STUDY GUIDE

DEPARTMENT OF ANAESTHESIOLOGY

CMH LAHORE MEDICAL COLLEGE

2021 - 2022

CURRICULUM OBJECTIVES

During short exposure to this specialty we aim to give students some idea of the true scope of anesthesia; it encompasses many areas of medicine as well as clinical physiology and pharmacology so that students coming to OR for their surgical rotations have some basic knowledge of anaesthesiology.

Anesthesiologists learn to use technical and analytical skills to look after patients in many situations – some are routine and others very challenging.

Students must also sharpen their humanitarian skills, since patients coming to the OR are often at their most vulnerable**.**

TEACHING FACULTY

Sr	Faculty Name	Designation
1.	Brig.(R) Dr. Muhammad Tariq	Professor/HOD
2.	Brig. Dr. Ahsin Zafar	Assistant Professor
3.	Lt. Col Dr. Muhammad Akram	Professor
4.	Col Dr. Fakkar-e-Fiyyaz	Associate Professor
5.	Lt. Col Dr. Khalid Ameer	Assistant Professor
6.	Lt. Col.Dr. Asif Saleem	Senior Registrar
7.	Lt. Col. Dr. Adnan	Senior Registrar
8.	Dr. Mehwish Naseer	Assistant Professor
9.	Dr. Abdul Wasay Toor	Assistant Professor
10.	Dr. Rehana Feroze	Assistant Professor
11.	Dr. Adnan Nasir	Senior Registrar

COURSE OUTLINE

LECTURES:

Sr	Topics
1.	Introduction to Anaesthesia, Types of Anaesthesia and Pre-operative assessment.
2.	Local and Regional Anaesthesia, Local anaesthetic agents
3.	General Anaesthesia and peri-operative management, IV Anaesthetic agents
4.	Recovery from Anaesthesia, Anaesthesia complications, Acute pain management
5.	Introduction to critical care and ventilator support
6.	Acid – base balance and compensation in clinical settings
7.	Pain management

CLINICAL ROTATIONS:

Sr	Topics
1.	a. Introduction to Anaesthesia b. Importance of Anaesthesia c. Types of Anaesthesia (local, regional, general) d. Pre-operative anaesthetic assessment and premedication
2.	a. Local and regional anaesthesia b. Spinal and epidural anaesthesia c. Local anaesthetic agents and their complications
3.	a. General Anaesthesia

	b. Intravenous anaesthetic agents, muscle relaxants, inhalational agents c. Peri-operative management
4.	a. Recovery from Anaesthesia b. Complications of anaesthesia and their management c. Acute pain management
5.	a. Introduction to critical care (layout, admission, discharge criteria). b. Ventilator support and monitoring
6.	a. Acid-base balance and compensation in clinical settings b. Diagnosing acid-base disorders, ABGs interpretation
7.	Pain Management

CLINICAL PROCEDURE TO BE OBSERVED/ASSISTED DURING CLINICAL ROTATIONS

Sr	Skills
1.	Pre-operative assessment of patient, ASA Scoring
2.	IV cannulation and Intraoperative fluid management
3.	Placement and care of central venous lines
4.	Demonstration of induction of general anaesthesia and tracheal intubation
5.	Demonstration of spinal block
6.	Demonstration of epidural block
7.	Demonstration of local blocks in eye, ENT and general surgery
8.	Demonstration of CPR, identification and uses of common instruments used in primary survey
9.	Post-operative care/acute pain management
10.	General ICU procedures
11.	Demonstration of anaesthesia machine and related instruments
12.	Demonstration of sterilization process in OT and ICU
13.	Demonstration of vital signs, monitors and their application
14.	Demonstration of managing a patient placed on artificial ventilator support

METHODS OF TEACHING

- Lecture
- Bedside teaching in OR
- Interactive Group Discussion in OR Classrooms

METHODS OF ASSESSMENT

- Viva
- Individual assessment in clinical rotations
- MCQs

TOPICS TO BE DISCUSSED IN TEACHING SESSIONS

ORIENTATION OF STUDENTS IN OPERATING ROOM

1. On day one of each clinical rotation, new undergraduates coming to OR are given orientation for working in theatre.
    a. Student safety orientation
    b. Importance of sterilization
    c. How to dress before entering OR (scrubs, caps and masks)
    d. OR ethics
    e. Patient confidentiality
2. Introduction to all Faculty

INTRODUCTION TO ANAESTHESIA:

- History of anaesthesia
- Definition of Anaesthesia, Amnesia, Analgesia
- Types of Anaesthesia
    i. General Anaesthesia
    ii. Regional Anaesthesia
    iii. Local anaesthesia

PRE-OPERATIVE ASSESSMENT:

- Importance of preoperative assessment
- History taking
- Vitals monitoring and systemic examination

- Airway assessment (Mallampati)
- Predictors of difficult airway
- Appropriate laboratory workup
- ASA class classification and its significance
- Premedication
- NPO Guidelines
    - **i.** Adults
    - **ii.** Children
    - **iii.** Emergency situation
    - **iv.** Purpose of NPO

