Sri Lakshmi Narayana Institute of Medical Sciences

Date: 03.05.2019

From
Dr. M Kalasree
Head Of Department Incharge
Department of Anaesthesia
Sri Lakshmi Narayana Institute of Medical Sciences
Bharath Institute of Higher Education and Research
Puducherry

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

Sub: Request for Permission to conduct value-added course: Pre- Operative Anesthetic Assessment

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: Pre- Operative Anesthetic Assessment for undergraduates from Jan- June 2020. We solicit your kind permission for the same.

Kind Regards

Dr.M KALASREE

FOR THE USE OF DEANS OFFICE

Names of Committee members for evaluating the course:

The Dean: Dr JAYALAKSHMI

The HOD: Dr. M KALASREE

The Expert: Dr Chandrasekar

The committee has discussed about the course and is approved.

Dean Subject Expert HOD

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

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

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

OFFICE OF THE DEAN

Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,
PUDUCHERRY - 605 502.
[Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME (P -II) dt. 11/07/2011]
[Affliated to Bharath University, Chennai - TN]

Circular

07.06.2019

Sub: Organizing Value-added Courses: Pre- Operative Anesthetic Assessment - 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 **"_Pre- Operative Anesthetic Assessment"** course in Jan- June 2020. 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 15/06/2019. Applications received after the mentioned date shall not be entertained under any circumstances.

Dean

Dr. G. JAYALAKSHMI, BSC.,MBBS.,DTCD.,M
DEAN
Sri Lakshmi Narayana Institute of Medical Sciences
Osudu, Ageram Kudapa
Villanur Commune Pud

Encl: Copy of Course content

COURSE PROPOSAL

Course Title: **PRE- OPERATIVE ANESTHETIC ASSESSMENT**

Course Objective

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1. To enable the students to learn history taking and physical examination of patients coming for operative procedures. It will also teach them to identify individuals who are at a higher risk for the procedure, so that they can evaluate the patient further with appropriate investigations and referral.

2. To understand the various risk factors that can be predictors for adverse outcome after anaesthesia and to optimize them in the best possible way

Course Outcome:

On successful completion of the course the students will be able to classify patients according to the ASA risk stratification for various surgical procedures

Course Audience: IV MBBS

Course Coordinator: Dr M KALASREE

Course Faculties with Qualification and Designation:

1. Dr. Kalasree-Associate Professor
2. Dr Chandrasekar- Assistant Professor

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

S.No	Date	Topics	Time	Hours	Faculty
1	04.01.2020	Pac	2-4PM	1	Dr Chandrasekar
2	11.01.2020	Introduction	2-4PM	1	Dr. Kalasree
3	18.01.2020	Objectives	2-4PM	1	Dr Chandrasekar
4	25.01.2020	Step[s of pre operative visit	2-4PM	1	Dr. Kalasree
5	01.02.2020	History taking	2-4PM	1	Dr Chandrasekar
6	08.02.2020	Examination	2-4PM	1	Dr. Kalasree
7	15.02.2020	LEMON scoring	2-4PM	1	Dr Chandrasekar
8	22.02.2020	Airway assessment	2-4PM	1	Dr. Kalasree
9	29.02.2020	Group discussion	2-4PM	1	Dr Chandrasekar
10	01.03.2020	Risk assessment	9-11AM	1	Dr. Kalasree
11	07.03.2020	Mallampati scoring	2-4PM	1	Dr Chandrasekar
12	08.03.2020	Fasting guidelines	9-11AM	1	Dr. Kalasree
13	14.03.2020	Medical management and optimization	2-4PM	1	Dr Chandrasekar
14	15.03.2020	Informed consent	9-11AM	1	Dr. Kalasree
15	21.03.2020	Final assessment	2-4PM	1	Dr Chandrasekar

References:

1.Clinical Anestehesiology, Morgan & Mikail's, 5th Edition, Page No 295-307

2. Clinical Anesthesia, Paul G. Barash, Seventh Edition, Page № 583- 609

3.Http://Www.Medscape.Com/Viewarticle/819 629_2

4. Miller's Anesthesia 8th Edition

VALUE ADDED COURSE

1. Name of the program & Code

: PRE- OPERATIVE ANESTHETIC ASSESSMENT, ANAES 12

2. Duration & Period

30 hrs: Jan 2020- March 2020

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 2020-MARCH 2020

8. Year of discontinuation: 2020

9. Summary report of each program year-wise

Value Added Course Jan 2020- March 2020					
Sl. No	**Course Code**	**Course Name**	**Resource Persons**	**Target Students**	**Strength & Year**
1	ANAES 12	PRE-OPERATIVE ANESTHETIC ASSESSMENT	DR. M KALASREE	IV MBBS	20

10. Course Feed Back

Enclosed as Annexure- V

RESOURCE PERSON

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

DR.CHANDRASEKAR

COORDINATOR

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

DR. M KALASREE

Annexure I

PREOPERATIVE ASSESSMENT

INTRODUCTION

The pre-operative assessment is an opportunity to identify co-morbidities that may lead to patient complicationsduring the anaesthetic, surgical, or post-operative period. Patients scheduled for elective procedures will generally attend a pre-operative assessment one week before the date of their surgery.

Preoperative assessment forms an integral precursor to the surgical process. It provides the opportunity to assess acute illness, optimize chronic disease where appropriate, assess risk and structure perioperative management.

During the assessment process, consideration should be made of surgical complexity, the severity of specific co-morbidities and an individual's functional capacity.

The process of assessment requires the adoption of basic clinical skills, targeted investigations and also the use of functional assessment tools, including cardiopulmonary exercise testing.

Surgical procedures and administration of anesthesia are associated with a complex stress response that is proportional to the magnitude of injury, total operating time, amount of intraoperative blood loss and degree of postoperative pain. The adverse metabolic and hemodynamic effects of this stress response can present many problems in the perioperative period.

Decreasing the stress response to surgery and trauma is the key factor in improving outcome and lowering the length of hospital stay as well as the total costs of patients care.

It is well recognized that safe and efficient surgical and anesthesia practice requires an optimized patient.Several of the large-scale epidemiological studies have indicated that inadequate preoperative preparation of the patient may be a major contributory factor to the primary causes of perioperative mortality

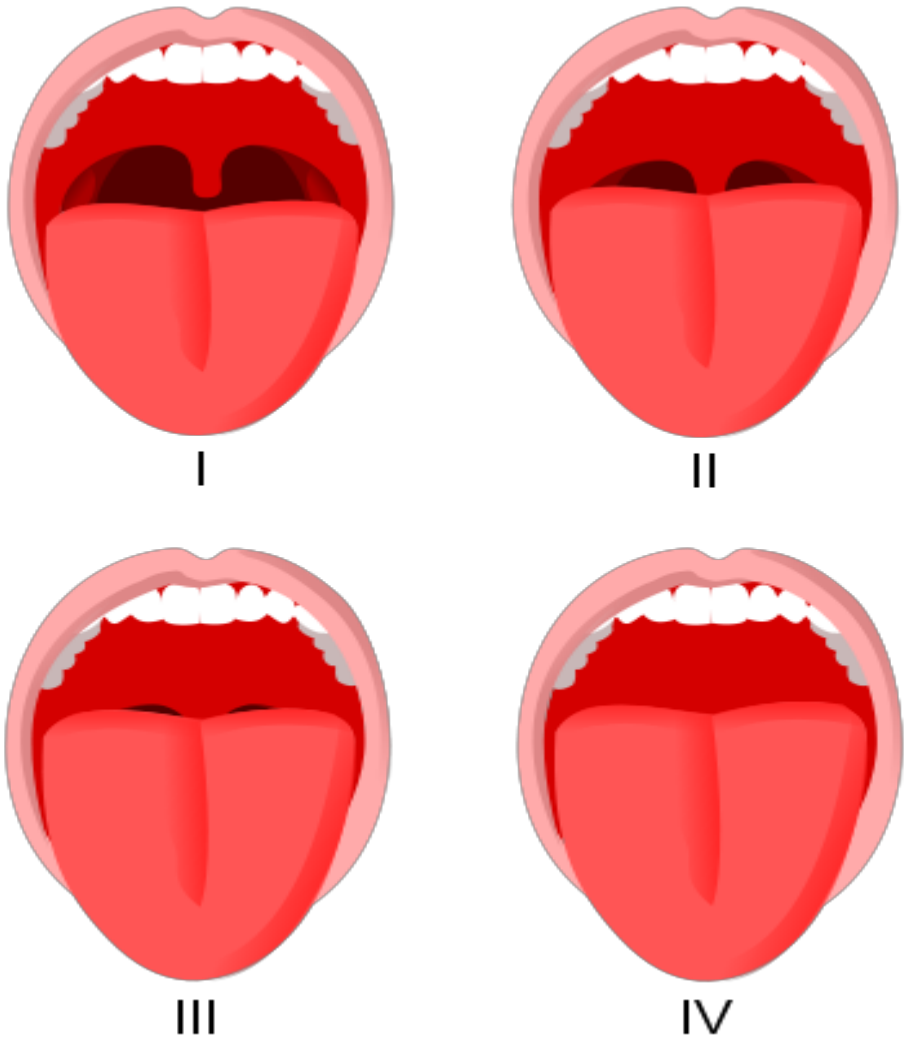
THE AIRWAY EXAMINATION

The airway examination will typically be covered during the anaesthetist's assessment of the patient but is always good practice to assess during the preoperative assessment. Look at the face for any obvious facial abnormalities. Particularly, do they have a receding mandible (retrognathia). This could cause difficulties during airway insertion.

