Syllabus for MD (Anaesthesiology) Programme

Guru Gobind Singh Indraprastha University

A State University established by the Govt. of NCT of Delhi

University School of Medicine and Allied Health Sciences

SYLLABUS

M D ANAESTHESIOLOGY

GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY, DELHI

The course content should include a fund of acquired information and the strategy evolved for acquiring the information. Most useful information should be included taking into account the limits of the time available. The contents should ensure that the candidate acquires basic skills and attitudes in the subject. It should discipline the thinking habit for problem solving and discovery of new knowledge in the field.

To this Extent the Course Content should include Certain Facts:-

a) A thorough knowledge of the pharmacokinetics and pharmacodynamics of anaesthetic drugs and adjuncts.

b) Knowledge of cardiovascular, respiratory ,neurological, hepatobiliary, renal and endocrine homeostasis and related drugs as relevant to patients undergoing anaesthesia.

c) Relevant anatomy, physiology and biochemistry.

d) A basic idea of the relevant physical principles involved in the construction and functioning of equipment used in anaesthesia and monitoring.

e) Knowledge to attain expertise of the commonly used techniques in general, regional and local anaesthesia.

f) A clear-cut concept of unconsciousness and its implications.

g) Relevant knowledge about chronic intractable pain and its management.

h) Relevant knowledge to manage patients in intensive therapy unit.

i) Relevant knowledge of medical Statistics

j) Knowledge & Expertise in Cardiopulmonary resuscitation.

The Course content should also include ways and means of stimulating the thought processes of the candidate and ensure that the candidate can critically acquire new information from books, journals, lectures, seminars and discussions. It should include ways and means of developing reflective thinking and problem solving by critically analysing events during anaesthesia. Interpretation of these data and logical reasoning should lead to application of facts and principles in practice.

It is needless to emphasise that the course content should ensure that the candidate acquires the necessary aptitude and motor skills to become a competent anaesthesiologist, learn the art of teaching students, nurses and paramedical staff and carry out a simple research project.

The trainee will undergo a graded training in the following manner :

Orientation: At the beginning of 3 Years each student should be given an orientation to the hospital operation theatre and subject of anaesthesia. The candidate shall be assigned thesis guides so as to help them prepare protocols.

Introductory lectures (to be taken by faculty) should be aimed to familiarize the student with the:

a) Basic anaesthesia delivery equipment and Monitors and important principles of physics that govern the functions of these equipments.

b) Intravenous Anaesthetic drugs and Inhalation agents.

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c) Patient evaluation, interpretation of laboratory investigation as applied to the care of the patients planning and conduct of General anaesthesia and postoperative care.

d) Students should be taught basic and advanced cardiac life support.

e) The student should be familiarized about the principle of the sterilization and universal precautions.

f) They should be able to ask for consultation when necessary. The students are encouraged and taught to search literature to be able to write a thesis protocol.

1st Year Theory ***Should cover the following:***

1. **Anatomy** related to -- Diaphragm, larynx and upper and lower airway, learn relevant, anatomy for regional anaesthesia and venous canulations. Some Anatomical areas of interest to the anaesthetist are Orbit of the Eye, Base of skull, Vertebral Column, spinal cord, and meninges, axilla, 1st rib, Intercostal space.

2. **Principles of physics** and use of equipment in anaesthesia

i) Anaesthesia machine - checking the machine and assembly of necessary items.

ii) Airway equipment including PercutaneousTracheostomy, Cricothyroidotomy set./ Equipments for airway management - mask, Supraglotic apparatus llike LMA, fibreoptic laryngoscopes; other devices like Combi tube etc.

iii) Breathing systems continuous flow systems, draw over system - Assembly and checking.

iv) Monitoring in Anaesthesia with concepts of minimal monitoring.

v) Safety in Anaesthesia Equipments.

vi) Medical gases - storage and central pipeline system, Liquid oxygen, Oxygen concentrators(Zeolite mechanism)

3. **Physiology related to**

i). Theories of mechanism of production of Anaesthesia

ii) Respiratory, cardiovascular, hepatobiliary, renal and endocr ine system. Pregnancy, Blood Groups, Muscle & N M Junction, ECG, Regulation of temperature & Metabolism, Stress response.cerebral blood flow, ICP& Neuromuscular junction.

iii) Central, autonomic and peripheral system.

4. **Pharmacology**

i) General pharmacological principles

ii) Concepts of pharmacokinetics and pharmacodynamics. Uptake and distribution of inhaled anaesthetics.

iii) Drug interaction in Anaesthesiology.

iv) Drugs used for pre-treatment, induction of anaesthesia, general –intravenous and inhalational, neuromuscular block and reversal.

5. Theoretical background of the commonly used anaesthetic techniques of general and regional anaesthesia viz.

i) GA - Intravenous, Inhalational, Endotracheal etc. using spontaneous and controlled mode of ventilation.

ii) RA – Central neuroaxial block:- Spinal, Epidural, CSE & Caudal

Peripheral Nerve blocks

Infiltration

iii) Pharmacology of local anaesthetics & opoids

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6. Preoperative assessments and medication - General principals, ASA grading.

7. Biochemistry relevant to fluid balance & Blood Transfusions, Artificial Blood. & Perioperative fluid therapy, .Acid base hemostasis in health and diseases, Autologous blood transfusion, Factor-VIII.

8. Theoretical background on disorders of:

   i) Cardiovascular system.

   ii) Respiratory system

   iii) Hepatobiliary system.

   iv) Urinary system.

   v) Endocrine system, Pregnancy.

9. Cardiopulmonary Resuscitation; -Basic and advanced life support (cardiac and trauma life support), Neonatal resuscitation .Theories of cardiac pump, thoracic pump and defibrillation(Monophasic, Biphasic,AED).

10. Introduction to the operation theatre, recovery rooms (concepts of NICU PACU,ICU)

11. Introduction to acute& chronic pain management.

12. Intensive care of critical patients with introduction to artificial ventilation, management of unconscious patients, Oxygen therapy, Shock - pathophysiology and management.

13. Documentation and medico-legal aspects of anaesthesia : Stress the importance of accurate documentation , Log book maintenance.

14. Consent including high risk consent

15. Introduction to Research methodology, Random clinical trials etc. Basics of biostatistics.

16. History of Anaesthesia

2nd Year Theory

1. Relevant anatomy o f each system

2. Physics of equipment used in anaesthesia

   i) Medical gases - gas plant, central pipeline,Manifold room, Scavenging system.

   ii) Reducing valves

   iii) Anaesthesia machine, Humidifiers

   iv) Flow meters

   v) Vaporizers - Characteristics and functional specifications.

   vi) Breathing systems - Assembly, functional analysis, flow, Minimum monitoring standards requirements, APL and flow directional valves, Anaesthesia ventilator, Closed circuit system

3. Sterlization of equipment- Steam steriliser, ETO, Plasma steriliser

4. Computers, Utility, computer assisted learning and data storage. Computerised anaesthesia records.

5. Pharmacology of drugs used in cardiovascular, respiratory endocrine, renal diseases and CNS disorders.

6. Interpretation of blood gases and other relevant biochemical values, various function tests and basics of measurement techniques, ECG

7. Paediatric and geriatric anaesthesia –Principles & practice

8. Principles of monitoring equipment used for assessment of

   i) Cardiac function viz. Rhythm, pulse, venous and arterial pressures, cardiac output(Non invasive monitoring including ECG & Echo)

   ii) Temperature

   iii) Respiratory function (PFT including static & dynamic

   iv) Intracranial pressure, depth of anaesthesia- BIS & Entropy

   v) Neuromuscular block.

9. Special anaesthetic techniques as relevant to outpatient anaesthesia, hypotensive anaesthesia anaesthesia in remote location viz. MRI,CT,PET and disaster situations.

10. Anaesthetic management in special situations - Emergency, ENT, Ophthalmology, Obstetrics,Labour analgesia, Plastic, Dental, Radio-diagnosis and Radiotherapeutic procedures and patients with systemic diseases.

