


Syllabus for Written Test to the post of Technical (Anesthesia) A to B- MFCP

Anesthesia and perioperative care for surgeries and interventions related to cardiac and neurosciences:

- Adult and pediatric cardiac surgeries
- Cardiac catheter laboratory procedures
- Diagnostic Cardiac Radiological procedures
- Adult and pediatric neurosurgical procedures
- Neuroradiological catheter laboratory procedures
- Diagnostic neuroradiological procedures
- Heart transplant, ECMO, IABP
- CPB-related anesthesia

Perioperative Medical emergencies& management:

- Cardiac arrest, Cardiopulmonary resuscitation, ventricular tachycardia, ventricular fibrillation, bradycardia, atrial fibrillation, ectopic heart beats
- Severe bronchospasm, pulmonary embolism, pneumothorax, pulmonary hemorrhage, inhaled aspiration of gastric contents, airway obstruction
- Generalized or focal Seizures, unconscious patient, "Full brain", air embolism
- Massive hemorrhage
- Allergic/ anaphylaxis and anaphylactoid reactions
- Brain death


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Anesthesia-related procedures:

- Difficult ventilation and intubation
- Application of Difficult airway gadgets
- Lung isolation techniques and fiberoptic bronchoscopy
- Neuro-axial procedures: Spinal anesthesia, epidural catheterization, CSF drainage
- Regional blocks in cardiothoracic anesthesia and neuroanesthesia
- Blood transfusion: Blood groups, blood components and their transportation, storage, and administration
- Echocardiography and ultrasound in cardiac anesthesia and neuroanesthesia practice
- Central venous cannulation, arterial catheterization, insertion of pulmonary artery catheters, transvenous pacing,
- Pulmonary function testing
- Positioning in anesthesia
- Percutaneous tracheostomy

Monitoring related to anesthesia, technical aspects and repair of monitors:

- ECG, 12-lead ECG, invasive and noninvasive blood pressure, central venous pressure, PA pressure, transducers, invasive and noninvasive cardiac output,
- Pulse oximetry, respiratory gas monitoring,
- Neuromuscular monitoring,

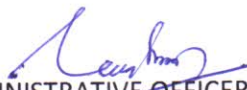

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- Temperature, vital parameter monitoring,
- NIRS, depth of anesthesia
- Arterial and central venous, jugular blood gasses
- Point of care coagulation monitoring
- Intracranial pressure monitoring
- EEG, EMG and evoked potential and cranial nerve monitoring
- Transcranial doppler

Anesthesia workstations:

- Parts of anesthesia workstation, Types of anesthesia ventilators, principles of vaporizers, low-flow anesthesia
- Modes of ventilation
- Daily maintenance and pre-anesthesia check-up of anesthesia workstations
- Emergencies associated with malfunction of anesthesia workstations
- Types of ventilation circuits
- Humidification and prevention of contamination of anesthesia system
- Sodalime and canister care
- Anesthetic gas scavenging system
- Airway pressure, flow volume loops, compliance and resistance, lung recruitment maneuvers.


Pre-anesthesia preparation:


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- Pre-anesthesia preparation in adult and pediatric cardiac surgical procedures
 - Pre-anesthesia preparation in adult and pediatric neurosurgical procedures
 - Pre-anesthesia preparation in adult and pediatric cathlab and diagnostic radiological procedures
 - Pre-anaesthesia preparation and precautions in adult and pediatric MRI procedures

Anesthesia-related drugs and equipments:

- Inhaled and intravenous anesthetic drugs, sedatives, hypnotics, muscle relaxants and reversal agents
- Drugs acting on cardiovascular system, respiratory system, kidney and nervous system.
- Anesthesia related recurrent disposables:
- Direct and video Laryngoscopes, FOB, circuits, airways, suction equipments, endotracheal tubes, tracheostomy tubes, supraglottic airways, nasogastric tubes, etc
- Infusion pumps, target control infusion systems, patient-controlled analgesia systems
- Blood, fluid and body warmers
- Equipment maintenance, care and servicing such as cleaning, sterilizing, assembling, calibrating and testing, troubleshooting, requisitioning, recording of inspections and maintenance


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 6/3/24

Other areas in the operation theatre and ICUs:

- Setting up storage facilities for anesthesia items
- Use of hospital computers for anesthesia services
- Setting up and maintenance of pre-anesthesia induction room
- Procurement of drugs and disposables, equipment, maintenance of stock, record keeping needed in the perioperative care

Patient transportation:


- Transportation of adult and pediatric patients from Cardiac surgical and neurosurgical OT to postoperative ICU
- Transportation of patient on IABP
- Transportation of patient from ICU to Radiological suites
- Transportation of patient from patient from SCTIMST to other hospitals
- Keeping ready a critical care service room for admission of a VIP

ICU ventilators:

- Types of ICU ventilators, modes of ventilation, connecting a ventilator to transported patient in ICU

Care of operation theatre environment:

- Electrical safety issues
- Fire hazards in OT
- Biohazards in OT
- Radiation hazards in Radiology suites


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6/3/24

- OT ventilation and temperature management
- Management of OT lights
- Sharp disposal and Segregation of OT waste

Microbiology-related to OT:

- OT preparation and waste disposal in Hepatitis B/ C infection, HIV infection
- Cleaning and sterility of OT equipments
- Sterilization of reusable equipments, and other items related to anesthesia
- Care in COVID-19 patients

Recent advances related to anesthesia and operation theatre:

- Green operation theatres
- Anesthesia simulation laboratory
- CPR training courses; code blue, code orange
- New equipment and monitoring modalities in anesthesia
- Other recent advances

Teaching and training of anesthesia technical students and apprentices:

- Teaching and training the technical trainee students
- Organization of academic program for the trainees
- Ethics in operation environment

Basic theory topics:


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6/3/24

Anatomy:

Cardiac, thoracic, vascular, neuroanatomy

Physiology:

1. Heart rate, cardiac cycle, cardiac output, blood pressure, blood volume, cardiac contractility, cardiac pressure waveforms, determinants of coronary circulation, cardiac electrical conduction
2. Pulmonary circulation, physiological function of lung, pulmonary function tests
3. Perioperative physiology of kidney, brain and liver
4. Blood Hemostasis (including coagulation pathways)

Pharmacology:

1. Pharmacological principles: Routes of administration of drugs, elimination of drugs, pharmacological actions and adverse reactions, drug dosages
2. Inotropes, vasodilators, vasoconstrictors, antiarrhythmic drugs
3. Calcium gluconate & chloride, sodium bicarbonate, antihypertensives, diuretics, beta-blockers, calcium channel blockers, nitroglycerine, drugs for coronary artery disease, anticoagulants, antiplatelet agents, antifibrinolytics, Nitric oxide and Protamine.
- iii. Pulmonary drugs: Bronchodilators, drugs used for pulmonary hypertension, drugs for treating respiratory emergencies
- iv. Inhalational and intravenous anaesthetic drugs, drugs acting on neuromuscular transmission, opioids, analgesics, sedatives and hypnotics, steroids, premedication drugs

v. fluids- colloid, crystalloids, hyperosmolar agents

Anesthesia equipments:

- Anesthesia gases and pipeline system
- Oxygen storage, transportation and delivery to the hospital
- Anesthesia workstations, monitors and other devices


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6/3/24