Ask the patient to open their mouth and assess:

- Their degree of mouth opening (favourable if inter-incisor distance is above 3cm).
- Their teeth, mainly do they have teeth? If so, what is their dentition like? Are any teeth loose?
- Their oropharynx. Ask the patient to maximally protrude their tongue. A Mallampati classification which correlates with difficulty of intubation, can be assessed.

Lastly, assess the neck. Ask the patient to flex, extend and laterally flex the neck to see their range of movement. Then ask the patient to maximally extend their neck and measure the distance between the thyroid cartilage and chin (the thyromental distance); if this is less than 6.5cm (~3 finger breadths), it indicates that intubation may be difficult.



Fasting guidelines

Pre-operative assessment

A thorough preoperative evaluation is necessary in order to identify the patients who are at increased risk of aspiration. The preoperative evaluation should include patient history and clinical examination which in turn should include the patient's age, sex, American Society of Anesthesiologists (ASA) status, any difficult airway, gastro-oesophageal reflux disease, diabetes or any other factors which may increase the risk of pulmonary aspiration. It is imperative that the patients are educated on the need and importance of preoperative fasting.

Clear fluids

The fasting period especially for clear fluids have literally come down over the past 50 years. Randomised trials comparing the gastric volume and pH in two groups who were given clear fluids either till 2 to 4 hours or more than 4 hours prior to surgery showed lower gastric pH in the second group whereas equivocal findings regarding gastric volume.[1] This was further corroborated by a study done by Maltby *et al*., which showed that clear fluids can safely be taken till 2 hours prior to surgery.[4] Also another study by Song *et al.* where ultrasonic assessment of gastric volume in children were done, showed that clear fluids up to 10 to 15ml/kg when given 2 hours prior to induction resulted in a decrease in antral volume rather than increasing it.[5]

The guidelines published by the European and American organisations encourage drinking clear fluids till 2 hours prior to an elective surgery.[1],[6] The updated

guidelines by European Society of Paediatric Anaesthesiologists (ESPA) encourage drinking clear fluids till 1 hour prior to surgery. ESPA updated guidelines regarding clear fluids has also been endorsed by Society for Paediatric Anaesthesia of Australia and New Zealand. Clear fluids include fruit juice without pulp, water, and coffee or tea without milk; but do not include alcohol. Milk is not included under clear fluids because it coagulates in the acidic environment of stomach and delays gastric emptying. Though some studies define a small amount of milk added to tea or coffee as clear fluids, there is insufficient data to suggest the volume of milk that can be safely added.

Until recently, most guidelines would suggest a fasting period of 2 hours for clear fluids.[7] Nonetheless recent studies have shown that the risk of pulmonary aspiration is less in children and this has led to many centres now moving on to a 1 hour fasting time for clear fluids in children.[8] The APRICOT study– 'The Anesthesia Practice in Children Observational Trial', which is a pan European multicentric study reported that there has not been a single documented admission to intensive care or incidence of prolonged intubation following aspiration in children.[2],[9] A study by Andersson H *et al.* reported that liberalising the fasting period in children for clear fluids did not alter the incidence of pulmonary aspiration.[10] APAGBI, the French Language Society of Paediatric Anaesthesiologists and the ESPA also recommends clear fluid intake upto 1 hour prior to elective surgery unless specific contraindications exists. It is now an official guideline of ESPA that clear fluids can be allowed till 1 hour prior to surgery.[11] A recent study of 16000 children from the United States also showed the safety of 1 hour NPO for clear fluids.[12]

Hence, it can be summarised that while the traditional 2 hours fasting regime for

clear fluids may still be practiced for adults, it can be reduced upto 1 hour for children prior to an elective surgery unless specific contraindications exist. The decrease in fasting time results in reduced anxiety, irritability, hunger and thirst in the perioperative period which in turn contributes to the comfort and well-being of children.

Breast milk

Studies have suggested that breast milk empties faster than formula feeds but required more than 2 hours and upto 3 hours to ensure complete emptying. So the current guidelines recommend a fasting period of 4 hours for breast milk before an elective procedure requiring any form of anaesthesia.[2],[6]

Infant formula feeds

There is inadequate data to evaluate the safe period of fasting for formula feeds. This is due to the fact that gastric emptying for formula feed varies with the content of the formula. Also, rather large variations have been noticed in the composition of formula food between different regions/countries. For this reason, ASA has set a fasting period of 6 hours for infant formula before any elective procedures requiring anaesthesia.[1]

Solids and non-human milk

Robert *et al.* on their study on rhesus monkey suggested that clinically significant aspiration occurs when the gastric volume is more than 25ml (0.4ml/kg) and the pH is 2.5 or less.[13] Van de Putte *et al.* on their study on the gastric volume using

bed side ultrasound however suggested a higher critical volume of 1.5 ml/kg for clinically significant aspiration.[14] A randomised control trial by Miller *et al.* showed no significant difference between patients who fasted overnight and patients who had light breakfast 2 to 4 hours prior to surgery in terms of gastric volume and pH.[15] Further non randomised studies by Thomas *et al*. showed that incidence of hypoglycaemia was more in the group that fasted for 8 hours or more as compared to the group that had milk 4 hours prior to surgery.[16] Also non-randomised trials by Power *et al.* reported enhanced comfort in patients with fasting period of 2 hours for fluids and 6 hours for solids with no increase in the risk of pulmonary aspiration.[17]

It is recommended that non-human milk or a light meal can be taken till 6 hours prior to elective surgery requiring any form of anaesthesia whereas a heavy meal or meal with fried and fatty items require a longer fasting period of 8 hours or more as the gastric emptying may be delayed in such cases. Not only the type of food, but also the amount is important in determining the fasting period.[1]

Carbohydrate loading

Recognition of the physiology of stress response to surgery and anaesthesia led to the adoption of various measures to decrease it.[18] It has been recognised that prolonged preoperative fasting leads to increased stress response to surgery. Major surgeries result in a lot of metabolic responses which includes insulin resistance and hyperglycaemia. Preoperative carbohydrate loading enhances recovery by modifying insulin resistance, minimising protein losses and thus improving postoperative muscle function. It has also been reported that preoperative loading of carbohydrate does not increase the incidence of pulmonary aspiration; however,

its role in diabetics has not been well established.[19] Carbohydrate loading has also been found to be an important independent predictor for improved post-operative outcome and in the reduction of post-operative wound dehiscence.[20] Fluids with 50 grams of carbohydrate can be safely given till 2–3 hours prior to surgery.[21] However, all carbohydrates may not be equally safe, with evidence being based primarily on products with predominantly maltodextrins.[6]

Chewing gum

The 2011 European fasting guidelines do not put any restriction on chewing gum. A randomised controlled trial by Dubin *et al.* suggested that surgery need not be cancelled if the patient arrives chewing sugarless gum prior to induction. It has also been established that no significant relationship exists between chewing sugarless gum, gastric volume and pH.[22] A randomised controlled trial in children aged between 5 and 17 years reported that children who chewed gum with or without sugar prior to anaesthesia had higher gastric volume and pH.[23] A meta-analysis of four studies on the effects of chewing gum in the perioperative period reported a slight increase in gastric volume without a change in gastric pH. This increase in gastric volume was found to be insufficient for causing pulmonary aspiration. Therefore, it has been suggested that surgery need not be cancelled in healthy individuals who chew gum in the preoperative period.[24] There is also evidence suggesting that gum chewing can enhance gastric mobility and emptying. However, chewing gum should not be allowed after administration of sedatives and any residual chewing gum should be removed from the mouth prior to induction.[25] As the significance of increase in gastric volume by gum chewing is unclear, some studies have suggested restricting it in the immediate preoperative period.[3] In view of the conflicting reports regarding gum chewing in the

preoperative period, further studies may be required to determine the exact relationship between gum chewing and pulmonary aspiration.

Special situations

While assessing the fasting status of a trauma victim it must be remembered that the gastric volume is not related to the hours of fasting but to the nature of trauma and the time interval between last food intake and trauma.[26] Thus all trauma victims are considered to be full stomach.[6] Severe pain and administration of opioids can cause a delay in gastric emptying.[27],[28] Various systemic diseases can also cause delay in gastric emptying, the commonest example being diabetes mellitus.[29] It has been found that there is no significant change in gastric acid secretion in pregnancy.[6],[30] While early labour does not significantly affect gastric emptying, advanced labour can result in delay of the same.[31] Conditions causing gastro esophageal reflux as in hiatus hernia and bowel obstruction can increase the risk of pulmonary aspiration during anaesthesia. Patients with difficult airway are also at high risk for aspiration. So the anaesthetic management has to be modified in such situations.

