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
Bharat 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 Subject Expert 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

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

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),767-773,2007.

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

ANNEXURE I

HOSPITAL INFECTION CONTROL

TOPICS:

Introduction
Concepts of infection control
Nosocomial infections
Impact of nosocomial infections
Microbial agents
Patient and enviromental factors
Transmission of infection
Basics of infection control program
Infection control team and responsiblity
Group discussion
Hand washing
Aseptic techniques
Handling of contaminated material
sterilization
Final assessment

INTRODUCTION:

Hospital infection:

Hospital acquired infection is also known 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 orimmunization 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.

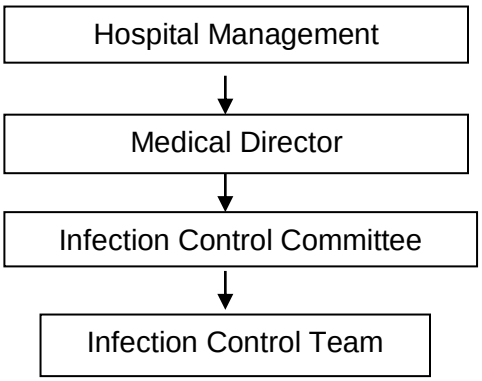
Standard Universal Precaution: They are a set of precautions designed to protect health care workers from exposure to blood borne pathogens. Since the majority of patients infected with HIV/HBsAg/ HCV are asymptomatic at the time of presentation all patients are approached as having potentially infectious 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 form 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 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 thesite 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^{ths} 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:

<u>Needle stick injuries</u>: Briefly induce bleeding from the wound. Wash for 10 minutes with soap and water. Report to supervisor.

<u>Non intact skin exposure</u>: 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 ->100MIU- 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.

Bacillocid: Contains chemically bound formaldehyde, glutaraldehydeand 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 stereothermophilus 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 chorizo, 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 confirm 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. Maintainenace 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, BMWM, barrier nursing, bacterial contamination of mobile phones etc.

Antibiotic Policy:

General features: Prophylactic therapy will not exceed 24 hours duration after starting 1st 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^{rd} or 4^{th} 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 Amoxyciliin and clavilunic 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 / Tobramicin / 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 2nd 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. Encepahalities

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 hand s with running water.Keep arms and fingers held up and elbow down to ensure flow of water from tips to the elobow. 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 coherted 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**

		barriers
Low Risk Contact with skin with no Visible blood	• Injections • Minor wound dressing	Gloves
Medium Risk Probable contact with blood; Splash unlikely	• Insertion or removal of intravenous cannula • handling of laboratory specimens • Large open wounds dressing • Venipuncture, spills of blood • Vaginal examination	Gloves ,Gowns and Aprons
High Risk probable contact with blood, splashing, uncontrolled bleeding	• Major surgical procedures particularly in Neuro surgery and other minor surgical procedures	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 accidently 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 I 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 quantitiy 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 1st 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 121^0C 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 & resterilizes 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**

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	Refnol 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.

DONTs: 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 3/4th 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:

Protective barriers **Low Risk**	Contact with skin with no visible blood (a) Injections (b) Minor wound dressing Gloves
Medium Risk	Probable contact with blood Splash unlikely

	• Vaginal examination, • Insertion or removal of intravenous cannula • Handling of laboratory specimens • Large open wounds dressing • Venipuncture spills of blood Gloves, Gowns and Aprons

1.1.1 **Blood Testing (Consent Required):**

Health care worker	**Source**
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:

