- C. Manage cardiovascular instability
 - 1. Know different fluid therapy options and when to use them
 - 2. Know the different inotropic drugs and when to use them
 - 3. Know how to use invasive monitoring devices to guide therapeutic use of fluids and inotropic drugs
- D. Manage respiratory failure and postoperative pulmonary complications
 - 1. Know how to use arterial blood gas and ventilatory variables to evaluate postoperative patients with respiratory failure
 - 2. Understand the operation of mechanical ventilators including different ventilatory modalities and how each is best used for management of respiratory failure and noninvasive) including modes complications and modes of weaning

Principles & application of Oxygen therapy.

- E. Pathophysiology and Clinical manifestation of septicemia and its treatment
 - 1. Recognize sepsis in the postoperative patient including all the typical hemodynamic findings
 - 2. Know the appropriate tests to diagnose sepsis, including diagnostic tests
 - 3. 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.
 - 4. Know the different classes of antibiotics and antifungal agents and their use in treating sepsis
- F. Deliver appropriate nutritional support
 - 1. Learn about the use of enteral nutrition in the patient who cannot tolerate input per os
 - 2. Learn about the use of parenteral nutrition in the critically ill surgical patient
 - 3. Interact with nutrition support services in planning nutrition for the critically ill patient
- G. Provide effective pain management and sedation postoperatively
 - 1. Learn the appropriate use of pain management modalities in the ICU including:
 - a. Patient-controlled analgesia
 - b. Epidural and subarachnoid narcotics
 - 2. Learn the use of sedative/hypnotic drugs in the ICU for:
 - a. For Patient on Ventilator

Principles of Transplantation

Care of Immunosuppression Infections in the immunocompromised patient Should know Organ rejection.

Monitoring and Biostatistics

Should be able to use Prognostic indices such as acute physiology and chronic health evaluation, therapeutic intervention scoring system and know the concept of audit

Ethical and legal aspects of critical care

Know the legal importance of

Should be able to take informed consents not resuscitate orders; (DNR) withdrawing of therapy

Psychosocial Issues

Should be able to communicate with distressed relatives

Should be able to give the correct picture of a critical patient, but with compassion in view of critical nature of the illness

Should be able to Transport a critically ill patient/ resuscitate patient with acute traumatic injury

PEDIATRIC TRAINING

Sould be able to

Recognize and manage cardiovascular and respiratory failure in a critically ill child

Evaluate manage the critically ill neonate

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

Core procedural skills for residents. 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. Due to the variability of individual training programs, practical experience may be limited for some procedures

Cardioversion Pulmonary artery catheterization Trancutaneous pacing Draining of tension Pneumothorax Insertion of chest drain Conventional and Percutaneous Tracheostomies

CARDIOVASCULAR ANESTHESIA

I. Goals

- A. Understand cardiac physiology Develop knowledge of cardiovascular anesthesia (anesthesia for the patient with cardiovascular disease). Choose appropriate anesthetic techniques for patients with different types of cardiovascular disease and the skills for lifelong continuing education.
- B. Develop technical and monitoring skills necessary for cardiovascular anesthesia
- C. Administer anesthesia for a wide variety of cardiothoracic Cases and develop interest in further learning
- D. Perform a thorough preoperative assessment of the patient undergoing cardiovascular surgery
- E. Know intraoperative anesthetic management for the patient undergoing cardiopulmonary bypass. Know how cardiopulmonary bypass is instituted and discontinued Understand cardiopulmonary bypass and discuss the mechanical aspects of it as follows:
 - 1. Different types of pumps pulsatile and nonpulsatile
 - 2. Physiology of hypothermia and cardiac and cerebral protection
 - 3. Effects of bypass on volumes of distribution and clearance of anesthetic drugs and anesthetic maintenance, including amnesia
- D. 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

- E. Develop and understanding of the major issues involved in the perioperative care of the child with congenital heart disease
- B. Insert vascular catheters or cannulas for adult and pediatric patients and obtain measurements from them as follows:
 - 1. Arteries