Current Concepts

Role of education

Education to all medical staff regarding the importance of correct duration of fasting will help in the practical application of the existing guidelines. Newton *et*

al. documented that introduction of standard protocols and education of nurses and doctors can reduce unnecessary preoperative fasting duration by three times.[32]

Role of ultrasound in fasting

There is growing evidence for role of ultrasound in qualitative and quantitative assessment of gastric content which in turn will guide us more into starvation guidelines.[33]

Post-operative feeding

It has been reported that early oral feeding is safe and well tolerated even after elective colorectal surgery, which questions the traditional belief of fasting till bowel function returns.[34] The European society for clinical nutrition and metabolism (ESPEN) guidelines recommend that oral intake can be initiated within hours of surgery in most of the patients.[35] Delaying oral intake following surgery gives no added advantage. Few studies challenged the concept of early feeding as they documented increased incidence of nausea and vomiting after early but forced feeding.[36] But none of the recent studies support this issue. Early oral intake in the postoperative period does not affect wound healing and can result in decreased hospital stay following surgery.[35],[37],[38],[39] There has been various observational studies, meta-analysis and multicentric trials that support early oral intake after surgery.[38] Based on the various studies it can be concluded that early but on demand oral feeding can be started in the post-operative period even before the return of bowel function in otherwise healthy individuals. While fluids can be started almost immediately, the introduction of solids should be done more cautiously.

Summery

Types of Feeds	Hours of Fasting -Existing Guidelines	Explanation
Clear Fluid	1	Rare instances of aspiration (0.07-0.1%) and if aspiration occurs, it is not severe and long lasting.
Max vol=3 ml/kg		Mostly, fasting durations are prolonged.
water, clear (non-opaque) fruit juice or squash/ cordial, ready diluted drinks, and nonfizzy sports drinks. Non-thickened, non-carbonated		Clear fluid calms the child down especially in hot weather
Carbohydrate rich drink	2	Improves insulin sensitivity.
		Better metabolic profile.
		Early Discharge after surgery.
Breast Milk	4	High whey to casein ratio content of breast makes it follow water like emptying.
		Due to high lipid content than water needs more time
Milk	6	Cow's milk+Gastric acidic juices converts into solid and liquid (curd)
		Emptying follows biphasic with rapid initial liquid phase followed by zero order solid phase
Solids		Follows zero order kinetics.
Non Fatty Meal	6	
Fatty Meal	8	
Postoperative resumption of fluids	As early as possible, on demand	

PREOPERATIVE ASSESSMENT

INFORMED CONSENT

Legally, two or more persons are said to consent when they agree upon the same thing in the same sense. Consent must be obtained prior to conducting any medical procedure on a patient.

It may be expressed or implied by patient's demeanour. A patient who comes to a doctor for treatment implies that he is agreeable to general physical (not intimate) examination.Express consent (verbal/written) is specifically stated by the patient.

Express verbal consent may be obtained for relatively minor examinations or procedures, in the presence of a witness. Express written consent must be obtained for all major diagnostic, anaesthesia and surgical procedures as it is the most undisputable form of consent.

ESSENTIAL PRINCIPLES OF A VALID CONSENT AND THE INDIAN LAW

A doctor must take the consent of the patient before commencing a treatment/procedure

Except in emergencies, informed consent should be obtained sometime prior to the procedure so that the patient does not feel pressurised or rushed to sign. On the day of surgery, the patient may be under extreme mental stress or under influence of pre-medicant drugs which may hamper his decision-making ability. Consent remains valid for an indefinite period, provided there is no change in patient condition or proposed intervention. [4] It should be confirmed at the time of surgery.

Consent must be taken from the patient himself

The doctor before performing any procedure must obtain patient's consent. [5] No one can consent on behalf of a competent adult. In Dr.RamcharanThiagarajanFacs versus Medical Council of India case, [6] disciplinary action was awarded to the surgeon for not taking a proper informed consent for the entire procedure of kidney and pancreas transplant surgery from the patient. In some situations, beside patient consent, it is desirable to take additional consent of spouse. In sterilisation procedures, according to the Ministry of Health and Family Welfare, Government of India guidelines, consent of spouse is not required. [7] The Medical Council of India (clause 7.16) however states that in case an operation carries the risk of sterility, the consent of both husband and wife is needed. [8] It is advisable to take consent of spouse when the treatment or procedure may adversely affect or limit sex functions, or result in death of an unborn child. [9] In case of minor, consent of person with parental responsibility should be taken. [10] In an emergency, the person in charge of the child at that time can consent in absence of parents or guardians (loco parentis). [11] In a medical emergency, life-saving treatment can be given even in absence of consent.

Refusing treatment in life-threatening situations due to non-availability of consent may hold the doctor guilty, unless there is a documented refusal to treatment by the patient. In Dr. TT Thomas versus Smt.Elisa and Ors case, [12] the doctor was held guilty of negligence for not operating on a patient with life-threatening emergency condition, as there was no documented refusal to treatment.

The patient should have the capacity and competence to consent

A person is competent to contract [13] if (i) he has attained the age of majority, [14] (ii) is of sound mind [15] and (iii) is not disqualified from contracting by any law to which he is subject. The legal age for giving a valid consent in India is 18 years. [14] A child >12 years can give a valid consent for physical/medical examination (Indian Penal Code, section 89). [3] Prior to performing any procedure on a child <18 years, it is advisable to take consent of a person with parental responsibility so that its validity is not questioned. If patient is incompetent, then consent can be taken from a surrogate/proxy decision maker who is the next of kin (spouse/adult child/parent/sibling/lawful guardian). [11]

Consent should be free and voluntary

Consent is said to be free [16] when it is not caused by coercion, [17] undue influence, [18] fraud, [19] misrepresentation, [20] or mistake. [21],[22],[23]

Consent should be informed

Consent should be on the basis of adequate information concerning the nature of the treatment procedure. [5] Consent should be informed and based on intelligent understanding. The doctor must disclose information regarding patient condition, prognosis, treatment benefits, adverse effects, available alternatives, risk of refusing treatment and the approximate treatment cost. He should encourage questions and answer all queries. [2]

If the possibility of a risk, including the risk of death, due to performance of a procedure or its refusal is remote or only theoretical, it need not be

explained. [5] Exceptions to physician's duty to disclose include [24] : (i) Patient refusal to be informed; this should be documented. (ii) If the doctor feels that providing information to a patient who is anxious or disturbed would not be processed rationally by him and is likely to psychologically harm him, the information may be withheld from him (therapeutic privilege); he should then communicate with patient's close relative, family doctor or both.

The "adequate information" must be furnished by the doctor (or a member of his team) who treats the patient. [5]

Information imparted should enable the patient to make a balanced judgment as to whether he should submit himself to the particular treatment or not. [5]

Consent should be procedure specific

Consent given only for a diagnostic procedure, cannot be considered as consent for the therapeutic treatment. [5] Consent given for a specific treatment procedure will not be valid for conducting some other procedure. [5] In Samira Kohli versus Dr.PrabhaManchanda and Anr case, [5] the doctor was held negligent for performing an additional procedure on the patient without taking her prior consent. An additional procedure may be performed without consent only if it is necessary to save the life or preserve the health of the patient and it would be unreasonable to delay, until patient regains consciousness and takes a decision. [5]

A common consent for diagnostic and operative procedures may be taken where they are contemplated. [5]

Consent obtained during the course of surgery is not acceptable

In Dr.Janaki S Kumar and Anr versus Mrs.Sarafunnisa case, [25] in an allegation of performing sterilisation without consent, it was contended that consent was obtained during the course of surgery. The commission held that the patient under anaesthesia could neither understand the risk involved nor could she give a valid consent.

Consent for blood transfusion

When blood transfusion is anticipated, a specific written consent should be taken, [24] exception being an emergency situation where blood transfusion is needed to save life and consent cannot be attempted. [26] In M. Chinnaiyan versus Sri. Gokulam Hospital and Anr case, [27] court awarded compensation as patient was transfused blood in the absence of specific consent for blood transfusion.

Consent for examining or observing a patient for educational purpose

Prior to examining or observing patients for educational purpose, their consent must be taken. [28]

Blanket consent is not valid

Consent should be procedure specific. An all-encompassing consent to the effect 'I authorize so and so to carry out any test/procedure/surgery in the course of my treatment' is not valid. [29]

Fresh consent should be taken for a repeat procedure

A fresh written informed consent must be obtained prior to every surgical procedure that includes re-exploration procedure. In Dr.Shailesh Shah versus AphraimJayanandRathod case, [30] the surgeon was found deficient in service and was liable for compensation as he had performed a re-exploration surgery without a written consent from the patient.

