure nerve and muscle function, and may be indicated when there is pain in the limbs, weakness from spinal nerve compression, or concern about some other neurologic injury or disorder.<sup>[5]</sup> Spinal nerve injury does not cause neck, mid back pain or low back pain, and for this reason, evidence has not shown EMG or NCS to be helpful in diagnosing causes of axial lumbar pain, thoracic pain, or cervical spine pain.

Nerve conduction studies are used mainly for evaluation of paresthesias (numbness, tingling, burning) and/or weakness of the arms and legs. The type of study required is dependent in part by the symptoms presented. A physical exam and thorough history also help to direct the investigation. Some of the common disorders that can be diagnosed by nerve conduction studies are:

- Carpal tunnel syndrome
- Cubital Tunnel Syndrome
- Guillain–Barré syndrome
- Guyon's canal syndrome
- Peripheral neuropathy
- Peroneal neuropathy
- Spinal disc herniation
- Tarsal Tunnel Syndrome

#### **Other conditions**

- Radiculopathy
- Neuromuscular junction defects
- Myasthenia Gravis
- LEMS
- Motor Neuron Disease
- ALS
- Sensory Neuronopathy
- Sjogren's disease

**SENSORY NERVE CONDUCTION** Sensory nerve conduction studies are used to assess the functional integrity of sensory nerve fibers. They measure the amplitude and velocity of somatosensory-induced sensory nerve action potentials (SNAPs). They can be performed orthodromically in the direction of normal nerve conduction, or antidromically in the distal part of major peripheral nerves. The primary goals of sensory nerve conduction studies are the assessment of (1) the number of functioning axons (amplitude of SNAPs), and (2) the state of myelin in these axons (conduction velocity of SNAPs). In patients with axonal degeneration neuropathies (i.e., injury after injection into a nerve fascicle or diabetic neuropathy), the primary feature is a markedly reduced sensory action potential amplitude. Under these circumstances, the conduction velocity may be slightly reduced, but only to the extent that the largest axons are gone. In contrast, demyelinating neuropathies (i.e., tourniquet compression or Guillain-Barré Syndrome) generally cause profound abnormalities in conduction velocity, with or without alterations in action potential amplitude

**Sensory nerve conduction study** :This represents conduction impulse along the sensory nerve fibres

It is performed by electrical stimulation of the peripheral nerve and recording from a purely sensory portion of the nerve such as on a finger


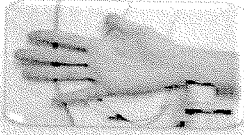


The recording electrode is placed proximal to the stimulating electrode

Like the motor studies sensory latencies are on the scale of milliseconds

The sensory amplitude are much smaller than the motor amplitude microvolts

The sensory conduction is measured in latency and distance between stimulating and recording electrode

## SENSORY NERVE CONDUCTION STUDY SITES

	<b>Median nerves (R &amp; L) at;</b> <ul style="list-style-type: none"><li>• index finger</li><li>• thumb</li></ul>
	<b>Ulnar nerves (R &amp; L) at;</b> <ul style="list-style-type: none"><li>• little finger</li><li>• ring finger</li></ul>
	<b>Sural nerves (R &amp; L) at;</b> <ul style="list-style-type: none"><li>• behind the Lateral Malleolus</li></ul>
	<b>Saphenous nerves(R &amp; L) at;</b> <ul style="list-style-type: none"><li>• anterior to the Medial Malleolus</li></ul>

**Motor nerve conduction:** This represents conduction impulse along the peripheral motor nerve

This recorded as a compound evoked potential from a motor point within the muscle

The time it takes for electric impulse to travel from stimulation to the recording electrode is measured

This called latency and measured in milliseconds

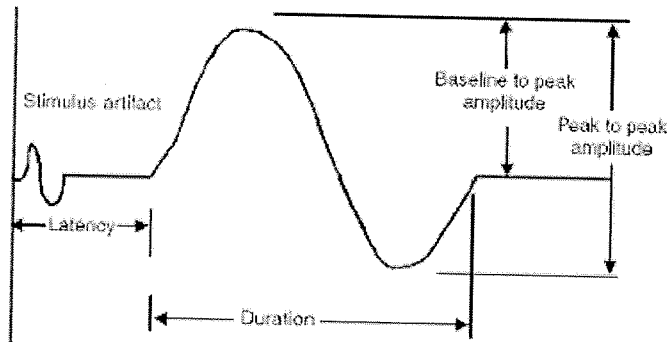
The size of resonds called amplitude and measured in millivolts

By stimulating in two or more different locations along the same nerve ,NCV across different segments can be measured

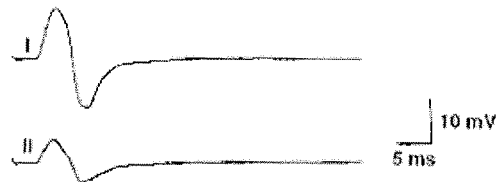
It corresponds to the integrity of the motor unit but cannot distinguish between pre and post ganglionic lesions because the cell body is located in the spinal cord

It can be abnormal with normal SNAPs if the lesion is proximal to the DRG or affecting a purely motor nerve

The active and reference pickup should not be too close together if this occur similar waveforms are recorded at both sites and rejected, dropping the amplitude of the wave form



Compound Motor Action Potential



effect on the amplitude of varying the inter-electrode separation.

I: Normal.

II: Pickups are too close.

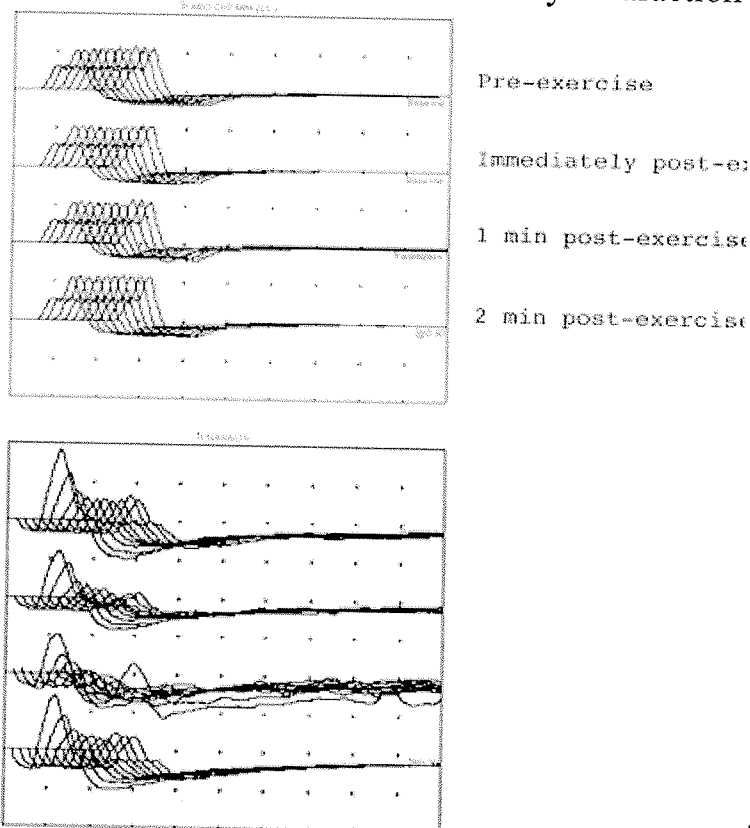
## MOTOR NERVE CONDUCTION STUDY SITES:

	<p><b>Median nerves (R &amp; L) at;</b></p> <ul style="list-style-type: none"> <li>• Wrist</li> <li>• Elbow</li> </ul> <p>Abductor Pollicis Brevis</p>
	<p><b>Ulnar nerves (R &amp; L) at;</b></p> <ul style="list-style-type: none"> <li>• Wrist</li> <li>• Elbow</li> </ul> <p>First Dorsal Interosseous (FDI) Abductor Digiti Minimi (ADM)</p>
	<p><b>Peroneal nerves (R &amp; L) at;</b></p> <ul style="list-style-type: none"> <li>• Ankle</li> <li>• Head of fibula</li> </ul> <p>Extensor Digitorum Brevis Tibialis Anterior</p>
	<p><b>Tibial nerves (R &amp; L) at;</b></p> <ul style="list-style-type: none"> <li>• Ankle</li> </ul> <p>Abductor Hallucis Abductor Digiti Quinti Pedis</p>

## REPETITIVE NERVE STIMULATION

Repetitive nerve stimulation (RNS) is used in the evaluation of patients with suspected neuromuscular transmission disorders (NMTD) such as myasthenia gravis (MG) or Lambert-Eaton myasthenic syndrome (LEMS). RNS is a modified motor NCS where instead of recording CMAPs with single supramaximal electrical stimuli, a train of 8–10 stimuli is applied and the sequential response amplitudes and/or areas measured. This may be carried out at low (3–4 Hz) or high frequency stimulation (20–50 Hz). In the latter case the train is prolonged to allow 2–10 seconds of continuous data to be measured. Both distal and proximal muscles/nerves should be studied in every patient suspected of an NMTD as the sensitivity of the test is greatly increased by this means.

With low frequency stimulation in normal subjects, the CMAP amplitude and/or area falls over the first 4–5 stimuli by a maximum of 10–12%. The maximum fall should be between potentials 1 and 2 (see RNS pitfalls). A number of department specific protocols have been published to study the RNS over time both before and after a period of maximum voluntary contraction of the muscle to pick up



early or late NMT failure (fig 7).

## TECHNIQUE

The nerve conduction study consists of the following components

- Motor NCS
- Sensory NCS
- F wave study
- H-reflex study

The nerve conduction study is often combined with needle *electromyography*.

### Other

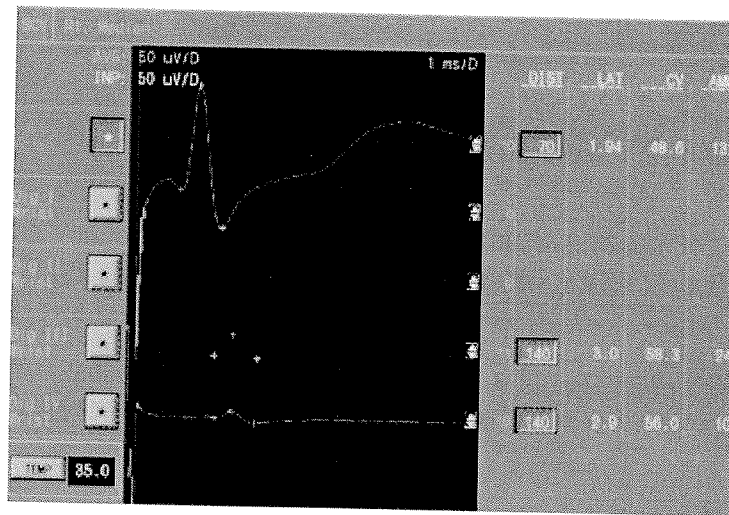
The Department of Health and Human Services Inspector General recently identified the use of NCSs without a needle electromyography at the same time a sign of questionable billing.<sup>[6]</sup>

### Motor NCS

*Motor NCS* Motor NCS are obtained by stimulating a motor nerve and recording at the belly of a muscle innervated by that nerve. The CMAP is the resulting response, and depends on the motor axons transmitting the action potential, status of the neuromuscular junction, and muscle fibers. The CMAP amplitudes, motor onset latencies, and conduction velocities are routinely assessed and analyzed. As with sensory NCS, conduction velocity is calculated by dividing distance by time. In this case, however, the distance between two stimulation sites is divided by the difference in onset latencies of those two sites, providing the conduction velocity in the segment of nerve between the two stimulation sites. This method of calculating conduction velocity thereby avoids being confounded by time spent traversing the neuromuscular junction and triggering a muscle action potential (since these are subtracted out).

### Sensory NCS

*Sensory NCS* are performed by electrical stimulation of a peripheral nerve while recording the transmitted potential at a different site along the same nerve. Three main measures can be obtained: SNAP (Sensory nerve action potential) amplitude, sensory latency and conduction velocity. The SNAP amplitude (in microvolts) represents a measure of the number of axons conducting between the stimulation site and the recording site. Sensory latency (in milliseconds) is the time that it takes for the action potential to travel between the stimulation site and the recording site of the nerve. The conduction velocity is measured in meters per second and is obtained by dividing the distance between stimulation site and the recording site by the latency:  $\text{Conduction velocity} = \text{Distance} / \text{Latency}$



*Sensory NCS:* An example screenshot showing the results of a sensory nerve conduction velocity study of the right median nerve.

### **F-wave study**

*F-wave study* uses supramaximal stimulation of a motor nerve and recording of action potentials from a muscle supplied by the nerve. This is not a reflex, per se, in that the action potential travels from the site of the stimulating electrode in the limb to the spinal cord's ventral horn and back to the limb in the same nerve that was stimulated. The F-wave latency can be used to derive the conduction velocity of nerve between the limb and spine, whereas the motor and sensory nerve conduction studies evaluate conduction in the segment of the limb. F waves vary in latency and an abnormal variance is called "chrono dispersion". Conduction velocity is derived by measuring the limb length, D, in millimeters from the stimulation site to the corresponding spinal segment (C7 spinous process to wrist crease for median nerve). This is multiplied by 2 as it goes to the cord and returns to the muscle (2D). 2D is divided by the latency difference between mean F and M

and 1 millisecond subtracted (F-M-1). The formula is

### **H-reflex study**

H-reflex study uses stimulation of a nerve and recording the reflex electrical discharge from a muscle in the limb. This also evaluates conduction between the limb and the spinal cord, but in this case, the afferent impulses (those going toward the spinal cord) are in sensory nerves while the efferent impulses (those coming from the spinal cord) are in motor nerves. This process cannot be changed.

## **Procedure:**

Procedure for motor study:

Active electrode placed on the center of the muscle belly (over the motor end plate)

Ground electrode: in between active and recording electrode

Stimulator/recording electrode is placed over the nerve that supplies the muscle, cathode closest to the recording electrode

Current needed

15-35 mA for motor NCS

<20 mA for sensory NCS

Supramaximal stimulation is given in motor studies

## **Components of NCS:**

Compound nerve actions potential

F-wave study

H reflex study

Motor conduction study Belly -tendon montage

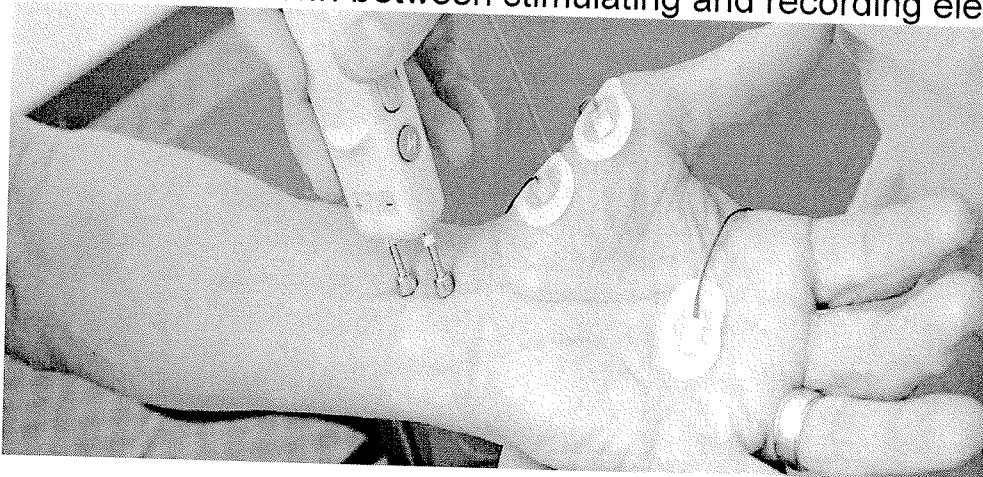
**Active recording electrode** is placed on the center of the muscle belly (over the motor endplate)

Reference electrode (G2) is distally, over the tendon to the muscle

Stimulator: Placed over the nerve that supplies the muscle

Cathode placed closest to the recording electrode

Ground electrode: In between stimulating and recording electrode



### **Normal values for NCS**

Age matched "Normal" values for NCS parameters are either derived from studies of groups of neurologically normal subjects or culled from the literature. Regrettably in the view of the authors the most frequent statistics used are limits of 95% or less frequently 99% confidence limits of a normal group to indicate abnormality of a single parameter.

This approach may mislead as a crude separation between "normal" and "abnormal" dilutes the information whereas a Z score, for example, indicating the separation between a single value and the group mean expressed in SD, may be more informative. Alternatively, (a) a number of electrophysiological parameters may be taken together either as an "index" or "score", or (b) the neurophysiologist assesses a number of parameters together to make a judgement as to whether a clinically relevant numerical abnormality should be emphasised in the report interpretation or not.

There are a number of physical parameters that require correction or allowance for. The most important is temperature. The fastest motor nerve conduction velocity (FMNCV) is reduced by approximately 1 m/s per °C temperature fall. Conventionally, studies are performed as close to a surface recorded temperature of 34 °C. If that is not achieved by adequate heating of the limb, rarely a temperature correction must be applied. Some measures of conduction require correction for limb length or height. Finally nerve conduction data alter with age. The motor conduction slows by 0.4–1.7 m/s per decade after 20 years and the sensory by 2–4 m/s.

### **Precautions:**

Follow general precautions

Failure to get response may be due to defect in stimulating or recording system

Laboratory temperature should be maintained preferably between 21-23° C

## Interpretation of nerve conductions

The interpretation of nerve conduction studies is complex and requires the expertise of health care practitioners such as clinical neurophysiologists, medical neurologists, physical therapists, chiropractic neurologists or physiatrists. In general, different pathological processes result in changes in latencies, motor, and/or sensory amplitudes, or slowing of the conduction velocities to differing degrees. For example, slowing of the NCV usually indicates there is damage to the myelin. Another example, slowing across the wrist for the motor and sensory latencies of the median nerve indicates focal compression of the median nerve at the wrist, called carpal tunnel syndrome. On the other hand, slowing of all nerve conductions in more than one limb indicates generalized diseased nerves, or generalized peripheral neuropathy. People with diabetes mellitus often develop generalized peripheral neuropathy.

### Basic Interpretations

- Amplitude: related to the # of axons in a nerve
- Latency: a marker of time; therefore, most affected by demyelinating processes □ Conduction velocity: speed; can be affected by both axonal loss and demyelination
- Large, fast conducting fibers are lost
- Moderate slowing
- Demyelination
- Marked slowing

The speed of nerve conduction is related to

- Diameter of the nerve and ,
- Degree of myelination
- Normally functioning nerve will transmit a stronger and faster signal than a damaged nerve
- In general the range of normal conduction velocity will be approximately 50-60 meters per second ,however the normal conduction velocity may vary from one individual to another

## **Artifacts and technical errors**

**Temperature** : cooler temperature prolong time of depolarization

Conduction velocity slows between 1.5-2.5m/sec distal latency prolong by 0.2ms for every degree drop in temperature

Higher amplitude and longer duration

Temperature to be maintained between 32-34<sup>0</sup>

**Age** : conduction decrease with age

More prominent after 60 years

Correction factor 0.5-4m/sec for older patient can be used

Sural nerve cannot be elicitable for some

**Height** :Taller individual have slower conduction velocity

Adjustment no more than 2-4m/sec below lower limit of normal

Proximal vs distal : proximal nerve segmen conduct slightly faster than distal

Non physiological factors

Electrical impedance

**Stimulus artifact** :reduced by placement of ground between recording and stimulator

Decrease electrical impedance

Coaxial electrodes

Stimulator directly over nerve

Lower stimulus

Rotate anode while maintaining cathode

Stimulator and recording cables do not overlap

**Cathode position reversed** : theoretical possibility of anodal block

Distal latency prolonged by 0.3 -0.4 ms

Slowing sensory CV by 10m/sec

**Costimulation of adjacent nerves** : can be reduced by

Stimulator directly over the nerve

Watch for abrupt change in waveform change in resultant muscle twitch

Avoid excess current

Corecord muscles simultaneously from adjacent nerves

**Cardinal rules of NCS:** NCS are extension of clinical examination cannot be performed without a good clinical examination

When in doubt always think about a technical factor

When in doubt reexamine the patient

When in doubt do not overcall a diagnosis

Always think about clinical electrophysiological correlation

### **Protocol for evaluating disorders of neuromuscular junction**

warm the extremity

immobilize the muscle as best as possible

perform routine motor nerve conduction studies first to ensure that the nerve is normal

perform RNS at rest. after making sure that the stimulus is supramaximal, perform 3-HZ RNS at rest for 5-10 impulses repeated three times, 1 minute apart. Normally, there is <10% decrement between the first and fourth responses .

if >10% decrement occurs and is consistently reproducible

-have the patient perform maximal voluntary exercise for 10 seconds

Immediately repeat 3- HZ RNS postexercise to demonstrate post exercise facilitation and repair of the decrement

If <10% decrement or no decrement occurs

Have the patient perform maximal voluntary exercise for 1 minute then perform 3HZ RNS IMMEDIATELY AND 1,2,3 AND 4 minutes after exercise to demonstrate postexercise exhaustion

If a significant decrement occurs ,have the patient perform maximum voluntary exercise again for 10 seconds and immediately repeat 3HZ RNS to demonstrate repair of the decrement

Perform RNS on one distal and one proximal motor nerve .always try to study weak muscles

If the compound muscle action potential amplitude is low at baseline,have the patient perform 10 seconds of maximal voluntary exercise, then stimulate the nerve supramaximally immediately postexercise, looking for an abnormal increment(>40% above the baseline)

If the patient exercises for >10 seconds or the nerve is not stimulated immediately post exercise , a potential increment may be missed .

Always perform concentric needle EMG of proximal and distal muscle especially of clinically weak muscles . any muscle with denervation or myotonia on needle EMG may demonstrate a decrement of RNS .in this situation decrement of RNS does not signify a primary disorder of the neuromuscular junction

## **FACTORS AFFECTING NERVE CONDUCTION VELOCITY**

In general

Greater the diameter of a given nerve fibre,the greater is its speed of conduction

In myelinated fibres,the speed of conduction is about 6 times the fibre diameter

In unmyelinated fibres,the speed of conduction is proportional to the square root of the diameter

Age:at birth the nerve conduction velocity is half of adult value it attains adult value by 3-5years decline slowly after 30-40years of age

Temperature: within physiological limit conduction velocity varies directly with temperature

Length of the nerve: an inverse relationship exists between length of the nerve and conduction velocity longer the nerve slower will be the conduction velocity

Myelination myelin thickness is inversely related to intermodal capacitance and conductance. conduction velocity, therefore increased in increase myelin

Diseases: segmental demyelination or during demyelination results in conduction block

In focal compression conduction velocity slows down due to demyelination and decrease in fibre diameter

## PATIENTS RISK AND COMPLICATIONS

Nerve conduction studies are very helpful to diagnose certain diseases of the nerves of the body. The test is not invasive, but can be painful due to the electrical shocks. The shocks are associated with a low amount of electric current so they are not dangerous to anyone. Patients with a permanent pacemaker or other such implanted stimulators such as deep brain stimulators or spinal cord stimulators must tell the examiner prior to the study. This does not prevent the study, but special precautions are taken.

Cardiac pacemakers and implanted cardiac defibrillators (ICDs) are used increasingly in clinical practice, and no evidence exists indicating that performing routine electrodiagnostic studies on patients with these devices pose a safety hazard. However, there are theoretical concerns that electrical impulses of nerve conduction studies (NCS) could be erroneously sensed by devices and result in unintended inhibition or triggering of output or reprogramming of the device. In general, the closer the stimulation site is to the pacemaker and pacing leads, the greater the chance for inducing a voltage of sufficient amplitude to inhibit the pacemaker. Despite such concerns, no immediate or delayed adverse effects have been reported with routine NCS.

No known contraindications exist from performing needle EMG or NCS on pregnant patients. In addition, no complications from these procedures have been reported in the literature. Evoked potential testing, likewise, has not been reported to cause any problems when it is performed during pregnancy.

**Summary and recommendations:**

- Easily tolerated, safe
- Must be consistent in technique
- Intralab normal values
- Monitor for technical issues
- Very sensitive to axonal loss
- Very specific for demyelinating diseases

Annexure 2

Bharath Institute of Higher Education and Research SLIMS

**List of Students Enrolled**

Participant list of Value added course: certificate course on nerve conduction study and its application

Sl.No	Reg.No	Name of the candidate	Signature
1	U18MB381	SUHAIL AHMAD	Suhail Ahmad
2	U18MB382	SUMAN KALYAN SAHOO	Suman Kalyan Sahoo
3	U18MB383	SUSMITA KHAN	Susmita Khan
4	U18MB384	SWAPNIL	Swapnil
5	U18MB385	SWARNAB JANA	Swarnab Jana
6	U18MB386	SWATHI .K	Swathi .K
7	U18MB387	TADAR YAMING	Tadar Yaming
8	U18MB388	TECHI NADAM	Techi Nadam
9	U18MB389	THENDRAL NILAVAN .M	Thendral Nilavan .M
10	U18MB390	TINA CAROLINE J	Tina Caroline J
11	U18MB391	URVASHI PAL	U. Pal
12	U18MB392	VAISHNAVI TRIPATHI	V. Tripathi
13	U18MB393	VARSHITHA .N	Varshitha .N
14	U18MB394	VIKAASH .M	Vikaash .M
15	U18MB395	VIKAS SHORAN	V. Shoran
16	U18MB396	VIKRANT SINGH	Vikrant Singh
17	U18MB397	K. C VINITHA	K. C. Vinitha
18	U18MB398	VISWAS ANIL	Viswas Anil
19	U18MB399	WARADKAR ANJUSHA DEEPAK	W.A. Deepak
20	U18MB400	YASHWANTH NAIK R	Yashwanth Naik R

### Annexure 3

9  
12

#### MCQS

1. For sensory conduction studies, the gain is usually set at:

- A. 1  $\mu\text{V}$
- B. 20  $\mu\text{V}$
- C. 100  $\mu\text{V}$
- D. 200  $\mu\text{V}$

2. The following statements are correct except:

- A. The recording electrodes are placed in line over the nerve with an interelectrode distance of 3 to 4 cm
- B. Most sensory nerves require a current in the range of 5 to 30 mA to achieve supramaximal stimulation
- C. Sensory nerves require a higher threshold for stimulation than do motor fibers
- D. In sensory studies, a conduction velocity can be calculated using one stimulation site alone

3. Antidromic recording of sensory nerves is superior to orthodromic technique because:

- A. Amplitude is higher using antidromic stimulation
- B. The electrodes are closer to the nerve
- C. It is less subject to noise or other artifact
- D. The entire nerve is stimulated including the motor fibers

4. Myelinated fibers conduct at a velocity of approximately:

- A. 100 m/s
- B. 65 m/s
- C. 30 m/s
- D. 10 m/s

5. Demyelination is associated with:

- A. Marked slowing of conduction velocity (slower than 85% of the lower limit of normal)

B. Marked prolongation of distal latency (longer than 110% of upper limit of normal)

C. Low compound motor action potential (CMAP) amplitude

D. Drop in amplitude in proximal stimulation compared to the distal stimulation

**6. Routine nerve conduction studies are normal in \_\_\_\_\_% of patients with clinical symptoms and signs of carpal tunnel syndrome.**

A. 5%

B. 20%

C. 30%

D. 40%

**7. Carpal tunnel syndrome electrodiagnostic studies usually show (see A. Higher amplitude of median CMAP compared to ulnar nerve**

B. The median nerve orthodromic absolute onset sensory latency is delayed by  $>3.7$  ms

C. The median nerve orthodromic sensory latency is delayed by  $>2.0$  ms compared to the ulnar nerve sensory distal latency

D. The median nerve orthodromic sensory latency is delayed by  $>0.2$  ms compared to the ulnar nerve sensory distal latency

**8. Median- versus ulnar-comparison tests are good tests to confirm carpal tunnel syndrome for the following reasons except:**

A. They create an ideal internal control

B. Distance is different

C. Temperature is constant

D. Nerve fiber size is constant

**9. Median- versus ulnar-sensory nerve short latency midpalmar study comparison test is abnormal if the median latency is delayed by more than \_\_\_\_\_ the ulnar latency.**

A. 0.1 ms

B. 0.2 ms

C. 0.3 ms

D. 0.4 ms

**10. In a patient with right foot pain, a sural and plantar sensory response is unmeasurable. The lesion can be present in the following except:**