Internal jugular vein and the subclavian vein

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
- 2. Mixed venous oxygen saturation
- 3. Theromodilution cardiac output
 - observe/know about a Transesophageal echocardiograpy (TEE) probe and interpret TEE images
- F. Manage care during cardiac surgery as follows:
 - 1. Blood replacement
 - 2. Monitoring the effect of heparin
 - Postcardio;ulmonary bypass coagulopathy Rationale for various therapies such as aprotinin designed to prevent Coagulopathy
- G. Know following procedures and anesthetic implications:
 - 1. Aortic repairs
 - 2. Congenital repairs pediatric
 - 3. Coronary artery bypass grafting and valves adults
 - 4. Electrophysiology
 - 5. Thoracic surgery
 - 6. Transplantation heart and lungs
- H. Work as a team member with fellow anesthesiologists, surgeons, perfusionists, and nurses
- I. Maintain good clinical judgment under stress and act quickly and accurately in diagnosis, interpretation, and treatment of intraoperative problems

Evaluation to Determine Goal Achievement.

NEUROANESTHESIA

I. Goals

A. Administer anesthesia safely to patients with neurologic disease who are undergoing neurologic or

non-neurologic surgery, diagnostic procedures requiring anesthesia, or nonsurgical interventions requiring anesthesia.

- B. Understand the basic concepts of central nervous system (CNS) physiology as they relate to neuroanesthesia, 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.
- C. Know the effect(s) of commonly used anesthetic agents and adjuvant agents, for example antihypertensives, on cerebral physiology.
- D. Understand the anesthetic implications of the most common neurosurgical procedures, that is, what is likely to happen during neurosurgery that will affect anesthetic management.
- E. Understand the basic concepts behind electrophysiologic monitoring of the brain and spinal cord.
- F. Understand how concurrent medical illnesses affect anesthesia during neurologic surgery.

II. Objectives

- A. 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 know what information about nervous system function and pathology as important to the anesthesiologist.
 - 1. Recognize both the adult and pediatric patient with poor elastance of increased intracranial pressure (ICP).
 - 2. Evaluate the patient with subarachnoid hemorrhage and intracranial aneurysm by means of the Hunt-Hess and Fischer gradings systems; recognize preoperative vasospasm; and anticipate which patients are likely to require special techniques such as barbiturate protection, hypotension, induced hypertension, or temporary vessel occlusion.
 - 3. Differentiate between radiculopathy and myelopathy and understand the anesthetic implications of each, that is, which patients require awake intubation and positioning.
 - 4. 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 anesthetic implications of:
 - a. Acoustic neuroma, Ependymoma, Gliomas, Meningioma, Pituitary tumours

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

- a. 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.
- 6. Anticipate premedication for and anesthetic considerations during electrocorticography
- 7. Anticipate airway and sedation requirements for stereotactic neurosurgical procedures conducted with either general anesthesia or monitored anesthesia care

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

- 1. Choose appropriate premedication and agents for anesthetic induction and maintenance based on a knowledge of their effects on cerebral physiology and on neuropathology
- 2. 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
- 3. 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. Intubate an awake patient such that coughing or movement are minimal
 - c. Master anesthesia for awake intubation, including but not limited to, superior laryngeal and glossopharyngeal nerve blocks and transtracheal injection of lidocaine
- 4. 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.
- 5. 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 because this position is no longer used at our institution
- 6. Know anesthetic effects on the electroencephalogram (EEG) and evoked potentials and basic implications of and appropriate responses to changes in each.
- 7. Understand the basic indications and techniques, and, if possible, perform the following special procedures used during neuroanesthesia:
 - a. Induced hypotension
 - b. Induced hypertension
 - c. Moderate Hypothermia

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

- 8. Know the differential diagnoses and treatment alternatives of intraoperative intracranial hypertension ("tight brain").
- 9. 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.
- 10. Know the management of Head Trauma, and its anesthetic management

III. 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.

PAIN MANAGEMENT

I. Goals

- A. Differentiate among the different chronic pain states, for example, reflex sympathetic dtystrophy and neuropathic or myofascial pain, and know what treatments are effective for each.
- B. Know the types of drugs that relieve pain and their efficacy, indications, side effects and contraindications and use.
- C. Know the laboratory tests, radiologic studies, and psychological tests used to help differentiate chronic pain syndromes.
- D. Learn to perform a thorough, directed history and physical examination, which will emphasize and facilitate the diagnosis of different pain states.
- E. Know the multidisciplinary approach to pain management.
- F. Know when it is appropriate to refer patients to different specialists for definitive or adjunctive therapy, for example, neurosurgery, orthopedic surgery, neurology.
- G. Manage acute and perioperative pain syndromes proficiently.