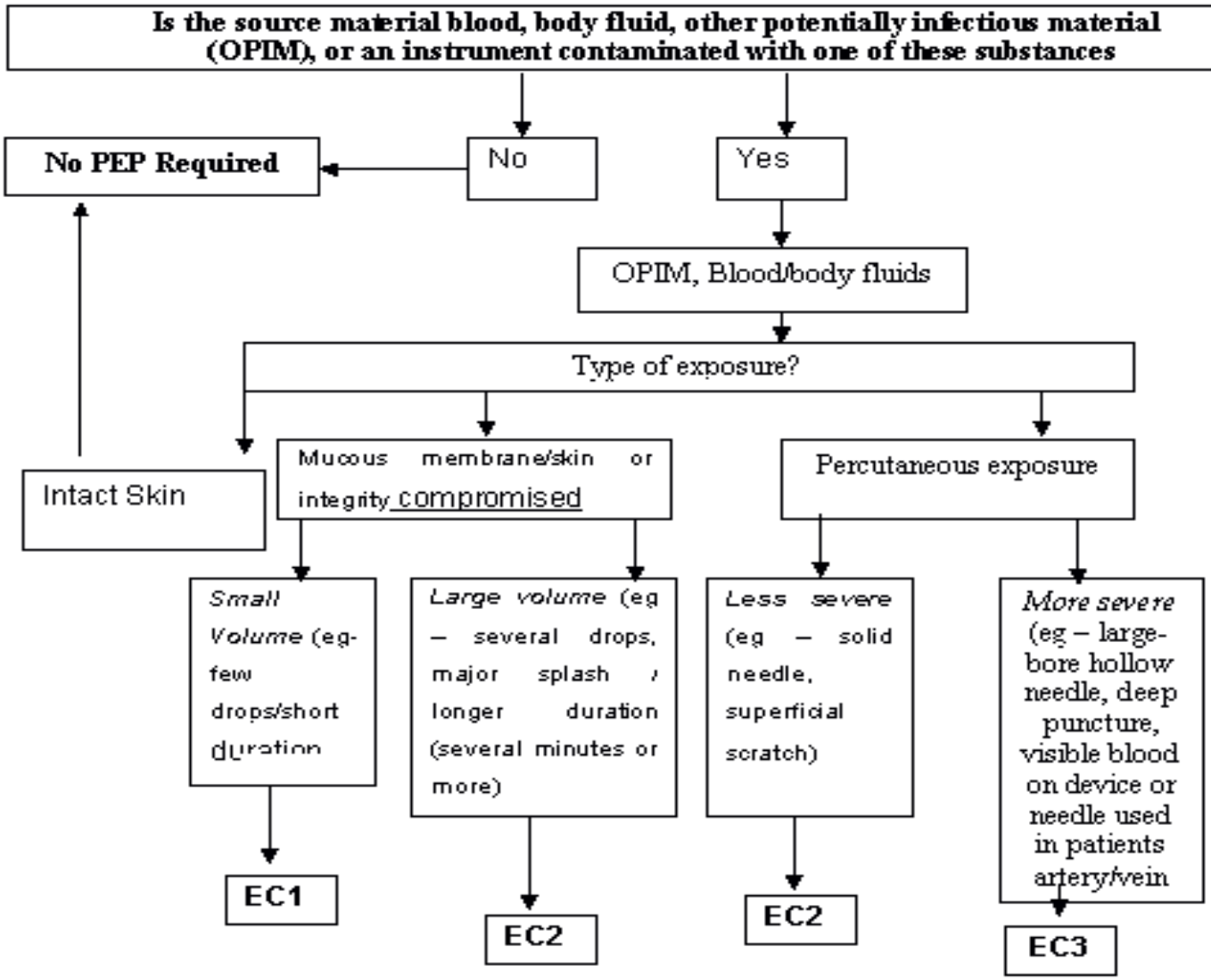
Exposure to HBsAg-Positive Source: Exposed persons who are known to have responded to vaccination are considered protected and need no further vaccine series. Exposed persons who are in the process of being vaccinated but who have not completed the vaccine series should receive the appropriate dose of 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 ≤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.