Surgical consent is not sufficient to cover anaesthesia care

The surgeons are incapable to discuss the risks associated with anaesthesia. Informed consent for anaesthesia must be taken by the anaesthesia provider as only he can impart anaesthesia related necessary information and explain the risks involved. It may be documented by the anaesthesiologist on the surgical consent form by a handwritten note, or on a separate anaesthesia consent form. [31]

Patient has the right to refuse treatment

Competent patients have the legal and moral right to refuse treatment, even in life-threatening emergency situations. [31] In such cases informed refusal must be obtained and documented, over the patient's witnessed signature. [32] It may be advisable that two doctors document the reason for non-performance of life-saving surgery or treatment as express refusal by the patient or the authorised representative and inform the hospital administrator about the same.

To detain an adult patient against his will in a hospital is unlawful. [9] If a patient demands discharge from hospital against medical advice, this should be recorded,

and his signature obtained. [9]

Unilaterally executed consents are void

Consent signed only by the patient and not by the doctor is not valid. [33]

Witnessed consents are legally more dependable

The role of a witness is even more important in instances when the patient is illiterate, and one needs to take his/her thumb impression. [34]

Consent should be properly documented

Video-recording of the informed consent process may also be done but with a prior consent for the same. This should be documented. It is commonly done for organ transplant procedures. If consent form is not signed by the patient or is amended without his signed authorisation, it can be claimed that the procedure was not consented to. [10]

Patient is free to withdraw his consent anytime

When consent is withdrawn during the performance of a procedure, the procedure should be stopped. The doctor may address to patient's concerns and may continue the treatment only if the patient agrees. If stopping a procedure at that point puts patient's life in danger, the doctor may continue with the procedure till such a risk no longer exists. [10]

Consent for illegal procedures is invalid

There can be no valid consent for operations or procedures which are illegal. [24] Consent for an illegal act such as criminal abortion is invalid. [9]

Consent is no defence in cases of professional negligence. [9]

How to Obtain a Valid Consent and Consent Format

Always maintain good communication with your patient and provide adequate information to enable him make a rational decision. [35] It is preferable to take consent in patient's vernacular language. It may be better to make him write down his consent in the presence of a witness. [34] It is desirable to use short and simple sentences and non-medical terminology that is written/typed legibly. [36] Patient information sheets (PIS) depicting procedure related information, including pre-operative and post-operative pre-cautions in patient's understandable local language with pictorial representation may facilitate the informed consent process. These may help in providing consistently accurate information to the patients. [35] PIS should be handed over to the patients after explaining the contents. Even videos may be used as an aid in increasing patient understanding.

Patient's name……..…Age/Gender……

Medical record number……..……Address……

Proposed surgical procedure……

I hereby give my free and voluntary consent in a fully alert state of mind to the administration of general and/ or regional anaesthesia with or without sedation/local anaesthesia with or without sedation/sedation only, for the performance of ……procedure on me/my patient. I agree to be supplemented or administered any other mode of anaesthesia during the course of the procedure/surgery, if necessary.

I have been explained in a language that I understand the procedure involved in the administration of various types of anaesthesia, together with the expected benefits and the associated risks including the risks that are specific to me. I have had an opportunity, to discuss and clarify any concerns and ask questions regarding the anaesthesia procedure and alternative methods and the same have been satisfactorily answered.

I have been given patient information sheets/information material on CD regarding the proposed anaesthetic technique which I have fully understood.

I have been explained the risks associated with undergoing/not undergoing blood transfusion and am willing/ not willing to undergo transfusion if required during the perioperative period (if applicable).

I have been explained the additional/high risk of anaesthesia due to emergency nature/ inadequate fasting period/difficult airway/co-existing or co-morbid conditions such as …….... (if applicable).

I have been explained the risk of dental trauma and subsequent morbidity (if applicable).

I have been explained the need of post-operative ventilation and Intensive Care Unit following my/my patient's surgery (if applicable).

Patient's signature/Proxy decision maker's name and signature……

Relationship to patient in case of proxy decision maker……

Place……Date……Time……..

I have explained verbally to the patient in detail about the anaesthesia technique and procedure, related risks, advantages and disadvantages. I have given the patient opportunity to ask any questions and have satisfactorily answered them.

Anaesthesiologist name and Signature……

Place, Date and Time……

Witness Name and Signature……Address……

Place, Date and Time……

Summery

It is not only ethical to impart correct and necessary information to a patient prior to conducting any medical procedure, but it is also important legally.

This communication should be documented. Even professional indemnity insurance may not cover for lapses in obtaining a valid consent, considering it to be an intentional assault.

PREOPERATIVE ASSESSMENT

LEMON SCORING

The LEMON score is a mnemonic for predicting difficult intubation.

It stands for Look, Evaluate the 3-3-2 rule, Mallampati score, Obstruction, and Neck mobility (NEJM JW Emerg Med Mar 2005 and Emerg Med J 2005; 22:99).

Using a prospective registry of emergency department intubations in Japan, researchers assessed the sensitivity and specificity of the modified LEMON criteria for predicting difficult intubation (defined as requiring >1 attempt).

The modified LEMON criteria do not include assessment of the Mallampati score or measurement of thyroid-to-mouth distance (part of the 3-3-2 rule).

LEMON Airway assessment method

L	Look externally (Facial trauma, large incisors, beard or moustache, large tongue
E	Evaluate the 3-3-2 rule - Incisor distance: 3 FB - Hyoid-mental distance: 3 FB - Thyroid-to-mouth distance: 2 FB
M	Mallampati Score $\geq$ 3
O	Obstruction : Presence of any condition like epiglotitis, Peritonsillar abscess, trauma
N	Neck Mobility (Limited neck mobility)

Drug history

A history of medication use should be obtained in all patients. Especially, the geriatric population consumes more systemic medications than any other group. Numerous drug interactions and complications arise in this population and special attention should be paid to them

Generally, administration of most drugs should be continued up to and including the morning of operation, although some adjustment in dosage may be required (e.g. antihypertensives, insulin).

Some drugs should be discontinued preoperatively. The monoamine oxidase inhibitors should be withdrawn 2-3 weeks before surgery because of the risk of interactions with drugs used during anesthesia. The oral contraceptive pill should be discontinued at least 6 weeks before elective surgery because of the increased risk of venous thrombosis.

Recently, the American Society of Anesthesiologists (ASA) examined the use of herbal supplements and the potentially harmful drug interactions that may occur with continued use of these products preoperatively[11–13]. All patients are requested to discontinue their herbal supplements at least 2 weeks prior to surgery.

The use of medications that potentiate bleeding needs to be evaluated closely, with a risk-benefit analysis for each drug and with a recommended time frame for discontinuation based on drug clearance and half-life characteristics. Aspirin should be discontinued 7-10 days before surgery to avoid excessive bleeding and thienopyridines (such as clopidogrel) for 2 weeks before surgery. Selective cyclooxygenase-2 (COX-2) inhibitors do not potentiate bleeding and may be continued until surgery. Oral anticoagulants should be stopped 4-5 days prior to invasive procedures, allowing INR to reach a level of 1.5 prior to surgery.

Perioperative risk assessment

Perioperative risk is a function of the preoperative medical condition of the patient, the invasiveness of the surgical procedure and the type of anesthetic administered.

The ASA grading system was introduced originally as a simple description of the physical state of a patient (Table 2). Despite its apparent simplicity, it remains one of the few prospective descriptions of the patient general health which correlates

with the risk of anesthesia and surgery[15–16]. It is extremely useful and should applied to all patients who present for surgery. Increasing physical status is associated with increasing mortality. Emergency surgery increases risk dramatically, especially in patients in ASA class 4 and 5.

Table 2.

American Society of Anesthesiologists' Classification of Physical Status

Status	*Disease State*
ASA class 1	No organic, physiologic, biochemical, or psychiatric disturbance
ASA class 2	Mild to moderate systemic disturbance that may or may not be related to the reason for surgery *Examples*: Heart disease that only slightly limits physical activity, essential hypertension, diabetes mellitus, anemia, extremes of age, morbid obesity, chronic bronchitis
ASA class 3	Severe systemic disturbance that may or may not be related to the reason for surgery, *(does limit activity)* *Examples*: Heart disease that limits activity, poorly controlled essential hypertension, diabetes mellitus with vascular complications, chronic pulmonary disease that limits activity, angina pectoris, history of prior myocardial infarction
ASA class 4	Severe systemic disturbance that is life-threatening with or without surgery *Examples*: Congestive heart failure, persistent angina pectoris, advanced pulmonary, renal, or hepatic dysfunction
ASA class 5	Moribund patient who has little chance of survival but is submitted to surgery as a last resort (resuscitative effort) *Examples*: Uncontrolled hemorrhage as from a ruptured abdominal aneurysm, cerebral trauma, pulmonary embolus.
ASA class 6	A declared brain-dead patient whose organs are being removed for donor purposes
E	An "E" is added to the status number to designate an emergency operation

Surgical complications occur frequently. One large study[17] documented at least one complication in 17% of surgical patients. Surgery-related morbidity and mortality generally fall into one of three categories: cardiac, respiratory and infectious complications[17]. The overall risk for surgery-related complications depends on individual factors and the type of surgical procedure. For example, advanced age places a patient at increased risk for surgical morbidity and mortality. The reason for an age-related increase in surgical complications appears to correlate with an increased likelihood of underlying disease states in older persons[18]. Diseases associated with an increased risk for surgical complications include respiratory and cardiac disease, malnutrition and diabetes mellitus[7]. With respect to the type of surgery, major vascular, intraabdominal and intrathroracic surgical procedures, as

well as intracranial neurosurgical procedures are frequently associated with increased perioperative morbidity and mortality[19, 20]. In addition, urgent and emergency procedures constitute higher risk situations than elective, nonurgent surgery and present a limited opportunity for preoperative evaluation and treatment.