II. 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 (Please note: Some of these blocks may not be performed in a given month because of the patient population available during that month):
 - 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
- 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

III. Evaluation to Determine Goal Achievement

PEDIATRIC

I. Goals

- A. Administer anesthesia 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

II. 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 priniciples of and medications used for preoperative sedation.
- 4. Induce anesthesia 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. Heat 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 color, 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 in pediatric by demonstrating the use and abuse of the followi,ng, Heat lamp,b. Heat blanket, Heat humidifier, Room temperature.
- 13. Master the techniques of halothane and isoflurane/nitrous oxide/oxygen/muscle relaxant anesthesia.
- 14. Determine and discuss when deep or awake extubation is appropriate and apply the proper approach.
- 15. 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 as compared to adult patients.

- 16. Apply the priniciples of fluid and blood replacement during anesthesia.
- 17. Understand the benefits and risks of regional anesthesia, including spinal anesthesia 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

III. Evaulation to Determine Goal Achievment

OBSTETRIC

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

II. Objectives

- 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 labor and deliver nurses.
- 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 deliver
 - 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

REGIONAL ANESTHESIA

I. GOALS

- A. To teach anesthesia residents the art and sciences of regional anesthesia understand the anatomy, pathophysiology, and appropriate management of complications and side effects of regional anesthetic techniques, the test doses; total spinal, subdural blocks assessment and treatment; Risks of spinal, epidural hematoma and abscess assessment and treatment; Postdural puncture headache assessment and treatment; Pneumothorax- assessment and treatment; Physiologic side effects: sympathectomy, phrenic nerve block, intercostal nerve block assessment and treatment; Peripheral nerve injury assessment and follow up.
- B. To understand general priniciples of local anesthetic pharmacology, including the pharmacodynamics and pharmacokinetics of various local anesthetics. This includes onset duration, motor/sensory differentiation, and toxicity profile of various local anesthetics and allergy its treatment:
- C. To understand the principles and indications for various local anesthetic adjuvants including:

Epinephrine, phenylephrine, narcotics, sodium bicarbonate, carbonation, hyaluronidase, alpha agonists, anticholinesterases.

- D. To be familar with the relevant anatomy for regional techniques, including: Spinal canal and its contents, neural plexuses of the limbs, major autonomic ganglia.
- E. Be familiar with the physiologic changes associated with spinal and epidural anesthesia.
- F. Understand the indications for and the contraindications to regional anesthetic techniques including central neuraxis blocks, peripheral nerve blocks, sympathetic nerve blocks.

B. COGNITIVE SKILLS

At the completion 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

OBJECTIVES OF DENTAL ANESTHESIA

Understand the principles of conscious sedation

Principles of anesthesia in a dental Chair

Local Blocks For Dental Surgery

OBJECTIVES OF TRANSPLANT ANESTHESIA

Know the basic Principles of anesthetizing An immunocompromised Patient Principles of anesthetising

patient with end stage renal/liver disease Warm/Cold ischemic Time

OBJECTIVES FOR OPHTHALMOLOGY POSTING

- 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.

OBJECTIVES FOR ENT POSTING

- 1. To give topical anesthesia for awake intubation.(nasal and oral)
- 2. To give local block for Tonsillectomy
- 3. Local anesthesia for tracheostomy..
- 4. Local block for thyroid surgery TO give anesthesia for MLS
- To give anesthesia for Laser surgery of airway.
 To give anesthesia for vascular malformations /tumours of noses

APPENDIX — I

Text books:

- 1. Miller RD, ed. Anesthesia, 5th ed.
- 2. Wylie Churchill Davidson
- 3. Nunn and Utting
- 4. Stoelting RK, Miller RD, eds. Basics of Anesthesia