LOCAL AND REGIONAL ANAESTHESIA:

- **Local anaesthesia:**
  Drugs, volume, indications, limitations, field blocks
- **Spinal Anaesthesia:**
    i. Physiology
    ii. Level of blockade
    iii. Indications
    iv. Contraindications
    v. Procedure of spinal anaesthesia
    vi. Drugs used for spinal
    vii. Assessing efficacy of block
    viii. Intraoperative monitoring standards I, II
    ix. Complications of spinal (High spinal, cardiac arrest, respiratory arrest, hematoma)
    x. Maintaining ABC (Airway, breathing, circulation)

- **Epidural Anaesthesia:**
    i. Physiology
    ii. Dermatomes blocked
    iii. Indications
    iv. Contraindications
    v. Procedure
    vi. Drugs used (Volume, concentration, bolus and top-up dose)

vii. Assessing block efficacy
viii. Intraoperative monitoring
ix. Management of hypotension
x. Complication of epidural (Total spinal, subdural, cauda equine syndrome, hematoma)

- **Caudal Epidural:**
  i. Physiology
  ii. Procedure
  iii. Level of block
  iv. Indication
  v. Contraindications
- Peripheral Nerve blocks:
  i. Brachial Plexus Block
  ii. Sacral Plexus Block
  iii. Field Blocks
  iv. Ankle Block
  v. Wrist Block
  vi. Total Intravenous Anaesthesia

- **Local Anaesthetic agents and their complications**
  i. Drugs
     a. Lignocaine
     b. Bupivacaine
     c. Ropivacaine
     d. Ligocaine with adrenaline
     e. Prilocaine (EMLA)
  ii. Mechanism of action
  iii. Local anaesthesia systemic toxicity (LAST)

GENERAL ANAESTHESIA

- Stages of general anesthesia

- Selection of type of anaesthesia for different surgical procedures
- Types of induction agents:
    i. Intravenous (Propofol, etomidate)
    ii. Inhaltional (Sevoflorane)
- Muscle relaxants (Depolarizing and non-depolarizing)
- Methods to maintain airway after induction of GA:
    - Bag-mask ventilation
    - Endotracheal tubes (Oral, nasal)
    - Laryngeal mask airway (LMA)
    - I-gel
    - Combitube
    - Double lumen tube
    - Tracheostomy
    - Fibre-optic intubation
- Intraoperative monitoring:
    - Standard I
    - Standard II
- Concept of depth of anaesthesia, MAC and awareness under anaesthesia and its implications on patient and doctor
- Analgesia
  Groups of drugs used
    Opioids
    NSAIDS
    Paracetamol
  Nerve blocks/epidural for pain management

<u>RECOVERY FROM ANAESTHESIA</u>

- Pharmacology of anticholinergic drugs and their application during extubation from anaesthesia
- Signs of adequate neuromuscular function
- Demonstration of neuromuscular monitoring
- Signs of partial recovery
- Extubation
- Complications during and after extubation

COMPLICATIONS OF ANAESTHESIA AND THEIR MANAGEMENT:

- Cannot intubate – cannot ventilate (Difficult airway)
- Cardiac arrest
- Malignant hyperthermia
- Sux apnea
- Bronchospasm
- Laryngospasm
- Post-operative nausea vomiting (PONV)
- Delayed recovery
- Anaphylaxis (possible causative agents and management)

ACUTE PAIN MANAGEMENT:

- **Pharmacological:**
  - Opioids (types, side effects, overdose)
  - NSAIDS (types, contraindications)
  - Paracetamol
  - Anaesthesia adjuncts (Analgesic effects)
- **Non-pharmacological:**
  - Acupuncture
  - Behavioral therapy
- **Nerve blocks:**
  - Surgical site wound infiltration
  - Wound catheter
  - Peripheral nerve blocks (Brachial plexus, lumbosacral plexus)
  - Field blocks

INTRODUCTION TO CRITICAL CARE:

  - Indications for intubation and mechanical ventilation
  - Weaning from ventilator
  - Extubation criteria
  - Post-extubation monitoring

VENTILATORY SUPPORT AND MONITORING:

- Types of ventilation modes (Brief introduction)
- Invasive/ non- invasive ventilation
- Invasive monitoring in ICU
    - Central venous lines
    - Arterial lines (ABGs, Invasive BP monitoring)
    - CSF pressure monitoring
    - Intra-abdominal pressure monitoring
- Care of patient on ventilator

ACID-BASE BALANCE AND COMPENSATION IN CLINICAL SETTINGS

- Body physiological buffers
- Normal pH, acidosis and alkalosis
- Types of acid-base disorders
- Compensated, partially compensated and non-compensated disorders
- Anion gap
- High anion gap metabolic acidosis
- Calculation and correction of base deficits
- Positive and negative fluid balance
- Steps to diagnose primary acid base disorder and its compensation
- Steps and protocol of taking sample for ABGs

BLS (Basic Life Support)

- Pretest
- Lecture Followed by hands on practice
- Post test

Study Material

- Morgan and Mikhail's Textbook of Clinical Anaesthesiology
- Power point presentations are available at department