When one looks at strictly anesthetic problems that lead to morbidity and mortality, airway problems and failure to provide adequate ventilation leading to hypoxia become important. Fortunately the number of critical incidents involving anaesthetics alone appear to be decreasing in recent years[15].

Assessing cardiovascular risk

The American College of Cardiology (ACC) and the American Heart Association (AHA) published a task force report on Guidelines for Perioperative Cardiovascular Evaluation for Noncardiac Surgery[19]. The purpose is to provide a framework for considering cardiac risk of noncardiac surgery in a variety of patients and operative situations.

The factors which guide decision making include the patient's cardiovascular risk and functional capacity and the surgery specific risk (Table 3-Table 5).

Table 3.

Patient-Related Predictors for Risk of Perioperative Cardiac Complications

Major clinical predictors (markers of unstable coronary artery disease)
Myocardial infarction <6 weeks
Unstable or severe angina (class III-IV)
Decompensated congestive heart failure
Significant arrhythmias (e.g., causing hemodynamic instability)
Severe valvular disease (e.g., aortic or mitral stenosis with valve area <1.0 cm^2)
CABG or PTCA <6 weeks
Intermediate clinical predictors (markers of stable coronary artery disease)
Previous myocardial infarction >6 weeks and <3 months (>3 months if complicated) based on the history or the presence of pathologic Q waves
Mild angina (class I-II)
Silent ischemia (Holter monitoring)
Compensated congestive heart failure, ejection fraction <0.35
Post CABG or PTCA >6 weeks and <3 months, or >6 yr, or with anti-anginal therapy
Diabetes mellitus
Renal insufficiency
Minor clinical predictors (increased probability of coronary artery disease)
Familial history of coronary artery disease
Age >70 yr
ECG abnormalities (arrhythmia, LVH, left bundle branch block)
Low functional capacity
History of stroke
Uncontrolled systemic hypertension
Hypercholesterolemia
Smoking
Post infarction (>3 months), asymptomatic without treatment
Post CABG or PTCA >3 months and <6 yr, and no symptoms of angina nor anti-anginal therapy
CABG= coronary artery bypass grafting, PTCA= percutaneous transluminal coronary angioplasty, LVH=left ventricular hypertrophy

Table 5.

Surgery-Related Predictors for Risk of Perioperative Cardiac Complications

High risk procedures (cardiac complication rate >5%)
Emergency surgery
Aortic and major vascular surgery
Prolonged surgical procedures with large fluid shifts or blood loss
Unstable hemodynamic situations
Intermediate risk procedures (cardiac complication rate 1-5%)
Abdominal or thoracic surgery
Neurosurgery
ENT procedures
Minor vascular surgery, including carotid endarterectomy
Orthopedic surgery
Prostatectomy
Low risk procedures (cardiac complication rate <1%)
Breast surgery
Superficial surgery
Eye surgery
Endoscopic procedures
Plastic and reconstructive surgery
Ambulatory surgery

Patients' risk factors are usually subdivided into three categories: major, intermediate and minor (Table 3). A 6-week period is necessary for the myocardium to heal after an infarction and for the thrombosis to resolve. Patients with coronary revascularization done within the preceding 40 days should also be classified as high-risk patients. Because of sympathetic stimulation and hypercoagulability during and after surgery, *patients with major predictors have a five times greater perioperative risk.* Only vital or emergency surgical procedures should therefore be considered for these patients. All elective operations should be postponed and the patients properly investigated and treated.

Intermediate-risk factors are proof of well established but controlled coronary artery disease. Diabetes mellitus is included in this category because it is frequently associated with silent ischemia and represents an independent risk factor for perioperative mortality.

Minor risk factors are markers of an increased probability of coronary artery disease, but not of an increased perioperative risk (Table 3).

Exercise tolerance is a major determinant of perioperative risk. It is usually evaluated by the estimated energy requirement for various activities and graded in metabolic equivalents (MET) on a scale defined by the Duke Activity Status Index (Table 4). One MET represents the oxygen consumption of a resting adult (3.5 ml/kg/min).

Table 4.

Examples of Functional Capacity

1-4 METs	Standard light home activities Walk around the house Walk 1-2 blocks on level ground at 3-5 km/h
5-9 METs	Climb a flight of stairs, walk up a hill Walk on level ground at >6 km/h Run a short distance Moderate activities (golf, dancing, mountain walk)
≥10 METs	Strenuous sports (swimming, tennis, bicycle) Heavy professional work
METs=metabolic equivalents of oxygen consumption	

Surgical procedures can be stratified into three categories, according to their level of perioperative physiological stress (Table 5).

Previous MI

Till recently it was accepted generally that a MI within 6 months of proposed surgery is a contraindication to elective anesthesia and surgery. It appears now that the risk after a previous infarction is related less to the age of the infarction than to

the functional status of the ventricles and to the amount of myocardium at risk from further ischemia. A small infarction without residual angina in the context of a good functional status allows essential non-cardiac surgery as soon as 6 weeks after the ischemic episode. On the contrary, a patient with a large infarct, residual symptoms and ejection fraction <0.35 has a high probability of a further cardiac event, even 6 months after the infarction. Usual practice guidelines consider the period within 6 weeks of infarction as a time of high risk for a perioperative cardiac event, because it is the mean healing time of the infarct-related lesion. The period from 6 weeks to 3 months is of intermediate risk; this period is extended beyond 3 months in cases with complications such as arrhythmias, ventricular dysfunction or continued medical therapy. In uncomplicated cases, no benefit can be demonstrated for delaying surgery more than 3 months after an ischemic accident[19].

Recent data have shown that any event in the coronary circulation, (ischemia, infarction, or revascularization), induces a high-risk period of 6 weeks and an intermediate-risk period of 3 months. A 3-month minimum delay is therefore indicated before performing non-cardiac surgery after myocardial infarction or revascularization. However, this delay may be too long if an urgent surgical procedure is requested, as for instance with rapidly spreading tumors, impending aneurysm rupture, infections requiring drainage, or bone fractures. In these situations, recent studies, have demonstrated a marked benefit of operating under the protection of β_1-adrenergic antagonism, which reduces the cardiac complication rate in such patients. When possible, beta-blockers should be started days or weeks before elective surgery, with a target heart rate between 50 and 60 beats per minute[20].

What are defined as perioperative cardiac complications?

Myocardial infarction, pulmonary edema, ventricular fibrillation, primary cardiac arrest, or complete heart block are defined as major perioperative cardiac complications. Perioperative MI: usually presents atypically (without chest pain), occurs within the first 2 days of surgery and carries a high mortality. The rate of postoperative myocardial infarction is 0.7% after general surgery in a male population over 50 yr old, but increases to 3.1% after vascular surgery where the prevalence of asymptomatic coronary artery disease is particularly high[17, 21]. Should a MI occur, the mortality rate remains at 40% to 70% [21]. The ACC/AHA Guidelines for Perioperative Cardiovascular Evaluation for Noncardiac Surgery offer recommendations for a patient suffering a perioperative MI. These include consideration for prompt angioplasty, aspirin, beta-blockade and possible angiotensin converting enzyme inhibitor therapy[19].

Management recommendations

Given an acute surgical emergency, preoperative evaluation might have to be limited to simple and critical tests such as a rapid assessment of cardiovascular vital signs, volume status, hematocrit, electrolytes, renal function, urine analysis and ECG. Only the most essential tests and interventions are appropriate until the acute surgical emergency is resolved. A more thorough evaluation can be conducted after surgery.

The decision to proceed with elective surgery begins with an assessment of risk. The clinician should assess the patient's preoperative risk factors and the risks associated with the planned surgery. It is often helpful to give an estimate of the percentage risk of cardiac complications (see above, by risk class) so that the surgeon can make the most educated decision regarding whether or not to proceed with surgery.

The decision to undergo further testing depends upon the interaction of the patient's risk factors, surgery-specific risk and functional capacity.

If a major risk predictor is present, nonemergency surgery should be delayed for medical management, risk factor modification and possible coronary angiography. For patients at intermediate clinical risk, both the exercise tolerance and the extent of the surgery are taken into account with regard to the need for further testing.