APPENDIX (CARDIAC)

Text books:

1. JA Kaplan: Cardiac Anesthesia J Benum of: Anesthesia for Thoracic Ssurgery C Lake: Pediatric Cardiac Anesthesia

APPENDIX (NEURO ANAESTHESIA)

Text books include:

- 1. Cucchiara and Michenfelder: Clinical Neuroanesthesia, Churchill-Livingstone
- 2. Cottrell and Smith: Anesthesia and Neurosurgery, 3rd ed, CV Mosbyd
- 3. Millelr: Aanesthesia, 4th ed, Churchill-Livingstone; chapters 21, 38, and 56
- 4. Kirby and Gravenstein: Clinical Anesthesia Practice, WB Saunders; chapters 22, 4, and 73
- 5. Russell and Rodichok: Primer of Intraoperative Neurophysiologic Monitoring, Butterworth and Heinemann

APPENDIX (PEADIATRIC ANAESTHESIA)

Text books:

- 1. Gregory GA: Pediatric Anesthesia, 2nd ed
- 2. Steward D: Handbook of Pediatric Anesthesia, MD

APPENDIX (ICU)

- 1. ICU Book Paul Marino
- 2. Critical Care by Joseph Civetta, Robert W Taylor and Robert Kirby publisher Lippincott

APPENDIX (PAIN)

- 1. Bonica: The Management of Pain
- 2. Cousins and Bridenbaugh: Neural Blockade in Pain Management
- 3. Raj: Practical Management of Pain

ASSESSMENT METHODS

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		
		Assessment		

FORMATIVE ASSESSMENT/(Ongoing Evaluation)

Formative assessment will be conducted during each posting/module/unit. 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) OSCE

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) MCQs of different types Shoule be included atleast in one of the 4 papers. The use of MCQs is recommended for formative/end semester evaluation.

Final Theory papers: 4 Papers

		IVIAI KS		
Paper I	Basic Sciences as applied to Anaesthesiology, including ethics, statistics, Quality assurance, medicolegal Aspects.	100		
Paper 2	Anaesthesia in relation Associated Systemic	100		
Paper 3	Anaesthesia in relation to subspecialities such As cardiac, neuro, obstetrics and pediatrics etc.	100		
Paper 4	Intensive care Medicine, Pain Medicine and Recent advances in Anaesthesiology	100		
2) PRACTICAL				
4 components	S:	Marks		

The practical examination should be structured and objective as possible

Marke

			1 long case	40 min	100				
A)	Cli	nical Cases							
			2 Short cases	15 min each	40 each				
St	ruc	tured Assessn	nent (Long Ca	ase)					
1.	Ora	Oral skills/presentation 10							
2.	Dia	Diagnosis/investigations 10							
3.	Preanaesthetic Preparation								
4.	Anaesthetic management 4								
5.	Post operative complications & management								
B)	OS	CE: At least 10 C	OSCE stations wit	th checklists		20			
		For objective	e assessment mar	ks					
C) VIVA-VOCE (Structured)									
						TOTAL MARKS: 200			
	1.	Problem solving si	tuations			40			
	2.	Drugs/Anaesthetic				40			
	3.	Equipments for An	40						
	4. Investigations}ECG/Xrays/MRI					40			
		Endoscopy etc.							
D)	1. CPR Assessment on Mannequins				40				
						Total Marks			
		Theory (Papers 1-	4)			400			
		Practical (Cases, C	OSCE, Viva Voce)	1		400			
		Grand Total				800			

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 three external and three internal examiners should conduct the clinical examination. A maximum of 4 candidates should be examined per day and if there are more than 4 candidates the examination should be conducted on 2 consecutive days.

THESIS

Objectives

- 1. The student would be able to demonstrate capability in research by planning and conducting systematic scientific inquiry & data analysis and deriving conclusion.
- 2. Communicate scientific information for health planning.

Guide for thesis

- 1. Chief guide will be from the department of Anaesthesiology
- 2. Co-guide(s) will be from the department or from other disciplines related to the thesis.

Submission of thesis protocol

It should be submitted at the end of six months after admission in the course.