11. Medical statistics relevant to data collection, analysis, comparison and estimation of significance.

12. Journal clubs.

3rd Year Theory

1. Anaesthesia for patients with severe cardiac, respiratory, renal and hepatobiliary disorders posted for unrelated surgery.
2. Management of patients in shock, renal failure, critically ill and/or on ventilator.
3. Chronic pain therapy and therapeutic nerve blocks.
4. Selection, purchase, maintenance and sterilization of anaesthesia and related equipment.
5. Principles of anaesthetic management of neuro/ cardiac/ thoracic / vascular/ Transplantation/ burn and plastic surgery.
6. Principles of neonatal ventilation and critical care.
7. Principles of human resources and material management.
8. General principles of medical audit
9. Principles of one lung anaesthesia

ATTITUDE DEVELOPMENT

The student should develop attitudes that lead to:

1. Life long learning and updating
2. Sympathetic Communication with relatives
3. Sympathetic Communication with patients
4. Appropriate communication with colleagues to function in a group in OR/ICU
5. Become a teacher for Technicians, Nurses, and paramedical staff. And teach undergraduates.

6. Ability to discuss. Participate in case discussion and scientific presentations

7. Ability to function as a leader in the Operating room

Objectives to be achieved by an individual at the end of 3 years of MD course

SKILL DEVELOPMENT

Requirement of Practical Training by Junior Resident

It is felt that at the end of a 3-year training course a candidate should have the knowledge and ability to:

1. Plan and conduct anaesthesia, recovery, and postoperative pain relief for elective and emergency surgery related to all surgical specialties.

2. Carry out basic life support (BLS) and advanced life support (ALS) and train medical and paramedical staff in BLS and ALS.

3. Manage unconscious patients : Airway management and long term management of unconscious patient.

4. Manage patients admitted to an intensive care unit.

5. Manage patients suffering from chronic intractable pain.

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6. Organize the Hospital environment to manage mass casualty situation

7. Critically review and acquire relevant knowledge from the journals about the new development in the speciality.

8. Should be able to participate in anaesthesia audit.

9. Organise & set up OT, ICU, CSSD

10. Should be able to plan to write an article.

Major stress will be on practical training. The Goals of postings both the general goals and ofspecific sub speciality postings will be fulfilled by rotating the junior resident in various operating theatres.

Cognitive Domain

1. He should have precise concepts of doing basic clinical research and application of statistical analysis, in clinical medicine, medical audit, and medical record maintenance.
2. He should be able to put into use judiously all types of regional anaesthetic techniques both in OT as well as for all pain management.
3. He has to understand the problems and anaesthetics implications of the following conditions and situation:
   - Endocrine disorders
   - Chronic respiratory disease
   - Respiratory crisis situations
   - Hypertension and coronary artery disease
   - Congenital heart disease
   - Surgical operable conditions of newborn
   - Management of trauma including burns of various stages of its course
   - Geriatric anaesthetic problems

- Acid-base homeostasis
- Anaesthesia in difficult situations- Radiology including MRI, Dental chair, Endoscopic and airway-sharing procedures, Camp anaesthesia, Day car surgery, Shock of various etiology, Field situations including high altitude, Laser surgery.

Affective Domain

1.He should have exposure to specialities of Anaesthesia such as transplants, laparoscopic, cardiac surgical, neurosurgical, neonatal, obstetric, orthopaedic, plastic , ophthalmologic procedures,Geriatric & Bariatric Surgery.

2. He should be familiar with blood products transfusions, their indications, limitations and hazards.

3. He should have knowledge of basic and advanced life support measures..

Psychomotor Domain

The candidate should be able to:

1. Perform preanaesthetic check of patients taking detailed history, thorough physical examination, examining the reports of relevant laboratory tests, and order appropriate premedication.
2. Categorise patients according to ASA (American Society of Anesthesiologists) risk grading.
3. Recognise anaesthetic problems in high-risk patients and select further investigations and referral for expert opinion for dealing with specific problems.
4. Obtain patient/guardian consent for anaesthesia after proper explaining the Anaesthetic procedure, its advantages and any complications.
5. Conduct complete check for oxygen supply, other gases supply.
6. Administer anaesthesia to patients for emergency surgery, recognize perioperative complication and institute therapy.
7. Assist in anaesthetic management of the-Organ Transplant surgery, Limb replantation, Complicated reconstructive surgeries

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8. Perform the following procedures related to general anaesthetic independently-

- Endotracheal intubation, nasal and oral under difficult situations eg. Awake intubation, under local anaesthesia without the use of muscle relaxants,
- To obtund response to larygnoscopy. Assist/Perform-Blind nasal intubation, Intubation with double lumen tube,
- Laryngoscopy and bronchoscopy using malleable fibre optic(Difficult airway management system)
- Laryngoscopy /Bronchoscope. Maintain airway by using different types of laryngeal mask airway.
- Maintain airway by using mask ventilation.
- Undertake the following regional anaesthesia techniques- Lumbar epidural including segmental block and paravertebral block, Spinal/Intrathecal anaesthesia, Combined spinal and epidural block, Caudal block, PeripheralNerve block, Bracheal plexus block by interscalene, supraclavicular and axillaryapproach, Intravenous regional anaesthesia.
- Recognize chronic pain syndromes and manage them by-Pharmacotherapy,Nerve blocks, Physical methods TENS, and acupuncture.RFA, Endolaser & Ozone therapy.
- Assist/Perform Neurolytic Blocks.
- Manage Patients for cancer pain by WHO regime.
- Maintain nutrition of critically ill patients by parenteral and entral nutrition.
- Assist/Perform central venous cannulation by all routes-Perform Percutaneous/Mini-Tracheostomy, Institute Jet Ventilation.,Cricothyroidotomy set
- Carry out cardiopulmonary brain resuscitation.
- Initiate, maintain and wean patients from ventilators in ICU settings.
- Initiate and manage labour analgesia in labour room settings.
- Initiate and manage total intravenous anaesthesia.
- Able to manage anaesthesia for electro convulsive therapy.

Besides he should have comprehensive knowledge in anaesthetics and perioperative management of patients with hypertension, diabetes mellitus, Chronic obstructive airway disease, including bronchial asthma, myasthenia gravis, obesity, paraplegia, neuromuscular disorders, burns resuscitation and critical care, intensive care management of all assorted patients under that which includes choice ofventilators, and management of patients on ventilators, sterilization of equipments.

Intensive Care, Pain Clinic, Emergency Room (Casualty), Out Patient Department and Peripheral anaesthesia Facilities.

To achieve these objectives the post graduate student should be rotated through various specialty. The recommended period of stay in each area is as follows:

Speciality	**months**
General Surgery	2
Urology	1
Eye	1
ENT	1
Dental	1
Orthopedics/Trauma	2
Gynecology	2
Obstetrics	2

Pediatrics	2
Burns/Plastic	2
CTVS	2
Neurosurgery	1
ICU	7

Pain	1
Organ Transplant	1
Peripheral Theatre(Radiology, radiotherapy	1
ECT Cardiac Cath.)	1

elective	1/wk
emergency	1/wk

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DETAILS OF THE SKILLS TO BE ACQUIRED DURING THE TRAINING PERIOD

The student will be instructed in preoperative preparation of the patients and discussion of the intraoperative problems of cases being conducted on the day. During these postings the students will initially observe and then perform various procedures and conduct the anaesthestic procedure as listed.

Each procedure observed and performed will be listed in the logbook. Which will be signed by attending faculty.