Patients with poor functional status should undergo noninvasive cardiac testing unless low-risk surgery is planned. Patients with good or excellent functional status require noninvasive testing only if they are having high-risk surgery. Finally, patients with minor risk predictors or no risk predictors should have noninvasive testing if they have poor functional status and are about to undergo high-risk surgery. *Importantly, no preoperative cardiovascular testing should be performed if the results will not change perioperative management.*

The results of noninvasive testing can then be used to determine further perioperative management. Such management may include intensified medical therapy or cardiac catheterization, which may lead to coronary revascularization or potentially to cancellation or delay of the elective noncardiac operation. Alternatively, results of the noninvasive test may lead to a recommendation to proceed directly with surgery. In some patients, the risk of coronary angioplasty or corrective cardiac surgery may approach or even exceed the risk of the proposed noncardiac surgery. In some instances, this approach may be appropriate, however, if it also significantly improves the patient's long-term prognosis.

Go to:

Assessing pulmonary risk

A careful history taking and physical examination are the most important parts of preoperative pulmonary risk assessment. The role for preoperative pulmonary function testing remains uncertain. No data suggest that spirometry identifies a high-risk group that would not otherwise be predicted by the history and physical examination. Spirometry may be useful when there is uncertainty about the presence of lung impairment. It should be used selectively when the information it provides will change management or improve risk stratification.

Postoperative pulmonary complications (PPCs) such as pneumonia, atelectasis, bronchitis, bronchospasm, hypoxemia, respiratory failure with prolonged mechanical ventilation or exacerbation of underlying chronic lung disease, increase patient morbidity and mortality and prolong the length of hospital stay after surgery[23]. PPCs occur in approximately 20-30% of patients undergoing major, non thoracic surgery.

The risk factors for PPCs include the following[24]:

- *Procedure-related risk factors:* primarily based on how close the surgery is to the diaphragm (i.e. upper abdominal and thoracic surgery are the highest risk procedures).
- *Length of surgery* (> 3 hours) and general anesthesia (vs. epidural or spinal).
- Emergency surgery.
- Underlying chronic pulmonary disease or symptoms of respiratory infection.
- Smoking.
- Age >60 years.
- Obesity.

- Presence of obstructive sleep apnea.
- Poor exercise tolerance or poor general health status.

The most significant of these risk factors is the *site of surgery,* with abdominal and thoracic surgery having pulmonary complication rates ranging from 10 to 40 percent[25]. As a rule, the closer the surgery is to the diaphragm, the higher the risk of pulmonary complications. The most important modifiable risk factor is *smoking*. The relative risk of pulmonary complications among smokers as compared with nonsmokers ranges from 1.4 to 4.3. Unfortunately, the risk declines only after eight weeks of preoperative cessation[26]. This interval allow the mucociliary transport mechanism to recover, the secretions to decrease and the carbon monoxide levels in the blood to drop.

The presence of either *obstructive or restrictive pulmonary disease* places the patient at increased risk of developing perioperative respiratory complications. If significant pulmonary disease is suspected by history or physical examination, determination of functional capacity, response to bronchodilators and/or evaluation for the presence of carbon dioxide retention through arterial blood gas analysis may be justified.

For elective anesthesia and surgery in a patient with a history of *asthma*, the asthmatic condition should be under control and the patient should be free of wheezing, with a peak flow greater than 80% of predicted. If necessary, the patient should receive a short course of steroids (60 mg of prednisone daily or the equivalent) prior to surgery to achieve this goal[27–28]. If the patient takes drugs regularly, treatment must not be discontinued. Any patient who has previously been admitted to hospital for an asthmatic attack should be carefully assessed, because airway reactivity persists for several weeks after an asthmatic episode.

The increased frequency of PPCs in patients with chronic obstructive pulmonary disease (COPD) may be explained by co-morbidities (e.g. cardiovascular disease) rather than by airway obstruction. Patients with COPD may have chronically fatigued respiratory muscles. Impaired nutrition, electrolyte and endocrine disorders can contribute to respiratory muscle weakness and should be corrected before surgery. Patients with COPD should be examined for unrecognized corpulmonale; if present, it should be treated before surgery[29–30].

Generally, all patients with COPD / asthma who require home oxygen therapy or have required hospitalization for respiratory problems in the past 6 months are assumed to be at greater risk.

Patients with obstructive sleep apnea (OSA) are prone to postoperative hypoxemia quickly after emergence from general anesthesia. The sedative and respiratory depressant effects of general anesthesia place the patient with OSA at significantly increased risk of airway obstruction and respiratory compromise in the perioperative period. It is prudent to diagnose OSA preoperatively so special treatments applied appropriately[31].

Go to:

Diabetes mellitus

Perioperative morbidity and mortality are greater in diabetic than in non-diabetic patients. When a diabetic patient needs surgery, *it is important to remember that he or she is more likely to be harmed by neglect of the long term complications of diabetes than from the short term control of blood glucose levels.* The majority of long-standing diabetics develop compromise in one or more organs. The diabetic patient who needs elective surgery should be carefully assessed preoperatively for

symptoms and signs of peripheral vascular, cerebrovascular and coronary disease. Co-existing pathologies must be identified and carefully managed perioperatively.

Diabetics have a higher incidence of death after MI than non-diabetics. Myocardial ischemia or infarction may be clinically "silent" if the diabetic has autonomic neuropathy. Therefore, a high index of suspicion for myocardial ischemia or infarction should be maintained throughout the perioperative period if unexplained hypotension, dysrhythmias, hypoxemia or ECG changes develop. Eight to 31% of type 2 diabetics are reported to have asymptomatic coronary artery disease on stress testing. Administration of perioperative beta-blockers should be considered in diabetic patients with coronary artery disease to limit perioperative ischemia. Despite prior controversy regarding the use of beta blockade in diabetics (due to concerns of worsened glucose intolerance and masking symptoms of hypoglycemia), it is emphasized that diabetics benefit as much or more than the non-diabetic population from post-MI beta blockade[32–33].

Adequate control of blood glucose concentration (< 180 mg/dL) must be established preoperatively and maintained until oral feeding is resumed after operation. Oral hypoglycemic agents are withheld the day of surgery for an agent with a short half-life and up to 48 h preoperatively for a long acting agent such as chlorpropamide. A combination of glucose and insulin is the most satisfactory method of overcoming the deleterious metabolic consequences of starvation and surgical stress in the diabetic patient. Generally, there is no need for insulin infusion in diabetics who are diet-controlled regardless of type of surgery, or in diabetics who are on oral agents only and are undergoing minor surgeries.

Complications of perioperative hyperglycemia include dehydration, impaired wound healing, inhibition of white blood cell chemotaxis and function (associated with an increased risk of infection), worsened CNS and spinal cord injury under

ischemic or hypoxic conditions and hyperosmolarity leading to hyperviscosity and thrombogenesis. A glucose level > 180 mg/dL (10 mmol/ L) results in osmotic diuresis; glycosuria may lead to dehydration and increases the risk of urinary tract infection. As a general rule in a 70 kg patient, 1 unit/h of regular insulin lowers the glucose by approximately 2530 mg/dL (1.5 mmol/L).

Hypoglycemia [a glucose < 50 mg/dL (2.8 mmol/L) in adults and < 40 mg/dL (2.2 mmol/L) in children] may develop postoperatively due to residual effects of long-acting oral hypoglycemic agents or insulin preparations given preoperatively, in addition to perioperative fasting. Recognition of hypoglycemia in the perioperative period may be delayed because anesthetics, analgesics, sedatives and sympatholytics agents alter the usual presenting symptoms of hypoglycemia. In addition, diabetics with autonomic neuropathy have blunting of the adrenergic symptoms associated with hypoglycemia. These symptoms generally begin with confusion, irritability, fatigue, headache and somnolence and may progress to seizures, focal neurologic deficits, coma and death[32]

PREOPERATIVE ASSESSMENT

OBJECTIVES

The following primary goals of preoperative evaluation and preparation have been identified

1. Documentation of the condition(s) for which surgery is needed.
2. Assessment of the patient's overall health status.
3. Uncovering of hidden conditions that could cause problems both during and after surgery.
4. Perioperative risk determination.

5. Optimization of the patient's medical condition in order to reduce the patient's surgical and anesthetic perioperative morbidity or mortality.
6. Development of an appropriate perioperative care plan.
7. Education of the patient about surgery, anesthesia, intraoperative care and postoperative pain treatments in the hope of reducing anxiety and facilitating recovery.
8. Reduction of costs, shortening of hospital stay, reduction of cancellations and increase of patient satisfaction.

PREOPERATIVE ASSESMENT

STEPS OF PRE OPERATIVE VISIT

Pre-Operative History

The history is the most important component of the preoperative evaluation. The history should include a past and current medical history, a surgical history, a family history, a social history (use of tobacco, alcohol and illegal drugs), a history of allergies,current and recent drug therapy, unusual reactions or responses to drugs and any problems or complications associated with previous anesthetics. A family history of adverse reactions associated with anesthesia should also be obtained. In children, the history should also include birth history, focusing on risk factors such as prematurity at birth, perinatal complications and congenital chromosomal or anatomic malformations and history of recent infections, particularly upper and lower respiratory tract infections.

The history should include a complete review of systems to look for undiagnosed disease or inadequately controlled chronic disease. Diseases of the cardiovascular and respiratory systems are the most relevant in respect of fitness for anesthesia and surgery

The pre-operative history follows the same structure as typical history taking, with the addition of some anaesthetic and surgery specific topics.

