

HEMATOLOGY

- **Anemias and polycythemias, deep venous thrombosis, pulmonary embolism**
- **Clotting disorders:**
 - Intrinsic and extrinsic coagulation pathways
 - Diffuse intravascular coagulation (DIC)
 - Congenital and acquired factor deficiencies
 - Dilutional coagulopathy
 - Fibrinolysis
 - Pharmacologic
 - Hemophilia A & B
 - Von Willebrand disease
 - Antithrombin III deficiency
 - Heparin induced thrombocytopenia (HIT)
- **Porphyrias and hemoglobinopathies:**
 - Sickle cell disease
 - Carboxyhemoglobin
 - Methemoglobinemia
 - β -thalassemia
- **Anticoagulation and coagulation therapy**
- **Fibrinolytic and antifibrinolytic therapy**
- **Dual antiplatelet therapy for balloon angioplasty and cardiac stenting**

RESPIRATORY

- **Nose, pharynx, larynx, trachea, lungs, compliance and elasticity**
- **Oxygen consumption and content, oxygen carrying capacity (CaO₂), PAO₂, PaO₂, A/a gradient, carbon dioxide (HCO₃⁻, PACO₂, PaCO₂, EtCO₂), carbon dioxide production, dead space ventilation, alveolar ventilation**
- **V/Q mismatch, dead space, hypoxic pulmonary vasoconstriction, oxyhemoglobin dissociation curve**
- **Basic Radiologic Anatomy:**
 - Chest X-ray indications and identification (atelectasis, mainstem intubation, pneumothorax, pneumonia, pulmonary edema)
- **Obstructive lung disease:**
 - Asthma
 - Bronchitis
 - Emphysema
 - Cystic fibrosis
 - Lung abscess
 - Parenchymal (asthma, bronchitis, emphysema, lung abscess, neoplasm, foreign body, trauma)
- **Restrictive lung disease**

- Parenchymal (interstitial pulmonary fibrosis/interstitial lung disease, sarcoidosis, acute respiratory distress syndrome, bronchopulmonary dysplasia, pneumonia, atelectasis)
- Neuromuscular (muscular dystrophy, amyotrophic lateral sclerosis, myasthenia gravis, myopathy)
- Thoracic/extrathoracic (obesity, kyphoscoliosis, ascites, pneumothorax, hemothorax, chylothorax, pleural effusion, empyema, bronchopleural fistula)
- **Obstructive sleep apnea:**
 - Complications
 - Management
 - Postoperative strategies and monitoring guidelines
- **Carbon monoxide poisoning and cyanide toxicity**

RENAL AND GENITOURINARY

- **Blood flow**
- **Glomerular filtration**
- **Tubular reabsorption and secretions of water**
- **Compounds and electrolytes**
- **Renal function tests**
- **Hormonal regulation**
- **Renal excretion of drugs**
- **Electrolyte and acid-base balance**
- **Autoregulation and renal perfusion pressure**
- **Normal urine output**
- **Pathophysiology & Anesthetic Management:**
 - Acute and chronic renal insufficiency and renal failure, hemodialysis and peritoneal dialysis, neoplasms, nephrotic syndrome, azotemia, perioperative oliguria and anuria (prerenal, renal, and postrenal failure),
 - Electrolyte abnormalities (including respiratory and acid-base effects on electrolytes), treatment and anesthetic management of electrolyte disorders
 - Arterial blood gases (compensated vs. uncompensated respiratory and metabolic acid-base disturbances), lactic acidosis, anion gap, treatment and anesthetic management of acid-base disturbances

HEPATIC AND GI

- **Blood supply and regulation**
- **Mechanism of drug metabolism and excretion**
- **Cytochrome P450**
- **Peristalsis**
- **Bowel obstruction**
- **Orogastric and nasogastric tubes**
- **Nutrition (enteral and parenteral)**
- **Hepatitis (A, B, C)**
- **Cirrhosis**

- Portal hypertension
- Ascites
- Intestinal obstruction
- Gastroesophageal reflux disease
- GI hemorrhage
- Esophageal varices
- GI dysfunction (diarrhea, vomiting, ileus)
- Liver transplant and resection, transjugular intrahepatic portosystemic shunt (TIPS) procedure

METABOLISM, ENDOCRINE, AND IMMUNOLOGY

- Hypothalamus and pituitary
- Thyroid and parathyroid
- Adrenal Medulla, adrenal cortex, and pancreas
- Surgical stress response
- Diabetes insipidus
- Acromegaly
- Inappropriate antidiuretic hormone secretion
- Hyperthyroidism and hypothyroidism, thyroid storm
- Cushing Syndrome, Addison's Disease, Hyperaldosteronism, and Hypoaldosteronism
- Pheochromocytoma
- Diabetes mellitus, diabetic ketoacidosis (DKA), and hyperosmolar nonketotic syndrome
- Infection control (general and universal precautions, catheters, nosocomial infections, antibiotic prophylaxis), infections
- Autoimmune disorders
- Carcinoid syndrome
- Anaphylactic and anaphylactoid reactions

GERIATRIC

- Physiology (CNS, cardiovascular, respiratory, renal and hepatic changes), pathophysiology, pharmacologic implications, anesthetic considerations, management of complications

OTOLARYNGOLOGY, PLASTIC SURGERY, AND OPHTHOLOGY

- Tonsillectomy and adenoidectomy
- Ear procedures
- Airway foreign bodies
- Diagnostic and therapeutic laryngoscopy
- Cleft lip and palate
- Craniofacial procedures
- Lefort fractures
- Strabismus
- Cataracts

- **Corneal transplant**

GENERAL SURGERY, ORTHOPEDICS, AND BARIATRICS

- **Scoliosis, joint replacement, hip and long bone fractures, shoulder arthroscopy, methylmethacrylate, fat embolism**
- **Laparoscopic procedures:**
 - Positioning
 - Subcutaneous emphysema
 - Gas embolism
 - Cardiovascular effects of peritoneal insufflation
- **Bariatrics:**
 - *physiology
 - Pathophysiology
 - Pharmacology
 - Anesthetic considerations and management
 - Management of complications
 - Postoperative management

GU AND GYN

- **Cystoscopy, transurethral resection of the prostate (TURP), transurethral resection of bladder tumor (TURBT), extracorporeal shock wave lithotripsy (ESWL), ureteral implantation, bladder and ureteral malformations, urinary diversion surgery (ileal conduit, neobladder reconstruction)**
- **Anesthesia for renal surgery and surgery associated with renal failure:**
 - Arteriovenous fistulas/grafts
 - Renal transplants
 - Wilms tumor
 - Partial and total nephrectomy