Name of procedure	As	Undersuper	Independently
Endotracheal intubation	1	200	500
Naso-tracheal	1	50	100
Blind Nasal intubation	1	20	20
LMA & intubating LMA nsertion	1	10	10
Failed intubation drill includes Fiberoptic Laryngo/Bronchoscop	1	5	10
Bronchial Blocker	1	5	5

placement			
Jet Ventilation	1	5	5
Suctioning & physiotherapy of wet lung	1	10	100
Intubation in Neonates	5	10	50
Initiation & management of ventilation	10	20	100
Spinal Anaesthesia	2	5	100
Lumber Epidural Anaesthesia	5	5	50
Thoracic Epidural	5	5	20
Caudal Epidural Anaeshtesia	5	5	50
Combined Spinal Epidural	5	5	25
Brachial Plexus Block	5	5	20
Intravenous Regional Anaesthesia	5	5	50
Elbow, Wrist, Digital, Sciatic,Femoral,	5	5	5

Lateral Cutaneous Nerve of thigh, Ankle - each			
Cervical-Superficial & Deep plexus, Stellate, Splanchnic block - each	2	5	5
Peripheral venous cannulation	2	5	500
Central Venous Line by Brachial,,Jugular & Subclavian veins	2	5	20
Radial & Femoral Artery cannulation	2	2	10
Oesophageal/Precordial Stethoscope	2	5	50
CVP monitoring	2	5	20
Pulmonary Capillary Wedge Pressure	1	1	1
Temperature at Tympanic Membrane esosopageal/nasopharyngeal/Rectal	2	5	20

Neuro-muscular transmission Monitoring	2	5	20
External Cardiac Compression	1	5	20
Expired Air Ventilation on Dummy	1	5	10
Manual Bag resuscitator	5	5	50
Cardiac Defbrillation	5	5	5
Advanced Life Support	10	20	50
Fire in OR drill	Desirable		
Oxygen failure drill	Once a while		
Cardiac Arrest drill	Once a while		
Mass Casualty drill	Once a while		

Clinical procedures which the candidate may know / desirable

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S. No.	Name of procedure	As Observer	Under Supervision	Independently
1	Intracranial Pressure Monitoring	5	5	5
2	Transeosophageal echocardiography	5	5	5
3	Non Invasive CardiacOutput monitoring	5	5	-

Investigations / tests which the candidate must know to interpret

1. ECG

2. Pulmonary Functions Tests

3. Blood Biochemistry

4. Arterial Blood Gases

5. 2D Echocardiography

6. Coagulation Profile/ TEG

7. X ray Chest, Neck (Air Tracheograms)

8. Cardiac Catheterization Study

9. Neuromuscular monitoring

10. Capnography tracings

11. Evoked potential

1st Year Objectives

The first year resident should be taught expertise in the management of ASA I and II cases. To start with they will observe and slowly become independent in giving general anaesthesia and spinal anaesthesia toASA I & II cases for minor and major surgery, under graded supervision. They should be posted to thefollowing specialties doing the first year gynecology, General Surgery, Orthopedic, ENT, RecoveryRoom, Urology.

2nd Year Objectives

The student should be taught to give general anaesthesia regional anesthesia to ASA I, II, III & IV undersupervision they should be able to give extradural block (EDB), Spinal Block, and Peripheral NerveBlocks under supervision. Should learn pediatric and trauma life supports and maintain skills for basic and advanced cardiac lifesupport.It is advised that they may be posted in the following specialties Obstetrics, Dental Surgery, Eye,ICU, Pain Clinic and Peripheral Theatres.

The student should be able to be able to analyze data and write a thesis. Should be able to presentscientific data.

3rd Year Objectives

The student should be able to plan and administer anaesthesia to all patients under graded supervision including patients for cardiac, Neurosurgery, Pediatric surgery and

for all major surgery. The aim at the end is to be competent and independent soon after the third year of junior residency in providing anaesthesia to elective and emergency cases. The junior resident should be able to manage critically ill patient and to treat intractable pain. They should also know how to organize mass casualty. The curriculum should be able to provide 1 month of elective posting.in the superspecialities mentioned above.

Minimum Procedures/Cases to entered in the log book.

Regional

SAB = 30 SAB

EDB (thoracic / lumber) = 30 including continuous EDB

Caudal = 10

Sciatic/Femoral = 5 + 5

Bier Block = 5

Ankle Block = 5

Stellate Ganglion = 3 (observe)

Brachial Plexus = 5 observe ;10 do

Sympathetic Block = 5 (Observe)

Trigger Point injection = 5

Other peripheral N. Block = 10

Ophthalmic Blocks = 5 (observe)

Field Block = 5

Radiofrequency ablation = 5

Ozone therapy = 5

Anaesthesia for:

Open Heart = 3 – 5 observe

Closed Heart = 5 observe

Craniotomy = 5 observe

Spinal Surgery = 5 observe

Joint Replacement = 5 observe

Anesthesia for organ transplant = 5 observe

Procedures

Internal Jugular Cannulation = 5 + 5 do/observe

External Jugular Cannulation = 5

Subclavian Vein Cannulation = 5 + 5 do/observe

Peripheral Central Line = 15

Arterial Line Cannulation = 10

Conduct of Cases

ASA I = 100

ASA II = 50

ASA III = 30

ASA IV = 10

DETAILED CURRICULUM FOR POSTINGS

I. GENERAL GOALS OF ALL POSTINGS

1) Learn to evaluate patients, prioritize problems and present case clearly and systematically to attending consultant .

2) Learn anaesthetic tecquniue and skill to anaesthetize patients in locations inside and out side the operating room

3) Learn to operate different equipment used by anaesthetist.

4) Select appropriate drugs for a case and develop a good system for arranging the drug and work tables6. Perform airway management by knowing various procedures and equipment:

5)They should know how to use/do

i) Direct laryngscopy using curve and straight blade

ii) Supraglotic devices

They should be familiar with

a. Fiberoptic techniques

b. Light wand techniques

c . Blind techniques

d. Combitube

6) Learn failed intubation drill and difficult airway algorithms

a. All techniques for endotracheal intubation

b. Additional techniques such as retrograde wire intubation and surgical cricothyroidotomy both of which will be learned on a mannequin.

7) Awake intubation

a. Topical/Local anaesthesia for airway

b. Airway nerve block, for example, superior laryngeal nerve and glossopharyngeal nerve block.

8) Learn to monitor and assess anaesthetic depth, volume status and replacement of fluid and blood loss. Learn appropriate use of blood and blood product

9) Learn appropriate use of intraoperative laboratory test, blood gas , coagulation tests etc.

10) Become skilled in cannulation of central and peripheral veins, arteries.

11) Become skilled in using and interpreting the following routine noninvasive and invasive monitors intraoperatively:

a. Electrocardiogram with ST-segment analysis

b. Noninvasive blood pressure

c . Capnograph: values and changes in values and waveform.

d. Pulse oximetry: values and changes in values

e. Neuromuscular blockade monitor

f. Invasive arterial pressure: waveform and changes in the waveform

g. Central venous pressure: values and waveform

h. Pulmonary artery pressure: Values and waveforms, pulmonary capillary wedge tracing

i. Cardiac output / Stroke volume index(SVI)

j. Mixed venous oxygen saturation

k. Evoked potential

l. transesophageal echocardiography: basic understanding

m. SVO2 monitoring

n. Entropy & BIS monitoring

12) Become skilled in techniques for regional anesthesia,

13) Become skilled in emergence from anesthesia and monitoring emergence from anaesthesia

a. Reversal of neuromuscular blockade

b. Determination of appropriate time for extubation

c . Monitoring of airway function during and after emergence

14) Become familiar with/skilled in perioperative pain management

a. Postoperative epidural infusion (opiates, local anesthetics)

b. Patient-controlled analgesia

c . Adjunctive nerve blockade

15) Become skilled in use of techniques for conscious sedation and monitored anaesthesia care

a. Selection of patients for conscious sedation

b. Selection of drugs for use in conscious sedation

c . Monitoring techniques helpful in controlling depth of sedation

d. Recognition of when conscious sedation has become unconscious sedation

16) Know how to successfully resuscitate, and develop skill of Basic Life support and Advance Cardiac Life support & Advance Trauma Life Support(ATLS)

17) Work with other members of the OR team, including surgeons and nurses, to optimally care for surgical patients, especially develop communications skill.