History of the Presenting Complaint

A brief history of why the patient first attended and what procedure they have subsequently been scheduled for. One should also confirm the side on which the procedure will be performed (if applicable)

Past Medical History

A full past medical history (PMH) is required, with the following specifically asked about:

- Cardiovascular disease (including hypertension and exercise tolerance)
  - The risk of an acute cardiac event is increased during anaesthesia
- Respiratory disease, as adequate oxygenation and ventilation is essential in reducing the risk of acute ischaemic events in the peri-operative period
- Renal disease, as many features of renal disease (such as anaemia, coagulopathy, biochemical disturbances) can increase the incidence of surgical complications
- Endocrine disease, specifically diabetes mellitus and thyroid disease
  - Many medications often require specific changes to be made in the peri-operative period

Other specific questions it may be useful to ask themselves the following questions:

- Female of reproductive age – could they be pregnant
- African or Afro-Caribbean descent – could they have undiagnosed sickle cell disease

Past Surgical History

Has the patient had any previous operations? If so, what, when, and why?

Past Anaesthetic History

Has the patient had anaesthesia before? If so, were there any issues? Were they well intra- and post-operatively? Specifically, has the patient experienced to any previous post-operative nausea and vomiting?

Drug History

A full drug history is required, as some medications require stopping or altering prior to surgery. Ask about any known drug allergies.

Family History

An important condition to ask about is malignant hyperpyrexia* (also known as malignant hyperthermia), yet any other adverse reactions in surgery of immediate family members should also be documented.

**An autosomal dominant condition that characteristically leads initially to muscle rigidity (despite neuromuscular blockade) followed by a rise in temperature (requires senior input and support if present)*

Social History

Ensure to ask the patient about smoking history and alcohol intake and their exercise tolerance.

Pre-Operative Examination

The physical examination should build on the information gathered during the history. At a minimum, a focused preanesthesia physical examination includes an assessment of the airway,

lungs and heart, with documentation of vital signs[6]. Unexpected abnormal findings on the physical examination should be investigated before elective surgery.

In the pre-operative examination, two distinct examinations are performed; the general examination (to identify any underlying undiagnosed pathology present) and the airway examination (to predict the difficulty of intubation). If appropriate, the area relevant to the operation can also be examined.

Perform a full general examination, looking closely for any obvious cardiovascular, respiratory, or abdominal signs. An anaesthetic examination, including an airway assessment, will also be performed by the anaesthetist prior to any surgery (see Appendix).

American Society of Anaesthesiologists Grade

On all anaesthetic charts, a patient will be given an American Society of Anaesthesiologists (ASA) grade after their pre-operative assessment, which has been subjectively assessed and based on the criteria below. A patient's ASA grade directly correlates with their risk of post-operative complications and absolute mortality.

ASA Grade	Definition	Absolute Mortality (%)
I	Normal healthy patient	0.1
II	Mild systemic disease	0.2
III	Severe systemic disease	1.8
IV	Severe systemic illness that is a constant threat to life	7.8

ASA Grade	Definition	Absolute Mortality (%)
V	Moribund, who is not expected to survive without the operation	9.4
E	Suffix added if an emergency operation	–

Pre-Operative Investigations

It is generally accepted that the clinical history and physical examination represent the best method of screening for the presence of disease. Routine laboratory tests in patients who are apparently healthy on clinical examination and history are not beneficial or cost effective. A clinician should consider the risk-benefit ratio of any ordered lab test. When studying a healthy population, 5% of patients will have results which fall outside the normal range. Lab tests should be ordered based on information obtained from the history and physical exam, the age of the patient and the complexity of the surgical procedure[6–9] (Table 1).

Table 1.

Indications for specific preoperative tests

Complete blood count Major surgery Chronic cardiovascular, pulmonary, renal, or hepatic disease; or malignancy Known or suspected anemia, bleeding diathesis, or myelosuppression Less than one year of age
International Normalized Ratio (INR), Activated Partial Thromboplastin Time (aPTT) Anticoagulant therapy Bleeding diathesis Liver disease
Electrolytes & creatinine Hypertension Renal disease Diabetes Pituitary or adrenal disease Digoxin or diuretic therapy, or other drug therapies affecting electrolytes
Fasting glucose Diabetes (should be repeated on day of surgery)
Electrocardiograph Heart disease, hypertension, diabetes Other risk factors for cardiac disease (may include age) Subarachnoid or intracranial hemorrhage, cerebrovascular accident, head trauma
Chest radiograph Cardiac or pulmonary disease Malignancy

The nature of the exact investigations required depends on a number of factors, including co-morbidities, age, and the nature of the procedure.

Each specific hospital is likely to provide local guidelines, however it is useful to understand the tests than could be done pre-operatively and have an appreciation as to why each may be requested. NICE produce a colour traffic light table which can further guide your investigative decisions.

Blood Tests

- Full Blood Count (FBC)
  - Most patients will get a full blood count, predominantly used to assess for any anaemia or thrombocytopenia, as this may require correction pre-operatively to reduce the risk of cardiovascular events
- Urea & Electrolytes (U&Es)
  - To assess the baseline renal function, which help inform any potential IV fluid management intra- and post-operatively
- Liver Function Tests (LFTs)
  - Important in the assessing liver metabolism and synthesising function, useful for peri-operative management; if there is suspicion of liver impairment, LFTs may help direct medication choice and dosing

- Clotting Screen
  - Any indication of deranged coagulation, such as iatrogenic causes (e.g. warfarin), inherited coagulopathies (e.g haemophilia A/B), or liver impairment, will need identifying and correcting before surgery
- Group and Save (G&S) +/- cross-matching

Group and Save (G&S) and Cross-Match (X-match) are two tests often cause a great deal of confusion:

- A G&S determines the patient's blood group (ABO and RhD) and screens the blood for any atypical antibodies; the process takes around 40 minutes and no blood is issued
  - A G&S is recommended if blood loss is not anticipated, but blood may be required should there be greater blood loss than expected

- A cross-match involves physically mixing the patient's blood with the donor's blood, in order to see if any immune reaction takes places; if it does not, the donor blood is issued and can be transfused in to the patient, otherwise alternative blood is trialled
  - This process also takes ~40 minutes (in addition to the 40 minutes required to G&S the blood, which must be done first), and should be done if blood loss is anticipated

Imaging

Electrocardiogram (ECG)

An ECG is often performed in individuals with a history of cardiovascular disease or for those undergoing major surgery. It can indicate any underlying cardiac pathology and provide a baseline if there are post-operative signs of cardiac ischaemia.

N.B An echocardiogram (ECHO) may be considered if the person has (1) a heart murmur (2) cardiac symptom(s) (3) signs or symptoms of heart failure.

Chest X-rayA plain film chest radiograph (CXR) should be used only when necessary and should not be performed routinely (Fig. 1). Local guidelines should be available to aid decision-making and indications may include:

- Respiratory illness who have not had a CXR within 12 months
- New cardiorespiratory symptoms
- Recent travel from areas with endemic tuberculosis
- Significant smoking history

If a patient has a chronic lung condition, spirometry may be of use in assessing current baseline and predicting post-operative pulmonary complications in these patients.

Other Tests

Pregnancy Testing

Consider pregnancy testing in all women of reproductive age, always ensuring to get the patient's consent

Sickle Cell Test

Do not routinely offer testing for sickle cell disease or sickle cell trait before surgery. If the person has any member of their family with sickle cell disease, or is Africa or Afro-Caribbean descent however, strongly consider performing a sickle cell test.

Urinalysis

A urinalysis may be performed if any evidence or suspicion of ongoing glycosuria or urinary tract infection, yet should not be done routinely pre-operatively.

MRSA Swabs

All patients will have swabs taken from the nostril ± perineum ± other sites for MRSA colonisation. If this is isolated, antiseptic hair and body wash, along with topical ointment applied to the nostrils, will be given; in some hospitals, this is given for all elective patients pre-operatively, even if this means the operation is delayed.

VALUE ADDED COURSE

PRE-OP ANAESTHETIC ASSESSMENT

Annexure II

STUDENT ENROLLMENT LIST (JAN-MARCH 2020)

S.No.	University no	Name of the student	Year / CRRI	Signature
1.	U15MB351	SAKTHIYANATHAN .S	IV th	Sakthiyanathan.
2.	U15MB352	SANDIYA. T	IV th	Sandiya.
3.	U15MB353	SARANKUMAR. B	IV th	Saran kumar.
4.	U15MB354	SARANYA R.E	IV th	Saranya.
5.	U15MB355	SARANYA. E	IV th	Saranya.
6.	U15MB356	SARATH KUMAR. A	IV th	Sarath Kumar
7.	U15MB357	SATHESH. B	IV th	Sathesh kumar
8.	U15MB358	SATHIYA NARAYANA .S	IV th	Sathiya Narayana.
9.	U15MB359	SEDHUPATHY. S	IV th	Sedhupathy.
10.	U15MB360	SELVASRINIVASAN. B	IV th	Selvasrinivasan.
11.	U15MB361	SENTHILKUMARAN. A	IV th	Sharad Zad I
12.	U15MB362	SHAHARA ZAD .S	IV th	Sakthi
13.	U15MB363	SHAKTHI. K	IV th	Shakthi. K.
14.	U15MB364	SHALINI. A	IV th	Shalini
15.	U15MB365	SHANMUGA PRIYANGA. A	IV th	Shanmuga Priyanga.
16.	U15MB366	SHARUMATHI.E	IV th	Sharumathi
17.	U15MB367	SHIYAM. M	IV th	Shiyam
18.	U15MB368	SHRIRAAM .K	IV th	Shriraam.
19.	U15MB369	SIVA SAKTHI VELAN .A.V	IV th	Siva Sakthi velan.
20.	U15MB365	SHANMUGA PRIYANGA. A	IV th	Shanmuga Priyanga.