A. Tarsal tunnel syndrome

B. Sciatic lesion

C. Lumbosacral plexus lesion

D. Peripheral neuropathy

**11. All of the following statements are correct except:**

A. Orthodromic stimulation of the plantar sensory nerve produce a small amplitude response

B. Bilateral absent plantar sensory responses in middle aged or older individuals have no significance

C. In suspected tarsal tunnel syndrome, one side abnormal plantar response is diagnostic of tarsal tunnel syndrome

D. Medial and lateral plantar sensory potentials are unobtainable even in healthy subjects

**12. Small fiber peripheral neuropathy is seen in all of the following conditions except:**

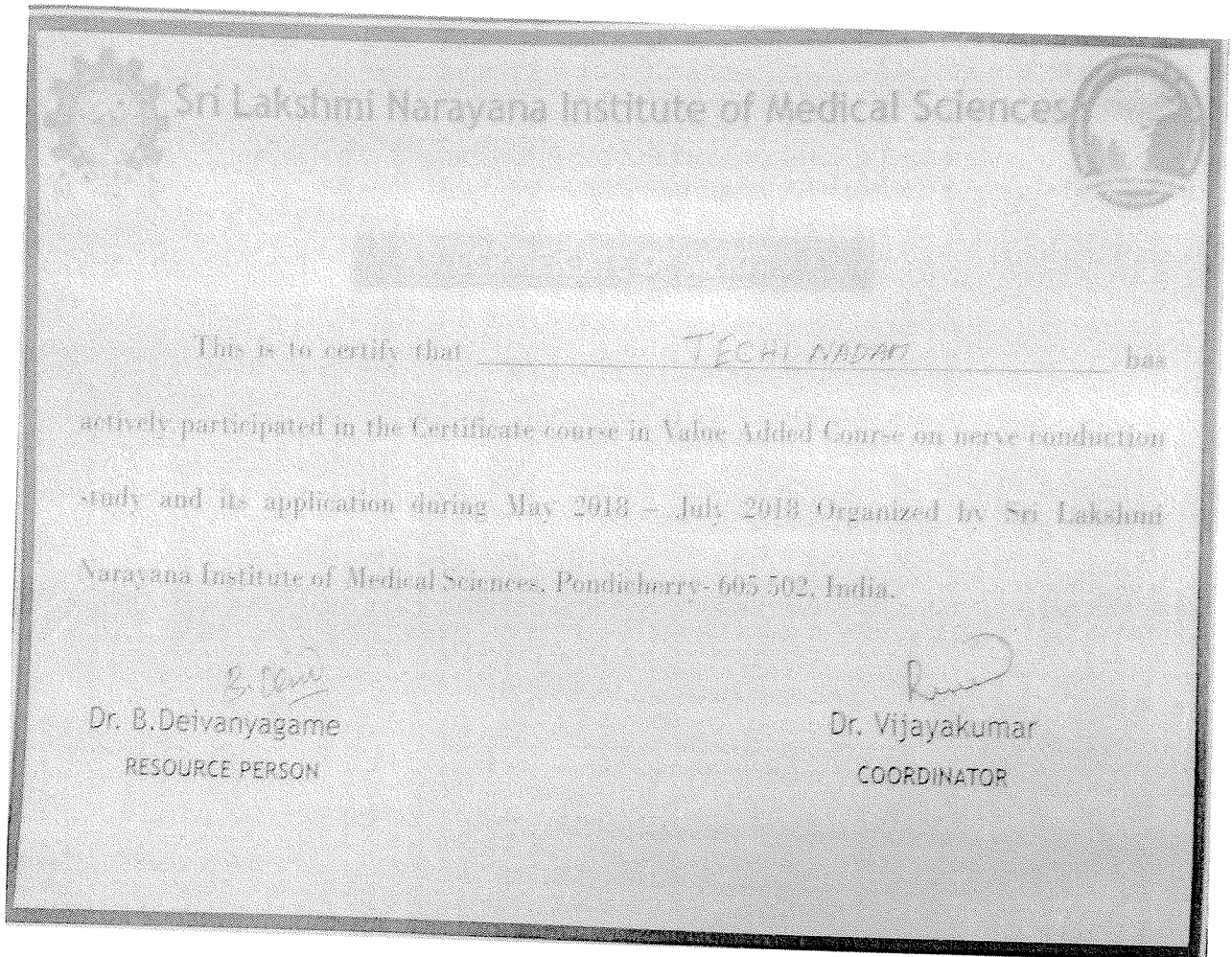
A. Diabetes

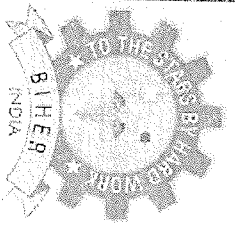
B. Fabry disease

C. Diphtheria

D. Tangier disease

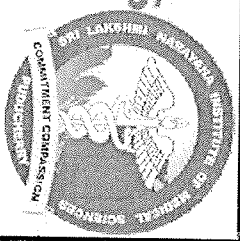
**Annexure 4**





# Sri Lakshmi Narayana Institute of Medical Sciences

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## CERTIFICATE OF MERIT

This is to certify that TECHI NADAN has

actively participated in the Certificate course in Value Added Course on nerve conduction study and its application during May 2018 – July 2018 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr. B. Deivanyagame

RESOURCE PERSON

Dr. Vijayakumar

COORDINATOR

Annexure 5

**Course/Training Feedback Form**

Course: Certificate Course on nerve Conduction Study & Its Application  
Date: URVASHI PAZ  
Name:  
Reg NO. V18MB391  
Department: physiology

Q 1: Please rate your overall satisfaction with the format of the course:

a. Excellent    b. Very Good    c. Satisfactory    d. unsatisfactory

Q 2: Please rate course notes:

a. Excellent    b. Very Good     c. Satisfactory    d. unsatisfactory

Q 3: The lecture sequence was well planned

a. Excellent     b. Very Good    c. Satisfactory    d. unsatisfactory

Q 4: The lectures were clear and easy to understand

a. Excellent    b. Very Good    c. Satisfactory    d. unsatisfactory

Q 5: Please rate the quality of pre-course administration and information:

a. Excellent     b. Very Good    c. Satisfactory    d. unsatisfactory

Q 6: Any other suggestions:

Comments: Course was really useful,  
we want to attend similar courses like this in the future

Thank you for taking the time to complete this survey, your comments are much appreciated.

OPTIONAL Section: Name URVASHI PAZ  
Signature Ushika Date \_\_\_\_\_

**COURSE COMPLETION LETTER**

Date 10.07.2018

From  
B.Deivanayagame,  
Department of physiology,  
SLIMS  
Bharath Institute of Higher Education and Research,  
Chennai.

Through Proper Channel

To  
The Dean,  
SLIMS  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Completion of value-added course: certificate course on nerve conduction study and its application**

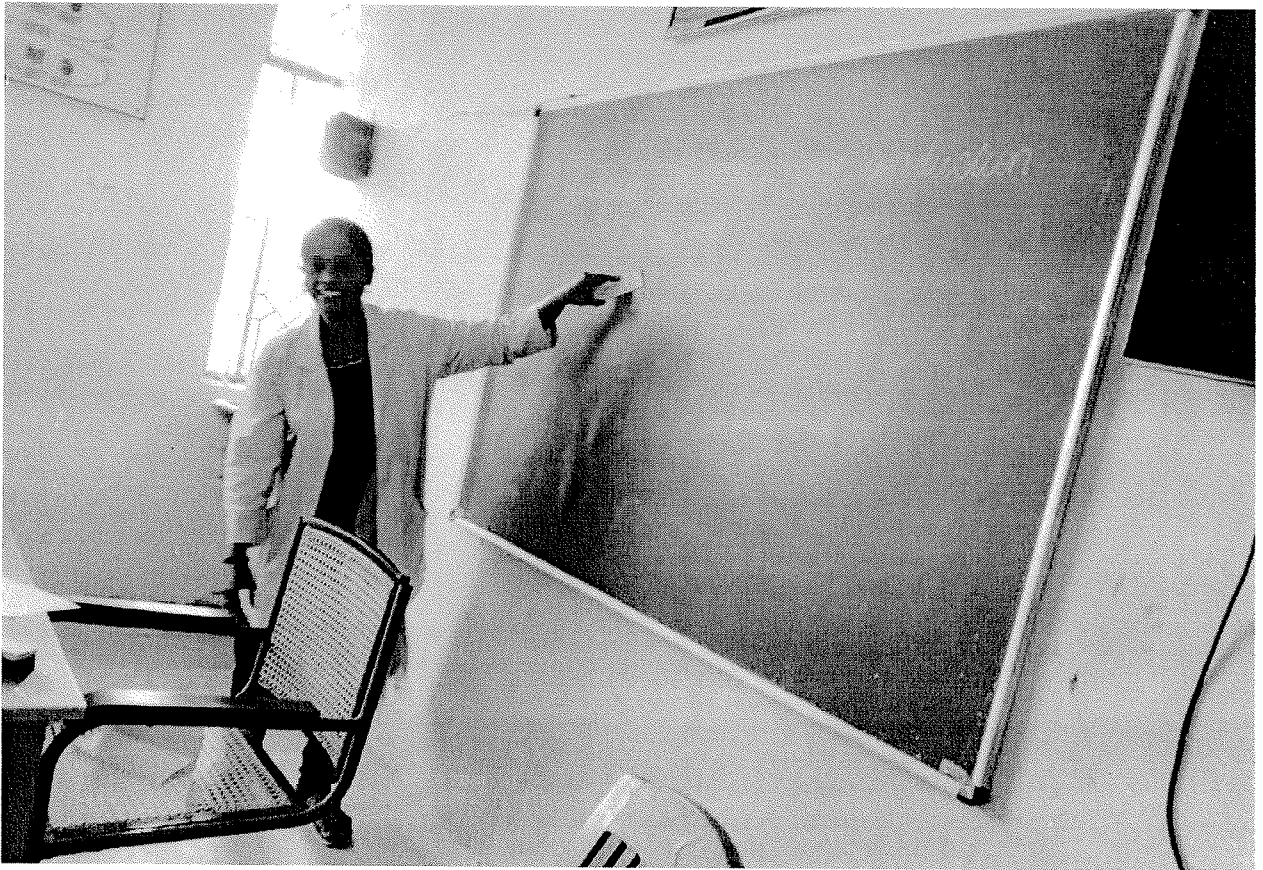
Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: **\_ certificate course on nerve conduction study and its application** on 08.07.2018 .We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.  
Kind Regards

Dr.B.Deivanayagame

**Encl: Photographs**

PHOTO





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Date :07.04.2018

From  
DR. Vijayaragavan,  
Associate Professor and Head,  
Department of orthopaedics,  
SLIMS,  
Bharath Institute of Higher Education and Research,  
Pondicherry.

To  
The Dean,  
SLIMS,  
Bharath Institute of Higher Education and Research,  
Pondicherry.

**Sub: Permission to conduct value-added course:Examination of hip joint.**

Respected Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled:  
**Examination of hip joint** on 25.05.2018. We solicit your kind permission for the same.

Kind Regards

Dr. R. VIJAYARAGAVAN, DNB,  
Reg. No 68472  
Asso Professor Orthopaedics  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502

DR. Vijayaragavan

---

FOR THE USE OF DEANS OFFICE

Names of Committee members for evaluating the course:

The Dean:DR.Jayalakshmi

The HOD:DR.Vijayaragavan

The Expert:Dr.Boblee james



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The committee has discussed about the course and is approved.

Dean

Dr. G. JAYALAKSHMI, BSC, MBBS, DTCO, M.D.,  
DEAN  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agaram Kudapakkam, Post,  
Villanur Commune Puducherry-605 502.

Subject Expert

Department of Orthopaedics  
Sri Lakshmi Narayana Institute of Medical Sciences  
Pudicherry - 605 502.

HOD

Dr. R. VIJAYA RAGAVAN, DNB, |  
Reg No 68472  
Asso Professor Orthopaedics  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502



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## Circular

07.06.2020

**Sub: Organising Value-added Course: EXAMINATION OF HIP JOINT**

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research** is organizing **EXAMINATION OF HIP JOINT.30 HRS& MAY18-AUG18**

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before MAY18-AUG18. Applications received after the mentioned date shall not be entertained under any circumstances.

**Dean**

Dr. G. JAYALAKSHMI, BSC., MBBS., DTCO., M.D.,  
DEAN  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Ageram Kudapakam, Post,  
Villanur Commune Puducherry-605 502.





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### **VALUE ADDED COURSE**

**1. Name of the programme & Code**

Examination of HIP JOINT – OR08

**2. Duration & Period**

30 hrs & may 2018 – august 2018

**3. Information Brochure and Course Content of Value Added Courses**

*Enclosed as Annexure- I*

**4. List of students enrolled**

*Enclosed as Annexure- II*

**5. Assessment procedures:**

Multiple choice questions- *Enclosed as Annexure- III*

**6. Certificate model**

*Enclosed as Annexure- IV*

**7. No. of times offered during the same year:**

1 MAY 2018– AUGUST 2018

**8. Year of discontinuation: 2019**

**9. Summary report of each program year-wise**



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Value Added Course- MAY- AUG 2018					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	OR08	EXAMINATION OF HIP JOINT	Dr. Vijayaragavan	THIRD YEAR <sup>t</sup> MBBS	24 (MAY 2018 – AUG 18)

## 10. Course Feed Back *Enclosed as Annexure- V*

**RESOURCE PERSON**  
**DR.VIJAYARAGAVAN**

Dr. R. VIJAYA RAGAVAN, DNB.,  
Reg No 68472  
Asso Professor Orthopaedics  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502

**COORDINATOR**  
**DR.JAYALAKSHMI**

Dr. G. JAYALAKSHMI, BSC, MBBS, DTCO, M.D.,  
DEAN  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agaram Kudapakkam, Post,  
Villianur Commune Puducherry-605 502.



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### **EXAMINATION OF HIP JOINT**

**25/05/2018**

### **EVALUATION OF HIP JOINT**

<b>Particulars</b>	<b>Description</b>
Course Title	EXAMINATION OF HIP JOINT
Course Code	OR08
Objective	<ul style="list-style-type: none"><li>•HISTORY</li><li>•GAIT</li><li>•LOCAL EXAMINATION</li></ul>



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	•SPECIAL TESTS
Further learning opportunities	<b>To examine other joints</b>
Key Competencies	On successful completion of the course the students will have skill to examine hip joint
Target Student	Pre final yearStudents
Duration	30hrs MAY 18- AUGUST 2018
Theory Session	10hrs
Practical Session	20hrs
Assessment Procedure	Short notes

### HISTORY:

#### CHIEF COMPLAINTS

1. PAIN

2. SWELLING :

3. DEFORMITIES

4. STIFFNESS

5. LIMP

#### PAST HISTORY:

•TRAUMA

•TB

•MEDICAL DISORDERS

•NEUROLOGICAL DISORDERS

•SURGERIES AROUND HIP



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### **GAIT:**

**Normal gait is rhythmical bipedal biphasic walking in which the lumbar spine, hip and legs move in unison.**

**Limping is the most common abnormality, can be defined as abnormality of rhythmical normal biphasic walking.**

### **TYPES OF ABNORMAL GAIT:**

- Antalgic gait
- Trendelenburg gait
- Waddling gait
- Circumduction gait
- Gluteus Maximus gait
- High stepping Gait

### **ANTALGIC GAIT:**

- In painful condition,  
patient walks with  
reduced stance phase  
on affected side

### **TRENDELENBERG GAIT:**

**Trendelenburg gait pattern  
(or gluteus medius lurch) is an**



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**abnormal gait (as with walking)**

**caused by weakness of the**

**abductor muscles of the lower**

**limb, gluteus medius and gluteus**

**minimus.**

### **WADDLING GAIT**

**•Both abductors of hip**

**paralyzed**

**•The patient bends his**

**trunk towards the stance**

**phase**

### **CIRCUMDUCTION GAIT:**

**• Patient rotates the hip sideways**

**during swing phase due to hip**

**flexor tightness**

**•Absence of heel strike**

### **GLUTEUS MAXIMUS GAIT:**

**• If paralyzed, posterior tilting.**

**• Centre Of Gravity shifts towards to**

**stance hip.**



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- So while walking, forward and

backward movement of the trunk

occurs is called as 'rocking horse

gait

HIGH STEPPING GAIT

- High stepping (Neuropathic gait) is a form of gait abnormality characterised by foot drop due to loss of dorsiflexion. The foot hangs with the toes pointing down, causing the toes to scrape the ground while walking.

**LOCAL EXAMINATION**

- INSPECTION
- PALPATION
- MEASUREMENT
- MOVEMENT

**INSPECTION:**

**STANDING: FRONT**

- PELVIC TILTING
- MUSCLE WASTING
- DEFORMITY

**SIDE :**



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LORDOSIS

**BACK:**

- SCOLIOSIS
- GLUTEAL MUSCLE

WASTING

- SINUS SCARS

**ATTITUDE:Fracture of the neck**

**of the femur:**

Elderly patient lying

on the bed with externally

Rotated, lower limb

**Anterior dislocation**

**of the hip:**

Young patient lying with

externally rotated, slightly

abducted and

Flexed lower limb

**Posterior dislocation**

**of the hip:**

Young patient with flexed,

adducted and

Internally rotated lower limb

**PALPATION**



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- LOCAL RISE OF TEMPERATURE
- JOINT TENDERNESS
- FEMORAL PULSE
- SWELLING EXAMINATION

### **FEMORAL PULSE EXAMINATION**

- In congenital dislocation, the head of the femur is dislocated and this bony support is missing.
- So there will be great difficulty in feeling femoral artery.
- This is known as 'Vascular sign' of Narath

### **MOVEMENTS:**

#### **FLEXION**

- With the knee extended up to 90°
- With the bent knee the hip joint can be flexed up to 120°

#### **EXTENSION**

Up to 30

#### **ABDUCTION**

(0-40°)

#### **ADDUCTION**

(0-30°)

### **ROTATIONAL MOVEMENTS**



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INTERNAL ROTATION

(UPTO 30°)

EXTERNAL ROTATION

(UPTO 45°)

LIMB LENGTH

- APPARENT LIMB LENGTH

- Measured from

xiphisternum or umbilicus

to medial malleolus

- TRUE LENGTH

- Measured from ASIS TO

medial malleolus

INTERPRETATION:

TRUE SHORTENING =

APPARENT SHORTENING=NO COMPENSATION

TRUE SHORTENING >

APPARENT SHORTENING=DEFORMITY IS

COMPENSATED BY

PELVIS TILT

TRUE SHORTENING <

APPARENT SHORTENING=FIXED DEFORMITY

WITHOUT ANY

COMPENSATION



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### SPECIAL TESTS

#### THOMAS TEST

- This test is used to diagnose fixed flexion deformity of the hip.
- The examiner blocks the pelvis by bringing the contralateral sound hip into maximal flexion.
- This eliminates lumbar lordosis that can be used to compensate for the hip flexion contracture of the affected hip.
- The leg to be examined is then brought into maximal extension with the hip in neutral adduction and rotation.

#### TRENDELENBERG TEST

- This test examine the strength of the abductor mechanism of the hip.
- Normally, in a one legged stance, the pelvis is raised up on the unsupported side. If the weight bearing hip is unstable, the pelvis drops on the unsupported side, to avoid falling the patient has to throw his or her



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body towards the loaded side.

- The patient stands on the unaffected lower

limb first, the buttock on the affected side

automatically rises. Next the patient stands

on the affected side, the pelvis on the

opposite (normal) side sinks as shown by

gluteal folds and iliac crest..

- It indicates a defect in the Osseo-muscular mechanism between the pelvis and the femur.

Causes for positive TRENDELENBERG TEST are

1. Weak abductors as in poliomyelitis, muscle dystrophies , MND
2. Congenital or Pathological dislocation of hip
3. Fracture neck of femur,
4. Coxa vara
5. Perthes' disease
6. Arthritis of hip joint.

BRYANT'S TRIANGLE.

- The patient lies in the dorsal position.

- A line is drawn vertically downwards from the ASIS.

- Another from the tip of the same spine to the tip of the



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greater trochanter and lastly a

horizontal line is drawn from

the tip of the greater

trochanter to the first line.

### INTERPRETATION OF BRYANTS TRIANGLE

- Diminution in the length of the last line or

the horizontal line in comparison to the

other side denotes an upward elevation

of the greater trochanter, the commonest

cause of which being the transcervical or

subcapital fracture of the neck of the

femur or separation of the upper femoral

epiphysis.

- Diminution or increase in the length of

the second line indicates the anterior or

posterior displacement of the greater

trochanter accordingly

### NELATONS LINE

- The patient lies on his sound

side. A line is drawn or a

measuring tape is placed from

the most prominent part of the

ischial tuberosity to the tip of



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the ASIS.

- Normally, this line touches the tip of the greater trochanter and upward displaced of trochanter can be easily demonstrated.

### SCHOEMAKER'S LINE

- The line from the tip of greater trochanter to the anterior superior iliac spine prolonged anteriorly will reach the umbilicus of the patient.

This is called Schoemaker's line.

- If the greater trochanter is elevated the line will cross the midline below the umbilicus.

### CHIENE'S TEST

- A tape joining the tips of the greater trochanters is parallel to another joining the two anterior superior iliac spines.
- When a trochanter is raised, these two lines converge towards the affected side.

### Morris 'BiTrochanteric Test

It measures the distance between the GT and pubic symphysis on both sides

Reduced in hip dislocations



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### OTHER EXAMINATION

- LYMPH NODES— Palpation of lymph nodes in inflammatory conditions
- OTHER JOINTS like lumbosacral spine, sacroiliac joints, knee joints..
- PER RECTAL EXAMINATION

Done in tuberculous arthritis if an intrapelvic abscess is suspected



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## VALUE ADDED COURSE

EXAMINATION OF HIP JOINT  
OR08

### 4. List of Students Enrolled MAY 2018 – AUG- 2018

1 <sup>st</sup> Year MBBS Student			
Sl. No	Name of the Student	Roll No	sign
1	AARTHA.A	U16MB251	Aarthi
2	ABILASHA.K	U16MB252	Abilasha
3	ABITHA RAJLIN J.S	U16MB253	J.S.R
4	ADAPALA PRIYANKA	U16MB254	Priyanka
5	ADHITHAYA RAJ .N	U16MB255	Adarsh
6	AJAY .N	U16MB256	Ajay
7	AKSHYA .R	U16MB257	Akshya
8	ALLARI KARTHIK ABHIROOP	U16MB258	AKBI
9	AMAL ASHOK	U16MB259	Amal
10	AMIRTHAVARSHNI .R	U16MB260	Vanshika
11	ANANYA SHARMA	U16MB261	Ananya
12	ANGALAKUDURU DEEPCHAND	U16MB262	Deepak
13	ANJAN BANERJEE	U16MB263	Anjan
14	ANWESHA CHATTERJEE	U16MB264	Anwesha
15	ARCHANA .A	U16MB265	Archana
16	ARCHITHA.A	U16MB266	A.I
17	ARIVUMATHI .R	U16MB267	P.A
18	ARJUN.S	U16MB268	Arjun
19	ASHVANTH KUMAR .A	U16MB269	Ashwanta
20	ASMITHA S.V	U16MB270	S.V
21	AVIDI VENKATA SAISUSHMA	U16MB271	Sushma
22	AVIRAL PATPATIA	U16MB272	Aviral

RESOURCE PERSON

DR.VIJAYARAGAVAN

COORDINATOR

DR.JAYALAKSHMI

Dr. R. VIJAYA RAGAVAN, DNB, |  
Reg No 68472  
Asso Professor Orthopaedics  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502

Dr. G. JAYALAKSHMI, BSC, MBBS, DTCO, M.D.,  
DEAN  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Agaram Kudapakkam, Post,  
Villanur Commune Puducherry-605 502.



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[ Affiliated to Bharath University, Chennai - TN ]

## Course/Training Feedback Form

Course: examination of hip joint  
Date: 22/8/18  
Name: balaji.s  
Reg NO.  
Department: ORTHO

Q 1: Please rate your overall satisfaction with the format of the course:

a. Excellent  b. Very Good  c. Satisfactory  d. unsatisfactory

Q 2: Please rate course notes:

a. Excellent  b. Very Good  c. Satisfactory  d. unsatisfactory

Q 3: The lecture sequence was well planned

a. Excellent  b. Very Good  c. Satisfactory  d. unsatisfactory

Q 4: The lectures were clear and easy to understand

a. Excellent  b. Very Good  c. Satisfactory  d. unsatisfactory

Q 5: Please rate the quality of pre-course administration and information:

a. Excellent  b. Very Good  c. Satisfactory  d. unsatisfactory

Q 6: Any other suggestions:

Comments:

Thank you for taking the time to complete this survey, your comments are much appreciated.

OPTIONAL Section: Name \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_



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Cherni's Test  $\rightarrow$  take joining pts of greater trochanter & parallel to another joining the two ASIS

Length of lower limb  $\rightarrow$  Measured from ASIS to medial malleolus

---

### Special Test of Hip Joint

#### TRENDELENBERG'S TEST

$\rightarrow$  Tests the abductor mechanism of the hip & does the stability of hip

$\rightarrow$  Principle: When a person stands on two legs the body weight is distributed equally on both lower limbs. But when the person chooses to stand only on one leg, automatically the lower limb to align the whole body wt of the trunk

$\rightarrow$  Procedure: i) Ask pt to stand on floor, stand behind pt.  
ii) Ask pt to stand on one leg of normal side  
iii) Then on affected side

iv) Pathetic Trendelenburg: On normally standing & pathological side leg Non affected side's hemipelvis is not elevated



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Movements & Measurements of Hip Joint.

## MOVEMENT :

i) Flexion - Extension : Normal  $\rightarrow 0^\circ$  to  $130^\circ$  -  $0^\circ$  to  $15^\circ$   
Thomas test for Fixed Flexion deformity of hip.

ii) Abduction - Adduction : Normal  $\rightarrow 0^\circ$  to  $45^\circ$  -  $0^\circ$  to  $35^\circ$ .



Test for Fixed Abduction/Adduction deformity  
Abducts in flexion of hip

iii) External - Internal Rotation : Normal  $0^\circ$  to  $40^\circ$  -  $0^\circ$  to  $30^\circ$ .

Rotation  $\hat{c}$  hip extended  
Rotation  $\hat{c}$  hip flexed  
Rotation in prone.

## MEASUREMENT :

i) Bryant's Triangle : Check for: Transcervical/Subscapular  $\hat{c}$  neck of femur  
separation of upper femoral epiphyses

ii) Nelaton's line : Check for: Upward displacement of Trochanter

iii) Shoemaker's line : The line from AS greater trochanter to ASIS if prolonged and, reaches midline of ht.

iv) Morris Bi Trochanter line : Medial or lat displacement of Trochanter



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### c. Palpation of Bony Landmarks :

→ Greater trochanter : Size, shape, surface, level, tenderness, transmitted movement

→ ASIS : Level, tenderness

→ Ischial tuberosity : Pt in lat position, side to be examined facing upwards, hips & knees flexed @ 90°.

Palpated as bony hard prominence mid way b/w half border of trochanter & lower sacrum and coccyx, at the level of "gluteal fold".

→ Iliac crest : Position, defect, tenderness

→ PSIS : Level, tenderness (line from border)

### d. soft tissue palpation

→ Adductor muscle roll test : Pt supine, standing on affected side of knee, gently roll thigh  
• distal hand, medially of laterally, by palpate muscle  
• proximal hand

→ femoral pulse

→ Inguinal lymph node

→ Iliac fossa

→ Gluteal region

→ Sacral font



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PALPATION OF HIP JOINT

a. Temperature -  
i) Palpate  $\approx$  dorsum of fingers of dom. hand  
ii) Note, compare & comment on the temperature of over the femoral triangle  
iii) Order - first on normal side, then on affected (pathological) side finally again a normal side

b. Tenderness - Look at patient's face, & palpate -  
i) Ant. Iliac Point (Direct) - 1.5 cm below & lateral to Mid inguinal point.  
ie Mid point of dist b/w ASIS & Symphysis Pubis, just beneath femoral Artery Pulsation  
ii) Morris Bi Trochanteric - Pl. supine, Place both hand over both trochanters, so that base of hand were contact  $\approx$  centre of the trochanteric prominence

Tenderness seen in -  
# Central dislocation  
# Acetabulum  
# Femoral neck, Trochanter  
Trochanteric bursa  
TB hip  
AVN  
Pituitary disease



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①

Q1 Inspection of Hip Joint  
Q2 Palpation of Hip Joint  
Q3 Measurements & Movements of Hip Joint.  
Q4 ~~etc~~ special tests for Hip Joint.

---

ANSWERS

①

① INSPECTION OF HIP JOINT

a) With Patient Standing -

i) from front - Level of shoulders; Anterior Superior Iliac spine  
+ Iliac fossa + groin fold; Patella; foot

ii) from Side - Lumbar Lordosis; Abnormal protrusion of abdomen/buttocks; supra+infra trochanteric depression

iii) from Back - Scapula; Central furrow over spine (scoliosis)  
Posterior Superior Iliac spine (Dimple of Venus);  
Iliac fold + Popliteal fossa + Heels.

b) With patient sitting : significance of scoliosis from the back

c) With patient sitting : Attitude of lower limb of Pelvis, shortening of lower limb.

d) With patient prone : for patients who cannot stand for ~~para~~ bed sores

+ GAIT.      ✓

16  
—  
20



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Cause of Positive Trendelenburg sign

i) Gluteus medius failure

ii) Lumbar spine failure

iii) Abductor muscle failure

iv) Painful hip

④



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(Deemed to be University under section 3 of the UGC Act 1956)



### CERTIFICATE OF MERIT

This is to certify that BALAJI.S has actively participated in the Value Added Course on *examination of hip joint* held during MAY 2018 – AUG 2018 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr. Vijayaragavan  
RESOURCE PERSON

Dr. Jayalakshmi  
COORDINATOR



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era

## Student Feedback Form

Course Name: Examination of hip joint

Subject Code: OR08

Name of Student: Arjun S. Roll No.: U15MB268

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					/
2	Course contents met with your expectations					/
3	Lecturer sequence was well planned					/
4	Lectures were clear and easy to understand					/
5	Teaching aids were effective					/
6	Instructors encourage interaction and were helpful					/
7	The level of the course					/
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Date: 22/8/18

Arjun S.  
Signature



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[ Affiliated to Bharath University, Chennai - TN ]

Date:22.08.2018

From  
DR. Vijayaragavan,  
Department of orthopaedics,  
SLIMS,  
Bharath Institute of Higher Education and Research,  
Pondicherry.