2. GOALS OF INDIVIDUAL POSTING

A. PAC

1. Learn to collect and synthesize preoperative data and to develop a rational strategy for the perioperative care of the patient. Outpatients: Develop skills in obtaining medical information from sources outsideour institution, that is, other hospital and private physicians.

2. Learn a thorough and systematic approach to preoperative evaluation of patients with systemic diseases. Perform preoperative medical evaluations of patients undergoing many different types of operations, both of inpatients and outpatients especially elderly patients with complex medical illnesses such as alcoholism, chronic obstructive pulmonary diseases, congestive heart failure,coronary artery disease, hepatic failure, hypertension, myocardial infarction, renal failure, and stroke etc.

3. Develop working relationships with consultants in other specialities to assist in preoperative evaluation.. Learn to get a good consultation..

4. Learn to interact with preoperative patients and develop effective counselling techniques for different anesthetic techniques and perioperative procedures. Learn to assess and explain risk of procedure and take informed consent.

B.Anaesthesia Inside the Operating Room

Learn anesthetic techniques and skills and understand to operate different equipment used by anaesthesiologist,Develop optimum plans depending on patients condition.

1. Perform the anesthesia machine check and prepare basic equipment necessary for all anesthetic cases.

2. Prepare drug table: select appropriate drugs for a case and develop a good system for arranging the drug and work tables.

3. Place standard monitors, for example, electrocardiogram, noninvasive blood pressure device, precordial stethoscope, neuromusclar blockade monitor, pulse oximeter, and capnograph

4. Learn proper techniques of preoxygenation.

5. Learn how to induce anesthesia, both routine induction and rapid sequence induction, and the pertinent mechanical skills and choice of drugs

6. Failed Intubation or difficult airway algorithms

7. Learn anesthetic maintenance: appropriate choice and use of anesthetic drugs and adjuvant drugs such as muscle relaxants and how to monitor their effects

a. Assessment of Anesthetic depth.

b. Assessment of volume status

c . Replacement of intraoperative fluid losses

d. Appropriate use of blood and blood products

e.. Appropriate use of intraoperative laboratory tests blood gas coagulation tests etc.

8. Become skilled in catheterizing or cannulating the following vessels for sampling blood, measuring concentrations or pressures, or administering drugs or fluids:

a. Veins: all ages and all sizes

b. Arteries: radial and other sites

c. Central vessels: internal jugular, subclavian, and "long-arm" routes

C. **Anaesthesia Outside Operation Room**

1. Radiology : special anesthetic considerations for radiotherapy,CT, MRI ,PET especially in relation to dye allergy and embolisation

2. Anaesthesia for Electroconvulsive shock therapy

3. cardiac catheterization.

D. UROLOGY SERVICE (This service may be in OPD or OT)

Become skilled in anesthetic techniques applicable to the Genitourinary Clinic

a. Transurethral resection of the prostate: recognize and treat hyponatermia; know different anesthetic options and advantages and disadvantages of each

b. Irrigation fluid options: know advantages and disadvantages of each.

c. Anesthetic techniques for extracorporeal shock wave lithotropsy & laser prostatectomy

d. Anesthetic considerations for percutaneous placement of nephrostomy

E. Trauma & Resuscitation

All residents must achieve proficiency in:

1.BCLS, ACLS. BLTS, ATLS, Cerebral preservationt and pediatric advance life support (PALS)training.

2.Triage, assessment, transport and management of mass casualities, disaster management.

3.Anaesthetic consideration for trauma patients

4. Documentation and medicolegal aspects.

F. POST ANESTHESIA CARE UNIT (PACU)

1. Understand the importance, purpose, and components of the anesthesia record and the report from the concern anesthesiologist.

2. Use information about the patient that is received and observed on admission to the PACU and during care there for the following purposes:

i. To create a care plan

ii. To score the patient's condition according to the Aldrete system

iii . To assess the patient's recovery and condition for a safe discharge or transfer.

3. Observe, recognize, and learn to treat the most commonly occurring problems likely to arise in the Postaanesthesia Care Unit (PACU).

1. Airway integrity and compromise.

2. Arrhythmia

3. Hypertension

4. Hypotension

5. Pain prevention and relief.

6. Nausea and vomiting

7. Decreased urine output

8. Emergence delirium

9. Delayed emergence from anesthesia

10. Shivering

11. Post obstructive pulmonary oedema

4.Understand the parameters patients must meet for safe discharge from the PACU to the following:

1. home
2. inpatient ward
3. intensive care unit

G. INTENSIVE CARE UNIT

I. Understand the spectrum of critical illnesses requiring admission to ICU

2. recognize the critically ill patient who needs intensive care.

3. Learn the principles of managing a critically ill medical patient:

Cardiovascular

Recognition and acute management of Shock (all forms) Cardiac arrhythmias,Cardiogenic, pulmonary edema ,Acute cardiomyopathies, Hypertensive emergencies and,myocardial infarction.

Respiratory

Recognition and acute management of Acute and chronic respiratory failure(ARDS)/ALI, Status asthmaticus, Smoke inhalation and airway burns.

Upper airway obstruction, including foreign bodies and infection

,Near drowning and Adult respiratory distress syndrome

Use of Pulmonary function tests including bedside spirometer.

Renal

Recognition and acute management of Fluid and electrolyte disturbances.

Should be able to prescribe fluids in Renal failure, Acid-basis disorders.

Should be able to prescribe drugs based on Principles of Drug dosing in renal failure.

Should know when to use Dialysis/hemofiltration/ CRRT.

Central Nervous System

Recognition and Acute management of Coma, Drug overdose

know Glasgow Coma Scale(GCS)

Hematologic disorders

i.Recognition and acute management of Defects in hemostasis Hemolytic disorders

ii. should be able to prescribe component therapy based on the results of Coagulation profile or Thromboelastography.

iii.Should be able to diagnose Deep Vein thrombosis and know Principles of Anticoagulation and fibrinolytic therapy.

iv.Know the indications of Plasmapheresis for acute disorders, including neurologic and hematologicdiseases.

Gastrointestinal disorders

Should be able to recognize and manage Gastrointestinal bleeding hepatic failure, should be able to prescribe prophylaxis against stress ulcer bleeding.

4..Metabolic and Endocrine,emergencies like Diabetic ketoacidosis Hypoadrenal crisis, pheochromocytoma.

5.Recognition and acute management of hospital acquired and opportunistic infections, including acquired immunodeficiency syndrome.

Should know how to protect against cross infection Infection risks to healthcare workers.

6. should be able to do the following and interpret the data at the end of the posting:

1. Radial arterial catheters and other sites as necessary

2. Central venous catheters

a. Subclavian route

b. Internal or external jugular route

3. Pulmonary artery (PA) catheters (Observe only)

b. Factors producing errors in cardiac output measurement

7. Manage cardiovascular instability

i) Know different fluid therapy options and when to use them

ii)Know the different inotropic drugs and when to use them

iii) Know how to use invasive monitoring devices to guide therapeutic use of fluids and inotropic drugs

8. Manage respiratory failure and postoperative pulmonary complications

Understand the operation of mechanical ventilators including different ventilatory modalities and how each is best used for management of respiratory failure and including noninvasive modes, complications and modes of weaning.