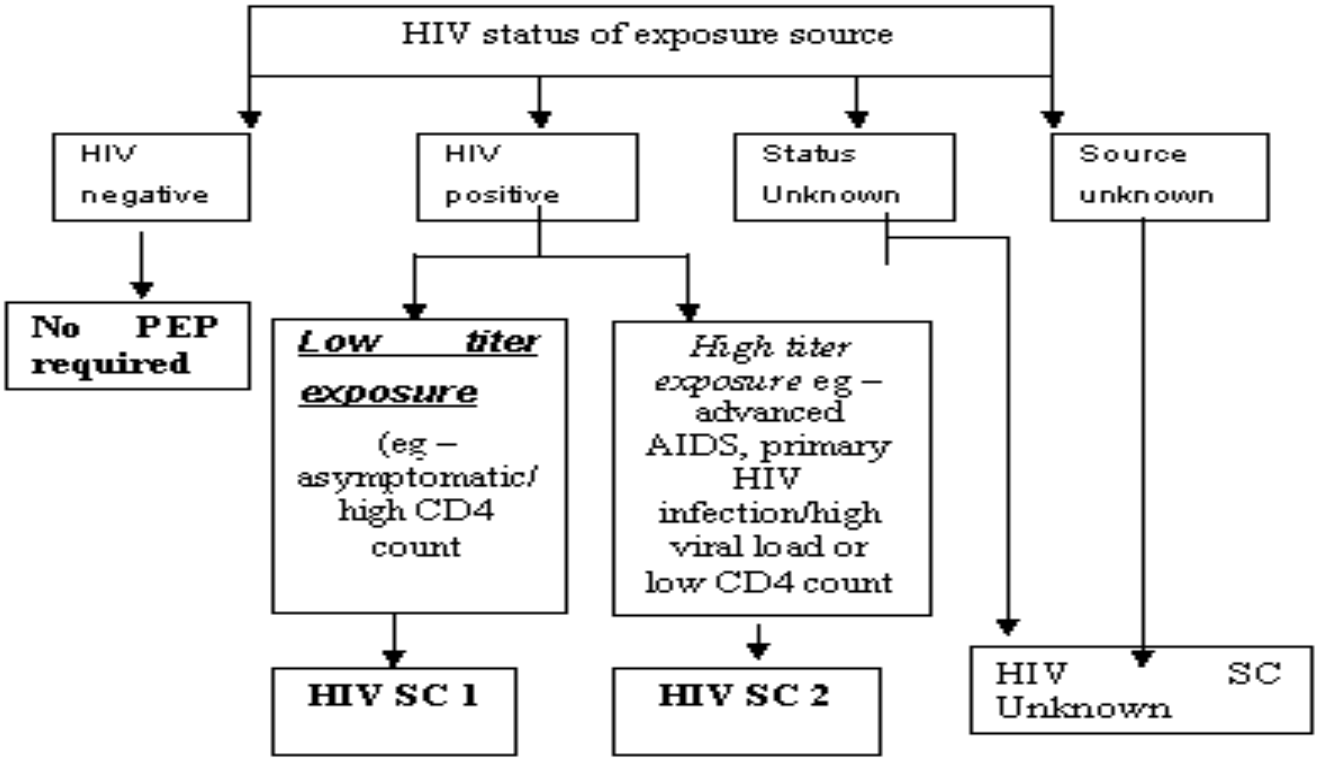
Exposure to Source with Unknown HBsAg Status: Unvaccinated persons who have a discrete, identifiable exposure to blood or body fluids containing blood from a source with unknown HBsAg status should receive the hepatitis B vaccine series, with the first dose initiated as soon as possible after exposure (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**
Discrete exposure to an HBsAg*-positive source	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)†
Discrete exposure to a source with unknown HBsAg status	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.


Is the source material blood, body fluid, other potentially infectious material (OPIM), or an instrument contaminated with one of these substances
No
Yes
No PEP Required
OPIM, Blood/body fluids
Type of exposure?
Intact Skin
Mucous membrane/skin or integrity compromised
Percutaneous exposure
Small Volume (eg- few drops/short duration
Large volume (eg – several drops, major splash / longer duration (several minutes or more)
Less severe (eg – solid needle, superficial scratch)
More severe (eg – large-bore hollow needle, deep puncture, visible blood on device or needle used in patients artery/vein
EC1
EC2
EC2
EC3



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 3rd 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 2nd series. Again test for Anti HBs after 1-2 months of 2nd 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 24hours. 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 ≤ 12 months of age and has fever > 38^0 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 (> 38^0 C) urgency, frequency, dysuria or suprapubic tenderness. And Patient has urine culture of ≥ 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	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

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 valve

c. E valve

d. Thermal death temperature

10. Which one the following is bactericidal

a. Deep freezing

b. Flue decaying

c. Ionizing radiation

d. Membrane filtration

Roopeshranjan

Annexure III

9/10

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Ruchiyadhav

Annexure III

9/10

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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

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: **HOSPITAL INFECTION CONTROL**
Subject Code: **ANAES 06**

Name of Student: PADMAKUMARI Roll No.: 016MB36

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: PRIYANK NATH 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.

D. ALAKANDAN
RESOURCE PERSON

Dr NITHIANANDAM S
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.

Dr.JALAKANDAN
RESOURCE PERSON

Dr. NITHIANANDAM S
COORDINATOR


REDMI K20 PRO
AI TRIPLE CAMERA

SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES

OSUDU, AGARAM VILLAGE, KUDAPAKKAM POST, PUDUCHERRY-605502.

Date:26.12.17

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 Subject Expert HOD