Through Proper Channel

To  
The Dean,  
SLIMS,  
Bharath Institute of Higher Education and Research,  
Pondicherry.

## Sub: Completion of value-added course: Examination of hip joint

Respected Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: **Examination of hip joint** on 22.08.2018. We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards

DR. VIJAYARAGAVAN

Dr. R. VIJAYA RAGAVAN, DNB, |  
Reg No 68472  
Asso Professor Orthopaedics  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502

Encl: Certificates

Photographs



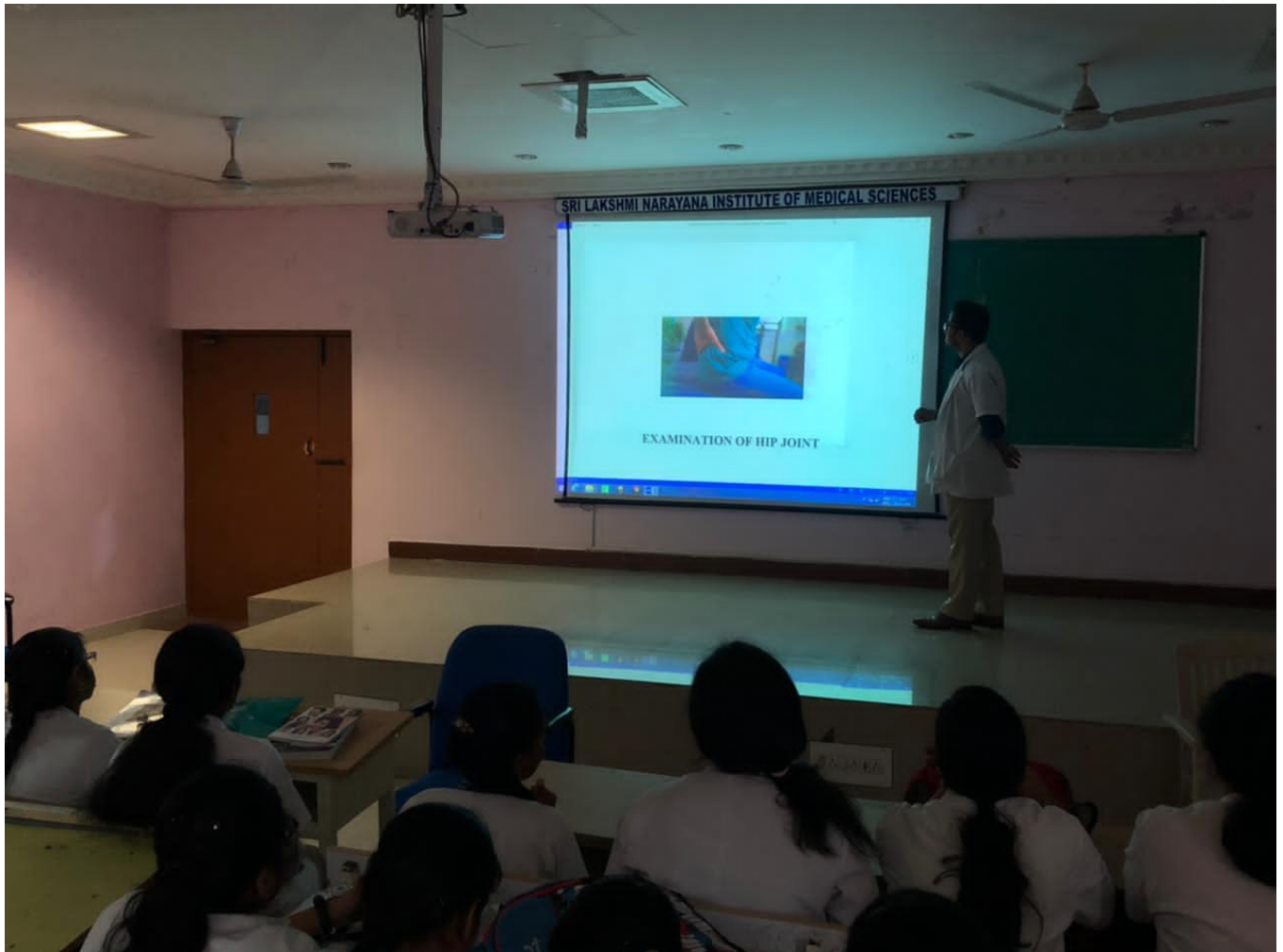
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SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES



OSUDU, AGARAM VILLAGE, KUDAPAKKAM POST, PUDUCHERRY-605502.

Date 30.5.18

From  
DR. BALAJI SUBRAMANIYAN,  
Professor and Head,  
DENTISTRY,  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
Bharath Institute of Higher Education and Research,  
Chennai.

To  
The Dean,  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Permission to conduct value-added course: FULL MOUTH REHABILITATION**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: **FULL MOUTH REHABILITATION** on 3.6.18. We solicit your kind permission for the same.

Kind Regards

DR. BALAJI SUBRAMANIYAN

---

**FOR THE USE OF DEANS OFFICE**

Names of Committee members for evaluating the course:

The Dean: DR. SUGUMARAN

The HOD: DR. BALAJI SUBRAMANIYAN

The Expert: DR. AMUTHAVALLI.V

The committee has discussed about the course and is approved.

Dean  
**DEAN**

Dr. Subject Expert

Reg. No. 0740

Asst. Prof. (Dental)

Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502

**HOD**  
**DEPARTMENT OF DENTISTRY**

Sri Lakshmi Narayana Institute of Medical Sciences  
PONDICHERRY - 605 502

SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
OSUDU, AGARAM VILLAGE,  
KODAPAKKAM POST,  
PUDUCHERRY - 605 502





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**Circular**

1.6.18

**Sub: Organising Value-added Course: FULL MOUTH REHABILITATION reg**

With reference to the above mentioned subject, it is to bring to your notice that SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES, **Bharath Institute of Higher Education and Research**, is organising “**FULL MOUTH REHABILITATION**”. The course content and registration form is enclosed below.”

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before 2.6.18. Applications received after the mentioned date shall not be entertained under any circumstances.

**DEAN**  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
OSUDU, AGARAM VILLAGE,  
KUDAPAKKAM POST,  
PUDUCHERRY - 605 502

Dean

Encl: Copy of Course content and Registration form.







## ABSTRACT

Restoration of occlusion in patients with severely worn dentition is a challenging situation as every case is unique in itself. There is great apprehension involved in reconstructing debilitated dentition due to widely divergent views concerning the choice of an appropriate occlusal scheme for successful full mouth rehabilitation. This article is an overview of the various occlusal concepts/philosophies in full mouth rehabilitation which will help the clinician select an appropriate occlusal scheme for an individual case.

The objective of full mouth rehabilitation is not only the reconstruction and restoration of the worn out dentition, but also maintenance of the health of the entire stomato gnathic system. Full mouth rehabilitation should re-establish a state of functional as well as biological efficiency where teeth and their periodontal structures, the muscles of mastication, and the temporomandibular joint (TMJ) mechanisms all function together in synchronous harmony. Proper evaluation followed by definitive diagnosis is mandatory as the aetiology of severe occlusal tooth wear is multifactorial and variable. Careful assessment of the patient's diet, eating habits and/or gastric disorders, along with the present state of occlusion is essential for appropriate treatment planning. Various classifications have been proposed to classify patients requiring full mouth rehabilitation, however, the classification most widely adopted is the one given by Turner and Missirlian. According to them, patients with occlusal wear can be broadly classified as follows: Excessive wear with loss of vertical dimension of occlusion (VDO) The patient closest speaking space is more than 1 mm.



## FULL MOUTH REHABILITATION

Occlusion is a factor that is common to all branches of dentistry. It is a term generally accepted to describe the contact relationship of the upper and lower teeth. Teeth whether natural or artificial are not immobile; so occlusion can never be considered a purely static relationship. Natural teeth move in their socket and change perceptibly from day to day. They move under load into their sockets and return to position when the load is removed. Artificial occlusion discloses even more apparent movement, since the teeth move as a group on a common base because of the nature of the supporting structures.

There are numerous concepts, techniques and philosophies concerning complete denture occlusion. Keeping abreast with the changes in this area is a challenging task. Some prosthodontists believe that there should be cusps on the artificial teeth and that they must be in harmony with the dynamics of mandibular functions. Other prosthodontists think that the artificial teeth should not have cusps because they create forces that are difficult to control. <sup>1</sup>

## THEORIES AND CONCEPTS

**Occlusion** according to glossary of prosthodontic terms 8<sup>th</sup> ed, is defined as “the static relationship between the incising and masticating surfaces of the maxillary or mandibular teeth or teeth analogues.”<sup>2</sup>

**Articulation** is another terminology that deals with occlusion. It is the dynamic relationship or relationship in function of the maxillary and mandibular teeth.

Occlusion of natural and artificial teeth varies to a great extent. It is important for one to know about these differences in order to understand the need of balanced occlusion in a complete denture.

The first description of occlusal relationship of the teeth was made by Edward Angle in 1899. Occlusion became a topic of interest and much discussion in the early years of dentistry as the restorability and replacement of teeth became more feasible. The first significant concept developed to describe optimum functional occlusion was called balanced occlusion.

The primary components of human dental occlusion are

- (1) The dentition,
- (2) The neuromuscular system, and

### (3) The craniofacial structures.

The development and maturation of these components are interrelated so that growth, adaptation, and change actively participate in the development of an adult occlusion. Dentition development is characterized by a period of dental alveolar and craniofacial adaptability, which is also a time when motor skills and neuromuscular learning are developing. Clinical treatment at this time may take advantage of such responsive adaptive mechanisms; for example, teeth can be guided into their correct alignment by orthodontic treatment.

In a healthy adult dentition, dental adaptive mechanisms are restricted to wear, extrusion, and drifting of teeth. Bony adaptations are essentially of a reparative nature and are slow in their operation. Protective reflexes are learned so one can avoid pain and inefficiency of the masticatory system. If and when an adult dentition begins to deteriorate, the prosthodontist resorts to fixed or removable prosthodontic therapy in attempts to maintain a functional occlusal equilibrium. This period is characterized by greatly diminished dental and reflex adaptation and by bone resorption.

Obviously, the presence of tooth loss and disease and the depletion of reparative processes pose a major prosthodontic problem. Finally, in the edentulous state, there are few natural adaptive mechanisms left. The prosthesis

rests on tissues that will change progressively and irreversibly, and the artificial occlusion serves in an environment characterized by constant change that is mainly regressive. The modern complete denture service is characterized by an integration of biological information with instrumentation, materials and clinical techniques. Orofacial and tongue muscles play an important role.

**VALUE ADDED COURSE**

**FULL MOUTH REHABILITATION**

**DI-8**

**List of Students Enrolled Sep 2018 – Jan- 2019**

<b>Year MBBS Student</b>		
<b>Sl. No</b>	<b>Name of the Student</b>	<b>Roll No</b>
<b>1</b>	VIDYABARATHI .T	U15MB393
<b>2</b>	VIGNESH .V	U15MB394
<b>3</b>	VIGNESH KUMAR. K	U15MB395
<b>4</b>	VIJAY KUMAR .C.M	U15MB396
<b>5</b>	VINOTHINI .S	U15MB397


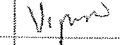
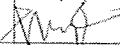


**DR.BALAJI SUBRAMANIYAN**  
**RESOURCE PERSON**

**DR.JAYALAKSHMI**  
**COORDINATOR**



Bharath Institute of Higher Education and Research  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES

Participant list of Value added course: FULL MOUTH REHABILITATION

Sl.No	Reg.No	Name of the candidate	Signature
1	U15MB393	VIDYABARATHI .T	
2	U15MB394	VIGNESH .V	
3	U15MB395	VIGNESH KUMAR. K	
4	U15MB396	VIJAY KUMAR .C.M	
5	U15MB397	VINOTHINI .S	





**SRI LAKSHMI NARAYANA INSTITUE OF HIGHER EDUCATON  
AND RESEARCH**

**FULL MOUTH REHABILITATION  
and DI-8**

**QUESTIONS**

**Course Code: DI-8**

**I. ANSWER ALL THE QUESTIONS**

1. Anterior facial height?
2. Attrited posteriors?
3. Supra erupted anteriors?
4. Lip line?
5. Golf chin?



28  
50  
Full Mouth Rehabilitation.

Definition:

The restoration of the functional integrity of the dental arches by the use of inlays, crowns, bridge and partial dentures.

Full Mouth Rehabilitation:

Restoration of the form and function of the masticatory apparatus to as near a normal as possible. (GPT-11)

Objective of full mouth Rehabilitation:

All patients requiring full mouth rehabilitation have one problem in common, stress and strain. usually the stress is due to malfunction or to poorly related parts of the oral mechanism.

Reasons for full mouth Rehabilitation:

1. Common reason for doing full mouth rehabilitation is to obtain and maintain the health of the dental tissue.

# Temporo mandibular joint dis.

- FP-1 - crown
- FP-2 crown and portion of root
- FP-3 - Replacing crown, root with soft tissue.
- RP-4 - Implant support
- RP-5 - Implant & soft tissue support.

## Misch Classification

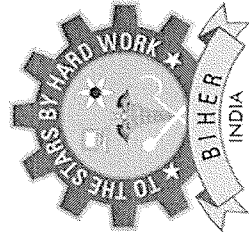
- D<sub>1</sub> - Dense Cortical.
- D<sub>2</sub> - porous cortical, trabecular.
- D<sub>3</sub> - porous cortical and fine trabecula.
- D<sub>4</sub> - fine trabecula.



2

3

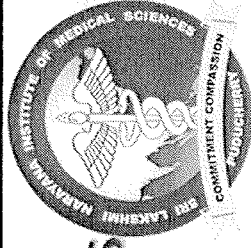
4



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(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that VIGNESH.V has actively participated in the Value

Added Course on FULL MOUTH REHABILITATION held during JUNE 2018 – SEP

2018 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605

502, India.

Dr. R. Balaji

RESOURCE PERSON

Dr. Jayalakshmi

COORDINATOR



## Student Feedback Form

Course Name: FULL MOUTH REHABILITATION

Subject Code: DI - 8

Name of Student: VIJAYALUMAR Roll No.: V15MB392

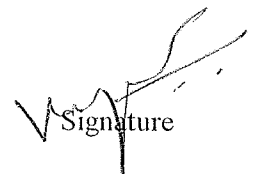
We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear		✓			
2	Course contents met with your expectations		✓			
3	Lecturer sequence was well planned			✓		
4	Lectures were clear and easy to understand		✓			
5	Teaching aids were effective			✓		
6	Instructors encourage interaction and were helpful		✓			
7	The level of the course		✓			
8	Overall rating of the course	1	2 ✓	3	4	5

\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Date: 0.6.18

  
Signature



**COURSE COMPLETION**

Date 20.8.18

From  
DR.BALAJI SUBRAMANIYAN.R  
DEPT OF DENTISTRY  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
Bharath Institute of Higher Education and Research,  
Chennai.

Through Proper Channel

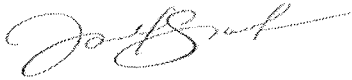
To  
The Dean,  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
Bharath Institute of Higher Education and Research,  
Chennai.

**Sub: Completion of value-added course: FULL MOUTH REHABILITATION**

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: **FULL MOUTH REHABILITATION** on 18.8.18. We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards

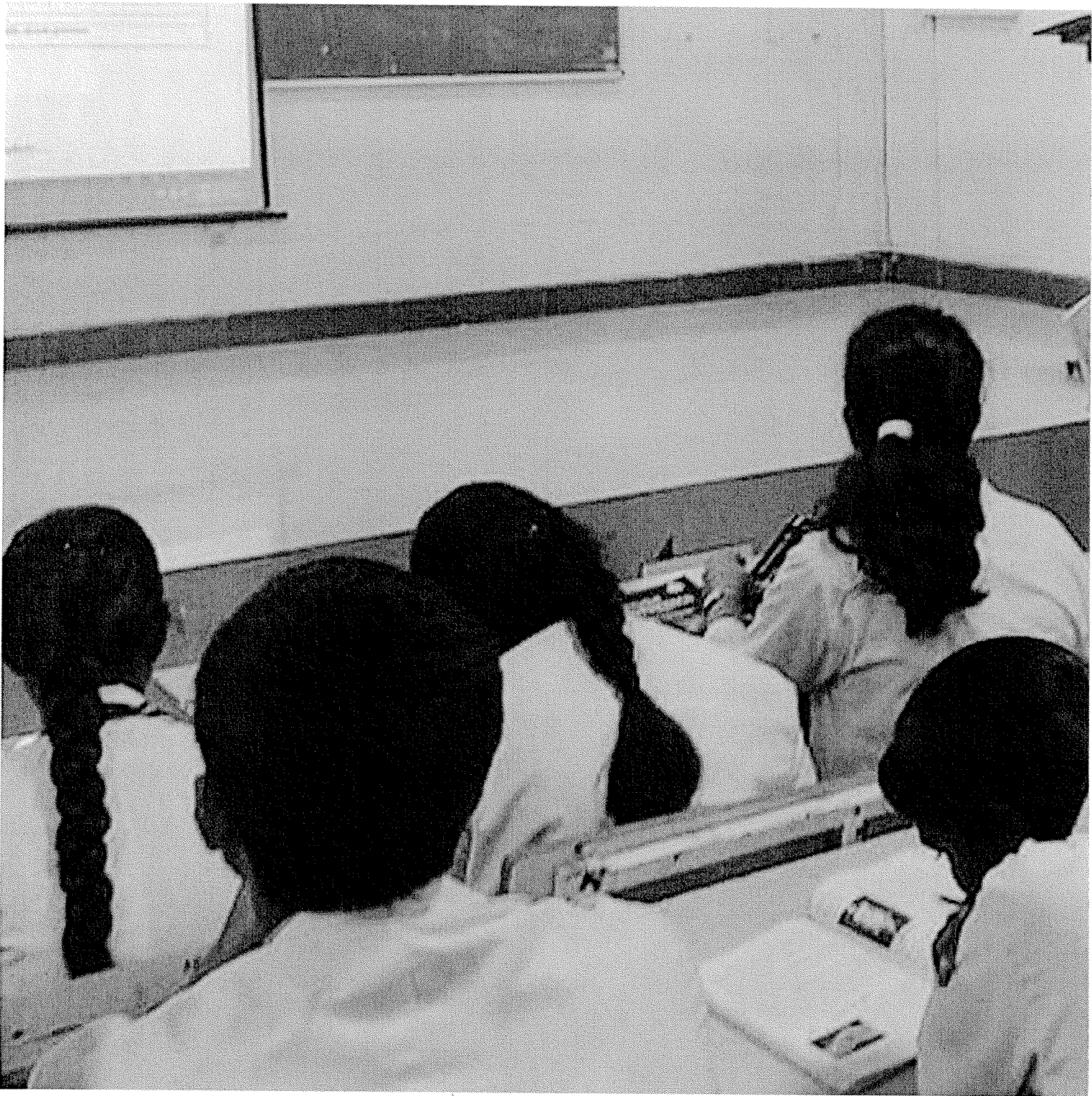


DR.BALAJI SUBRAMANIYAN.R  
DEPARTMENT OF DENTISTRY  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES  
Bharath Institute of Higher Education and Research,  
Chennai.

**Encl: Certificates**

**Photographs**







7/6/2017

Chennai

From

The Course Coordinator  
Introduction to Palliative care  
Department of Medicine  
Sree Balaji Medical College  
Bharath Institute of Higher Education and Research,  
Chennai

To

The Dean  
Sree Balaji Medical College  
Bharath institute of Higher Education Research,  
Chennai

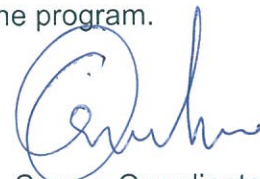
**Sub: -Permission to conduct value- added course: Introduction to Palliative care**

Respected sir,

With reference to subject mentioned above, the Department of Medicine proposes to conduct a value- added course titled: Introduction to Palliative care

We kindly solicit your kind permission to commence the program.

Warm Regards,

  
Course Coordinator

**SREE BALAJI MEDICAL COLLEGE & HOSPITAL**

**CHROMPET CHENNAI -600044**

**Date: 7/10/2017**

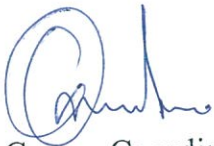
**R.NO 233/SBMCH/2017**

**CIRCULAR**

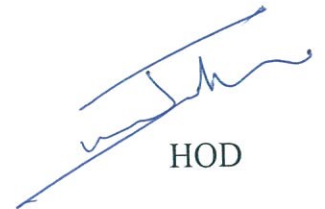
**Notification for Value added courses offered by the Department of Medicine**

The **Department of Medicine** of Sree Balaji Medical College is scheduled to offer a Value added Course on **Introduction to Palliative care** from 7/29/2017 for a period of 3 weeks. Interested students can approach the Head of Department of Medicine and Course Coordinator, for registration and for further details on or before 7/24/2017.

**Eligibility-MBBS STUDENTS**



Course Coordinator



HOD

Copy to:

Dean office

Vice Principal

Medical Superintendent

AO College

			Medicine
<b>12.</b>	Ethical and legal issues at the end of life:	<b>2 hours</b>	Asst Prof : Dept of Medicine
<b>13.</b>	Therapeutic communication:	<b>2 hours</b>	Assoc Prof : : Dept of Medicine
<b>14.</b>	Loss, grief, and bereavement:	<b>2 hours</b>	Asst Prof : Dept of medicine
<b>15.</b>	Assessment	<b>2 hours</b>	Asst Prof : Dept of Medicine



CORSE FEEDBACK FORM

Date: 7-10-11

Course Title: CHITRA S

Name: PALLIATIVE CARE

RegNo: 58

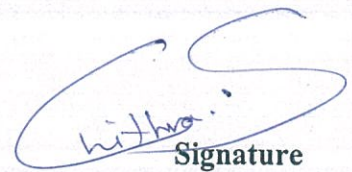
Department: MEDICINE

S.NO	Particulars	1	2	3	4	5
(1. Very Unsatisfied 2. Unsatisfied 3. Neutral 4. Satisfied 5. Very satisfied)						
1.	Objectives of the course clear to you			/		
2.	The course contents met with your expectations			/		
3.	The lecture sequence was well planned				/	
4.	The lecturers were clear and easy to understand				/	
5.	The teaching aids were effective				/	
6.	The instructors encourage interaction and were helpful				/	
7.	The level of the course				/	
(1. Very poor 2. Poor 3. Average 4. Good 5. Excellent)						
8.	Overall rating of the course:	1	2	3	4	5

Please give suggestion for the improvement of the course:

Weakness of the course:

Strength of the course:

  
Signature

\*\*\*Thank you\*\*\*

CORSE FEEDBACK FORM

Date: 7/10/17

Course Title: Palliative Care.

Name: Gowtham

RegNo: 87

Department: Medicine

S.NO	Particulars	1	2	3	4	5
(1. Very Unsatisfied 2. Unsatisfied 3. Neutral 4. Satisfied 5. Very satisfied)						
1.	Objectives of the course clear to you		/			
2.	The course contents met with your expectations		/			
3.	The lecture sequence was well planned			/		
4.	The lecturers were clear and easy to understand				/	
5.	The teaching aids were effective				/	
6.	The instructors encourage interaction and were helpful				/	
7.	The level of the course				/	
(1. Very poor 2. Poor 3. Average 4. Good 5. Excellent)						
8.	Overall rating of the course:	1	2	3	4	5

Please give suggestion for the improvement of the course:

NIL

Weakness of the course:

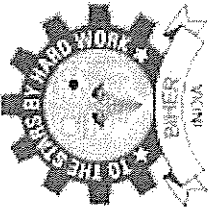
NIL

Strength of the course:

NIL

  
Signature

\*\*\*Thank you\*\*\*



**Bharath Institute of Higher Education and Research**  
**Sree Balaji Medical College & Hospital**



**Certificate**

This is to certify that Mr./Ms. GOWTHAM H has completed the value added course on Introduction to Palliative care conducted by Department of Medicine at Sree Balaji Medical College & Hospital, Chennai held during 7/29/2017 to 8/20/2017.

**Dr.P.Sai Kumar MD**

Vice Principal, SBMCH

**Dr.Gunasekeran MS**

Dean, SBMCH

Introduction to Palliative care

Student Name List

Sl.No.	Name	Sl.No.	Name
1	ARIVAZHAGAN V	31	ASHWIN GOPAL B
2	ROBIN LEJO S	32	ASHWIN KUMAR R P
3	SAI BALA M	33	AYEESHA SHOWKKATH S
4	SUGANYA G B	34	BALAJI AJAYKRISHNA V
5	ESHWANTH A	35	BALAKRISHNAN N
6	RAJU M	36	BALAMURUGAN C
7	SYED MEERAH S	37	BERNATSHA R
8	VIJAY P (Palani)	38	BEWIN PIUS A
9	VILVANAGESWARAN V	39	BHUVANESWARI K U
10	ARAVINDAKUMAR S K	40	DEEPAK GAUTAM G
11	DEEPAN M	41	DESHNA V
12	DEEPIKA P (26.01.1997)	42	DEVI C
13	EZHIL RAHULAN E	43	DHARANPATHY D
14	HARSHAVARDHAN KRISHNASWAMY S	44	DINEASH V R
15	MAYA N S	45	DIVYA KURUP P S
16	PRAVEEN V S		
17	RAKESH M		
18	SARANYA K		
19	SARAVANAN R		
20	SAUMIYA G		
21	SURYA PRAKASH V		
22	SYED SHAALAM K		
23	UDHAIYA		
24	ABHIJIT SATISH RAO		
25	ADIN DAVID		
26	AJAEY S		
27	AJEY PRASANTH P		
28	ANUSHA A G		
29	ARUN KUMAR G		
30	ASHRAF MOHAMED M		

6/13/2017

Chennai

From

The Course Coordinator  
A courses on Hair Care & Hygiene  
Department of Dermatology  
Sree Balaji Medical College  
Bharath Institute of Higher Education and Research,  
Chennai

To

The Dean  
Sree Balaji Medical College  
Bharath institute of Higher Education Research,  
Chennai

**Sub: -Permission to conduct value- added course: A courses on Hair Care & Hygiene**

Respected sir,

With reference to subject mentioned above, the Department of Dermatology proposes to conduct a value- added course titled: A courses on Hair Care & Hygiene

We kindly solicit your kind permission to commence the program.

Warm Regards,



Course Coordinator

SREE BALAJI MEDICAL COLLEGE & HOSPITAL

CHROMPET CHENNAI -600044

Date: 6/17/2017

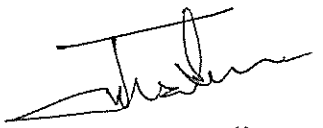
**R. No 239/ SBMCH/2017**

## CIRCULAR

**Notification for Value added courses offered by the Department of Dermatology**

The **Department of Dermatology** of Sree Balaji Medical College is scheduled to offer a Value added Course on **A courses on Hair Care & Hygiene** from 7/7/2017 for a period of 3 weeks. Interested students can approach the Head of Department of Dermatology and Course Coordinator, for registration and for further details on or before 6/30/2017.

**Eligibility-MBBS STUDENTS**



Course Coordinator



HOD

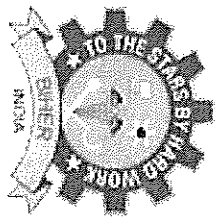
Copy to:

Dean office

Vice Principal

Medical Superintendent

AO College



**Bharath Institute of Higher Education and Research**  
**Sree Balaji Medical College & Hospital**



## **Certificate**

This is to certify that Mr./Ms. FEMINA GRACE C J has completed the value added course on A courses on Hair Care & Hygiene conducted by Department of Dermatology at Sree Balaji Medical College & Hospital, Chennai held during 7/7/2017 to 7/29/2017.