9. Principles & application of Oxygen therapy.

10. Pathophysiology and Clinical manifestation of septicemia and its treatment

i. Recognize sepsis in the postoperative patient including all the typical hemodynamic findings

ii. Know the appropriate tests to diagnose sepsis, including diagnostic tests

iii. Use various monitoring devices to assist in managing sepsis; specifically understand the optimization of oxygen delivery to tissues in the septic patient and the appropriate management of fluids and vasopressors to accomplish these goals.

iv. Know the different classes of antibiotics and antifungal agents and their use in treating sepsis

11. Deliver appropriate nutritional support entral and parenteral

12. Provide effective pain management and sedation postoperatively

Learn the appropriate use of pain management modalities in the ICU including:

a. Patient-controlled analgesia

b. Epidural and subarachnoid narcotics

13. Learn the use of sedative/hypnotic drugs in the ICU for patient on Ventilator

14. Ethical and legal aspects of critical care.

15. Should be able to communicate with distressed relatives.

16. Pediatric training

i) Should be able toRecognize and manage cardiovascular and respiratory failure in a critically ill child

ii) Evaluate manage the critically ill neonate

iii) Prescribe appropriate dose of all drugs and fluid and electrolytes in a child..

17.Due to the variability of individual training programs, practical training for the following procedures must be emphasised.

Cardioversion

Pulmonary artery catheterization

Trancutaneous pacing

Draining of tension Pneumothorax

Insertion of chest drain

Conventional and Percutaneous Tracheostomies, Cricothyrodotomy

In addition to practical training in the following procedural skills,the resident must have an understanding of the indications, contraindications, complications & pitfalls of these interventions

H. CARDIOTHORIC ANESTHESIA

1Understand the problems of open chest, pneumothorax and one lung anaesthesia

2. Develop knowledge and monitoring skills necessary for cardiovascular anaesthesia

3. Perform a thorough preoperative assessment of patient undergoing cardiovascular surgery and Choose appropriate anesthetic techniques for patients with different types of cardiovascular disease and the skills for lifelong continuing education.

4. Know how cardiopulmonary bypass is instituted and discontinued Understand cardiopulmonary bypass and discuss the mechanical aspects of it as follows:

i). Different types of pumps - pulsatile and nonpulsatile

ii). Physiology of hypothermia and cardiac and cerebral protection

ii). Effects of bypass on volumes of distribution and clearance of anesthetic drugs and anaesthetic maintenance, including amnesia.

5. Know intraoperative anesthetic management for the patient undergoing cardiopulmonary bypass.

6. Know how and why to use of inotropic support, vasodilators, and antiarrhythmic drugs that may be necessary before but are especially necessary after cardiopulmonary bypass

7. Develop and understanding of the major issues involved in the perioperative care of the child with congenital heart disease.

8. Insert vascular catheters or cannulas for adult and pediatric patients and obtain measurements from them as follows:

i) Arteries

ii) Internal jugular vein and the subclavian vein

iii) Pulmonary artery (Swan-Ganz) catheters and initiate appropriate therapy in response to changes in the following pulmonary artery (PA) variables:

a. Waveform

b. Normal tracing

c . Pathologic tracing

c . Pulmonary artery wedge tracings

iv. Mixed venous oxygen saturation

v. Theromodilution cardiac output

observe/know about a Transesophageal echocardiograpy (TEE) probe and interpret TEE images

9. Work as a team member with fellow anesthesiologists, surgeons, perfusionists, and nurses

10. Maintain good clinical judgment under stress and act quickly and accurately in diagnosis, interpretation and treatment of intraoperative problems.

I. NEUROANESTHESIA

1. Administer anesthesia safely to patients with neurologic disease who are undergoing neurologic or non-neurologic surgery, diagnostic procedures requiring anaesthesia, or nonsurgical interventions requiring anesthesia.

2. Understand the basic concepts of central nervous system (CNS) physiology as they relate to neuroanaesthesia, specifically mastery of autoregulation of blood flow, blood flow response to CO2,blood flow response to cerebral oxygen (CMRO2) and glucose (CMRglu) metabolic rates, and cerebrospinal fluid physiology.

3. Know the effect(s) of commonly used anaesthetic agents and adjuvant agents, for example antihypertensives, on cerebral physiology.

4. Understand the basic concepts behind electrophysiologic monitoring of the brain and spinal cord.

5. Understand how concurrent medical illnesses affect anesthesia during neurologic surgery.

6. .Review the medical history and physical examination of patients; assess their major neurosurgical problem. Evaluate the patients Glasgow Coma Scale as well as other medical problems that may affect anesthetic care and understand the anaesthetic implications of the most common neurosurgical procedureimportant to the anesthesiologist.

i). Recognize both the adult and pediatric patient with poor elastance of increased intracranial pressure (ICP).

ii). Evaluate the patient with subarachnoid hemorrhage and intracranial aneurysm by means of the Hunt-Hess and Fischer gradings systems; recognize preoperative vasospasm; and anticipatewhich patients are likely to require special techniques such as barbiturate protection, hypotension,induced hypertension, or temporary vessel occlusion.

iii). Differentiate between radiculopathy and myelopathy and understand the anaesthetic implications of each, that is, which patients require awake intubation and positioning.

iv). Know the basic differences between the following types of brain, spinal cord, and metastatic tumors of the CNS and their association with edema and intraoperative blood loss. Know the anaesthetic implications of: Acoustic neuroma, Ependymoma, Gliomas, Meningioma, Pituitary tumours

v)Understand the following different types of spinal operations as well as their anesthetic implications:

Anterior cervican discectomy and fusions, anterior cervial corpectomies, posterior cervical fusions, laminectomies, and foramenotomy, Laminectomies for excision of spinal cord tumors, both intrameullary and extramedullar, Lumbar laminectomies, microdiscectomies, corpectomies, and fusions with instrumentatio, Thoracic laminectomies and discectomies.

8. Anticipate premedication for and anesthetic considerations during electrocorticography

9. Anticipate airway and sedation requirements for stereotactic neurosurgical procedures conducted with either general anesthesia or monitored anesthesia care(MAC).

10.Perform the following specific procedures and monitoring techniques necessary to care for the neurosurgical patient.

i). Choose appropriate premedication and agents for anesthetic induction and maintenance based on a knowledge of their effects on cerebral physiology and on neuropathology.

ii) Choose and place the following monitors and monitoring devices for use during spinal and intracranial surgery:

a. Arterial line, central venous (CVP) or pulmonary artery (PA) pressure catheters by all approaches,especially the basilic or cephalic veins

b. observe/know about Precordial Doppler and interpretation of sounds

iii) Perform techniques for awake intubation and positioning of the neurosurgical patient with either an unstable neck or myelopathic signs and symptoms

a. Assess when awake intubation and positioning are needed.

b . Master the technique for awake intubation

11. Detect and treat air embolism during neurosurgery:

a. Know use of monitors to detect air embolism and what monitoring patterns are associated with air embolism.

b. Recognize the relative risks of different procedures and positions for air embolism.

12. Know general priniciples of positioning the patient for neurologic surgery and the advantages and disadvantages of each position:

a. Lateral

b. Prone

c . 3/4 prone

d. Supine-head turned

e. Sitting - theoretical knowledge only

13. Know anaesthetic effects on the electroencephalogram (EEG) and evoked potentials and basic implications of and appropriate responses to changes in each.

14. Know the differential diagnoses and treatment alternatives of intraoperative intracranial hypertension ("tight brain") and if possible, perform the following special procedures used during neuroanesthesia:

a. Induced hypotension

b. Induced hypertension

c . Moderate Hypothermia

d. Barbiturate cerebral protection, Cardiopulmonary bypass and circulatory arrest — theoretical knowledge only in most instances.

15. Reverse general anesthesia rapidly with a minimum of hemodynamic change to allow early postoperative assessment of the patient and recognize when failure to emerge from anesthesia is not likely an anesthetic effect.

16. Know the management of Head Trauma, and its anesthetic management

Evaluation to Determine Goal Achievement

A. Preparation for case and ability to carry out plan discussed the night before:

1. Recognition of intraoperative problems and communication with the attending; ability to appropriately respond to changing clinical situation; clinical judgment

2. Mechanical skills of placing lines and positioning the patient

3. Application of basic and clinical science knowledge and skills to the neurosurgical patient.

B. The neuroanesthesia group will meet at the conclusion of each rotation and an overall performance evaluation will be made based on the above criteria ED.