RESOURCE PERSON

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

DR. CHANDRASEKAR

COORDINATOR

DR. M KALASREE

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

Annexure III

MCQ: Pre-op Assessment

1. Most important parameter for the anaesthetics to asses

    a. Genitourinary system
    b. GI system
    c. Airway
    d. Skeletal system

2. M in LEMON assessment stands for
    a. Maniquine
    b. Modification
    c. Malampatti
    d. All the above

3. METS stands for
    a. Metabolic equilants
    b. Mass effect
    c. Metastatic equilants
    d. None of the above

4. Endoscopic procedures come under what type of cardiac risk
    a. Mild
    b. Moderate
    c. Severe
    d. Very severe

5. All the following test are done to assess the pregnant women except.
    a. Hb
    b. RFT
    c. ECG
    d. X-RAY chest

6. In ASA physical status a normal healthy patient is classified under.

    a. ASA-1
    b. ASA-2
    c. ASA-3
    d. ASA-4

7. Injection glycopyrulate is

    a. Opioid
    b. Muscle relaxants
    c. Antisialagogue
    d. Anti- hypertension

8. The clear liquid can be given before how many hours

    a. 5hrs
    b. 3hrs
    c. 2hrs
    d. 6hrs

9. Thyromental distance

    a. 5.2cm
    b. 3cm
    c. 6.5cm
    d. 1cm

10. Willson's test is done for

    a. Tongue protrusion
    b. Neck movements
    c. Upper lip bite
    d. Eye movements

Sathesh.B

Annexure III

7/10

MCQ: Pre-op Assessment

1. Most important parameter for the anaesthetics to asses

   a. Genitourinary system
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   c. Airway
   d. Skeletal system

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c. 6.5cm
d. 1cm

10. Willson's test is done for

a. Tongue protrusion
b. Neck movements
c. Upper lip bite
d. Eye movements

Shalini. A

Annexure III

6/10

MCQ: Pre-op Assessment

1. Most important parameter for the anaesthetics to asses

   a. Genitourinary system
   b. GI system
   c. Airway
   d. Skeletal system

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   a. Maniquine
   b. Modification
   c. Malampatti
   d. All the above

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   b. Mass effect
   c. Metastatic equilants
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5. All the following test are done to assess the pregnant women except.
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a. 5.2cm
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c. 6.5cm
d. 1cm

10. Willson's test is done for

a. Tongue protrusion
b. Neck movements
c. Upper lip bite
d. Eye movements

Annexure V

Student Feedback Form

Course Name: **PRE OPERATIVE ANAESTHETIC EVALUATION**
Subject Code: **ANAES 12**

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: **PRE OPERATIVE ANAESTHETIC EVALUATION**
Subject Code: **ANAES 12**

Name of Student: A. SHANMUGA PRIYANGA Roll No.: 115MB365

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

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

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

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

Suggestions if any:

Excellent.

Annexure V

Student Feedback Form

Course Name: **PRE OPERATIVE ANAESTHETIC EVALUATION**
Subject Code: **ANAES 12**

Name of Student: Sharaza3ed. S Roll No.:
U1SMB362

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

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

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

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

Suggestions if any:

Good

Date: 02.04.2020

From
Dr. M Kalasree
Head Of Department Incharge
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: Pre Operative Anaesthetic Evaluation

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: Pre Operative Anaesthetic Evaluation in Jan – March 2020 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. M Kalasree

Sri Lakshmi Narayana Institute of Medical Sciences
Oulgu, Kodapakkam, Puducherry - 605 502

Encl: Certificates

Photographs

Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research

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

CERTIFICATE OF MERIT

This is to certify that ____SHAKTHI K____ has actively participated in the Value Added Course on Pre operative Anaesthetic Evaluation held during January - June 2020 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr. CHANDRASEKAR
RESOURCE PERSON

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

Dr. KALASREE M
COORDINATOR

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

Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research

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

CERTIFICATE OF MERIT

This is to certify that __SANDIYA T_____ has actively participated in the Value Added Course on Pre operative Anaesthetic Evaluation held during January - June 2020 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

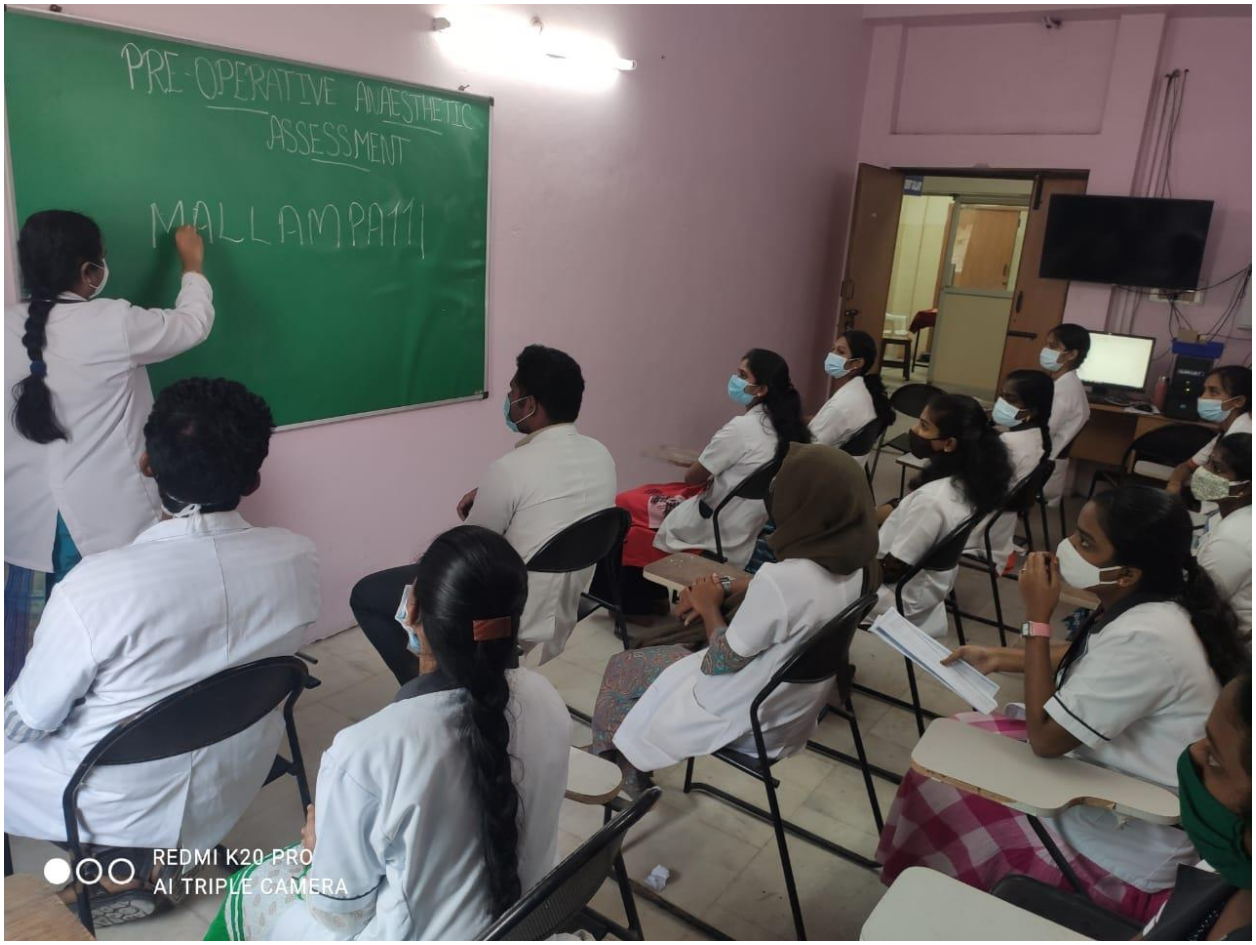
DEPARTMENT OF ANAESTHESIOLOGY
SRI LAKSHMI NARAYANA INSTITUTE
OF MEDICAL SCIENCES
OSUDU, KUDAPAKKAM, PUDUCHERRY-605 502.

Dr. CHANDRASEKAR
RESOURCE PERSON

Dr. KALASREE M
COORDINATOR

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

SSS


PRE-OPERATIVE ANAESTHETIC
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MALLAMPATI
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