**Dr.P.Sai Kumar MD**

Vice Principal, SBMCH

**Dr.Gunasekeran MS**

Dean, SBMCH

## Hair Care & Hygiene

### Course Outcomes

1. Develop good appearance and behaviour, practice tasks as per industry and express good communication skills.
2. Create positions and maintain high standards of health & safety at the work Place.
3. Carry out skin analysis, CTM, Exfoliation, Extraction, treatments for various types of skin manually & electrically, pack application. Illustrate and explain skin structure and common skin problems
4. Carry out hair & scalp analysis, shampooing, deep conditioning v, head massage , hair treatments for different hair problems, strand test, global coloring, head heena, grey hair coverage. Illustrate and explain hair structure, hair growth cycle, pH scale, chemical composition and types of hair.
5. Understand how to maintain, wash and care for your hair
6. Learn how to style hair according to the face
7. Discover the various hair problems and the ways to deal with them
8. Examine the various hair styling tools and techniques
9. Understand the difference between men's and women's hair
10. Understand the importance of personal hygiene

**Duration Of Course :** 30 hours

**Course Coordinator :** Professor/ Assoc Prof of Dermatology

### Course Syllabus

S.No	TOPIC	DURATION	FACULTY
1	Introduction to Course	2 hours	Assoc Prof of Dermatology
2	Personality Development, Sterilization & Sanitization	2 hours	Assist. Prof of Dermatology
3	Recognize & comply safe working practices and environment aspect	2 hours	Assist. Prof of Dermatology
4	Identify different types of hair, Comply with health and safety standard and process laid out by manufactures instruction. Analyze the hair and scalp	2 hours	Assoc Prof of Dermatology
5	Consultation rules and counselling	2 hours	Assist. Prof of

			Dermatology
6	Self Awareness	2 hours	Assoc Prof of Dermatology
7	Self hygiene practices	2 hours	Assist. Prof of Dermatology
8	Basic Skin care	2 hours	Assist. Prof of Dermatology
9	Common skin lesions and differentiation	2 hours	Assoc Prof of Dermatology
10	Management of common skin lesions	2 hours	Assoc Prof of Dermatology
11	Aesthetic skin care	2 hours	Assist. Prof of Dermatology
12	Hand washing technique and personal hygiene	2 hours	Assist. Prof of Dermatology
13	Practicals	2 hours	Assist. Prof of Dermatology
14	Viva voce	2 hours	Assist. Prof of Dermatology
15	Assessment	2 hours	Assist. Prof of Dermatology

CORSE FEEDBACK FORM

Date: 29/7/17

Course Title: Hair & Care

Name: Grace Femira

RegNo: 36

Department: Dermatology

S.NO	Particulars	1	2	3	4	5
(1. Very Unsatisfied 2. Unsatisfied 3. Neutral 4. Satisfied 5. Very satisfied)						
1.	Objectives of the course clear to you		/			
2.	The course contents met with your expectations			/		
3.	The lecture sequence was well planned			/		
4.	The lecturers were clear and easy to understand			/		
5.	The teaching aids were effective				/	
6.	The instructors encourage interaction and were helpful				/	
7.	The level of the course				/	/
(1. Very poor 2. Poor 3. Average 4. Good 5. Excellent)						
8.	Overall rating of the course:				/	/

Please give suggestion for the improvement of the course:

Very interesting course.

Weakness of the course:

NIL.

Strength of the course:

Teachers

*Grace Femira*  
Signature

\*\*\*Thank you\*\*\*

CORSE FEEDBACK FORM

Date:

Course Title: Hair & Care.

Name: Renuka . Devi . V

RegNo: 64

Department: Dermatology

S.NO	Particulars	1	2	3	4	5
(1. Very Unsatisfied 2. Unsatisfied 3. Neutral 4. Satisfied 5. Very satisfied)						
1.	Objectives of the course clear to you			✓		
2.	The course contents met with your expectations			✓		
3.	The lecture sequence was well planned			✓		
4.	The lecturers were clear and easy to understand				/	
5.	The teaching aids were effective				/	
6.	The instructors encourage interaction and were helpful				/	
7.	The level of the course				✓	
(1. Very poor 2. Poor 3. Average 4. Good 5. Excellent )						
8.	Overall rating of the course:	1	2	3	4	5

Please give suggestion for the improvement of the course:

Weakness of the course:

Strength of the course:

  
Signature

\*\*\*Thank you\*\*\*

Hair Care & Hygiene

Student Name List

Sl.No.	Name	Sl.No.	Name
1	ELANGO VANI	31	SHONA NELSON
2	ELIZA NONGMAITHEM	32	MUNDLURI SAI KRISHNA
3	GANUGAPANTA PREM SAI REDDY	33	MURUGESAN M
4	GAUTAM B	34	NEERAJ K S
5	GAUTHAM M	35	NITISH KUMAR S
6	GAYATHRI K	36	NIVEDHA M
7	GOKUL G	37	PRAMODH KANNAN
8	GOPINATH S	38	PRAVEEN KUMAR S
9	GOTTAM BHARGAVA SAI SRINIVAS	39	PREMSAGAR G
10	GOWSHIK RAJA K S	40	PRIYANGA E
11	GOWTHAMAN K	41	PRIYANKKA V C
12	HARIHARAN M	42	PURUSHOTHAM A
13	JAYAPREETHI S	43	RAGUNANDAN V
14	JINU SHIRLEY T		
15	KALAI VANI G		
16	KAMLESH KANNA A S		
17	KARTHICK M		
18	KARTHIKA RAJESWARI R		
19	KEERTHI RAJ G		
20	KRISHNA PRABA S		
21	KRISHNAKKUMAR N R		
22	LOGESH RAJA V M		
23	MADHANKUMAR M		
24	MAHALAKSHMI M		
25	MALACK MAHMOOD USAMA		
26	MANIKANDAN J K		
27	MANISHA V		
28	MITHUN J		
29	MONICA SATHYANARAYANAN		
30	MONISHA P		

## Hair and Hygiene Course



8/7/2017

Chennai

From

The Course Coordinator  
Certificate Program in basic epidemiology  
Department of Community Medicine  
Sree Balaji Medical College  
Bharath Institute of Higher Education and Research,  
Chennai

To

The Dean  
Sree Balaji Medical College  
Bharath institute of Higher Education Research,  
Chennai

**Sub: -Permission to conduct value- added course: Certificate Program in basic epidemiology**

Respected sir,

With reference to subject mentioned above, the Department of Community Medicine proposes to conduct a value- added course titled: Certificate Program in basic epidemiology

We kindly solicit your kind permission to commence the program.

Warm Regards,



Course Coordinator

CORSE FEEDBACK FORM

Date: 7/7/17

Course Title: *Basic Epidemiology.*

Name: *Rajesh*

RegNo: *84*

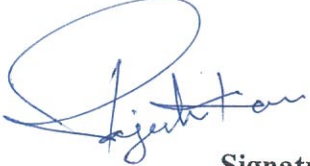
Department: *Community Medicine*

S.NO	Particulars	1	2	3	4	5
(1. Very Unsatisfied 2. Unsatisfied 3. Neutral 4. Satisfied 5. Very satisfied)						
1.	Objectives of the course clear to you		✓			
2.	The course contents met with your expectations		✓			
3.	The lecture sequence was well planned			✓		
4.	The lecturers were clear and easy to understand				✓	
5.	The teaching aids were effective				✓	
6.	The instructors encourage interaction and were helpful				✓	
7.	The level of the course				✓	
(1. Very poor 2. Poor 3. Average 4. Good 5. Excellent )						
8.	Overall rating of the course:	1	2	3	4	5

Please give suggestion for the improvement of the course:

Weakness of the course:

Strength of the course:

  
Signature

\*\*\*Thank you\*\*\*

SREE BALAJI MEDICAL COLLEGE & HOSPITAL

CHROMPET CHENNAI -600044

Date: 8/11/2017

**R. No 240/ SBMCH/2017**

## CIRCULAR

### Notification for Value added courses offered by the Department of Community Medicine

The **Department of Community Medicine** of Sree Balaji Medical College is scheduled to offer a Value added Course on **Certificate Program in basic epidemiology** from 8/31/2017 for a period of 3 weeks. Interested students can approach the Head of Department of Community Medicine and Course Coordinator, for registration and for further details on or before 8/26/2017.

#### Eligibility-MBBS STUDENTS



Course Coordinator



HOD

Copy to:

Dean office

Vice Principal

Medical Superintendent

AO College

## Basic Epidemiology

### Course overview

course introduces the basic concepts of epidemiology and biostatistics as applied to public health problems. Emphasis is placed on the principles and methods of epidemiologic investigation, appropriate summaries and displays of data, and the use of classical statistical approaches to describe the health of populations. Topics include the dynamic behavior of disease; usage of rates, ratios and proportions; methods of direct and indirect adjustment, and clinical life table which measures and describes the extent of disease problems. Various epidemiologic study designs for investigating associations between risk factors and disease outcomes are also introduced, culminating with criteria for causal inferences. The application of these disciplines in the areas of health services, screening, genetics, and environment policy are presented. The influence of epidemiology and biostatistics on legal and ethical issues are also discussed.

### Course objectives:

1. Perform exploratory data analysis using descriptive statistics.
2. Evaluate morbidity and mortality using ratios, proportions, and rates.
3. Perform direct and indirect methods of adjustment of overall rates.
4. Construct clinical life table in epidemiologic studies.
5. Recognize the assumptions associated with construction of a life table.
6. Calculate probabilities and conditional probabilities of health-related events.
7. Calculate sensitivity, specificity, and predictive values.
8. Recognize and describe the elements in the design and conduct of a randomized clinical trial, a cohort study, a case-control study, and a cross-sectional study.
9. Calculate measures of association in identifying risk factors of diseases.
10. Calculate a chi-square statistic to test the significance of a measure of association and interpret it using probability concepts.
11. Identify biases and their consequences in published literature.
12. Describe criteria for characterizing the causality of associations.
13. Recognize the presence of effect modifiers.
14. Explain the use of epidemiology in the genetics application.

15. Explain the use of epidemiology in the evaluation of screening process.
16. Describe the impact of epidemiology on national and local policy.
17. Describe the influence of epidemiology on ethical and professional issue.

## Readings

This course has two required textbooks:

1. Gordis, L. (2004). *Epidemiology*. Third edition. Philadelphia: Elsevier Saunders. (The second edition is also acceptable.)
2. Pagano, M. and Gauvreau, K. (2000). *Principles of Biostatistics*. Belmont, CA: Wadsworth.

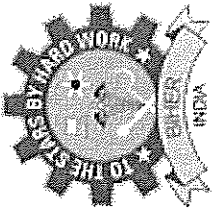
**Course Duration:** 30 hours

**Course Coordinator:** Professor /Assoc. Professor of Community Medicine

## Syllabus

S.No	TOPIC	DURATION	FACULTY
1	Introduction to course	2 hours	Associate Professor of community medicine
2.	Measuring Disease Occurrence	2 hours	Assist Prof Community Medicine
3	Surveillance	2 hours	Assist Prof Community Medicine
4	Infectious Disease Epidemiology	2 hours	Associate Professor of community medicine
5	Direct & Indirect Standardization	2 hours	Assist Prof Community Medicine
6	Data Sources & Secondary Analyse	2 hours	Assist Prof Community Medicine
7	Hypothesis Testing & Significance	2 hours	Assist Prof Community Medicine
8	Bias, Confounding, & Effect Modification	2 hours	Associate Professor of community medicine
9	Causation & Risk	2 hours	Assist Prof Community Medicine
10	Sampling Strategies & Descriptive Studies (Ecological, Cross Sectional, and Qualitative)	2 hours	Assist Prof Community Medicine

11	Case Control & Nested Case Control Studies	2 hours	Assist Prof Community Medicine
12	Cohort Studies & CBPR Guest: Sarah Gehlert, PhD	2 hours	Associate Professor of community medicine
13	Intervention Studies	2 hours	Assist Prof Community Medicine
14	Screening	2 hours	Assist Prof Community Medicine
15	Assessment	2 hours	Assist Prof Community Medicine



**Barath Institute of Higher Education and Research  
Sree Balaji Medical College & Hospital**



**Certificate**

This is to certify that Mr./Ms. HALEEMA A has completed the value added course on Certificate Program in basic epidemiology conducted by Department of Community Medicine at Sree Balaji Medical College & Hospital, Chennai held during 8/31/2017 to 9/22/2017.

**Dr.P.Sai Kumar MD**

Vice Principal, SBMCH

**Dr.Gunasekeran MS**

Dean, SBMCH

CORSE FEEDBACK FORM

Date: 6/7/17.

Course Title: *BASIC EPIDEMIOLOGY.*

Name: *Halema A.*

RegNo: *46.*

Department: *COMMUNITY MEDICINE.*

S.NO	Particulars	1	2	3	4	5
(1. Very Unsatisfied 2. Unsatisfied 3. Neutral 4. Satisfied 5. Very satisfied)						
1.	Objectives of the course clear to you			✓		
2.	The course contents met with your expectations			✓		
3.	The lecture sequence was well planned			✓		
4.	The lecturers were clear and easy to understand				✓	
5.	The teaching aids were effective				✓	
6.	The instructors encourage interaction and were helpful				✓	
7.	The level of the course				✓	
(1. Very poor 2. Poor 3. Average 4. Good 5. Excellent)						
8.	Overall rating of the course:	1	2	3	4	5

Please give suggestion for the improvement of the course:

*to include interesting topics.*

Weakness of the course:

*Lot of information.*

Strength of the course:

*Faculty taught us in a nice manner.*  
Signature *Halema.*

\*\*\*Thank you\*\*\*



Certificate Program in Basic Epidemiology

Student Name List

Sl.No.	Name	Sl.No.	Name
1	RAJKUMAR G B	31	VIDHYA SRI R J
2	RAM KUMAR R T	32	ARUNESHWAR S
3	SARAVANA KUMAR S	33	ASHIK ANSARI K
4	SHAIK MOHAMMED AFAAN	34	ASHTA LAKSHMI S
5	SHARMILA J	35	BALASIDDHARTH S
6	SHEIK DHANISH M	36	BARANIRAJ A S
7	SHIRAVANKUMAR S P	37	DEEPAKCHANDAR S
8	SHRIVIRUTHAA T	38	GAYATHRI S
9	SHRUTHI SRI R G	39	GHIRIDHARAN R
10	SMRITHI A	40	HARIHARAN P
11	SOWMIYA T		
12	SOWMYA N		
13	SRINATH M		
14	SAI AISHWARYA J		
15	SURYA NATARAJAN		
16	SUJI BARATHI D		
17	SUMERA KAUSAR R S		
18	SYED AFRIDI S		
19	TARIQ IBRAHIM		
20	SAKTHI VIGNESH T		
21	THRILOK RAM B		
22	TRUP MOHAMED FASIH MAAZ		
23	VAISHNAVI M		
24	VARUN V		
25	VENKATA MANISH REDDY MUNDLA		
26	VIDHYAPRIYADARSHINI S		
27	VIGNESH R		
28	YUVASHREE M		
29	GUNASEKARAN L		
30	ASWIN ROJER S G		

8/7/2017

Chennai

From

The Course Coordinator  
Certificate Program in Complementary & Alternative Medicine  
Department of Medicine  
Sree Balaji Medical College  
Bharath Institute of Higher Education and Research,  
Chennai

To

The Dean  
Sree Balaji Medical College  
Bharath institute of Higher Education Research,  
Chennai

**Sub: -Permission to conduct value- added course: Certificate Program in Complementary & Alternative Medicine**

Respected sir,

With reference to subject mentioned above, the Department of Medicine proposes to conduct a value- added course titled: Certificate Program in Complementary & Alternative Medicine

We kindly solicit your kind permission to commence the program.

Warm Regards,

  
Course Coordinator

**SREE BALAJI MEDICAL COLLEGE & HOSPITAL**

**CHROMPET CHENNAI -600044**

**Date: 8/11/2017**

**R. No 241/ SBMCH/2017**

**CIRCULAR**

**Notification for Value added courses offered by the Department of Medicine**

The **Department of Medicine** of Sree Balaji Medical College is scheduled to offer a Value added Course on **Certificate Program in Complementary & Alternative Medicine** from 8/31/2017 for a period of 3 weeks. Interested students can approach the Head of Department of Medicine and Course Coordinator, for registration and for further details on or before 8/26/2017.

**Eligibility-MBBS STUDENTS**



Course Coordinator



HOD

Copy to:

Dean office

Vice Principal

Medical Superintendent

AO College

**Certificate Program in Complementary & Alternative Medicine**

**Student Name List**

Sl.No.	Name	Sl.No.	Name
1	HARITHA A	33	GREESHMI C
2	HEMALATHA K	34	HARINI G
3	JERIN PAUL JACOB J	35	HARRIBALAJI M
4	PRABAKARAN R	36	HARSHATH KUMAR K N
5	RAJ KUMAR A	37	HARSHITHA REDDY D
6	SARRAJ AL FARRAJ	38	HOMA SAMANVITHA S
7	VISHNU P	39	JANANI S
8	YASHWANTH S	40	JAYA KALYANI P S
9	AARTHI P	41	JEEVITHA P
10	AISHWARYA RAMESH	42	JESVANTHAN E
11	AISHWARYA S	43	JEYA PRADHA C
12	AKSHARA P ROY	44	JOSEPH MARTIN J
13	ALICIA CATHERINE A	45	JOTHIRLATHA Y J
14	ANAND R	46	KAVYA G
15	ANNA SHAJU AYNIKKAL	47	KEERTHANA K
16	ANU ANANYA A	48	KEERTHANA SURESH
17	ANUJA P	49	KHAAVYA B
18	ARCHANA S	50	KODURU NAVEEN KUMAR
19	ARTHI SHREE V	51	LAKSHANA D
20	BAVATHARINI S A	52	MAHALAKSHMI B
21	BENISHA DEFI S I	53	MANGAIYARKARASI A
22	DAKINI PALA	54	MARTINA LINDSAY PAUL A
23	DEBBIE AISHWARYA SATHYA	55	MATCHA REDDYSRI
24	DEEPAKCHANDAR N	56	MICHAEL SWETHA J
25	DOMINIC BABU	57	MOHAMMED JUNAIDH KHAN B
26	ELBICH SONISA L	58	MONIHA R
27	GADILI LAVANYA	59	MURALI N
28	GANAPATHY S	60	MURUGAN NANDHINI
29	GANESH K	61	ANEES FATHIMA M
30	GOKUL S		
31	GOPIKA GIRI		
32	GRACELYN SHARON P		

## Certificate Program in Complementary & Alternative Medicine (CAM)

### Learning Outcomes

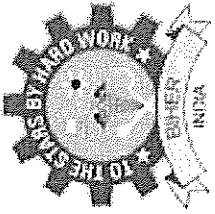
1. Define the etiology, pathogenesis, clinical manifestations of disease and the impact of behavioral factors, life-style choices and environmental factors on the cause and progression of disease.
2. Identify the use of CAM modalities to provide natural support options in these disease conditions and when a client should be referred to their licensed health care provider.
3. Summarize the CAM modalities such as aromatherapy, homeopathy, dynamic phytotherapy, herbal medicine, nutrition and lifestyle changes and how these may be beneficial in supporting health.
4. Analyze and construct a working knowledge of two of the modalities and how they can be applied to benefit clients and support optimal health, including appropriate use, contraindications, and expected outcomes.

**Course duration** : 30 Hours

**Course Coordinator** : Faculty of AHS

S.No	Topics	Duration	Faculty
1	Introduction to course	2 hours	Assoc Prof of Siddha medicine
2	Aromatherapy	2 hours	Assist. Prof of AHS
3	Introduction Ayurvedic medicine	2 hours	Assist. Prof of AHS
4	Introduction to Siddha & Homeopathic medicine	2 hours	Assist. Prof of AHS
5	Patient care & wellness	2 hours	Assist. Prof of AHS
6	Mental well being	2 hours	Assist. Prof of AHS
7	Anatomy & Physiology of systems of body	2 hours	Assist. Prof of AHS
8	Health care & alternative medicine	2 hours	Assist. Prof of AHS
9	Pranic healing	2 hours	Assist. Prof of AHS
10	Music therapy	2 hours	Assist. Prof of AHS
11	Acupuncture Therapy	2 hours	Assist. Prof of AHS

12	Practicals	2 hours	Assist. Prof of AHS
13	Limitations of alternative medicine	2 hours	Assist. Prof of AHS
14	Viva Voce	2 hours	Assist. Prof of AHS
15	Assessment	2 hours	Assist. Prof of AHS



**Bharath Institute of Higher Education and Research**  
**Sree Balaji Medical College & Hospital**



**Certificate**

This is to certify that Mr./Ms. HARINI K has completed the value added course on Certificate Program in Complementary & Alternative Medicine conducted by Department of Medicine at Sree Balaji Medical College & Hospital, Chennai held during 8/31/2017 to 9/22/2017.

**Dr.P.Sai Kumar MD**

Vice Principal, SBMCH

**Dr.Gunasekeran MS**

Dean, SBMCH

CORSE FEEDBACK FORM

Course Title: Complimentary & Alternative Medicine Date: 8/7/17

Name: Hani

RegNo: 52.

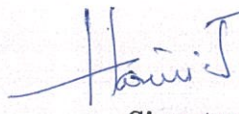
Department: Medicine

S.NO	Particulars	1	2	3	4	5
(1. Very Unsatisfied 2. Unsatisfied 3. Neutral 4. Satisfied 5. Very satisfied)						
1.	Objectives of the course clear to you		✓			
2.	The course contents met with your expectations			✓		
3.	The lecture sequence was well planned		✓			
4.	The lecturers were clear and easy to understand			✓		
5.	The teaching aids were effective					
6.	The instructors encourage interaction and were helpful				✓	
7.	The level of the course				✓	
(1. Very poor 2. Poor 3. Average 4. Good 5. Excellent )						
8.	Overall rating of the course:	1	2	3	✓ 4	5

Please give suggestion for the improvement of the course:

Weakness of the course:

Strength of the course:

  
Signature

\*\*\*Thank you\*\*\*

CORSE FEEDBACK FORM

Date: 7/7/17.

Course Title: *Complementary and alternative medicine*

Name: *Sarath Kumar.*

RegNo: *84.*

Department: *Medicine*

S.NO	Particulars	1	2	3	4	5
(1. Very Unsatisfied 2. Unsatisfied 3. Neutral 4. Satisfied 5. Very satisfied)						
1.	Objectives of the course clear to you		/			
2.	The course contents met with your expectations			/		
3.	The lecture sequence was well planned				/	
4.	The lecturers were clear and easy to understand					/
5.	The teaching aids were effective					/
6.	The instructors encourage interaction and were helpful					/
7.	The level of the course					/
(1. Very poor 2. Poor 3. Average 4. Good 5. Excellent )						
8.	Overall rating of the course:	1	2	3	/ 4	5

Please give suggestion for the improvement of the course:

Weakness of the course:

Strength of the course:

*Sarath Kumar*  
Signature

\*\*\*Thank you\*\*\*



8/29/2017

Chennai

From

The Course Coordinator  
Introduction to Veterinary Medicine  
Department of Pharmacology  
Sree Balaji Medical College  
Bharath Institute of Higher Education and Research,  
Chennai

To

The Dean  
Sree Balaji Medical College  
Bharath institute of Higher Education Research,  
Chennai


**Sub: -Permission to conduct value- added course: Introduction to Veterinary Medicine**

Respected sir,

With reference to subject mentioned above, the Department of Pharmacology proposes to conduct a value- added course titled: Introduction to Veterinary Medicine

We kindly solicit your kind permission to commence the program.

Warm Regards,

  
Course Coordinator

SREE BALAJI MEDICAL COLLEGE & HOSPITAL

CHROMPET CHENNAI -600044

Date: 9/2/2017


**R. No 134 /SBMCH/2017**

## **CIRCULAR**

**Notification for Value added courses offered by the Department of Pharmacology**

The **Department of Pharmacology** of Sree Balaji Medical College is scheduled to offer a Value added Course on **Introduction to Veterinary Medicine** from 9/22/2017 for a period of 3 weeks. Interested students can approach the Head of Department of Pharmacology and Course Coordinator, for registration and for further details on or before 9/16/2017.

**Eligibility-MBBS STUDENTS**

  
Course Coordinator

  
HOD

Copy to:

Dean office

Vice Principal

Medical Superintendent

AO College

## Introduction to Veterinary medicine

### Learning Objectives

- Demonstrate knowledge of the basic sciences that form the foundation of veterinary practice.
- Demonstrate knowledge of the clinical conditions that form the foundation of veterinary practice.
- Demonstrate the knowledge of livestock, poultry industry and milk industry
- Demonstrate knowledge of dogs, aquatic animals and zoo animals

Duration of Course : 30 hours

Sl.No	TOPICS	DURATION	FACULTY
1	Introductory Animal Husbandry	2 HOURS	Asst Prof : Dept of Veterinary medicine
2	Veterinary Anatomy in General	2 HOURS	Assoc Prof : : Dept of Zoology
3	Man-Animal and Society	2 HOURS	Asst Prof : Dept of Zoology
4	Introduction and Scope of Veterinary medicine & pathology	2 HOURS	Assoc Prof : : Dept of Veterinary medicine
5	Indian Poultry Industry	2 HOURS	Asst Prof : Dept of Veterinary medicine
6	Milk Industry in India	2 HOURS	Assoc Prof : : Dept of Veterinary medicine
7	Milk Hygiene in Relation to Public Health	2 HOURS	Asst Prof : Dept of Community Medicine
8	Concepts in Veterinary Immunology	2 HOURS	Assoc Prof : : Dept of Veterinary medicine
9	Introduction to Aquatic Animals	2 HOURS	Asst Prof : Dept of

			Veterinary medicine
10	Assignment	1' HOUR	Assoc Prof : : Dept of Veterinary medicine
11	Breeds of Dogs- International Pedigree Breeds and those Commonly seen in India	3 HOURS	Asst Prof : Dept of Veterinary medicine
12	Taxonomy of Various Genera of Wild/Zoo Animals of India along with their Descriptions	2 HOURS	Assoc Prof : : Dept of Veterinary medicine
13	Livestock in India	2 HOURS	Asst Prof : Dept of Veterinary medicine
14	Livestock Entrepreneurship	2 HOURS	Assoc Prof : : Dept of Veterinary medicine
15	ASSESSMENT	2 HOURS	Asst Prof : Dept of Veterinary medicine

CORSE FEEDBACK FORM

Date:

Course Title: *Introduction to Veterinary Medicine*

Name: *Karthik.S*

RegNo: *59.*

Department: *Pharmacology.*

S.NO	Particulars	1	2	3	4	5
(1. Very Unsatisfied 2. Unsatisfied 3. Neutral 4. Satisfied 5. Very satisfied)						
1.	Objectives of the course clear to you		/			
2.	The course contents met with your expectations		/			
3.	The lecture sequence was well planned			/		
4.	The lecturers were clear and easy to understand				/	
5.	The teaching aids were effective				/	
6.	The instructors encourage interaction and were helpful				/	
7.	The level of the course				/	
(1. Very poor 2. Poor 3. Average 4. Good 5. Excellent )						
8.	Overall rating of the course:	1	2	3	4	5

Please give suggestion for the improvement of the course:

Weakness of the course:

Strength of the course:

*Karthik.S*  
Signature

\*\*\*Thank you\*\*\*

CORSE FEEDBACK FORM

Date:

Course Title:

Introduction to  
Veterinary Medicine

Name:

Janani K.

RegNo:

42

Department:

Pharmacology

S.NO	Particulars	1	2	3	4	5
(1. Very Unsatisfied 2. Unsatisfied 3. Neutral 4. Satisfied 5. Very satisfied)						
1.	Objectives of the course clear to you		/			
2.	The course contents met with your expectations			/		
3.	The lecture sequence was well planned			/		
4.	The lecturers were clear and easy to understand			/		
5.	The teaching aids were effective			/		
6.	The instructors encourage interaction and were helpful			/		
7.	The level of the course			/		
(1. Very poor 2. Poor 3. Average 4. Good 5. Excellent)						
8.	Overall rating of the course:				/	

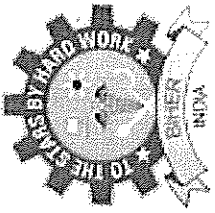
Please give suggestion for the improvement of the course:

Weakness of the course:

Strength of the course:

  
Signature

\*\*\*Thank you\*\*\*



**Bharath Institute of Higher Education and Research**  
**Sree Balaji Medical College & Hospital**



**Certificate**

This is to certify that Mr./Ms, KARTHIK S has completed the value added course on Introduction to Veterinary Medicine conducted by Department of Pharmacology at Sree Balaji Medical College & Hospital, Chennai held during 9/22/2017 to 10/14/2017.

