

CURRICULUM



MASTERS IN ANAESTHESIA DEPARTMENT OF ANAESTHESIOLOGY

**Peoples University of Medical & Health Sciences,
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SYLLABUS M S ANAESTHESIA

APPLIED ANATOMY RELATED TO ANAESTHESIA

- Cardiovascular system:
Pericardium, anatomy of heart and coronary circulation.
Heart chambers, conducting system, Blood and nerve supply.
Great vessels, main peripheral arteries and veins.
Foetal circulation.
- Respiratory system:
Upper and lower airway (Mouth, nose, pharynx, larynx, trachea, main bronchi, and bronchial tree.
Pleura, Mediastinum.
Lungs, Lobes, Bronchopulmonary segments, blood supply, lymphatic drainage, Diaphragm and muscles of respiration.
- Nervous system:
Brain, spinal cord, spinal meninges, subdural, epidural space, spinal nerves, dermatomes. Brachial plexus, nerves of arm, leg and intercostals nerves. Lumbar, Sacral and coccygeal plexus. Cerebral circulation.
Formation and circulation of C.S.F.
Autonomic nervous system.
Pain pathways
- Musculoskeletal system:
Vertebral column ligaments, sacrum and sacral hiatus.
Muscle spindle, neuromuscular junction .

PHYSIOLOGY

- Fluid and electrolyte balance:
Composition of body fluids and fluid compartments.
(Intracellular, Extracellular, Interstitial)
Fluid dynamics (osmosis, tonicity diffusion)
Electrolyte imbalance and management (Na, K, Ca, P, Mg)
- Heart and Circulation:
Cardiac muscle, cardiac cycle, pressure changes in chambers.
Rhythmicity of heart, heart blocks, interpretation of ECG, arrhythmias. Coronary circulation.
Regulation of cardiac function, B.P. and cardiac output.
Ischaemic changes. Pathophysiology of cardiac failure.
Special circulation :pulmonary, renal, portal & fetal
- Blood and immunology:
Haemoglobin and its variants, composition of blood, haemostasis and coagulation. Blood groups, transfusion and reactions. White blood cells, types, functions and diseases. Sick diseases, Inflammatory response, Immunity and allergy.
- Respiration:
Volumes, flows dead space, and spirometry.
Gaseous exchange in lungs and tissues, Oxygen and carbondioxide transport, Regulation of respiration.
Hypoxia, hypo and hypercapnoea, oxygen exchange and acid base balance.
Pulmonary ventilation, mechanics of ventilation, ventilation/perfusion relationship and abnormalities. Shunt.
Pathophysiology of respiratory failure.
- Musculoskeletal System:
Muscle types (skeletal, smooth and cardiac)
Neuromuscular junction, motor end plate, membrane and action potential,
Mechanism of neuromuscular transmission and contraction of smooth and skeletal muscle.
- Renal system:
Renal blood flow, glomerular filtration, plasma clearance, tubular function.

Formation of concentrated and dilute urine. Regulation of fluid, electrolyte balance, regulation of acid base balance.
Pathophysiology of acute renal failure.

- Nervous system:
Factors determining intracranial pressure, sensory receptors, nociceptive pathways, and effect of therapy on nociceptive mechanism.
Autonomic nervous system, motor and sensory innervations and Reflex responses involving cardiovascular, respiratory, digestive and urinary system.
- Liver:
Functional anatomy and blood supply, metabolic function, bile formation and other functions.
- Digestive system and Metabolism:
Nausea, vomiting, gut motility, sphincters and reflexes.
Nutrition, carbohydrates, proteins, fats, vitamins and minerals.
Metabolic rates, Hormonal control of metabolism,
Regulation of plasma glucose response to trauma and stress.
- Endocrine system:
Hypothalamus and pituitary functions, adrenal hormones.
Insulin, glucagons and exocrine pancreatic function.
Thyroid, parathyroid hormones and calcium homeostasis.

PHARMACOLOGY:

Intravenous induction agents, gases and volatile anaesthetics, local anaesthetics and muscle relaxants with antidotes.
Pharmacokinetics, Drug interaction,
Analgesics, sedatives, tranquilizers, hypnotics and antidepressants.
Cardiovascular drugs like vasodilators, inotropes, chronotropes.
Diuretics, antiemetics, antihistamines, anticonvulsants, & bronchodilators.

PHYSICS AND CLINICAL MEASUREMENTS:

S.I. units, gas laws, behavior of gases and liquids(volatile) .
Measurements of volumes, flow, pressure, temperature.
Humidification, analysis of gases, electrical safety (fire & explosions)
Theatre pollution hazards and prevention.

EQUIPMENT AND APPARATUS:

Equipment design, anaesthesia delivery system, pressure valves, regulators,
Vaporizers and gas supply (central and cylinders).
Breathing system devices, airway, mask endotracheal tube, laryngeal mask.
Tracheostomy tubes and laryngoscopes.

MONITORING:

Minimum monitoring standards, Pulse, Blood pressure, Temperature, respiratory rate, cyanosis, anaemia and urine output.
Oximetry, capnography, arterial and central

CLINICAL MANAGEMENT:

At the end of training the candidate is expected to have the knowledge and skill to do the following:

Preoperative assessment:

History taking, physical examination, evaluation of cardiac, respiratory, haematological, hepatological and neurological status and if necessary referral to concerned specialist.

Clinical skills:

- Maintenance of adequate airway, rapid sequence induction.
- Venous access, arterial line and central venous line.
- Management of Pneumothorax, interpretation of ECG and application of ACLS

- Able to Anaesthetise patients of different disciplines like general surgery, orthopaedic surgery, neurosurgery, paediatric/neonatal surgery, Eye & ENT surgery, Gynae & obstetric surgery, maxillofacial surgery, Dental surgery, cardiothoracic surgery and day care surgery.
- Able to manage and anaesthetize trauma and emergency surgery.
- Able to give Spinal, epidural, local or regional blocks. Organise Pain management clinics.
- Manage Shock, ventilatory failure, cardiac failure and sepsis.