J. PAIN MANAGEMENT

1. Differentiate among the different chronic pain states, for example, reflex sympathetic dystrophy and neuropathic or myofascial pain, and know what treatments are effective for each.

2. Know the types of drugs that relieve pain and their efficacy, indications, side effects and contraindications and use.

3. Know the laboratory tests, radiologic studies, and psychological tests used to help differentiate chronic pain syndromes.

4. Learn to perform a thorough, detailed history and physical examination, which will emphasize and facilitate the diagnosis of different pain states.

5. Know the multidisciplinary approach to pain management.

6. Know when it is appropriate to refer patients to different specialists for definitive or adjunctive therapy, for example, neurosurgery, orthopedic surgery, neurology.

7. Manage acute and perioperative pain syndromes proficiently.

Objectives

A. Learn the anatomy of the sympathetic nervous systems, specifically, the anatomy of the epidural and subarachnoid spaces and the location of sympathetic and parasympathetic ganglia

B. Perform blocks and techniques in administering them that are commonly used to manage acute and chronic pain as follows

1. Epidural steroid injuction (all levels)

2. Long-term epidural catheterization

3. Blocks Should observe and know about the following blocks:

a. Celiac plexus

b. Infraorbital nerve

c . Intercostal nerve

d. Lumbar sympathetic

e. Stellate ganglion

f. Facet blocks

4. Complications associated with each blocks and appropriate treatment of each

C. Know the cutaneous dermatomal mappings

D. Diagnose myofascial pain syndromes and perform trigger point injections

E. Know the different modalities of physical therapy that may relieve both acute and chronic pain and learn how to obtain such therapy

F. Know the indications for stimulation techniques such as transcutaneous electrical nerve stimulation (TENS), dorsal column stimulation, and deep brain stimulation.

G. Know the acute pain and cancer pain guidelines:

1. Treatments the WHO Treatment Ladder

a. Drugs: analgesics, opiates, sedatives, and stimulants

b. Nerve blocks

c . Neruolysis, surgical and chemical

2. Routes of administration and risk and benefits of each epidural

a. Intramuscular

b. Intrapleural

c . Intravenous

d. Oral

e. Patient controlled

f. Subcutaneous

g. Transdermal patches

H. Diagnose and know how to treat the following pain syndromes:

a. Diabetic neuropathy

b. Inflammatory states such as bursitis, carpal tunnel syndrome, skeletal pain, and tendonitis

c . Phantom limb pain

d. Post-herpetic neuralgia

e. Reflex sympathetic dystrophy

f. Trigeminal neuralgia

g. Low back pain

K. PEDIATRIC ANESTHESIA

Goals

A. Administer anaesthesia safely for routine surgical, diagnostic, and therapeutic procedures.

B. Recognize and treat postanesthesia problems.

C. Recognize when you or your institution cannot provide adequate care for a particular problem

Objectives

A. Preoperative

Neonatal anatomy and physiology applied to conduct of anesthesia.

1. Review the chart, take an adequate history, assess the major systemic problems, identify special problems such as latex allergy or apnea related to prematurity, and develop a plan of care.

2. Recognize and cope with the emotional problems of parents and child, and attempt to alleviate them.

3. Know the principles of and medications used for preoperative sedation.

4. Induce anaesthesia in an distraught or uncooperative child.

5. Recall and state the anatomic, physiologic, and pharmacologic differences and similarities in the major organ systems between children and adults.

6. Transport safely a sick pediatric patient to the operating room and be able to state and perform the solutions to any problems which may arise in the following areas:

a. Temp. maintenance

b. Cardiovascular stability

c . Ventilation

d. Oxygenation

7. Record and estimate preoperatively blood volume, hourly fluid requirements, estimated fluid deficit, third space loss, red cell mass at the patient's hematocrit, acceptable red cell mass loss, and acceptable blood loss.

B. Intraoperative

1. Know appropriate endoracheal tube sizes - cuffed and uncuffed.

2. Induce and maintain anesthesia by inhalation, intravenous, intramuscular, and rectal routes and know the differences in effects of various anesthetics between adults and pediatric patients.

3. Administer mask or laryngeal mask airway anesthesia when appropriate.

4. Maintain the airway of an anesthetized pediatric patient and intubate the trachea without trauma in 98% of cases within 1 minute.

5. Perform awake intubation.

6. Recognize abnormal airways and maintain them during anesthesia.

7. Describe the appropriate management of laryngospasm.

8. Recognize the following signs of hypoxias: bradycardia, poor colour, poor venous filling, distant heart tones and abnormal elctrocardiogram.

9. Understand the various forms of breathing circuits used in pediatric anesthesia and them appropriately.

10. Apply consistently and interpret data from a blood pressure cuff, electrocardiogram, oximeter, capnograph or mass spectrometer, and a thermistor.

11. Know the indications of use of a heat lamp and heated humidifier when appropriate Answer questions concerning the importance of thermoneutrality environment in pediatric patient by demonstrating the use and abuse of the following, Heat lamp, Heat blanket, Heat humidifier, Room temperature.

12. Master the techniques of isoflurane, sevoflurane, desflurane/nitrous oxide/oxygen/muscle relaxant anesthesia.

13. Determine and discuss when deep or awake extubation is appropriate and apply the proper approach.Recognise & manage laryngospasm

14. Understand and apply the basic concepts of neuromuscular blockade in children, know when anesthesia is adequately reversed, and know the differences between dose/effect in infants and children ascompared to adult patients.

15. Apply the priniciples of fluid and blood replacement during anaesthesia.

16. Understand the benefits and risks of regional anaesthesia, including spinal anaesthesia and regional analgesia for postoperative pain.

C. Postoperative

1. Transport safely and manage immediate postoperative care in the following areas: ventilation, oxygen administration, temperature control, cardiovascular monitoring, fluid balance, and pain relief.

2. Recognize postoperative croup and treat it.

3. Understand postanesthesia apnea, factors associated with it, the appropriate duration of monitoring, and treatment.

D. Special problems

1. Manage the following in pediatric patients undergoing anesthesia and surgery:

   a. Blood replacement

   b. Drug administration and anesthetic requirement (minimum anesthetic concentration)

   c . Fluid and electrolyte balance, glucose requirement, and renal maturation

   d. Hypocalcemia

   e. Hypoglycemia

   f. Metabolism

   g. Temperature control

   h. Vitamin K administration

2. Care of patients in the following special circumstances:

   a. Special problems

i. Congenital heart disease

ii. Epiglottitis

iii. Malignant hyperyrexia

iv. The child with the anatomically difficult airway (e.g. Pierre Robin syndrome)

b. Special procedures

i. Bronchoscopy (in particular for foreign body aspsiration)

ii. Tonsillectomy (in particular for the rebleeding tonsil)

iii. Computerized axial tomographic scan and magnetic resonance imaging

3. Know and experience management of a pediatric patient with a full stomach

4. Identify the following various problems in pediatric patients and handle them:

a. Diaphragmatic hernia

b. Omphalocele and gastroschisis

c . Pierre-Robin syndrome

d. Pyloric stenosis

e. Tracheoesophageal fistula

5. Understand pediatric resucitation, drugs and doses used for it, and defibrillation

Evaulation to Determine Goal Achievment

L. OBSTETRIC ANESTHESIA

I. Goals

A. Learn how the physiology of normal pregnancy alters the response to anesthesia

B. Learn pertinent aspects of fetal and placental physiology

C. Learn what obstetricians may require from anesthesiologists

D. Learn how pregnancy creates special problems for the anesthesiologist learn the nature of high-risk obstetrics and how special medical problems alter the approach to obstetric anesthesia

E. Participate in morbidity mortality conference and ongoing research

F. Learn how to evaluate the neonate and principles of neonatal resuscitation

G. Learn how drugs affect the neonate

H. Learn how to communicate effectively with obstetricians and with labour room nurses.

II. Objectives

A. Obtain pertinent information from the history and physical examination of the obstetric patient to assess major systemic problems

B. Understand obstetric physiology and pharmacology as follows:

1. Alteration of maternal physiology during pregnancy

2. Effects fo anesthesia, both general and regional, on human uteroplacental blood flow and of adjunctive medications such as vasopressors and vasodilators on uterine blood flow.