**Dr.P.Sai Kumar MD**

Vice Principal, SBMCH

**Dr.Gunasekeran MS**

Dean, SBMCH

**Introduction to Veterinary Medicine**

**Student Name List**

Sl.No.	Name	Sl.No.	Name
1	MANOJ KUMAR D R	31	WASIM FATHIMA M A
2	NAVEEN R	32	SASIDHAR K R
3	OOVIYA V	33	ARCHANA R
4	PARAMESWARI P	34	GAYATHRI C R
5	PAVITHRA R	35	KONA OLIVIA HEPHZIBAH
6	PRAKASH PONSINGH S	36	MONISH RAJER M
7	PRITHIKA N	37	RENZO SEBASTIAN
8	PRIYADHARSHINI R	38	SANTHOSH YESUDHAS
9	RAGHAVI P	39	VASANTHA KUMAAR K R
10	RAJESHWARI K	40	AMBIKA SUSHINDRI S
11	RAKESH P S	41	JESEELA S
12	RICHARDS S	42	JUDY ANCHY EDAL V
13	ROHIT KAMAL	43	KANCHANA M
14	SABARI VASAN S	44	KORTHI TANUJA VANI
15	SAKTHI VIVEGA M	45	PUCHALAPALLI SRIHARSHITHA
16	SANJAYEN P R		
17	SARVESWARAN S G		
18	SAVIER RAJAN S D		
19	SHAKEERA BANU A J		
20	SHANMUGAPRIYA M		
21	SHIRLEY ESTHER PRICILLA R		
22	SRIRAM C		
23	SSAMY C AJAY		
24	STEPHY S		
25	SUHITA M		
26	SUMAIYA FATHIMA U		
27	THIRUMURUGAN K		
28	VARSHINI I		
29	VASANTHA J		
30	VISALEESWAR V		

## Introduction to Veterinary Medicine



11/6/2017

Chennai

From

The Course Coordinator  
Short term course on Human Anatomy and Physiology  
Department of Anatomy  
Sree Balaji Medical College  
Bharath Institute of Higher Education and Research,  
Chennai

To

The Dean  
Sree Balaji Medical College  
Bharath institute of Higher Education Research,  
Chennai

**Sub: -Permission to conduct value- added course: Short term course on Human Anatomy and Physiology**

Respected sir,

With reference to subject mentioned above, the Department of Anatomy proposes to conduct a value- added course titled: Short term course on Human Anatomy and Physiology

We kindly solicit your kind permission to commence the program.

Warm Regards,

  
Course Coordinator

**SREE BALAJI MEDICAL COLLEGE & HOSPITAL**

**CHROMPET CHENNAI -600044**

**Date: 11/10/2017**

**R. No 245 /SBMCH/2017**

## **CIRCULAR**

### **Notification for Value added courses offered by the Department of Anatomy**

The **Department of Anatomy** of Sree Balaji Medical College is scheduled to offer a Value added Course on **Short term course on Human Anatomy and Physiology** from 11/30/2017 for a period of 3 weeks. Interested students can approach the Head of Department of Anatomy and Course Coordinator, for registration and for further details on or before 11/25/2017.

### **Eligibility-MBBS STUDENTS**



Course Coordinator



HOD

Copy to:

Dean office

Vice Principal

Medical Superintendent

AO College

## Short term course on Human Anatomy and Physiology

**Course Overview:** This self-paced, course on anatomy and physiology covers all the bodily systems playing a major role in human being. The material is presented in a practical and comprehensive manner. The focus of the course is on the need-to-know facts that must be understood in order to pursue any healthcare career or related education in the field of science. These easy to follow lessons are ideal for anyone requiring a solid understanding of how the human body works.

**Course Duration:** 30 hours

**Course Coordinator:** Professor of Anatomy & Physiology

### Course Outline

S.No	Topic	Duration	Faculty
1	Introduction	2 hours	Asst Prof of Anatomy
2	Levels of Organization	2 hours	Asst Prof of Anatomy
3	Homeostasis	2 hours	Asst Prof of Physiology
4	Skeletal System	2 hours	Asst Prof of Anatomy
5	Muscular System	2 hours	Asst Prof of Anatomy
6	Endocrine System (includes Reproduction)	2 hours	Asst Prof of Physiology
7	Integumentary System	2 hours	Asst Prof of Physiology
8	Digestion (includes Metabolism & Nutrition)	2 hours	Asst Prof of Physiology

9	Cardiovascular System	2 hours	Asst Prof of Anatomy
10	Respiratory System	2 hours	Asst Prof of Physiology
11	Urinary System	2 hours	Asst Prof of Anatomy
12	Lymphatic System and Immunity	2 hours	Asst Prof of Physiology
13	Review and Synthesis (with a disease and diagnosis)	2 hours	Asst Prof of Anatomy
14	Viva Voce	2 hours	Asst Prof of Anatomy
15	Assessment	2 hours	Asst Prof of Physiology

CORSE FEEDBACK FORM

Date:

Course Title: Human Anatomy & physiology

Name: Tamilacasi

RegNo:

Department:

S.NO	Particulars	1	2	3	4	5
(1. Very Unsatisfied 2. Unsatisfied 3. Neutral 4. Satisfied 5. Very satisfied)						
1.	Objectives of the course clear to you				✓	
2.	The course contents met with your expectations					✓
3.	The lecture sequence was well planned					✓
4.	The lecturers were clear and easy to understand				✓	
5.	The teaching aids were effective					✓
6.	The instructors encourage interaction and were helpful				✓	
7.	The level of the course					✓
(1. Very poor 2. Poor 3. Average 4. Good 5. Excellent)						
8.	Overall rating of the course:	1	2	3	4	5

Please give suggestion for the improvement of the course:

Weakness of the course:

Strength of the course: Good faculty  
doubt solving  
Nice brush up

Signature Signature

\*\*\*Thank you\*\*\*

CORSE FEEDBACK FORM

Date:

Course Title: *Short term Course on Human Anatomy & physiology.*

Name: *Vipin*

RegNo:

Department: *Anatomy*

S.NO	Particulars	1	2	3	4	5
(1. Very Unsatisfied 2. Unsatisfied 3. Neutral 4. Satisfied 5. Very satisfied)						
1.	Objectives of the course clear to you			/		
2.	The course contents met with your expectations			/		
3.	The lecture sequence was well planned			/		
4.	The lecturers were clear and easy to understand			/		
5.	The teaching aids were effective				/	
6.	The instructors encourage interaction and were helpful				/	
7.	The level of the course				/	
(1. Very poor 2. Poor 3. Average 4. Good 5. Excellent )						
8.	Overall rating of the course:	1	2	3	4	5

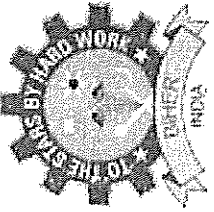
Please give suggestion for the improvement of the course:

Weakness of the course:

Strength of the course:

  
Signature

\*\*\*Thank you\*\*\*



**Bharath Institute of Higher Education and Research**  
**Sree Balaji Medical College & Hospital**



**Certificate**

This is to certify that Mr./Ms. NANDHU S MANMADHAN has completed the value added course on Short term course on Human Anatomy and Physiology conducted by Department of Anatomy at Sree Balaji Medical College & Hospital, Chennai held during 11/30/2017 to 12/22/2017.

**Dr.P.Sai Kumar MD**

Vice Principal, SBMCH

**Dr.Gunasekeran MS**

Dean, SBMCH



**Short term course on Human Anatomy and Physiology**

**Student Name List**

Sl.No.	Name	Sl.No.	Name
1	GUNASEKARAN L	31	ARTHI SHREE V
2	ASWIN ROJER S G	32	BAVATHARINI S A
3	VIDHYA SRI R J	33	BENISHA DEFI S I
4	ARUNESHWAR S	34	DAKINI PALA
5	ASHIK ANSARI K	35	DEBBIE AISHWARYA SATHYA
6	ASHTA LAKSHMI S	36	DEEPAKCHANDAR N
7	BALASIDDHARTH S	37	DOMINIC BABU
8	BARANIRAJ A S	38	ELBICH SONISA L
9	DEEPAKCHANDAR S	39	GADILI LAVANYA
10	GAYATHRI S	40	GANAPATHY S
11	GHIRIDHARAN R	41	GANESH K
12	HARIHARAN P	42	GOKUL S
13	HARITHA A	43	GOPIKA GIRI
14	HEMALATHA K	44	GRACELYN SHARON P
15	JERIN PAUL JACOB J	45	GREESHMI C
16	PRABAKARAN R		
17	RAJ KUMAR A		
18	SARRAJ AL FARRAJ		
19	VISHNU P		
20	YASHWANATH S		
21	AARTHI P		
22	AISHWARYA RAMESH		
23	AISHWARYA S		
24	AKSHARA P ROY		
25	ALICIA CATHERINE A		
26	ANAND R		
27	ANNA SHAJU AYNIKKAL		
28	ANU ANANYA A		
29	ANUJA P		
30	ARCHANA S		

12/5/2017

Chennai

From

The Course Coordinator  
Short term course on Magnetic Resonance Imaging  
Department of Radiology  
Sree Balaji Medical College  
Bharath Institute of Higher Education and Research,  
Chennai

To

The Dean  
Sree Balaji Medical College  
Bharath institute of Higher Education Research,  
Chennai

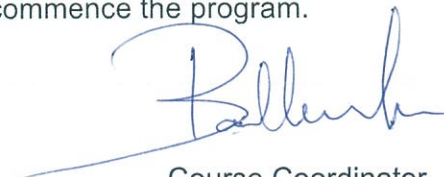
**Sub: -Permission to conduct value- added course: Short term course on Magnetic Resonance Imaging**

Respected sir,

With reference to subject mentioned above, the Department of Radiology proposes to conduct a value- added course titled: Short term course on Magnetic Resonance Imaging

We kindly solicit your kind permission to commence the program.

Warm Regards,



Course Coordinator

**SREE BALAJI MEDICAL COLLEGE & HOSPITAL**

**CHROMPET CHENNAI -600044**

**Date: 12/9/2017**

**R. No 256 /SBMCH/2017**


**CIRCULAR**

**Notification for Value added courses offered by the Department of Radiology**

The **Department of Radiology** of Sree Balaji Medical College is scheduled to offer a Value added Course on **Short term course on Magnetic Resonance Imaging** from 12/30/2017 for a period of 3 weeks. Interested students can approach the Head of Department of Radiology and Course Coordinator, for registration and for further details on or before 12/25/2017.

**Eligibility-MBBS STUDENTS**

  
Course Coordinator

  
HOD

Copy to:

Dean office

Vice Principal

Medical Superintendent

AO College

## Short term course on Magnetic Resonance Imaging

### Learning Objectives

- Definition of magnetic resonance
- Describe in detail the principles of MRI
- Understand the structure and functioning of an MRI machine
- Knowledge of the indications of using MRI
- Reading an MRI
- Reporting of MRI
- Safety precautions and cautions involved in using MRI

**Duration of Course : 30 hours**

S.No	TOPICS	DURATION	FACULTY
1	Introduction to course	2 HOURS	Asst Prof : Dept of Radiology
2	Basic physics of magnetics, magnetic gradients and magnetic field	2 HOURS	Assoc Prof : : Dept of Radiology
3	Medical imaging techniques	2 HOURS	Asst Prof : Dept of Radiology
4	Construction and physics	2 HOURS	Assoc Prof : : Dept of Radiology
5	Evolution of MRI machines	2 HOURS	Asst Prof : Dept of Radiology
6	T1 &T2 weighted images –	2 HOURS	Assoc Prof : : Dept

	definition and implications		of Radiology
7	Indications of MRI in Diagnostics	2 HOURS	Asst Prof : Dept of Radiology
8	Comparison of Gross anatomical and imaging details of anatomical structures	2 HOURS	Assoc Prof : : Dept of Radiology
9	Reading of an MRI image	2 HOURS	Asst Prof : Dept of Radiology
10	Steps in reporting the findings in MRI	2 HOURS	Assoc Prof : : Dept of Radiology
11	Safety precautions, contraindications and overuse of MRI	2 HOURS	Asst Prof : Dept of Radiology
12	Practical session: structure and functioning of MRI machine	2 HOURS	Assoc Prof : : Dept of Radiology
13	Practical session on: Settings of MRI	2 HOURS	Asst Prof : Dept of Radiology
14	ASSESSMENT - THEORY	2 HOURS	Assoc Prof : : Dept of Radiology
15	ASSESSMENT - PRACTICALS	2 HOURS	Asst Prof : Dept of Radiology

CORSE FEEDBACK FORM

Course Title: *Magnetic Resonance Imaging* Date: \_\_\_\_\_

Name: *Lavanya. J*

RegNo: *48*

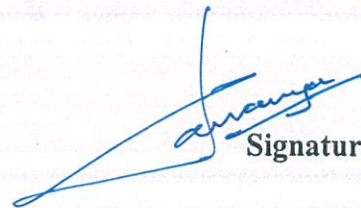
Department: *Radiology*

S.NO	Particulars	1	2	3	4	5
(1. Very Unsatisfied 2. Unsatisfied 3. Neutral 4. Satisfied 5. Very satisfied)						
1.	Objectives of the course clear to you				<input checked="" type="checkbox"/>	
2.	The course contents met with your expectations					<input checked="" type="checkbox"/>
3.	The lecture sequence was well planned					<input checked="" type="checkbox"/>
4.	The lecturers were clear and easy to understand					<input checked="" type="checkbox"/>
5.	The teaching aids were effective				<input checked="" type="checkbox"/>	
6.	The instructors encourage interaction and were helpful					<input checked="" type="checkbox"/>
7.	The level of the course					<input checked="" type="checkbox"/>
(1. Very poor 2. Poor 3. Average 4. Good 5. Excellent)						
8.	Overall rating of the course:	1	2	3	4	5

Please give suggestion for the improvement of the course:

Weakness of the course:

Strength of the course:

  
Signature

\*\*\*Thank you\*\*\*

CORSE FEEDBACK FORM

Date:

Course Title: Magnetic Resonance Imaging

Name: Anbuseivan

RegNo:

Department:

S.NO	Particulars	1	2	3	4	5
(1. Very Unsatisfied 2. Unsatisfied 3. Neutral 4. Satisfied 5. Very satisfied)						
1.	Objectives of the course clear to you			✓	✓	✓
2.	The course contents met with your expectations					✓
3.	The lecture sequence was well planned				✓	
4.	The lecturers were clear and easy to understand					✓
5.	The teaching aids were effective			✓		
6.	The instructors encourage interaction and were helpful				✓	
7.	The level of the course					✓
(1. Very poor 2. Poor 3. Average 4. Good 5. Excellent)						
8.	Overall rating of the course:	1	2	3	4	5

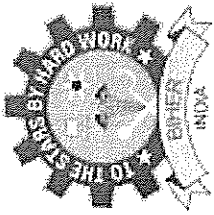
Please give suggestion for the improvement of the course:

Weakness of the course:

Strength of the course:

  
Signature

\*\*\*Thank you\*\*\*



**Bharath Institute of Higher Education and Research**  
**Sree Balaji Medical College & Hospital**



**Certificate**

This is to certify that Mr./Ms, PRAMOTH ARYA P V has completed the value added course on Short term course on Magnetic Resonance Imaging conducted by Department of Radiology at Sree Balaji Medical College & Hospital, Chennai held during 12/30/2017 to 1/20/2018.

**Dr.P.Sai Kumar MD**

Vice Principal, SBMCH

**Dr.Gunasekeran MS**

Dean, SBMCH



**Short term course on Magnetic Resonance Imaging**

**Student Name List**

Sl.No.	Name	Sl.No.	Name
1	HARINI G	37	SRIVIGNESH R
2	HARRIBALAJI M	38	SRUSHTI CHOWDARY YALAVARTHI
3	HARSHATH KUMAR K N	39	SUBASRI R
4	HARSHITHA REDDY D	40	SURAJ ANTON S
5	HOMA SAMANVITHA S	41	SURYA KUMAR S
6	JANANI S	42	SURYA R
7	JAYA KALYANI P S	43	SWETHA M
8	JEEVITHA P	44	UDAYA S
9	JESVANTHAN E	45	UTHAYASURYA K
10	JEYA PRADHA C	46	VAIBHAVI D
11	JOSEPH MARTIN J	47	VANI KRISHNA
12	JOTHIRLATHA Y J	48	VEENA KRISHNA
13	KAVYA G	49	VIGNESH P
14	KEERTHANA K	50	VIKAASH K S
15	KEERTHANA SURESH	51	VINITH M V
16	KHAAVYA B	52	VINOTH G
17	KODURU NAVEEN KUMAR	53	YASHOPRIYADARSHINI V R
18	LAKSHANA D	54	MANGAIYARKARASI A
19	MAHALAKSHMI B	55	MARTINA LINDSAY PAUL A
20	SANDILYAN V	56	MATCHA REDDYSRI
21	SARUNYA R	57	MICHAEL SWETHA J
22	SHANMUGA DEVI N	58	MOHAMMED JUNAIDH KHAN B
23	SHERON TUNE J	59	MONIHA R
24	SHUBAVEE R	60	MURALI N
25	SIDDARTH VINCENT RAJ S	61	MURUGAN NANDHINI
26	SIDDHARTHANI A	62	ANEES FATHIMA M
27	SIDHITHA S M	63	NELLORE ROHITHA REDDY
28	SAI SNEHA PREETHY E	64	PADMA PRIYA P
29	SNEKHA S	65	PARIMALAM A
30	SOUMIYA E	66	PAVITHRA N
31	SOWPACKIA MANIMOZHI S	67	PAVITHRA P
32	SRI DIVYA D	68	PAVITHRA S
33	SRI SAHASARAJITHA S	69	PRADEEP A
34	SRI SIVA SHYLA R	70	PRADEEP A N
35	SRI VIDVATHA V	71	PRADHEEKSHA K
36	SRIMATHI M	72	PRAMITHA U
		73	PRATHUSHA E

3/16/2018

Chennai

From

The Course Coordinator  
Introduction to First Aid, Medical Care and Emergency  
Department of Emergency & Medicine  
Sree Balaji Medical College  
Bharath Institute of Higher Education and Research,  
Chennai

To

The Dean  
Sree Balaji Medical College  
Bharath institute of Higher Education Research,  
Chennai

**Sub: -Permission to conduct value- added course: Introduction to First Aid, Medical Care and Emergency**

Respected sir,

With reference to subject mentioned above, the Department of Emergency & Medicine proposes to conduct a value- added course titled: Introduction to First Aid, Medical Care and Emergency

We kindly solicit your kind permission to commence the program.

Warm Regards,



Course Coordinator

**SREE BALAJI MEDICAL COLLEGE & HOSPITAL**

**CHROMPET CHENNAI -600044**

**Date: 3/20/2018**

**R. No 130 /SBMCH/2018**

## **CIRCULAR**

### **Notification for Value added courses offered by the Department of Emergency & Medicine**

The **Department of Emergency & Medicine** of Sree Balaji Medical College is scheduled to offer a Value added Course on **Inroduction to First Aid, Medical Care and Emergency** from 4/9/2018 for a period of 3 weeks. Interested students can approach the Head of Department of Emergency & Medicine and Course Coordinator, for registration and for further details on or before 4/4/2018.

#### **Eligibility-MBBS STUDENTS**



Course Coordinator



HOD

Copy to:

Dean office

Vice Principal

Medical Superintendent

AO College

## **Introduction to First Aid, Medical Care and Emergency**

### **Course Description**

Emergency Medicine is a medical specialty which helps to provide immediate medical assistance to patients in urgent need during acute illness, injuries, and trauma and accidents. Medical emergencies always test the patience, perseverance and mental strength of a patient as well as the patient's family. Emergency medicine deals with varied patients who are presented to the emergency department at any time with multiple problems without diagnosis and appropriate information. The first few minutes of diagnosis and treatment will definitely help the patient from an emergency condition and can revert back to a normal life gradually. It is a wonderful rotation that exposes medical professionals to a different patient population and also variety in pathology.

### **Course Outline**

#### **Module 1 - Introduction & Overview**

- Emergency Medicine Department – Organization of EMD, Organization of Emergency MS, Disaster management
- Legal Aspects of Emergency Medicine – Introduction (Content Edited)\*\*

#### **Module 2 - Airway Management**

- Airway Management – Introduction
- Mechanical Ventilation – Introduction, Specific Modes of Ventilation, General Classes of Ventilators, Noninvasive ventilation, Weaning

#### **Module 3 - Trauma & Orthopaedics**

- Trauma Emergencies – General Approach to a Trauma Patient, Traumatic Shock, Hypovolemic Shock, Thoracic Shock, Stab Wounds, Pelvic Trauma, Genitourinary Trauma, Pediatric trauma, Trauma in Pregnancy, Penetrating & Blunt Neck Trauma
- Emergency Department Imaging – Emergency Department Sonography, Diagnostic Imaging in Emergency Medicine
- Neurology in Trauma – Management of Head Injuries, Cerebral Protection in Head Injuries, Spinal Injuries

#### **Module 4 - Orthopedic Emergencies**

- 
- Types of Orthopedic Emergencies, Fractures, Hand and Wrist Injuries, Hand Injuries, Wrist Injuries, Forearm, Elbow, Upper Arm and Shoulder Injuries, Pelvis, Hip and Femur Injuries, Lower Leg and Ankle Injuries.
- Complications of Orthopedic Injuries, Basic Management of Orthopedic Emergencies

#### **Module 5 - Wounds & Analgesia**

- Principles of wound management, Methods of wound closure, Local and Regional anesthesia, Bedside anesthesia in emergency department and Pain management

#### **Module 6 - Medical Emergencies**

- Cardiac Emergencies: Approach To Chest Pain, Cardiogenic Shock, Congestive Cardiac Failure or Acute heart failure, Acute Coronary Syndrome, Syncope and Cardiac Arrhythmias
- Respiratory Emergencies: Acute Respiratory Failure, Asthma and Bronchial Asthma, Chronic Obstructive Pulmonary Disease (COPD), Hemoptysis, Pneumonia, Non-Cardiogenic Pulmonary Edema, Pleural Effusions and Pneumothorax, Mycobacterial Emergencies
- Endocrine Emergencies: Hypoglycemia, Diabetic Ketoacidosis, NKH Coma (Nonketotic Hyperosmolar Coma),
- Alcoholic Ketoacidosis, Lactic Acidosis, Thyroid Storm and Myxedema Coma, Adrenal Crisis

- Neurological disorders: Altered Mental Status and Coma, CNS Infections, Stroke Emergencies, Anorexia Nervosa and Bulimia Nervosa, Panic Disorder, Depression and Suicide, Septic Shock
- Renal Emergencies: Acid Base Balance and Interpretation of Blood Gas Results, Electrolyte Disorders, Acute Renal Failure, Chronic Renal Failure, Acute kidney injury, Urinary Tract Infections, Urinary Retention
- Gastrological and Hepatic Emergencies: Inflammatory Bowel Disease, Diverticulitis, Hepatitis, Management of Acute Bleeding Esophageal Varices, Liver Cirrhosis

#### **Module 7 - Surgical Emergencies and Transfusion Emergencies**

- Surgical Emergencies: Abdominal Trauma, Acute Appendicitis, Acute Cholecystitis, Acute Pancreatitis, Anorectal Disorders- Hemorrhoids and Anal fissure, GI Foreign Bodies, Oropharyngeal Foreign Bodies, Rectal Foreign Bodies, Abdominal Aortic Aneurysm [AAA], Acute Mesenteric Ischemia [ AMI ], Intestinal Obstruction, Surgical Emergencies of Bowel, Genital Lesions (Content Edited)\*\*
- Transfusion Emergencies: Blood Transfusion

#### **Module 8 - Obstetric, Gynecologic Emergencies and Pediatric Emergencies**

- Pelvic Pain, Ectopic Pregnancy, Vaginal Bleeding during Pregnancy, Hypertension in Pregnancy, Emergency Delivery, Vaginitis, cervicitis and Pelvic Inflammatory Disease, Amenorrhea, Sexual Assault
- Approach to Ill Pediatric Patient, Pain, Sudden Infant Death syndrome, Ingested Foreign Bodies, Respiratory
- Tract Infections, Bronchiolitis, Pharyngitis, Epiglottitis, Pneumonia Syndrome, Otitis Media, Congenital Heart Disease, Kawasaki Disease, Bacteremia, Meningitis and sepsis, GIT Disorders, Intestinal Obstruction, Incarcerated hernia, Pyloric Stenosis, Intussusception, Seizures, Meckel's Diverticulum, Appendicitis, Status Epilepticus, Child Abuse

#### **Module 9 -Ear and Eye Emergencies**

- 
- Otolaryngologic Emergencies –Obstruction Due To Foreign Body, Epistaxis, Anterior Epistaxis, Posterior Epistaxis, Nasal Fracture
- Ophthalmic Emergencies – Corneal Abrasion, Glaucoma, Red Eye

### **Module 10 - Toxicology**

- Approach to the Poisoned patient
- Antidotes commonly used in Overdoses
- Treatment of Hypotension Associated with Drug Poisoning
- Carbon Monoxide Poisoning
- Illicit Drug & Controlled Substances of Abuse
- Alcohol Withdrawal
- Digitalis Toxicity
- Calcium Channel Blocker Toxicity
- Acetaminophen Hepato-Toxicity
  
- Salicylate Overdose
- Tricyclic Antidepressant Overdose
- Monoamine Oxidase Inhibitor Overdose
- Arsenic Poisoning
- Cyanide Poisoning
- Iron Poisoning
- Serum Osmolality
- Ethanol Poisoning
- Ethylene Glycol Poisoning
- Poisoning Management

### **Module 11 - Environmental Emergencies**

- Environmental Emergencies – Frost bite, Heat Exhaustion & Heat Stroke, High Altitude-Pulmonary Symptoms, High Altitude cerebral Symptoms, Hypothermia
- Burns – Chemical Burns, Electrical Burns, Lightning Burns, Thermal Burns

- Dive Emergencies – Barotrauma, Near Drowning
- Emergency Department Anaphylaxis
- Bee Sting and Insect Bites
- Bites: Animal Bites, Human Bites
- Snake Bite Emergency First Aid Information

**Course Duration: 30 Hours**

**Course coordinator : Asst Professor / Assoc Professor Department Of Emergency & Trauma Care**

S.No	Topics	Duration	Faculty
1	Introduction & Overview	2 hours	Asst Professor: Department Of Emergency & Trauma Care
2	Airway Management	2 hours	Assoc Professor Department Of Emergency & Trauma Care
3	Trauma & Orthopaedics	2 hours	Asst Professor: Department Of Emergency & Trauma Care

4	Orthopedic Emergencies	2 hours	Asst Professor: Department Of Emergency & Trauma Care
5	Wounds & Analgesia	2 hours	Assoc Professor Department Of Emergency & Trauma Care
6	Medical Emergencies	2 hours	Asst Professor: Department Of Emergency & Trauma Care
7	Surgical Emergencies and Transfusion Emergencies	2 hours	Assoc Professor Department Of Emergency & Trauma Care
8	Medical Emergencies	2 hours	Asst Professor: Department Of Emergency & Trauma Care
9	Obstetric,	2 hours	Assoc

	Gynecologic Emergencies and Pediatric Emergencies		Professor Department Of Emergency & Trauma Care
10	Ear and Eye Emergencies	2 hours	Asst Professor: Department Of Emergency & Trauma Care
11	Toxicology	2 hours	Assoc Professor Department Of Emergency & Trauma Care
12	Environmental Emergencies	2 hours	Assoc Professor Department Of Emergency & Trauma Care
13	Skills lab simulations	2 hours	Asst Professor: Department Of Emergency & Trauma Care
14	Viva Voce	2 hours	Asst Professor:

			Department Of Emergency & Trauma Care
15	Assessment	2 hours	Asst Professor: Department Of Emergency & Trauma Care

CORSE FEEDBACK FORM

Date:

Course Title: *Introduction to first aid, Medical care & Emergency*

Name: *Pramoath.*

RegNo: *22.*

Department: *Emergency Medicine*

S.NO	Particulars	1	2	3	4	5
(1. Very Unsatisfied 2. Unsatisfied 3. Neutral 4. Satisfied 5. Very satisfied)						
1.	Objectives of the course clear to you				✓	
2.	The course contents met with your expectations					✓
3.	The lecture sequence was well planned					✓
4.	The lecturers were clear and easy to understand					✓
5.	The teaching aids were effective					✓
6.	The instructors encourage interaction and were helpful				✓	
7.	The level of the course					✓
(1. Very poor 2. Poor 3. Average 4. Good 5. Excellent )						
8.	Overall rating of the course:	1	2	3	4	5

Please give suggestion for the improvement of the course:

Weakness of the course:

Strength of the course:

  
Signature

\*\*\*Thank you\*\*\*

CORSE FEEDBACK FORM

Course Title: *Introduction to First Aid, Medical Care & Emergency* Date:

Name: *AKSHAYA DEVI K.*

RegNo:

Department: *Emergency medicine*

S.NO	Particulars	1	2	3	4	5
(1. Very Unsatisfied 2. Unsatisfied 3. Neutral 4. Satisfied 5. Very satisfied)						
1.	Objectives of the course clear to you				✓	
2.	The course contents met with your expectations					✓
3.	The lecture sequence was well planned				✓	
4.	The lecturers were clear and easy to understand					✓
5.	The teaching aids were effective					✓
6.	The instructors encourage interaction and were helpful				✓	
7.	The level of the course				✓	
(1. Very poor 2. Poor 3. Average 4. Good 5. Excellent )						
8.	Overall rating of the course:	1	2	3	4	5

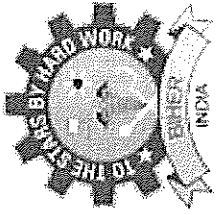
Please give suggestion for the improvement of the course:

Weakness of the course:

Strength of the course: *very clear & useful.*

*Dkavya*  
Signature

\*\*\*Thank you\*\*\*



**Bharath Institute of Higher Education and Research  
Sree Balaji Medical College & Hospital**



**Certificate**

This is to certify that Mr./Ms. ANSHIYA DEVI K has completed the value added course on Introduction to First Aid, Medical Care and Emergency conducted by Department of Emergency & Medicine at Sree Balaji Medical College & Hospital, Chennai held during 4/9/2018 to 5/1/2018.