- 1. Protocol in essence should consist of:
 - a. Introduction and objectives of the research project.
 - b. Brief review of literature.
 - c. Suggested materials and methods, and (scheme of work)
 - d. Statistician should be consulted at the time of selection of groups, number of cases and method of study. He should also be consulted during the study.
 - e. Bibliography
- 2. The protocol must be presented in the department of Anaesthesiology before being forwarded to the Research Committee of the Institute.
- 3. Protocol will be approved by the research committee appointed by the Dean/Principal to scrutinise the thesis protocol in references to its feasibility, statistical validity, ethical aspects, etc.

Submission of thesis

- 1. The thesis shall relate to the candidate own work on a specific research problem or a series of clinical case studies in accordance with the approved plan.
- 2. The thesis shall be written in English, printed or typed on white bond paper 22×28 cms with a margin of 3.5 cm. bearing the matter on one side of paper only and bound with cloth/rexine, with the title, author's name and the name of the College printed on the front cover.
- 3. The thesis shall contain: Introduction, review of literature, material and methods, observations, discussions, conclusion and summary and reference as per index medicus.

Each candidate shall submit to the Dean four copies of thesis, through their respective Heads of the Departments, not later than six months prior to the date of commencement of theory examination in the subject.

Evaluation of thesis

1. The thesis shall be referred by the University evaluation to the Examiners appointed by the University. The examiners will report independently to the Controller of Examinations and recommend whether the thesis is-

- a) approved
- b) returned for improvements as suggested or
- c) rejected
- 2. The thesis shall be deemed to have been accepted when it has been approved by atleast two external examiners and if the thesis is rejected by one of the external examiners it shall be referred to another external examiner (other than the one appointed for initial evaluation) whose judgement shall be final for purposes of acceptance or otherwise of the thesis.
- 3. Where improvements have been suggested by two or more of the examiners, the candidate shall be required to re-submit the thesis, after making the requisite improvements, for evaluation.
- 4. When a thesis is rejected by the examiners, it shall be returned to the candidate who shall have to write it again. The second thesis, as and when submitted shall be treated as a fresh thesis and processed.
- 5. Acceptance of thesis submitted by the candidate shall be a pre-condition for his/her admission to the written, oral and practical/clinical part of the examination.

Provided that under special circumstances if the report from one or more examiners is not received by the time, the Post-graduate examination is due, the candidate may be permitted provisionally to sit for the examination but the result be kept with held till the receipt of the report subject to the condition that if the thesis is rejected then the candidate in addition to writing a fresh thesis, shall have to appear in the entire examination again.

6. A candidate whose thesis stands approved by the examiners but fails in the examination, shall not be required to submit a fresh one if he/she appears in the examination in the same branch on a subsequent occasion.

ANATOMY — M D

OBJECTIVES

At the end of the three years post-graduate training programme in Anatomy the student should be able to:

- 1. Acquire in depth knowledge of structure of human body from the gross to the molecular level, and correlate it with the functions.
- 2. Comprehend the principles underlying the structural organization of body and provide anatomical explanations for disturbed functions.
- 3. Acquire knowledge of basic principles of normal growth and differentiation. Understand critical periods of human growth and development as well as ontogeny of all the or 5gan systems of body. Analyze the congenital malformations, know the etiological factors including genetic mechanisms involved in abnormal development and their effects on functions.
- 4. Have comprehensive knowledge of the basic structure and correlated function of the nervous system in order to understand altered state in the various disease processes.
- 5. Plan and implement teaching programmes for under-graduate medical students. Be familiar with and be able to use different teaching methods and modern learning resources for under-graduate teaching. Plan and conduct evaluation of under-graduate teaching.
- 6. Develop/acquire an attitude of scientific enquiry and learn contemporary research techniques. Be familiar with recent scientific advances, identify lacunae in the existing knowledge in a given area and be able to plan investigative procedures for research, analyze data critically and derive logical conclusions.

LEARNING ACTIVITIES, TRAINING AND EVALUATION

During the course students have formal teaching and are trained for teaching and research

I Didactic Teaching

Topics in gross anatomy, microanatomy, embryology, neuroanatomy, histochemistry, and genetics, along with related practical sessions.