3. Perinatal pharmacology and placental transfer of drugs

4. Effects of epidural and systemic medications on labor and delivery

5. Learn all anesthetic techniques suitable for managing normal labor pain including:

a. Epidural local anesthesia

b. Epidural opiate anesthesia

c . Inhalation analgesia

d. Intravenous analgesia

C. Understand epidural and spinal analgesia and anesthesia as follows:

1. Anatomy and physiology of the epidural space and spine

2. Techniques of needle placement including midline and paramedian approaches

3. Pharmacology of local anesthetics

4. Complications and side effects

D. Know common problems encountered in continuous epidural infusion and how to prevent and treat them

E. Know how to use of intraspinal opiates in obstetrics:

1. Physiology and pharmacology

2. Benefits for labor, deliver and postoperative pain

3. Side effects

F. Understand the advantages of regional and general anesthesia for cesarean section

G. Know the risk factors, prevention, and treatment of maternal aspiration.

H. Evaluate difficult airways and know how to prevent the problems associated with them and to manage failed intubation

I. Be familiar with recent advances in obstetric anesthesia

1. The effect of epidural anesthesia on labor and delivery

2. Drug interaction

3. The epidural test dose

4. Anesthesia for pre-term delivery

J. Recognize high-risk factors in obstetric patients and how they affect anesthetic management as follows:

1. Morbid obesity and anesthesia: Problems and management

2. Preeclampsia: Basic considerations and controversy in management

3. Neurologic disease and pregnancy

K. Understand anesthetic choices for the pregnant patient with heart disease

L. Identify and manage common medical emergencies in the post-parturient

M. Know how the late 20th century social problems affect anesthetic care, such as perinatal human immunodeficiency virus infection and maternal substance abuse

N. Manage maternal anesthesia and the stressed fetus

O. Know current fetal monitoring techniques and how to interpret the information they provide

III. Evaluation to Determine Goal Achievement

M. REGIONAL ANESTHESIA

1. To learn the anatomy, physiology and appropriate management of complications of regional anaesthesia(CNB,Peripheral,symphathetic).

2. To understand general principles of local anaesthetic pharmacology, including the pharmacodynamics and pharmacokinetics of various local anesthetics. This includes onset duration, motor/sensory differentiation, andtoxicity profile of various local anaesthetics and allergy its treatment:

3. To understand the principles and indications for various local anaesthetic adjuvants including:Epinephrine, phenylephrine, narcotics, sodium bicarbonate, carbonation, hyaluronidase, alpha agonists, anticholinesterases.

4. To be familiar with the relevant anatomy for regional techniques, including: Spinal canal and its contents, neural plexuses of the limbs, major autonomic ganglia.

5. Understand the indications for and the contraindications to regional anaesthetic techniques including central neuroaxial blocks, peripheral nerve blocks, sympathetic nerve blocks

6. Assess adequacy of regional anaesthesia and learn techniques of supplementation of inadequate blocks.

7. Provide effective anxiolysis and sedation of patients by both pharmacologic and inter personal techniques appropriate)

8. Learn to perform the following regional anaesthesia techniques:-

a . Epidural anesthesia: lumbar, caudal, and thoracic

b.Brachial plexus blockade: interscalene, supraclavicular, axillary techniques with and without nerve stimulator for localization

c. Spinal anesthesia (including continuous spinal where

d. Lower extremity blockade: femoral, sciatic, and lateral femoral cutaneous nerves/ 3in block

e. Upper extremity blockade: ulnar, median, and radial nerves

f. Bier block

g. Cervical plexus block

COGNITIVE SKILLS

At the compleltion of this rotation residents should be able to demonstrate the following skills.

1. Rational selection of regional anesthesia technique and choice of local anesthetic for particular patient encounters.

2. Ability to assess adequacy of regional anesthesia before the start of surgery, and demonstrate appropriate plans for supplementation of inadequate blocks.

3. Provide effective anxiolysis and sedation of patients by both pharmacologic and interpersonal techniques.

4. Select appropriate monitors for specific patient encounters, and document performance of regional anesthetic adequately.

III. EVALUATION TO DETERMINE GOAL ACHIEVEMENT

SKILLS SHEET FOR RESIDENTS ON THE REGIONAL ANESTHESIA ROTATION

Demonstrate ability to perform/familiarity with the following regional anesthesia techniques:

- Brachial plexus blockade
- sciatic nerve block
- femoral nerve block, o or 3-in-1 block
- Caudal block – adult and peadiatric
- ankle block
- epidural block/Catheter
- spinal subarachnoid block
- Biers block
- others

N. DENTAL ANESTHESIA

1.Understand the principles of conscious sedation

2.Principles of anesthesia in a dental Chair

3.Local Blocks For Dental Surgery

O. TRANSPLANT ANESTHESIA

1.Know the basic Principles of anesthetizing an immunocompromised patient

2.Principles of anesthetising patient with end stage renal/liver disease

P. OPHTHALMOLOGY

1. Give anesthesia for intra and extraocular surgery

2. To anesthetize premature babies for ROP surgery.

3. To give Monitored Anesthesia Care to learn to sedate patients for MAC

4. To give Ophthalmic nerve blocks.

5. To understand the mechanism of OCR & ways to prevent it

Q ENT ANAESTHESIA

1. To give topical anesthesia for awake intubation.(nasal and oral)

2. To give local block for Tonsillectomy

3. Local anesthesia for tracheostomy(conventional 7 percutaneous)

4. Local block for thyroid surgery TO give anesthesia for MLS

5. To give anesthesia for Laser surgery of airway.

6. To give anesthesia for vascular malformations /tumours of nose

Evaluation to Determine Goal Achievment

a. The resident will be evaluated every 3 months end posting by all attending consultants who worked with them.The attending physicians complete a

Departmental Resident Evaluation Form, which is reviewed by the Clinical Competence Committee & informs them of any problems identified. and serious problems will be discussed with them immediately after they occur.

b. Residents will complete a log book. After each posting it will be checked and signed by the faculty concerned.

METHODS OF TRAINING AND TEACHING FOR M.D. & D.A. (ANAESTHESIOLOGY)

- Case Presentation : Once a Week
- Seminar / Symposia : Once a Week
- Pre Anaesthesia Care / Clinic : Once a Week
- Critical Care unit / Recovery : Once a Week
- Room : Once a Week
- Classroom Lectures : Twice a Week
- Morbidity / Mortality : Once a Week
- Audit : Once a month
- Journal Club : Once a Month
- Record Keeping : Once a Month
- Emergence Drills / Protocols : Once a Week
- Interesting Cases

SAMPLE CASES FOR PRESENTATION AND DISCUSSION

Practical Long Cases

□□RHD with MS or MR or both

□□MS and MR (with other lesions)

□□Hypertension

□□IHD with CAD

□□Cardiomyopathy

□□Bronchial asthma

□□Bronchiectasis

□□Carcinoma lung

□□COPD

□□DM

□□Thyroid swelling

□□Obstructive jaundice

□□Portal hypertension

□□CRF

□□Severe anaemia

□□Normal pregnancy

□□PIH and Eclampsia

□□Pregnancy with heart disease

□□Emphysema (pleural effusion)

□□BHP for TURP

□□Kyphoscolosis

□□Pregnancy with anaemia

□□Geriatric pt. ForTHR/TKR

□□Paraplegia/GBS / Motor neuron disease

□□Congenital Heart Disease: ASD Congenital Heart Disease: VSD

□□Congenital Heart Disease: TOF

Short Cases

□□Congenital heart disease

□□ASD, VSD,PDA

□□Buerger.s disease

□□Cleft lip and cleft palate

□□Meningocele and Hyrocephalus

□□Tracheotomy

□□Cataract

□□Intercostal Drain

□□Burn contracture

☐☐TM joint Ankylosis

☐☐CTEV

☐☐Diabetic foot ulcer

☐☐Sacrococcygeal teratoma

☐☐Thyroid swelling

☐☐COPD

☐☐Pregnancy with heart disease

☐☐Squint

Spots

☐☐ECG

☐☐X-rays

☐☐Capnograph tracings

☐☐Flow volume loops

☐☐Arterial blood gases values

☐☐Drugs used in Anaesthesia including anaesthetic agents

☐☐Anaesthesia equipments

☐☐Intravenous fluids

☐☐CPR Dummy

☐☐Anaesthesia machine

☐☐Ventilator

☐☐Skeleton for blocks

□□Defibrillator

Assessment is a vital part of any course and it is element where there is frequently considerable doubt.