**Dr.P.Sai Kumar MD**

Vice Principal, SBMCH

**Dr.Gunasekeran MS**

Dean, SBMCH



**Introduction to First Aid, Medical Care and Emergency**

**Student Name List**

Sl.No.	Name
1	IMAMKHAN K
2	SARATHKUMAR P
3	AJITH RAM P
4	FAIZAN SULTAN A H
5	KALIDAS R
6	RAJ KUMAR R
7	SHARMA P
8	ABHISEKH MUKHOPADHYAY
9	GAYATHRI J
10	INFAN RISHOB F
11	JASEELA MOHAMED YOOSUF
12	JAYASREE D
13	KANTHAVARSINI K
14	MIMISHA MONSON
15	NIVEDHA V
16	REVATHI I M S
17	SANDEEP B
18	SEDHU NAYAK D
19	WAJITH ALI A
20	ABINAYA B
21	AJITH KUMAR R S
22	AJITHKUMAR V
23	APOORVA S K
24	ARAVIND R
25	ARJUN S V
26	BENAZIR M
27	BINESH PAUL T
28	DAVID SOLOMON JAMES BAYNES
29	DEEPIKA M
30	DINESH S

5/18/2018

Chennai

From

The Course Coordinator  
Introduction to Healthcare Informatics  
Department of Community Medicine  
Sree Balaji Medical College  
Bharath Institute of Higher Education and Research,  
Chennai

To

The Dean  
Sree Balaji Medical College  
Bharath institute of Higher Education Research,  
Chennai

**Sub: -Permission to conduct value- added course: Introduction to Healthcare Informatics**

Respected sir,

With reference to subject mentioned above, the Department of Community Medicine proposes to conduct a value- added course titled: Introduction to Healthcare Informatics

We kindly solicit your kind permission to commence the program.

Warm Regards,



Course Coordinator

SREE BALAJI MEDICAL COLLEGE & HOSPITAL

CHROMPET CHENNAI -600044

Date: 5/22/2018

**R. No 131 /SBMCH/2018**

## **CIRCULAR**

### **Notification for Value added courses offered by the Department of Community Medicine**

The **Department of Community Medicine** of Sree Balaji Medical College is scheduled to offer a Value added Course on **Inroduction to Healthcare Informatics** from 6/11/2018 for a period of 3 weeks. Interested students can approach the Head of Department of Community Medicine and Course Coordinator, for registration and for further details on or before 6/6/2018.

### **Eligibility-MBBS STUDENTS**



Course Coordinator



HOD

Copy to:

Dean office

Vice Principal

Medical Superintendent

AO College

## Introduction to Healthcare Informatics

Health Informatics Essentials is a course which aims to upskill the participants by providing them with essential knowledge of IT in Health including entities and tools like but not limited to - HMIS, EMR, EHR, Medical Records, Telemedicine, Clinical Data, Health Insurance etc. which have shown trends, and will be the de facto standards of the Health and Hospital industry in the near future..

### Course Objectives

- Explored how technology can be used to improve health care delivery in health care organizations and in public health
- . Acquired breadth of knowledge of the principles of health informatics
- . Developed basic skills in using health informatics principles to improve practice  
. Acquired a conceptual and theoretical framework of the design, development, and implementation of health information systems.
- Acquired a basic understanding of educational and instructional design theory and principles and how the principles can be applied to deliver effective training to users of health information systems.

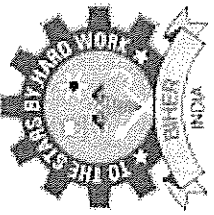
**Course Duration** : 30 Hours

**Course Coordinator** : Professor/ Assoc. Prof of Department of Community Medicine

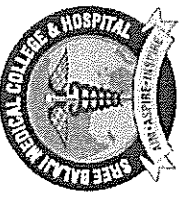
S.No	Topics	Duration	Faculty
1	Overview of Health Informatics	2 hours	Asst Prof : Dept of Community Medicine
2	Electronic Health Records and Data Standards and Exchange	2 hours	Assoc Prof : : Dept of Community Medicine
3	Workflow Analysis and Process Redesign	2 hours	Asst Prof : Dept of Community Medicine
4	Usability and Human Factors	2 hours	Assoc Prof : : Dept of Community

			Medicine
5	Systems Design and Designing for Safety	2 hours	Asst Prof : Dept of Community Medicine
6	Effective Training for HIT	2 hours	Assoc Prof : : Dept of Community Medicine
7	Discuss the advantages and disadvantages (unintended consequences) of Clinical Decision Support Systems (CDSS) in terms of cognitive support.	2 hours	Asst Prof : Dept of Community Medicine
8	principles underlying the design of healthcare systems for safety.	2 hours	Assoc Prof : : Dept of Community Medicine
9	common sources of error documented in research studies in medicine.	2 hours	Asst Prof : Dept of Community Medicine
10	principles of sound design to support usability.	2 hours	Assoc Prof : : Dept of Community Medicine
11	systematic approach to developing an effective lesson plan	2 hours	Asst Prof : Dept of Community Medicine
12	process for developing and implementing an instructional needs assessment	2 hours	Assoc Prof : : Dept of Community Medicine
13	workflow diagram based upon the application of a systematic approach	2 hours	Asst Prof : Dept of Community Medicine

	to workflow analysis.		
14	Viva Voce	2 hours	Assoc Prof : : Dept of Community Medicine
15	Assessment	2 hours	Asst Prof : Dept of Community Medicine



**Bharath Institute of Higher Education and Research**  
**Sree Balaji Medical College & Hospital**



**Certificate**

This is to certify that Mr./Ms. GOWTHAM S has completed the value added course on Inroduction to Healthcare Informatics conducted by Department of Community Medicine at Sree Balaji Medical College & Hospital, Chennai held during 6/11/2018 to 7/3/2018.

**Dr.P.Sai Kumar MD**

Vice Principal, SBMCH

**Dr.Gunasekeran MS**

Dean, SBMCH

CORSE FEEDBACK FORM

Course Title: Introduction to Health Care

Date:

Name: Dhanya K.

RegNo: 23

Department: Community Medicine

S.NO	Particulars	1	2	3	4	5
(1. Very Unsatisfied 2. Unsatisfied 3. Neutral 4. Satisfied 5. Very satisfied)						
1.	Objectives of the course clear to you		/			
2.	The course contents met with your expectations			/		
3.	The lecture sequence was well planned			/		
4.	The lecturers were clear and easy to understand			/		
5.	The teaching aids were effective			/		
6.	The instructors encourage interaction and were helpful				/	
7.	The level of the course				/	
(1. Very poor 2. Poor 3. Average 4. Good 5. Excellent )						
8.	Overall rating of the course:	1	2	3	4	5

Please give suggestion for the improvement of the course:

Weakness of the course:

Strength of the course:

  
Signature

\*\*\*Thank you\*\*\*

CORSE FEEDBACK FORM

Date:

Course Title: *Introduction to Healthcare Informatics*

Name: *Sanni H*

RegNo:

Department:

S.NO	Particulars	1	2	3	4	5
(1. Very Unsatisfied 2. Unsatisfied 3. Neutral 4. Satisfied 5. Very satisfied)						
1.	Objectives of the course clear to you				✓	
2.	The course contents met with your expectations				✓	
3.	The lecture sequence was well planned			✓		
4.	The lecturers were clear and easy to understand					✓
5.	The teaching aids were effective				✓	
6.	The instructors encourage interaction and were helpful				✓	
7.	The level of the course				✓	
(1. Very poor 2. Poor 3. Average 4. Good 5. Excellent)						
8.	Overall rating of the course:	1	2	3	4	5

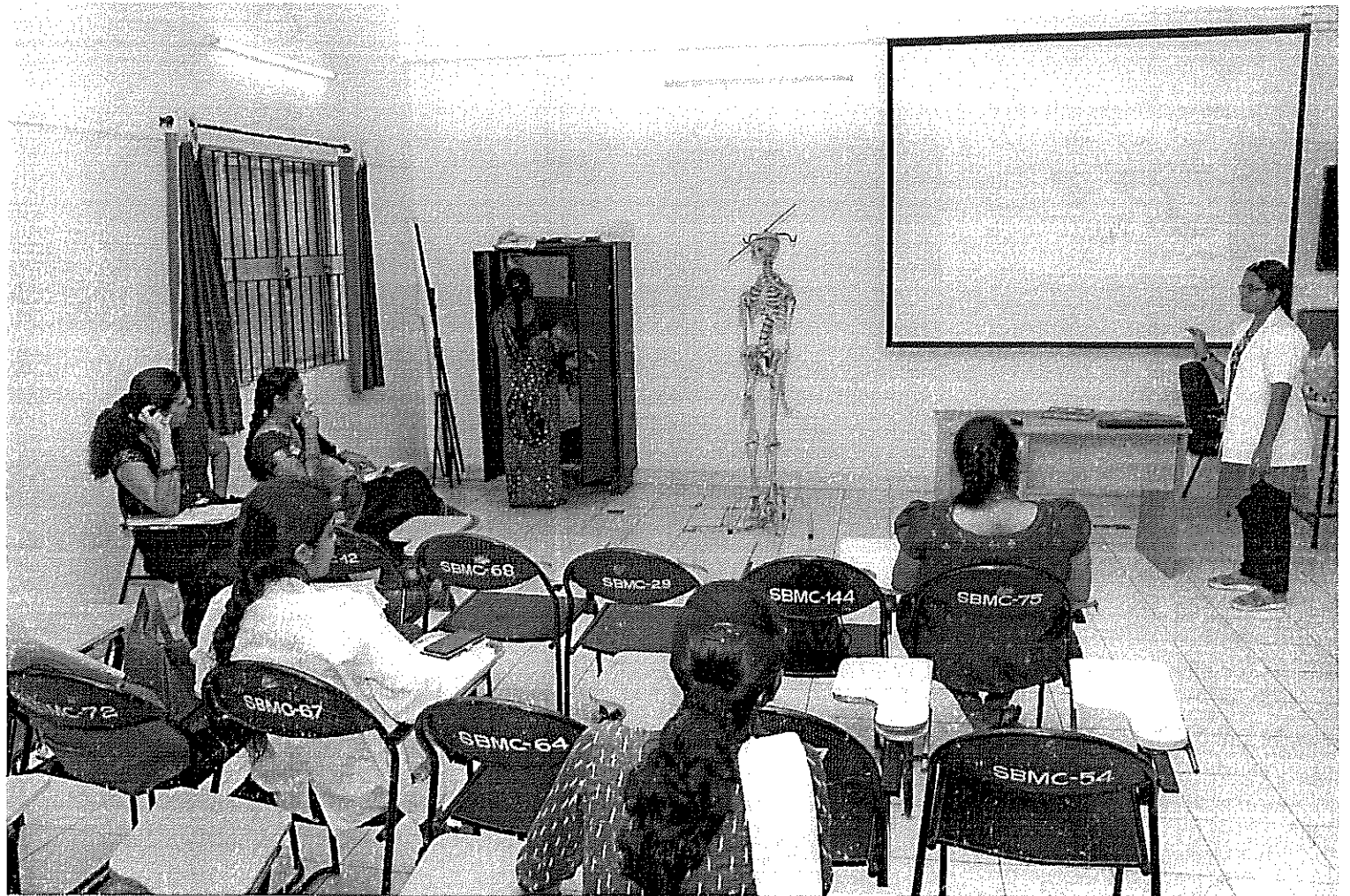
Please give suggestion for the improvement of the course:

Weakness of the course:

Strength of the course: *Useful in this age to computer modern data thought very well*

*[Signature]*  
Signature

\*\*\*Thank you\*\*\*



**Introduction to Healthcare Informatics**

**Student Name List**

Sl.No.	Name	Sl.No.	Name
1	RAM SUBRAMANIAM A C	31	MONISHA DEVI D
2	RAMANAN S	32	NANCY L
3	RAMPRASATH A	33	NANDHINI M
4	RANGANAYAKI D	34	NANDHINI SINGH R
5	RESHMI SAMOM	35	NAVEEN D
6	ROSHNI RAMAN	36	PADMASHINI A
7	SAHANA V	37	PRAKALYA R S
8	SAKTHI SRI DEVI P	38	PRATHIBHA PRASAD D
9	SARUMATHI S	39	PRAVEENA S
10	SATHISH V L	40	PRIYA SELVAKUMAR
11	SENTHAMIZH SELVI S	41	PURUSHOTHAMAN D
12	SETHU IMAYAN M S	42	RADHA N
13	SHENBAGA PRAVEEN R	43	RAGAVI V
14	SHILBA R	44	RAJADURAI I
15	SHRIYA DEV	45	RAJALAKSHMI N
16	DURGA T A		
17	FARZANA M		
18	FATHIMA SHAMEEM		
19	GRACE AISWARYA JASMIN D		
20	GURU RAJAN P K		
21	HEMA J		
22	INDHUMATHI M		
23	JEEVITHA M		
24	JOHN STENIN ABIE S B		
25	KAVIYA V		
26	KEERTHANA B		
27	KEERTHY RAJAN M		
28	LAKSHMI PRIYA K		
29	MANIGANDAN S		
30	MONICA J		

5/18/2018

Chennai

From

The Course Coordinator  
Introduction to Healthcare Innovation  
Department of Community Medicine  
Sree Balaji Medical College  
Bharath Institute of Higher Education and Research,  
Chennai

To

The Dean  
Sree Balaji Medical College  
Bharath institute of Higher Education Research,  
Chennai

**Sub: -Permission to conduct value- added course: Introduction to Healthcare Innovation**

Respected sir,

With reference to subject mentioned above, the Department of Community Medicine proposes to conduct a value- added course titled: Introduction to Healthcare Innovation

We kindly solicit your kind permission to commence the program.

Warm Regards,



Course Coordinator

**SREE BALAJI MEDICAL COLLEGE & HOSPITAL**

**CHROMPET CHENNAI -600044**

**Date: 5/22/2018**

**R. No 132 /SBMCH/2018**

**CIRCULAR**

**Notification for Value added courses offered by the Department of Community  
Medicine**

The **Department of Community Medicine** of Sree Balaji Medical College is scheduled to offer a Value added Course on **Inroduction to Healthcare Innovation** from 6/11/2018 for a period of 3 weeks. Interested students can approach the Head of Department of Community Medicine and Course Coordinator, for registration and for further details on or before 6/6/2018.

**Eligibility-MBBS STUDENTS**



Course Coordinator



HOD

Copy to:

Dean office

Vice Principal

Medical Superintendent

AO College

## **Introduction to Healthcare Innovation**

This course is a high level introduction to a dynamic and growing field of health innovations. Students will be provided with introductions to various health innovations, including pathways, technology, techniques, and outcomes. This course will expose students to the latest innovations happening in various segments of the healthcare industry. The purpose of the course is to provide tools for health innovators. On one hand, theoretical and practical understanding of information pathways in the health industries will introduce students to 'venues' for health innovators. Topics include brief introductions to different health technologies including electronic medical records, medical imaging, telemedicine, consumer health informatics, artificial intelligence in healthcare among others. The innovation process including design thinking and startup challenges will be discussed. Topics include needs findings, evaluation of existing solutions, stakeholder and market analysis, among others.

### **Learning Objectives and Outcomes**

By the end of this course, students should be able to

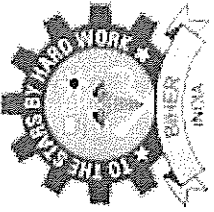
- : • Understand EMR/EHR & PHR
- Understand basics of Artificial Intelligence (AI)
- Understand how Virtual Reality (VR) & Augmented Reality (AR) is used in healthcare
- Explain impact of Precision medicine and Personalized medicine
- Differentiate between Health Exchanges and Health Networks
- s • Explain the processes involved in innovating in healthcare
- Conduct needs assessment and prioritize needs
- Evaluate healthcare markets
- Recognize the major differences between successful innovations and failures; and appreciate both of their places in the process of health innovations
- Discern competitive strategies

**Course Duration:** 30 Hours

Course Coordinator: Professor / Assoc Prof of Department of medicine

S.No	Topic	Duration	Faculty
1	Course overview; Intro. to health innovations	2 hours	Guest Speaker/Asst Prof : Dept Medicine
2	Great healthcare innovation	2 hours	Guest Speaker/Assoc Prof : : Dept of Medicine
3	Health Data, Information & Knowledge	2 hours	Guest Speaker/Asst Prof : Dept of y Medicine
4	Case presentations: One failure and one success	2 hours	GuestSpeaker/Assoc Prof : : Dept of Medicine
5	The Innovation Process - Design thinking	2 hours	Guest Speaker/Asst Prof : Dept of Medicine
6	Presentation of needs in a selected clinical setting	2 hours	Guest Speaker/Assoc Prof : : Dept of Medicine
7	<ul style="list-style-type: none"> <li>Electronic health records and patient health records</li> </ul>	2 hours	Guest Speaker/Asst Prof : Dept of Medicine
8	Health information exchanges Case presentations: Success and failure with EHRs	2 hours	Guest Speaker/Assoc Prof : : Dept of Medicine
9	The Ten Types; Network	2 hours	Guest speakerAsst Prof : Dept of Medicine
10	Introduction to AI & Machine Learning	2 hours	Guest Speaker/Assoc Prof : : Dept of Medicine

11	Working with RapidMiner tool	2 hours	Guest Speaker/Asst Prof : Dept of Medicine
12	Artificial Intelligence (AI) and Virtual Reality (VR)	2 hours	Guest SpeakerAssoc Prof : : Dept of Medicine
13	Precision medicine and personalized medicine	2 hours	Guest Speaker/Asst Prof : Dept of Community Medicine
14	Process and Product Performance	2 hours	Guest SpeakerAssoc Prof : : Dept of Medicine
15	Assessment	2 hours	Asst Prof : Dept of Community Medicine



**Bharath Institute of Higher Education and Research**  
**Sree Balaji Medical College & Hospital**



**Certificate**

This is to certify that Mr./Ms. KAUSHIK K has completed the value added course on Inroduction to Healthcare Innovation conducted by Department of Community Medicine at Sree Balaji Medical College & Hospital, Chennai held during 6/11/2018 to 7/3/2018.

**Dr.P.Sai Kumar MD**

Vice Principal, SBMCH

**Dr.Gunasekeran MS**

Dean, SBMCH

CORSE FEEDBACK FORM

Date: 7/3/2000

Course Title: Introduction to health care innovation.

Name: Kavya K.S.

RegNo: 92.

Department: Community Medicine

S.NO	Particulars	1	2	3	4	5
(1. Very Unsatisfied 2. Unsatisfied 3. Neutral 4. Satisfied 5. Very satisfied)						
1.	Objectives of the course clear to you			✓		
2.	The course contents met with your expectations			✓		
3.	The lecture sequence was well planned			✓		
4.	The lecturers were clear and easy to understand				✓	
5.	The teaching aids were effective				✓	
6.	The instructors encourage interaction and were helpful				✓	
7.	The level of the course				✓	
(1. Very poor 2. Poor 3. Average 4. Good 5. Excellent)						
8.	Overall rating of the course:				✓	5

Please give suggestion for the improvement of the course:

Weakness of the course:

Strength of the course:

*Kavya.K.S.*  
Signature

\*\*\*Thank you\*\*\*

CORSE FEEDBACK FORM

Date: 7/3/201

Course Title: Introduction to health Care  
Name: Kaushik K. innovation.  
RegNo: 86  
Department: Community Medicine

S.NO	Particulars	1	2	3	4	5
(1. Very Unsatisfied 2. Unsatisfied 3. Neutral 4. Satisfied 5. Very satisfied)						
1.	Objectives of the course clear to you			✓		
2.	The course contents met with your expectations				✓	
3.	The lecture sequence was well planned				✓	
4.	The lecturers were clear and easy to understand				✓	
5.	The teaching aids were effective				✓	
6.	The instructors encourage interaction and were helpful				✓	
7.	The level of the course				✓	
(1. Very poor 2. Poor 3. Average 4. Good 5. Excellent )						
8.	Overall rating of the course:	1	2	3	4	5

Please give suggestion for the improvement of the course:

Nil.

Weakness of the course: ; Nil.

Strength of the course: ; Nil

  
Signature

\*\*\*Thank you\*\*\*



**Introduction to Healthcare Innovation****Student Name List**

Sl.No.	Name	Sl.No.	Name
1	SASIDHAR K R	31	GLADSTON V
2	ARCHANA R	32	HARICHAKIRAVARTHY A
3	GAYATHRI C R	33	JANAKI V
4	KONA OLIVIA HEPHZIBAH	34	JANANI K G
5	MONISH RAJER M	35	JAYASHALINI S
6	RENZO SEBASTIAN	36	JAYASHREE J
7	SANTHOSH YESUDHAS	37	KAVIYARASAN R
8	VASANTHA KUMAAR K R	38	KEERTHANA R J
9	AMBIKA SUSHINDRI S	39	LIBANIA ANGELINA J
10	JESEELA S	40	LOKESH KUMAR M
11	JUDY ANCHY EDAL V	41	MANJULADEVI K
12	KANCHANA M	42	MOHAN BABU G
13	KORTHI TANUJA VANI	43	MONIKA S
14	PUCHALAPALLI SRIHARSHITHA	44	NIRANJANAA S
15	SRINIVAS K M	45	NITHIS KUMAR S
16	ABHIJIT JOSEPH	46	NIVETHA V
17	AMBRISH B	47	PALLURU PRAVEEN KUMAR
18	ANISH BARVIN SAMSUDEEN	48	PARAMESWARI P E
19	ARJUN KARTHIK C	49	PAVITHRA V
20	ARUDHARA S	50	PONRUBA M
21	ARUNACHALAM A C	51	PRADEISH M
22	BALAJI A R	52	PRISHOO REDDY M
23	BALAJI V	53	PRIYANKA B
24	BHAGAT SINGH P P	54	RAMASAMY V
25	CATHERINE JENIFER D	55	SANTHOSH KUMAR R
26	CHANDRASEKAR R	56	SHAMBAVE B S
27	DEEPAK SAI PRASAD	57	SHIVRAAMGAUTAM S
28	DEVAPREETHA N	58	SHRUTHI M
29	DHARANI M	59	SOURIYA GOVINDAN A
30	FIFI DARLING EVANA	60	SRINIVASAN S

4/13/2018

Chennai

From

The Course Coordinator  
Introduction to Aesthetic Medicine  
Department of Dermatology  
Sree Balaji Medical College  
Bharath Institute of Higher Education and Research,  
Chennai

To

The Dean  
Sree Balaji Medical College  
Bharath institute of Higher Education Research,  
Chennai


**Sub: -Permission to conduct value- added course: Introduction to Aesthetic Medicine**

Respected sir,

With reference to subject mentioned above, the Department of Dermatology proposes to conduct a value- added course titled: Introduction to Aesthetic Medicine

We kindly solicit your kind permission to commence the program.

Warm Regards,

  
Course Coordinator



## Introduction to Aesthetic Medicine

### Learning Objectives

- Recognize the importance of aesthetic medicine.
- Introduction to basic treatment procedures for common skin and hair conditions
- Patient selection for aesthetic procedures

**Duration of Course : 30 hours**

S.No	TOPICS	DURATION	FACULTY
1	Introduction to the world of aesthetic medicine	2 HOURS	Asst Prof : Dept of Dermatology
2	Structure and function of skin	2 HOURS	Asst Prof : : Dept of Anatomy
3	Structure and function of hair	2 HOURS	Asst Prof : Dept of Anatomy
4	Common skin diseases – etiology, clinical features and management	2 HOURS	Assoc Prof : : Dept of Dermatology
5	Hair types and common hair problems	3 HOURS	Asst Prof : Dept of Dermatology
6	Chemical peels –Classification, charecteristics, indication and patient selection	3 HOURS	Assoc Prof : : Dept of Dermatology
7	Acne –Medical management, use of lasers in treatment and treatment of acne scars	3 HOURS	Asst Prof : Dept of Dermatology
8	Skin biopsy, mole and skin tag removal	2 HOURS	Assoc Prof : : Dept of Dermatology

9	Hair loss – types and medical management	2 HOURS	Asst Prof : Dept of Dermatology
10	Harvesting of hair – Donor preparation, graft preparation Video demonstration	3 HOURS	Assoc Prof : : Dept of Dermatology
11	Derma rollers and mesotherapy for hair regrowth	2 HOURS	Asst Prof : Dept of Dermatology
12	Dermal fillers – Introduction, patient selection, indications, side effects and complications	2 HOURS	Assoc Prof : : Dept of Dermatology
13	ASSESSMENT	2 HOURS	Asst Prof : Dept of Dermatology

CORSE FEEDBACK FORM

Date:

Course Title: *Aesthetic Medicine*

Name: *Roobar E.*

RegNo: *82.*

Department: *Dermatology*

S.NO	Particulars	1	2	3	4	5
(1. Very Unsatisfied 2. Unsatisfied 3. Neutral 4. Satisfied 5. Very satisfied)						
1.	Objectives of the course clear to you					✓
2.	The course contents met with your expectations				✓	
3.	The lecture sequence was well planned					✓
4.	The lecturers were clear and easy to understand					✓
5.	The teaching aids were effective				✓	
6.	The instructors encourage interaction and were helpful					✓
7.	The level of the course				✓	
(1. Very poor 2. Poor 3. Average 4. Good 5. Excellent)						
8.	Overall rating of the course:	1	2	3	4	5

Please give suggestion for the improvement of the course: *NIL*

Weakness of the course:

Strength of the course: *Good faculty*

  
Signature

\*\*\*Thank you\*\*\*

CORSE FEEDBACK FORM

Date:

Course Title: INTRODUCTION TO AESTHETIC MEDICINE

Name: DREETHI V.S

RegNo:

Department: DERMATOLOGY

S.NO	Particulars	1	2	3	4	5
(1. Very Unsatisfied 2. Unsatisfied 3. Neutral 4. Satisfied 5. Very satisfied)						
1.	Objectives of the course clear to you					✓
2.	The course contents met with your expectations					✓
3.	The lecture sequence was well planned					✓
4.	The lecturers were clear and easy to understand				✓	
5.	The teaching aids were effective				✓	✓
6.	The instructors encourage interaction and were helpful					✓
7.	The level of the course					✓
(1. Very poor 2. Poor 3. Average 4. Good 5. Excellent)						
8.	Overall rating of the course:	1	2	3	4	5

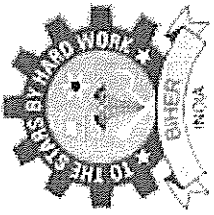
Please give suggestion for the improvement of the course:

Weakness of the course:

Strength of the course:

  
Signature

\*\*\*Thank you\*\*\*



**Bharath Institute of Higher Education and Research  
Sree Balaji Medical College & Hospital**



**Certificate**

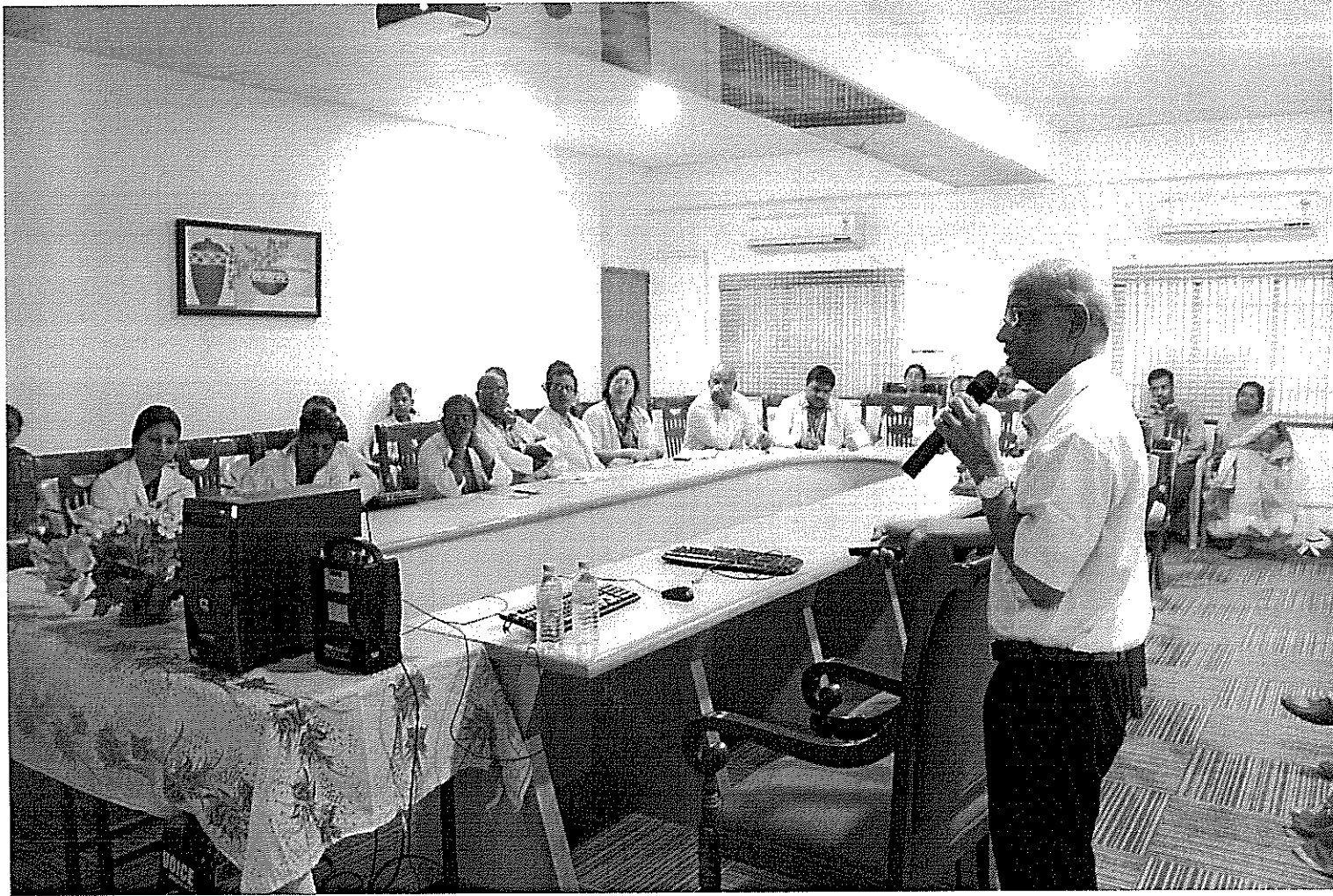
This is to certify that Mr./Ms. PREETHI V S has completed the value added course on Introduction to Aesthetic Medicine conducted by Department of Dermatology at Sree Balaji Medical College & Hospital, Chennai held during 5/9/2018 to 5/31/2018.

**Dr.P.Sai Kumar MD**

Vice Principal, SBMCH

**Dr.Gunasekeran MS**

Dean, SBMCH



**Introduction to Aesthetic Medicine**

**Student Name List**

Sl.No.	Name	Sl.No.	Name
1	ARUNA S	31	GAYATHRI B
2	ANDRO S	32	GOKUL G
3	JAINULABUDEEN S	33	GOMATHI S
4	PANNEERSELVAM P	34	HAMEEDA NASHIKA SALMA
5	PRANESH G	35	HANSAN PERI SANTHOSH S
6	SABRIYA HUSSAIN	36	HEMAPRIYA A
7	SIVARAM P	37	HUDSON J
8	DISHAN LOVINTO K J	38	INDRA S
9	GEETHA LAKSHMI N	39	ISWARYA B
10	JONATHAN PRAKASAM THOMAS J	40	JAYA PRABHA J
11	KIRAN KUMAR K	41	JAYACHANDRAN KARLINYACHANDER
12	NOUNESENUO	42	JEMIMA AJITHA P
13	RAM KUMAR P	43	KAAVYA CHANDRASEKAR
14	SRINATH K	44	MADHINA S
15	SWETHA U	45	MAGESHKUMAR M
16	UDHAYA BHASKAR R		
17	VENNILA R		
18	ADITHYA S		
19	AJITH ADITYAA T		
20	AMIRTHA MALAR A		
21	ANDREA JOSEPH		
22	ANNAPOORANI M		
23	ANSELINE MARY VERONICA B		
24	ASHISH V S		
25	ASHWATHI S		
26	ASWATH C A		
27	BALASUBRAMANIAM C		
28	BERTI S		
29	BHAVADHARANI M		
30	CHETENDRA PRASAD G		

1/8/2018

Chennai

From

The Course Coordinator  
Speech Language And Hearing Sciences  
Department of Otolaryngology  
Sree Balaji Medical College  
Bharath Institute of Higher Education and Research,  
Chennai

To

The Dean  
Sree Balaji Medical College  
Bharath institute of Higher Education Research,  
Chennai

**Sub: -Permission to conduct value- added course: Speech Language And Hearing Sciences**

Respected sir,

With reference to subject mentioned above, the Department of Otolaryngology proposes to conduct a value- added course titled: Speech Language And Hearing Sciences

We kindly solicit your kind permission to commence the program.

Warm Regards,



Course Coordinator

**SREE BALAJI MEDICAL COLLEGE & HOSPITAL**

**CHROMPET CHENNAI -600044**

**Date: 1/12/2018**

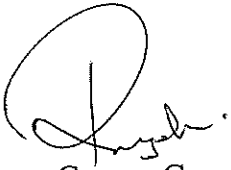
**R. No 137 /SBMCH/2018**

**CIRCULAR**

**Notification for Value added courses offered by the Department of Otolaryngology**

The **Department of Otolaryngology** of Sree Balaji Medical College is scheduled to offer a Value added Course on **Speech Language And Hearing Sciences** from 2/1/2018 for a period of 3 weeks. Interested students can approach the Head of Department of Otolaryngology and Course Coordinator, for registration and for further details on or before 1/27/2018.

**Eligibility-MBBS STUDENTS**



Course Coordinator



HOD

Copy to:

Dean office

Vice Principal

Medical Superintendent

AO College

## Speech Language And Hearing Sciences

### Learning Objectives

- Basic description of Anatomy and Physiology of hearing and speech
- Patho physiology of Adult neuro-communication disorders
- Psychological aspects of speech and Hearing
- Knowledge of the indications of using MRI
- Childhood communication disorders
- Articulation and phonological disorders
- Diagnostics and noise measurement and hearing conversion

**Duration of Course : 30 hours**

•

S.No	TOPICS	DURATION	FACULTY
1	Introduction to course	2 HOURS	Asst Prof : Dept of ENT
2	Basic Anatomy of hearing and speech	2 HOURS	Assoc Prof :Dept of Anatomy
3	Medical Physiology of hearing and speech	2 HOURS	Asst Prof : Dept of Physiology
4	Introduction to Linguists	2 HOURS	Assoc Prof : : Dept of ENT
5	Psychology-related to Speech	2 HOURS	Asst Prof : Dept of ENT
6	Basic Acoustics	2 HOURS	Assoc Prof : : Dept of ENT

7	Adult Neuro-communication disorders	2 HOURS	Asst Prof : Dept of neurology
8	Neuro-motor Speech Disorders	2 HOURS	Assoc Prof : : Dept of Neurology
9	Childhood Communication Disorders	2 HOURS	Asst Prof : Dept of Paediatrics
10	Articulation and Phonological Disorders	2 HOURS	Assoc Prof : : Dept of ENT
11	Clinical Work (Audiology)	2 HOURS	Asst Prof : Dept of ENT
12	Clinical Work (Speech Pathology)	2 HOURS	Assoc Prof : : Dept of ENT
13	Amplification and Assistive Devices for the hearing impaired.	2 HOURS	Asst Prof : Dept of ENT
14	Rehabilitative Audiology	2 HOURS	Assoc Prof : : Dept of ENT
15	ASSESSMENT	2 HOURS	Dept of ENT – All Faculty

CORSE FEEDBACK FORM

Date:

Course Title: *Speech Language & hearing Sciences*

Name: *Archana K.P.*

RegNo: *12*

Department: *ENT*

S.NO	Particulars	1	2	3	4	5
(1. Very Unsatisfied 2. Unsatisfied 3. Neutral 4. Satisfied 5. Very satisfied)						
1.	Objectives of the course clear to you				✓	
2.	The course contents met with your expectations					✓
3.	The lecture sequence was well planned				✓	
4.	The lecturers were clear and easy to understand				✓	
5.	The teaching aids were effective					✓
6.	The instructors encourage interaction and were helpful					✓
7.	The level of the course				✓	
(1. Very poor 2. Poor 3. Average 4. Good 5. Excellent)						
8.	Overall rating of the course:	1	2	3	4	5

Please give suggestion for the improvement of the course:

Weakness of the course:

Strength of the course:

  
Signature

\*\*\*Thank you\*\*\*

CORSE FEEDBACK FORM

Date:

Course Title: *SPEECH LANGUAGE & HEARING*

Name: *VIGNESHWARAN. P*

RegNo:

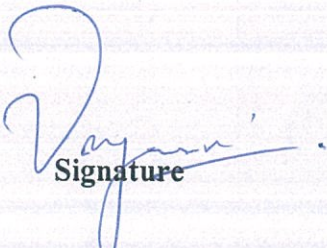
Department: *ENT*

S.NO	Particulars	1	2	3	4	5
(1. Very Unsatisfied 2. Unsatisfied 3. Neutral 4. Satisfied 5. Very satisfied)						
1.	Objectives of the course clear to you				✓	
2.	The course contents met with your expectations				✓	
3.	The lecture sequence was well planned					✓
4.	The lecturers were clear and easy to understand					✓
5.	The teaching aids were effective					✓
6.	The instructors encourage interaction and were helpful					✓
7.	The level of the course					✓
(1. Very poor 2. Poor 3. Average 4. Good 5. Excellent)						
8.	Overall rating of the course:	1	2	3	4	5

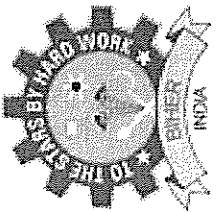
Please give suggestion for the improvement of the course:

Weakness of the course:

Strength of the course:

  
Signature

\*\*\*Thank you\*\*\*



**Bharath Institute of Higher Education and Research  
Sree Balaji Medical College & Hospital**



**Certificate**

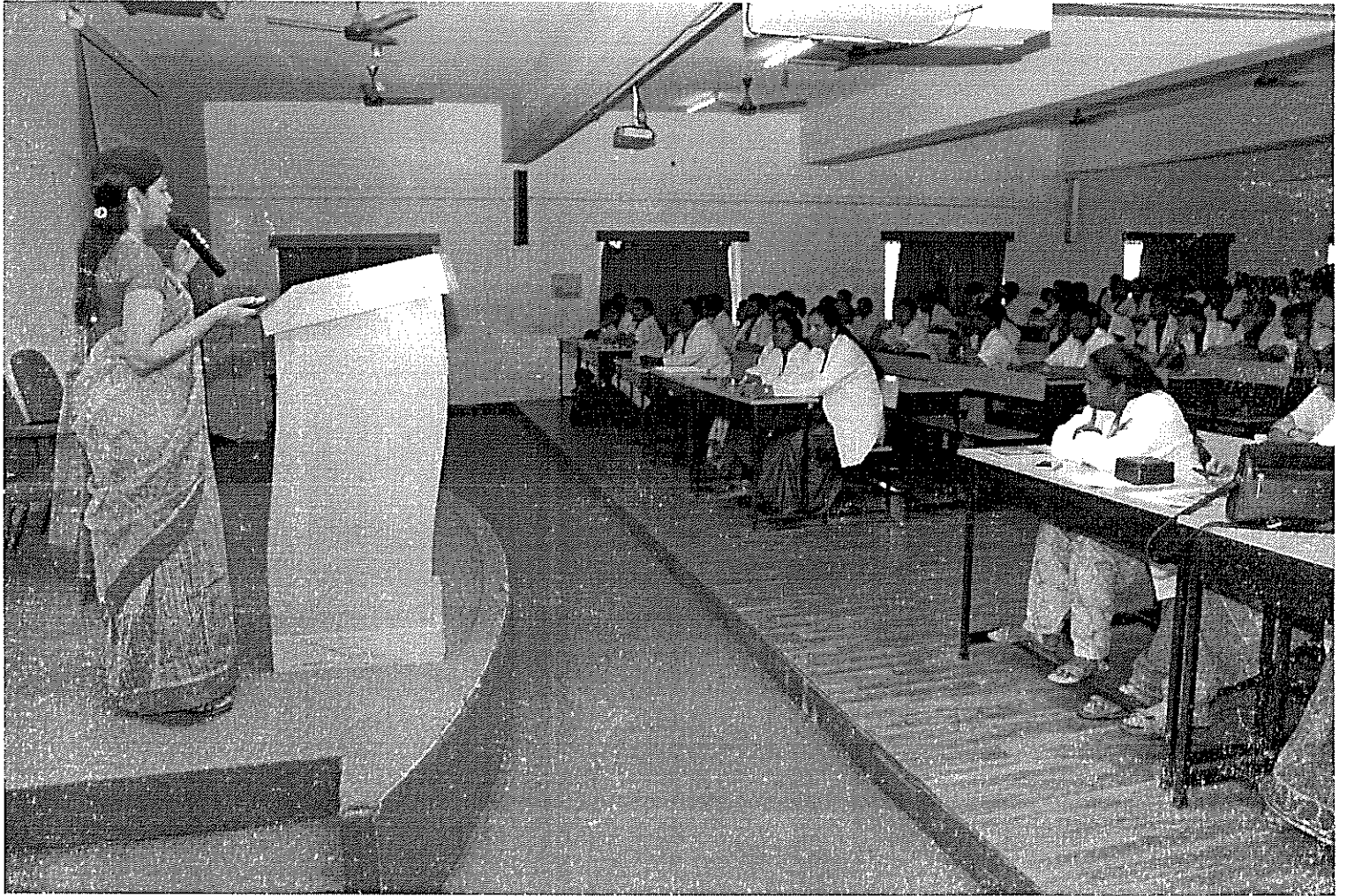
This is to certify that Mr./Ms. VIGNESHWARAN P has completed the value added course on Speech Language And Hearing Sciences conducted by Department of Otolaryngology at Sree Balaji Medical College & Hospital, Chennai held during 2/1/2018 to 2/23/2018.

**Dr.P.Sai Kumar MD**

Vice Principal, SBMCH

**Dr.Gunasekeran MS**

Dean, SBMCH



**Speech Language And Hearing Sciences**

**Student Name List**

Sl.No.	Name	Sl.No.	Name
1	IMAMKHAN K	31	DURGA T A
2	SARATHKUMAR P	32	FARZANA M
3	AJITH RAM P	33	FATHIMA SHAMEEM
4	FAIZAN SULTAN A H	34	GRACE AISWARYA JASMIN D
5	KALIDAS R	35	GURU RAJAN P K
6	RAJ KUMAR R	36	HEMA J
7	SHARMA P	37	INDHUMATHI M
8	ABHISEKH MUKHOPADHYAY	38	JEEVITHA M
9	GAYATHRI J	39	JOHN STENIN ABIE S B
10	INFAN RISHOB F	40	KAVIYA V
11	JASEELA MOHAMED YOOSUF	41	KEERTHANA B
12	JAYASREE D	42	KEERTHY RAJAN M
13	KANTHA VARSINI K	43	LAKSHMI PRIYA K
14	MIMISHA MONSON	44	MANIGANDAN S
15	NIVEDHA V	45	MONICA J
16	REVATHI I M S	46	MONISHA DEVI D
17	SANDEEP B	47	NANCY L
18	SEDHU NAYAK D	48	NANDHINI M
19	WAJITH ALI A	49	NANDHINI SINGH R
20	ABINAYA B	50	NAVEEN D
21	AJITH KUMAR R S	51	PADMASHINI A
22	AJITHKUMAR V	52	PRAKALYA R S
23	APOORVA S K	53	PRATHIBHA PRASAD D
24	ARAVIND R	54	PRAVEENA S
25	ARJUN S V	55	PRIYA SELVAKUMAR
26	BENAZIR M	56	PURUSHOTHAMAN D
27	BINESH PAUL T	57	RADHA N
28	DAVID SOLOMON JAMES BAYNES	58	RAGAVI V
29	DEEPIKA M	59	RAJADURAI I
30	DINESH S	60	RAJALAKSHMI N
		61	RAM SUBRAMANIAM A C

12/19/2017

Chennai

From

The Course Coordinator  
Training on Clinical Pharmacy  
Department of Pharmacology  
Sree Balaji Medical College  
Bharath Institute of Higher Education and Research,  
Chennai

To

The Dean  
Sree Balaji Medical College  
Bharath institute of Higher Education Research,  
Chennai

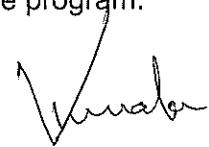
**Sub: -Permission to conduct value- added course: Training on Clinical Pharmacy**

Respected sir,

With reference to subject mentioned above, the Department of Pharmacology proposes to conduct a value- added course titled: Training on Clinical Pharmacy

We kindly solicit your kind permission to commence the program.

Warm Regards,



Course Coordinator

**SREE BALAJI MEDICAL COLLEGE & HOSPITAL**

**CHROMPET CHENNAI -600044**

**Date: 12/23/2017**

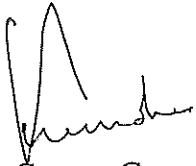
**R. No 258 /SBMCH/2018**

**CIRCULAR**

**Notification for Value added courses offered by the Department of Pharmacology**

The **Department of Pharmacology** of Sree Balaji Medical College is scheduled to offer a Value added Course on **Training on Clinical Pharmacy** from 1/12/2018 for a period of 3 weeks. Interested students can approach the Head of Department of Pharmacology and Course Coordinator, for registration and for further details on or before 1/5/2018.

**Eligibility-MBBS STUDENTS**



Course Coordinator



HOD

Copy to:

Dean office

Vice Principal

Medical Superintendent

AO College

## Training on Clinical Pharmacy

### Course Overview

The course includes working methods and tools for clinical pharmaceutical work. The student works with and discuss real and complex patient cases with a focus on drug-related problems. Practice is carried out within the in patient care and includes rounds, auscultation with health-care personnel and patient communication. The students also document patient cases continuously during the practice. During the course, the student may also train: - the ability to communicate with patients, physicians and other health-care personnel - the ability to assess the need of drug-related information to patients physicians and other health-care personnel - the ability to search, sort and review scientific

**Course Duration:** 30 hours

**Course Coordinators :** Professor/ Assoc Prof of Pharmacology

S.No	Topics	Duration	Faculty
1.	Introduction to Course	2 hours	Asst Prof of Pharmacology
2	Pharmaceutical Organic Chemistry	2 hours	Assoc.Prof of Pharmacology
3	Pharmaceutical Inorganic Chemistry	2 hours	Assoc.Prof of Pharmacology
4	Remedial Mathematics/ Biology	2 hours	Asst Prof of Pharmacology
5	Pathophysiology Pharmaceutical Microbiology	2 hours	Asst Prof of Pharmacology
6	Pharmacognosy & Phyto-pharmaceuticals	2 hours	Assoc.Prof of Pharmacology
7	Community Pharmacy	2 hours	Asst Prof of

			Pharmacology
8	Pharmaco-therapeutics	2 hours	Asst Prof of Pharmacology
9	Clinical Pharmacy	2 hours	Asst Prof of Pharmacology
10	Biopharmaceutics & Pharmacokinetics Clinical Toxicology	2 hours	Assoc.Prof of Pharmacology
11	Clinical Research	2 hours	Asst Prof of Pharmacology
12	Pharmacoepidemiology and Pharmacoeconomics	2 hours	Asst Prof of Pharmacology
13	Clinical Pharmacokinetics & Pharmacotherapeutic Drug Monitoring	2 hours	Assoc.Prof of Pharmacology
14	Viva voce	2 hours	Asst Prof of Pharmacology
15	Assrsment	2 hours	Asst Prof of Pharmacology

CORSE FEEDBACK FORM

Date:

Course Title: Clinical Phaearmacy

Name: Saurabh P.

RegNo:

Department:

S.NO	Particulars	1	2	3	4	5
(1. Very Unsatisfied 2. Unsatisfied 3. Neutral 4. Satisfied 5. Very satisfied)						
1.	Objectives of the course clear to you				✓	
2.	The course contents met with your expectations			✓		
3.	The lecture sequence was well planned				✓	
4.	The lecturers were clear and easy to understand				✓	
5.	The teaching aids were effective					✓
6.	The instructors encourage interaction and were helpful					✓
7.	The level of the course				✓	
(1. Very poor 2. Poor 3. Average 4. Good 5. Excellent )						
8.	Overall rating of the course:	1	2	3	4	5

Please give suggestion for the improvement of the course:

Weakness of the course:

Strength of the course:

Signature

\*\*\*Thank you\*\*\*

CORSE FEEDBACK FORM

Date:

Course Title: CLINICAL PHARMACY.

Name: SUDHARSHAN.

RegNo: 63

Department: PHARMACOLOGY

S.NO	Particulars	1	2	3	4	5
(1. Very Unsatisfied 2. Unsatisfied 3. Neutral 4. Satisfied 5. Very satisfied)						
1.	Objectives of the course clear to you			/		
2.	The course contents met with your expectations			/		
3.	The lecture sequence was well planned			/		
4.	The lecturers were clear and easy to understand				/	
5.	The teaching aids were effective				/	
6.	The instructors encourage interaction and were helpful				/	
7.	The level of the course				/	
(1. Very poor 2. Poor 3. Average 4. Good 5. Excellent )						
8.	Overall rating of the course:	1	2	3	4	5

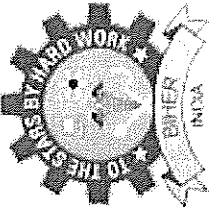
Please give suggestion for the improvement of the course:

Weakness of the course:

Strength of the course:

  
Signature

\*\*\*Thank you\*\*\*



**Bharath Institute of Higher Education and Research  
Sree Balaji Medical College & Hospital**



**Certificate**

This is to certify that Mr./Ms. SANGAMITHRAI S has completed the value added course on Training on Clinical Pharmacy conducted by Department of Pharmacology at Sree Balaji Medical College & Hospital, Chennai held during 1/12/2018 to 2/3/2018.

**Dr.P.Sai Kumar MD**

Vice Principal, SBMCH

**Dr.Gunasekeran MS**

Dean, SBMCH



**Training on Clinical Pharmacy**

**Student Name List**

Sl.No.	Name	Sl.No.	Name
1	SASIDHAR K R	31	GLADSTON V
2	ARCHANA R	32	HARICHAKIRAVARTHY A
3	GAYATHRI C R	33	JANAKI V
4	KONA OLIVIA HEPHZIBAH	34	JANANI K G
5	MONISH RAJER M	35	JAYASHALINI S
6	RENZO SEBASTIAN	36	JAYASHREE J
7	SANTHOSH YESUDHAS	37	KAVIYARASAN R
8	VASANTHA KUMAAR K R	38	KEERTHANA R J
9	AMBIKA SUSHINDRI S	39	LIBANIA ANGELINA J
10	JESEELA S	40	LOKESH KUMAR M
11	JUDY ANCHY EDAL V	41	MANJULADEVI K
12	KANCHANA M	42	MOHAN BABU G
13	KORTHI TANUJA VANI	43	MONIKA S
14	PUCHALAPALLI SRIHARSHITHA	44	NIRANJANAA S
15	SRINIVAS K M	45	NITHIS KUMAR S
16	ABHIJIT JOSEPH	46	NIVETHA V
17	AMBRISH B	47	PALLURU PRAVEEN KUMAR
18	ANISH BARVIN SAMSUDEEN	48	PARAMESWARI P E
19	ARJUN KARTHIK C	49	PAVITHRA V
20	ARUDHARA S	50	PONRUBA M
21	ARUNACHALAM A C	51	PRADEISH M
22	BALAJI A R	52	PRISHOO REDDY M
23	BALAJI V	53	PRIYANKA B
24	BHAGAT SINGH P P	54	RAMASAMY V
25	CATHERINE JENIFER D		
26	CHANDRASEKAR R		
27	DEEPAK SAI PRASAD		
28	DEVAPREETHA N		
29	DHARANI M		
30	FIFI DARLING EVANA		

3/9/2018

Chennai

From

The Course Coordinator  
Concepts Of Psychology  
Department of Psychiatry  
Sree Balaji Medical College  
Bharath Institute of Higher Education and Research,  
Chennai

To

The Dean  
Sree Balaji Medical College  
Bharath institute of Higher Education Research,  
Chennai

**Sub: -Permission to conduct value- added course: Concepts Of Psychology**

Respected sir,

With reference to subject mentioned above, the Department of Psychiatry proposes to conduct a value- added course titled: Concepts Of Psychology

We kindly solicit your kind permission to commence the program.

Warm Regards,



Course Coordinator

**SREE BALAJI MEDICAL COLLEGE & HOSPITAL**

**CHROMPET CHENNAI -600044**

**Date: 3/13/2018**

**R. No 127/SBMCH/2018**

**CIRCULAR**

**Notification for Value added courses offered by the Department of Psychiatry**

The **Department of Psychiatry** of Sree Balaji Medical College is scheduled to offer a Value added Course on **Concepts Of Psychology** from 4/2/2018 for a period of 3 weeks. Interested students can approach the Head of Department of Psychiatry and Course Coordinator, for registration and for further details on or before 3/28/2018.

**Eligibility-MBBS STUDENTS**



Course Coordinator



HOD

Copy to:

Dean office

Vice Principal

Medical Superintendent

AO College

### CONCEPTS OF PSYCHOLOGY

Psychology is the study of human health and behaviour affected by their mind. Psychology courses in India are offered at various levels i.e. Diploma courses in Psychology, Certificate courses in Psychology, Bachelor degree courses in Psychology as well as Postgraduate courses in Psychology. Moreover, there are many research-level courses in Psychology and part-time or online courses in Psychology.

While, Psychology is a vast subject itself, but every course that requires studying about Human anatomy and related subjects also include basic concepts of psychology in its course-curriculum. Psychology as a subject is generally included in counselling courses, physiotherapy therapeutic and other medical courses. Psychology course requires studying and understanding human brain development, consciousness, behaviour and personality and related topics.