There are 2 major components:

A) Formative Assessment:

Ongoing evaluation during the course –

During each posting/ Module/ End Unit

B) Summative Assessment:

Final assessment after 3 years and/at the end of each semester

FORMATIVE ASSESSMENT/(Ongoing Evaluation)

Formative assessment will be conducted during each posting/module/unit. It will be done every 3M & final assessment after 3yrs. This will include the following:

TECHNICAL SKILLS COMPETENCY EVALUATIONS:

Methods to be used

1) Performing anaesthetic management on real patients (check lists of each skill and competency including log book evaluation)

2) Simulators

3) Objective Structured Clinical Examination (OSCE)

This evaluation will be done either in the OT or ICU or PAC or Postoperative wards.

PROBLEM SOLVING CASES:

Method to be used

1) Case presentations (evaluation by Peers)

2) Simulated case cards

3) OT discussions

4) Objective Structured Clinical Examination OSCE

ASSESSMENT METHOD

The purpose of the concurrent assessment is to give regular feedback to the MD candidates about their performance and to prepare them for the final examination by giving them exposure to the examination pattern. As a part of concurrent evaluation the MD candidates will be assessed every 3/6 months by the department. This would include theory examination (100 marks of three hours duration) containing 10 structured questions related to the topics covered during the preceding 6 months.

ORAL SKILLS – Attitudinal Development:

Method to be used

1) Ability to present seminars, discussion in class room (evaluation by Peers)

2) Talking to patients in pre-anaesthesia rounds

3) Operation theatre Management

CARDIOPULMONARY RESUSCITATION:

Method to be used

1) Mannequins demonstration

2) Check lists for evaluation

3) OSCE

C P R evaluation will be repeated at the end of each semester

SUMMATIVE ASSESSMENT (FINAL ASSESSMENT) and End Semester assessment

1) THEORY (Subject contents already outlined in curriculum)

Should consist of

a) Structured Essay Questions (SEQs)

b) Short Answer questions (SAQs) minimum of 10 SAQs will be mandatory (in all four papers taken together)

c) Problem Solving Questions

d) Multiple choice Questions (MCQs) of different types Should be included atleast in one of the 4 papers. The use ofMCQs is recommended for formative/end semester evaluation.

Final Theory papers:

4 Papers- Marks-100 each

Paper I - Basic Sciences as applied to

Anaesthesiology, including ethics, statistics,

Quality assurance, medicolegal Aspects.

Paper 2- Anaesthesia in relation Associated Systemic disease

Paper 3- Anaesthesia in relation to subspecialities such

as cardiac, neuro, obstetrics and pediatrics etc.

Paper 4- Intensive care Medicine, Pain Medicine and

Recent advances in Anaesthesiology

2) PRACTICAL

4 components:

The practical examination should be structured and objective as possible

A) Clinical Cases

1 long case	40 min ,	100 marks
2 Short cases (2)	15 min, each	50 marks each

C) VIVA-VOCE (Structured)

TOTAL MARKS: 100

1. Drugs/Anaesthetic	25
2. Equipments for Anaesthesia/In. Care	25
3. Investigations -ECG/Xrays/MRI, Endoscopy etc Capnograph, X-rays	25
4. Assessment on Mannequins (CPR)	25

Total Marks

Theory (Papers 1-4)	400
Practical (Cases, OSCE, Viva Voce)	300
Grand Total	700

The candidate will be required to secure minimum 50% marks in theory and 50% marks in clinicals and viva-voce separately, which is mandatory for passing the whole examination. Candidate failing in theory will not qualify to take practical examinations. There should be enough gap between theory and practical Exam. as recommended by MCI rules.

Final Assessment Marks Weightage

30% : Internal (Formative) Assessment & Thesis

70% : Summative Assessment

The committee recommends that two external and two internal examiners should conduct the clinical examination.

List of Books

Must read:

1. Lee.s Synopsis of Anaesthesia
2. Clinical Anaesthesia Practice by Kirby and Gravenstein
3. Clinical Anesthesiology by Morgan
4. Anaesthesia by Nimmo, Rowbotham and Smith
5. Physics for Anaesthetists by Sir Robert macintosh
6. Physics applied to Anaesthesia by Hill
7. Scientific foundations in Anaesthesia by Stanley Feldman and Cyril Scurr
8. Cardiac Anaesthesia By Joel Kaplan
9. Clinical Anaesthesia by Barash, Cullen and Stoelting
10. Anaesthesia and perioperative complications by Benumoff and Saidman
11. Textbook of Anaesthesia by Aitkenhead Rowbotham and Smith
12. Paediatric Anaesthesia by Gregory
13. Medicine by Anaesthetists by Vickers

14. Pharmacology and Physiology for Anaesthetists by Stoelting

15. Principles of Obstetric Anaesthesia by Selwin Craford

16. Thoracic Anaesthesia byW.Mushin

17. Automatic Ventilation by Mushin

18. Miller RD, ed Anesthesia

19. Wylie, Churchill, Davidson: Practice of Anaesthesia

20. Nunn & Utting; Anaesthesia

21. Stoelting RK, Miller Rd, eds, Basics of Anaesthesia

22. ICU Book, Paul Marino

23. Critical Care, Joseph Civetta & Taylor

24. Critical Care, Schoemaker

25. Regional Anaesthesia, Moore

26. Regional Anaesthesia, P Prithviraj

27. The Management of Pain, Bonica

28. Neural Blockade in Pain Management, Cousins

29. Practical Management of Pain, Raj

30. Stoelting & Dierdorf: Anaesthesia and Co-existing Disease

31. ABG: Shapiro

32. Dorsch and Dorsch: Understanding Anaesthesia Equipments

33. ECG by Shamroth/Goldman

34. Anatomy for Anaesthetists by Harold Ellis

Must refer:

1. J Benumof: Anaesthesia for Thoracic Surgery

2. Cucchiara and Michenfelder: Clinical Neuroanaesthesia

3. Cottrell & Smith: Anaesthesia and Neurosurgery

4. Smith : Pediatric Anesthesia

5. Steward D: Handbook of Peadiatric Anaesthesia

6. Complications in Anaesthesiology by Orkin

7. Complications in Anaesthesia by Raven

8. Airway management by JL Benumof

9. Obstetric Anaesthesia by Chestnut

List of Journals:

1. Indian Journal of Anaesthesia

2. Journal of Anaesthesiology and Clinical pharmacology

3. Anaesthesia

4. British Journal of Anaesthesia

5. Anesthesia and Analgesia

6. Anesthesiology

7. Anaesthesia and Intensive Care

8. Canadian Anaesthesia Society Journal

9. Acta Anaesthesia Scandanavia

10. Regional Anesthsia and Pain Medicine

Year Books:

1. Anesthesia Clinic of North America

2. International Anesthesiology Clinics

3. Year Book of Anaesthesia

4. Recent Advances in Anaesthesia

5. Anaesthesia Review

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Dear Dean