**Course Duration: 30 hours**

**Course Coordinator: Professor of Psychiatry /Assoc Professor of Psychiatry**

S.NO	TOPICS	DURATION	FACULTY
1	Introduction to Psychology	2 Hours	Asst Prof : Dept of Psychiatry
2	General Psychology	2 Hours	Assoc Prof : : Dept of Psychiatry
3	Social psychology.	2 Hours	Asst Prof : Dept of Community Medicine
4	Physiological psychology	2 Hours	Assoc Prof : : Dept of Community Medicine
5	Experimental psychology	2 Hours	Asst Prof : Dept of Psychiatry
6	Human development	2 Hours	Assoc Prof : : Dept of Psychiatry
7	Attention & Perception		Asst Prof : Dept of

		2 Hours	Community Medicine
8	Intelligence and Creativity	2 Hours	Assoc Prof : : Dept of Community Medicine
9	Motivation and emotions	2 Hours	Asst Prof : Dept of Psychiatry
10	Stress and Well-Being	2 Hours	Assoc Prof : : Dept of Psychiatry
11	Principles of Psychological Test Construction	2 Hours	Asst Prof : Dept of Community Medicine
12	Organisational Behaviour	2 Hours	Assoc Prof : : Dept of Community Medicine
13	Councelling	2 Hours	Asst Prof : Dept of Psychiatry
14	Viva Voce	2 Hours	Assoc Prof : : Dept of Psychiatry
15	Assessment	2 Hours	Asst Prof : Dept of Community Medicine

CORSE FEEDBACK FORM

Date:

Course Title: *Concepts of Psychiatry*

Name: *Vivek M.*

RegNo:

Department: *Psychiatry*

S.NO	Particulars	1	2	3	4	5
(1. Very Unsatisfied 2. Unsatisfied 3. Neutral 4. Satisfied 5. Very satisfied)						
1.	Objectives of the course clear to you					✓
2.	The course contents met with your expectations					✓
3.	The lecture sequence was well planned				✓	
4.	The lecturers were clear and easy to understand					✓
5.	The teaching aids were effective				✓	
6.	The instructors encourage interaction and were helpful				✓	
7.	The level of the course					✓
(1. Very poor 2. Poor 3. Average 4. Good 5. Excellent)						
8.	Overall rating of the course:	1	2	3	4	5

Please give suggestion for the improvement of the course:

Weakness of the course:

Strength of the course:

  
Signature

\*\*\*Thank you\*\*\*

CORSE FEEDBACK FORM

Date:

Course Title: CONCEPTS OF PSYCHIATRY

Name: MUTHUPANDI

RegNo: 98

Department: PSYCHIATRY

S.NO	Particulars	1	2	3	4	5
(1. Very Unsatisfied 2. Unsatisfied 3. Neutral 4. Satisfied 5. Very satisfied)						
1.	Objectives of the course clear to you					✓
2.	The course contents met with your expectations					✓
3.	The lecture sequence was well planned				✓	
4.	The lecturers were clear and easy to understand					✓
5.	The teaching aids were effective				✓	
6.	The instructors encourage interaction and were helpful					✓
7.	The level of the course					✓
(1. Very poor 2. Poor 3. Average 4. Good 5. Excellent)						
8.	Overall rating of the course:	1	2	3	4	5

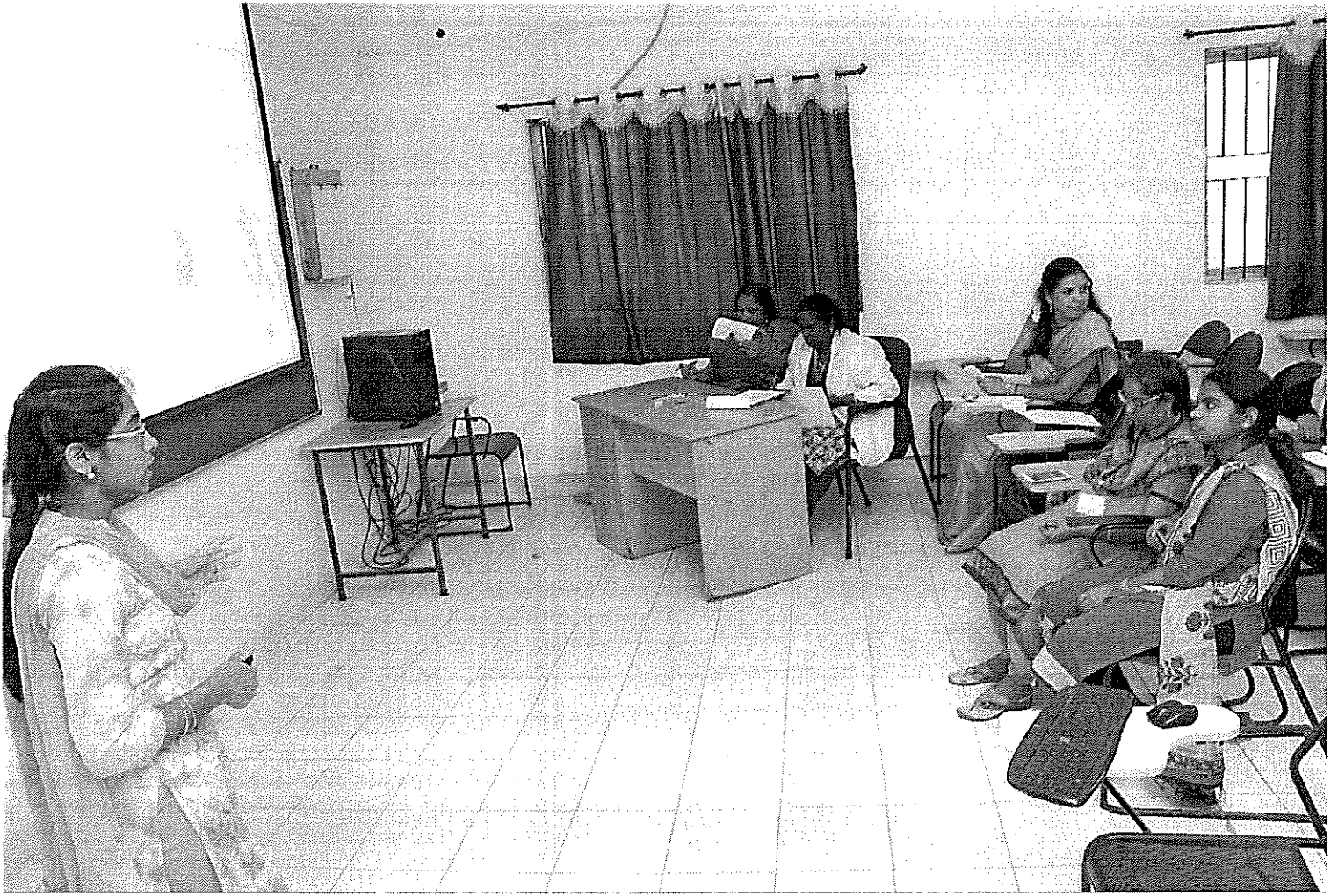
Please give suggestion for the improvement of the course:

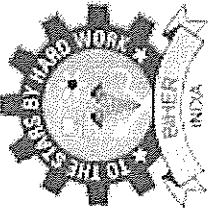
Weakness of the course:

Strength of the course:

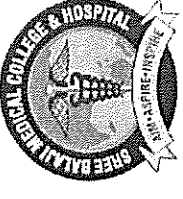
  
Signature

\*\*\*Thank you\*\*\*





**Bharath Institute of Higher Education and Research  
Sree Balaji Medical College & Hospital**



**Certificate**

This is to certify that Mr./Ms. VIVEK M has completed the value added course on Concepts Of Psychology conducted by Department of Psychiatry at Sree Balaji Medical College & Hospital, Chennai held during 4/2/2018 to 4/24/2018.

**Dr.P.Sai Kumar MD**

Vice Principal, SBMCH

**Dr.Gunasekeran MS**

Dean, SBMCH

**Concepts of Psychology**

**Student Name List**

Sl.No.	Name	Sl.No.	Name
1	PADMA PRIYA P	31	SIDDHARTHANI A
2	PARIMALAM A	32	SIDHITHA S M
3	PAVITHRA N	33	SAI SNEHA PREETHY E
4	PAVITHRA P	34	SNEKHA S
5	PAVITHRA S	35	SOUMIYA E
6	PRADEEP A	36	SOWPACKIA MANIMOZHI S
7	PRADEEP A N	37	SRI DIVYA D
8	PRADHEEKSHA K	38	SRI SAHASARAJITHA S
9	PRAMITHA U	39	SRI SIVA SHYLA R
10	PRATHUSHA E	40	SRI VIDVATHA V
11	PREETHA R	41	SRIMATHI M
12	PREMI RANJAN L	42	SRIVIGNESH R
13	PRITHY RAJAM R	43	SRUSHTI CHOWDARY VALAVARTHI
14	PUSHPAPRIYA B	44	SUBASRI R
15	RAHUL ULHAS V	45	SURAJ ANTON S
16	RANJANI P	46	SURYA KUMAR S
17	RASHMIKKA BOBBY R	47	SURYA R
18	RAVI SHANKAR	48	SWETHA M
19	SABA SAMBANDAM R	49	UDAYA S
20	SABARI V	50	UTHAYASURYA K
21	SAI KAVYA D		
22	SAI LAKSHMI G		
23	SAI VIGNESH S		
24	SALSABIEL NIJAMUDEEN		
25	SANDILYAN V		
26	SARUNYA R		
27	SHANMUGA DEVI N		
28	SHERON TUNE J		
29	SHUBAVEE R		
30	SIDDARTH VINCENT RAJ S		

4/14/2018

Chennai

From

The Course Coordinator  
Dementia Update for the Practitioner  
Department of Medicine  
Sree Balaji Medical College  
Bharath Institute of Higher Education and Research,  
Chennai

To

The Dean  
Sree Balaji Medical College  
Bharath institute of Higher Education Research,  
Chennai

**Sub: -Permission to conduct value- added course: Dementia Update for the Practitioner**

Respected sir,

With reference to subject mentioned above, the Department of Medicine proposes to conduct a value- added course titled: Dementia Update for the Practitioner

We kindly solicit your kind permission to commence the program.

Warm Regards,



Course Coordinator

**SREE BALAJI MEDICAL COLLEGE & HOSPITAL**

**CHROMPET CHENNAI -600044**

**Date: 4/19/2018**

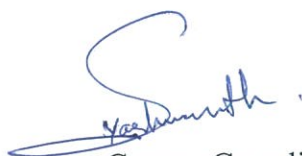
**R. No 128 /SBMCH/2018**

**CIRCULAR**

**Notification for Value added courses offered by the Department of Medicine**

The **Department of Medicine** of Sree Balaji Medical College is scheduled to offer a Value added Course on **Dementia Update for the Practitioner** from 5/9/2018 for a period of 3 weeks. Interested students can approach the Head of Department of Medicine and Course Coordinator, for registration and for further details on or before 5/4/2018.

**Eligibility-MBBS STUDENTS**



Course Coordinator



HOD

Copy to:

Dean office

Vice Principal

Medical Superintendent

AO College

CORSE FEEDBACK FORM

Date:

Course Title: DEMENTIA UPDATE FOR THE PRACTITIONER

Name: ANSHIYA DEVI. K.

RegNo: 10

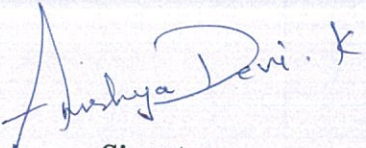
Department: PSYCHIATRY

S.NO	Particulars	1	2	3	4	5
(1. Very Unsatisfied 2. Unsatisfied 3. Neutral 4. Satisfied 5. Very satisfied)						
1.	Objectives of the course clear to you			✓		
2.	The course contents met with your expectations				✓	
3.	The lecture sequence was well planned					✓
4.	The lecturers were clear and easy to understand				✓	
5.	The teaching aids were effective				✓	
6.	The instructors encourage interaction and were helpful					✓
7.	The level of the course					✓
(1. Very poor 2. Poor 3. Average 4. Good 5. Excellent)						
8.	Overall rating of the course:	1	2	3	4	✓5

Please give suggestion for the improvement of the course:

Weakness of the course:

Strength of the course:

  
Signature

\*\*\*Thank you\*\*\*

CORSE FEEDBACK FORM

Date:

Course Title: *Dementia update for practitioners*

Name: *Archana . K. P.*

RegNo:

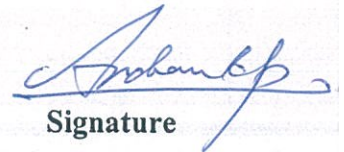
Department: *Psychiatry*

S.NO	Particulars	1	2	3	4	5
(1. Very Unsatisfied 2. Unsatisfied 3. Neutral 4. Satisfied 5. Very satisfied)						
1.	Objectives of the course clear to you					
2.	The course contents met with your expectations					
3.	The lecture sequence was well planned					
4.	The lecturers were clear and easy to understand					
5.	The teaching aids were effective					
6.	The instructors encourage interaction and were helpful					
7.	The level of the course					
(1. Very poor 2. Poor 3. Average 4. Good 5. Excellent )						
8.	Overall rating of the course:					

Please give suggestion for the improvement of the course:

Weakness of the course:

Strength of the course:

  
Signature

\*\*\*Thank you\*\*\*



**Dementia Update for the Practitioner**

**Student Name List**

Sl.No.	Name	Sl.No.	Name
1	VEENA KRISHNA	31	LOKESH K
2	VIGNESH P	32	MOKSHA DAYINI B
3	VIKAASH K S	33	NANDINI E
4	VINITH M V	34	PAVITHRA BHARATHI M
5	VINOTH G	35	PRABHAVATHI B
6	YASHOPRIYADARSHINI V R		
7	ARUN VIJAIANANDH A		
8	BRIFA TOSHI L		
9	NAJEEB AHMED		
10	VILVARAMKUMAR V		
11	AMIR ALI KHAN N		
12	KAVITHA D		
13	PARKAVIN P		
14	AARTHI M		
15	ABITHA V		
16	ANUSHA A		
17	ARVINDH SHIVA J		
18	ASMATH SULTHANA S		
19	BASSETTY INDRANI		
20	DHARSHINI K A		
21	ESTHER JEBARAANI R		
22	HARISH A		
23	HARSHINI A		
24	HEMA MALINI S		
25	KAVIN KUMARAN C		
26	KHADEEJA BEGUM Z		
27	KIRTHANA R B		
28	KISHALI P		
29	KOCHU KOZA		
30	PRATHEEKSHA V		

5/18/2018

Chennai

From

The Course Coordinator  
Global Health Delivery  
Department of Community Medicine  
Sree Balaji Medical College  
Bharath Institute of Higher Education and Research,  
Chennai

To

The Dean  
Sree Balaji Medical College  
Bharath institute of Higher Education Research,  
Chennai

**Sub: -Permission to conduct value- added course: Global Health Delivery**

Respected sir,

With reference to subject mentioned above, the Department of Community Medicine proposes to conduct a value- added course titled: Global Health Delivery

We kindly solicit your kind permission to commence the program.

Warm Regards,



Course Coordinator

**SREE BALAJI MEDICAL COLLEGE & HOSPITAL**

**CHROMPET CHENNAI -600044**

**Date: 5/22/2018**

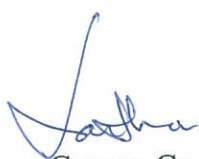
**R. No 129 /SBMCH/2018**

## **CIRCULAR**

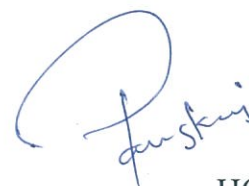
### **Notification for Value added courses offered by the Department of Community Medicine**

The **Department of Community Medicine** of Sree Balaji Medical College is scheduled to offer a Value added Course on **Global Health Delivery** from 6/11/2018 for a period of 3 weeks. Interested students can approach the Head of Department of Community Medicine and Course Coordinator, for registration and for further details on or before 6/6/2018.

#### **Eligibility-MBBS STUDENTS**



Course Coordinator



HOD

Copy to:

Dean office

Vice Principal

Medical Superintendent

AO College

## Global Health Delivery

The science of global health delivery and healthcare implementation research have served as drivers for measuring the impact and effectiveness of healthcare interventions.

**Course Duration:** 30 hours

**Course Coordinator:** Professor / Assoc Professor of  
Community Medicine

### Syllabus

S.No	Topic	Duration	Faculty
1	<ul style="list-style-type: none"><li>Introduction to the biosocial</li></ul>	2 hours	Asst Prof : Dept of Community Medicine
2	<ul style="list-style-type: none"><li>Why ideas matter: Social theory in global health</li></ul>	2 hours	Assoc Prof : : Dept of Community Medicine
3	<ul style="list-style-type: none"><li>The history of global health and colonial legacy</li></ul>	2 hours	Asst Prof : Dept of Community Medicine
4	<ul style="list-style-type: none"><li>Political economy and foreign aid</li></ul>	2 hours	Assoc Prof : : Dept of Community Medicine
5	Assignment	2 hours	Asst Prof : Dept of Community Medicine
6	<ul style="list-style-type: none"><li>The global AIDS movement</li></ul>	2 hours	Assoc Prof : : Dept of Community Medicine
7	<ul style="list-style-type: none"><li>Challenges in healthcare delivery:</li></ul>	2 hours	Asst Prof : Dept of Community Medicine
8	<ul style="list-style-type: none"><li>Building an effective rural health</li></ul>	2 hours	Assoc Prof : : Dept of Community Medicine

	delivery model		
9	Assignment	2 hours	Asst Prof : Dept of Community Medicine
10	<ul style="list-style-type: none"> <li>Critical perspectives on metrics of disease</li> </ul>	2 hours	Assoc Prof : : Dept of Community Medicine
11	Student Presentations	2 hours	Asst Prof : Dept of Community Medicine
12	<ul style="list-style-type: none"> <li>The unique challenges of mental health</li> </ul>	2 hours	Assoc Prof : : Dept of Community Medicine
13	<ul style="list-style-type: none"> <li>Values and global health</li> </ul>	2 hours	Asst Prof : Dept of Community Medicine
14	Viva Voce	2 hours	Assoc Prof : : Dept of Community Medicine
15	Assessment	2 hours	Asst Prof : Dept of Community Medicine

CORSE FEEDBACK FORM

Date:

Course Title: *Global Health Delivery*

Name: *Amand Srikanth*

RegNo:

Department:

S.NO	Particulars	1	2	3	4	5
(1. Very Unsatisfied 2. Unsatisfied 3. Neutral 4. Satisfied 5. Very satisfied)						
1.	Objectives of the course clear to you		✓			
2.	The course contents met with your expectations				✓	
3.	The lecture sequence was well planned				✓	
4.	The lecturers were clear and easy to understand			✓		
5.	The teaching aids were effective			✓		
6.	The instructors encourage interaction and were helpful				✓	
7.	The level of the course			✓		
(1. Very poor 2. Poor 3. Average 4. Good 5. Excellent)						
8.	Overall rating of the course:	1	2	3	4	5

Please give suggestion for the improvement of the course:

*More practicals needed*

Weakness of the course:

—

Strength of the course:

—

*Amand*  
Signature

\*\*\*Thank you\*\*\*

CORSE FEEDBACK FORM

Date: 7/3/2018

Course Title: *Global Health Delivery*

Name: *Madhumitha S*

RegNo:

Department: *Community Medicine*

S.NO	Particulars	1	2	3	4	5
(1. Very Unsatisfied 2. Unsatisfied 3. Neutral 4. Satisfied 5. Very satisfied)						
1.	Objectives of the course clear to you			/		
2.	The course contents met with your expectations			/		
3.	The lecture sequence was well planned				/	
4.	The lecturers were clear and easy to understand				/	
5.	The teaching aids were effective				/	
6.	The instructors encourage interaction and were helpful				/	
7.	The level of the course				/	
(1. Very poor 2. Poor 3. Average 4. Good 5. Excellent)						
8.	Overall rating of the course:	1	2	3	4	5

Please give suggestion for the improvement of the course:

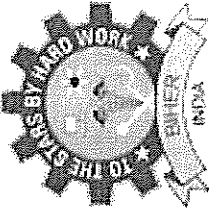
Weakness of the course:

Strength of the course:

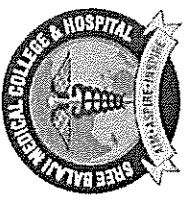
*Madhumitha S*

Signature

\*\*\*Thank you\*\*\*



**Bharath Institute of Higher Education and Research  
Sree Balaji Medical College & Hospital**



**Certificate**

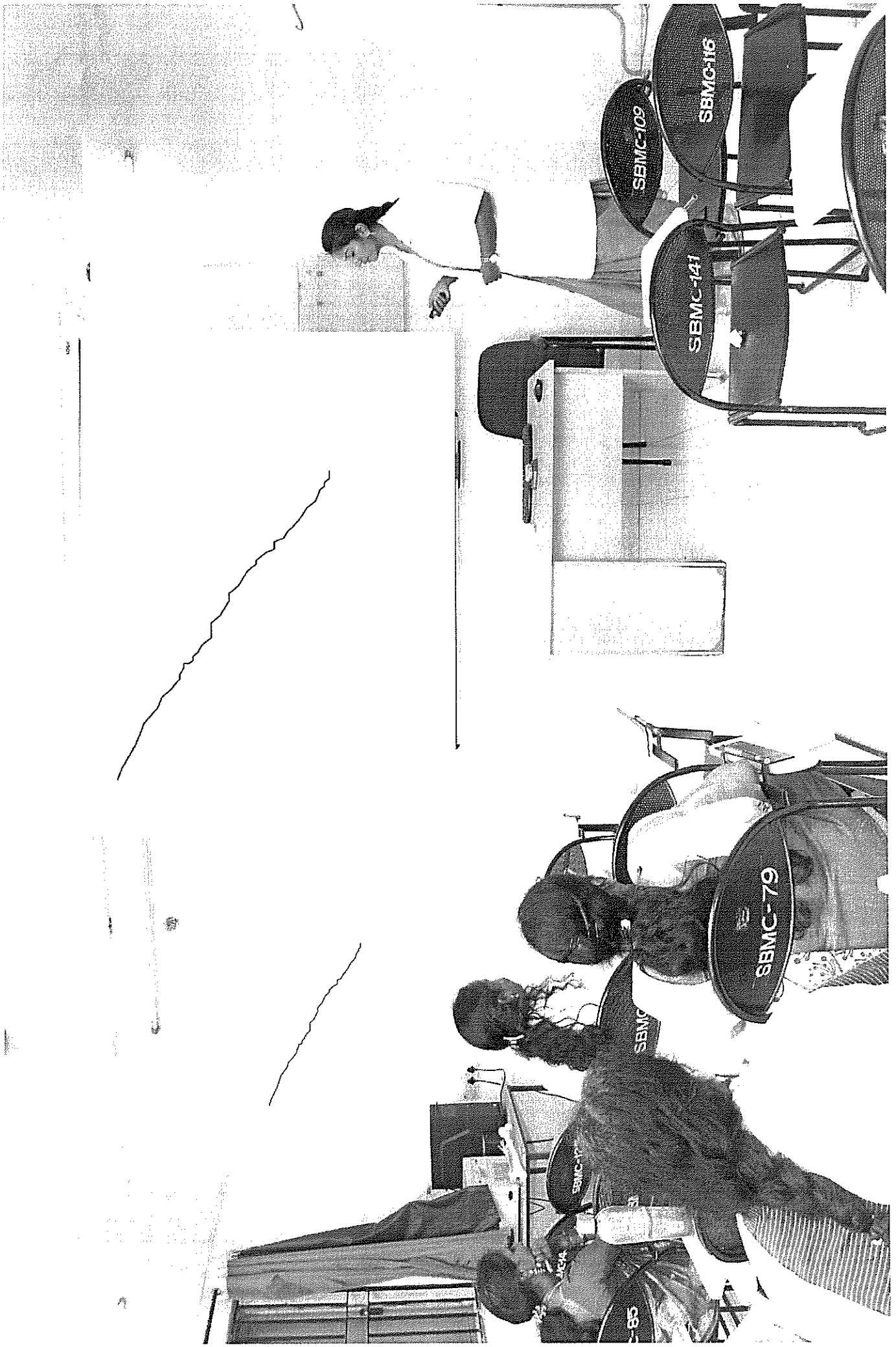
This is to certify that Mr./Ms. NOBLE TERIN RAYAN has completed the value added course on Global Health Delivery conducted by Department of Community Medicine at Sree Balaji Medical College & Hospital, Chennai held during 6/11/2018 to 7/3/2018.

**Dr.P.Sai Kumar MD**

Vice Principal, SBMCH

**Dr.Gunasekeran MS**

Dean, SBMCH



**Global Health Delivery****Student Name List**

Sl.No.	Name	Sl.No.	Name
1	PREETHI DEVI A	31	MIMISHA MONSON
2	RAJARAJESWARI M	32	NIVEDHA V
3	RAM SAI ARAVIND S	33	REVATHI I M S
4	REVANTH R S	34	SANDEEP B
5	SABEENA BANU O S	35	SEDHU NAYAK D
6	SABITHA S	36	WAJITH ALI A
7	SANJAY K	37	ABINAYA B
8	SARANRAJ D	38	AJITH KUMAR R S
9	SETHU ARUMUGAM R M	39	AJITHKUMAR V
10	SHREERAM S	40	APOORVA S K
11	SUGIVAN SP	41	ARAVIND R
12	SWETHA K	42	ARJUN S V
13	TAMIMULANSARI A	43	BENAZIR M
14	THARUN KUMAR J	44	BINESH PAUL T
15	THIRUVATHANAM V K	45	DAVID SOLOMON JAMES BAYNES
16	VAISHNAVI K	46	DEEPIKA M
17	VANISHREE K	47	DINESH S
18	IMAMKHAN K	48	RAM SUBRAMANIAM A C
19	SARATHKUMAR P	49	RAMANAN S
20	AJITH RAM P	50	RAMPRASATH A
21	FAIZAN SULTAN A H	51	RANGANAYAKI D
22	KALIDAS R	52	RESHMI SAMOM
23	RAJ KUMAR R	53	ROSHNI RAMAN
24	SHARMA P	54	SAHANA V
25	ABHISEKH MUKHOPADHYAY		
26	GAYATHRI J		
27	INFAN RISHOB F		
28	JASEELA MOHAMED YOOSUF		
29	JAYASREE D		
30	KANTHAVARSINI K		

09/03/2018

Chennai

From

The Course Coordinator

Department of Anaesthesia

Sree Balaji Medical College

Bharath Institute of Higher Education and Research,

Chennai

To

The Dean

Sree Balaji Medical College

Bharath Institute of Higher Education Research,

Chennai

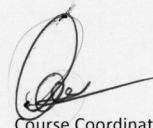
Sub: -Permission to conduct value-added course: **Certificate course in Anaesthesia Technology**

Respected sir,

With reference to subject mentioned above, the Department of Anaesthesia proposes to conduct a value-added course titled: Certificate course in certificate course in Anaesthesia Technology

We kindly solicit your kind permission to commence the program.

Warm Regards,



Course Coordinator

**SREE BALAJI MEDICAL COLLEGE & HOSPITAL**

**CHROMPET CHENNAI -600044**

**Date: 09/04/2018**

**R. No 200 / SBMCH/2018**

**CIRCULAR**

**Notification for Value added courses offered by the Department of General  
Medicine**

The **Department of Anaesthesia** of SreeBalaji Medical College is scheduled to offer a Value added Course on "**Certificate Course in Anaesthesia Technology**" from 9/5/2018 for a period of 4 weeks. Interested students can approach the Head of Department, General Medicine and Course Coordinator, for registration and for further details on or before 10/04/2018.

**Eligibility-MBBS STUDENTS**

Course Coordinator  
HOD

Copy to:

Dean office

Vice Principal

Medical Superintendent

AO College



**DEAN**

SREE BALAJI MEDICAL COLLEGE & HOSPITAL  
No 7, Works Road, Chromepet,  
Chennai-600 044.



**Bharath Institute of Higher Education and Research  
SreeBalaji Medical College & Hospital**



**CERTIFICATE OF PARTICIPATION**

This is to certify that Mr./Ms.SUDHARSON S has completed the Value added course on  
“Certificate course in Anaesthesia Technology” conducted by Department of  
Psychiatry, SreeBalaji Medical College & Hospital, Chennai held during  
09/05/2018 to 10/04/2018.

**Dr. WMS Johnson MD; PhD**

**Name of the Course: Certificate course in Anaesthesia Technology**

Hours: 30 hrs

Learning objective:

1. Demonstrate understanding of Anaesthesia care and procedure
2. Understand the machines used in Operation theatre and ICU
3. Know the basic principles of neonatal resuscitation

Syllabus

Topic	Faculty	Hours allotted
Applied Anatomy and physiology relevant to anaesthesia	Assistant professor of anatomy	3 hours
History of Anaesthesia	Assistant Professor Anaesthesia	1
Pharmacology of Anaesthesia	Assistant Professor Pharmacology	3
Anaesthetic postures	Assistant Professor Anaesthesia	2
Metabolic response to trauma and stress	Associate professor Anaesthesia	2
Neonatal resuscitation	Assistant Professor Anaesthesia	2
Post Anaesthesia care rooms	Assistant Professor Anaesthesia	2
Local Anaesthetics - use	Assistant Professor Anaesthesia	2
Anaesthesia machine	Associate professor Anaesthesia	3
Assignment	Assistant Professor Anaesthesia	1
Airway and Laryngoscope	Assistant Professor Anaesthesia	2
Monitoring in OT	Associate professor Anaesthesia	3
Preanaesthetic Investigations and instructions	Associate professor Anaesthesia	3
Assesment	Assistant Professor Anaesthesia	1

## Name of the Course-course in Anaesthesia Technology

No.of Students- 45

STUDENT VOLUNTEER ATTENDED-Sudharsan

1	HARIHARAN R
2	HARINI SHREE R N
3	HARISH G
4	HARITHA T
5	HARSHANI ANGA MUTHU
6	HARSITHA B
7	HASWAATHAM K
8	HEMA KARUNA NITHI
9	HEMAVILASHINI R
10	ISHA DUARAH
11	ISWARYA LAKSHMI S R
12	JAISIMMAN V S
13	JANANIE K R
14	JAYAA SHAKTHI A
15	JAYASREE S
16	JEEVIKA SHREE M
17	JENIFER MICHALAMMAL M
18	JOEVIN JOHNSON
19	JOHN KARUN WELLINGTON C
20	JUHI KUMARI
21	KAAVIYAN N
22	KABILAN P
23	KAJAL PRADEEP
24	KALYAN R
25	MEENA LAKSHMI K
26	MEGHA SARA CHERIYAN
27	MEGHAVATH KEERTHI SAI
28	MOHAMED SAMEER M S
29	MOHAMMED IJAZ H
30	MOHANAKUMAR S
31	MONICA FAUSTINA I
32	MONISHA BAGAVATHI
33	MONISHA V
34	MUKESH R
35	NAGABHYRAVA NISHITHA VENKATA
36	NAITHEHA V
37	NEHA OVIYA R
38	NESHMAA S
39	NETHANYA U
40	NIKHIL CHERUKURI
41	RITHANYA M
42	RITHIKA R
43	RITHISH R
44	RITVIJ MISHRA
45	ROOPA KRISHNAN K

CORSE FEEDBACK FORM

Date: 10.04.2018

Course Title: Certificate Course in Anaesthesia Technology

Name: Sudhasan. S

RegNo:

Department: MBBs

S.NO	Particulars	1	2	3	4	5
(1. Very Unsatisfied 2. Unsatisfied 3. Neutral 4. Satisfied 5. Very satisfied)						
1.	Objectives of the course clear to you				✓	
2.	The course contents met with your expectations				✓	
3.	The lecture sequence was well planned				✓	✓
4.	The lecturers were clear and easy to understand				✓	✓
5.	The teaching aids were effective				✓	✓
6.	The instructors encourage interaction and were helpful				✓	✓
7.	The level of the course				✓	✓
(1. Very poor 2. Poor 3. Average 4. Good 5. Excellent)						
8.	Overall rating of the course:	1	2	3	4	5

Please give suggestion for the improvement of the course:

Weakness of the course:

Strength of the course:

A. Sudhasan  
Signature

\*\*\*Thank you\*\*\*