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     1. Components
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        CO₂ Absorbers
        High and Low Pressure Components
        MRI Compatibility
        Oxygen Supply Systems
        Valves
        Vaporizers
        Waste Gas Evacuation Systems
     2. Safety Features
        TAGS:
        Troubleshooting
     3. Design and Ergonomics
  B. Mechanical or Assisted Ventilation
     1. Classifications
        TAGS:
        High Frequency Ventilation
        Modes of Mechanical Ventilation
        Non-Invasive Techniques
     2. Parameters
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        Ventilator Settings and Controls
     3. Drug Delivery Systems
        TAGS:
        Inhaled Nitric Oxide
        Nebulizers
     4. Ventilation Monitors
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        Apnea, FiO₂, Airway Pressure Monitoring
  C. Monitoring
     1. Basic Physiologic
        TAGS:
        Capnography
        ECG
        Neuromuscular Blockade
        Noninvasive Blood Pressure
        Pulse Oximetry
        Temperature
     2. Advanced Physiologic
        TAGS:
        Arterial Wave Form Analysis
        Cardiac Output
        Cerebral Oximetry
        EEG
        Neurophysiologic Monitors
I.C.2

Point of Care Ultrasound
Stroke Volume Assessment
TEE
TTE

3. Intraoperative Blood Monitoring

TAGS:
Arterial Blood Gas
Coagulation
Glucose
Point of Care Laboratory Testing

D. Electrical and Fire Safety

1. National Fire Protection Association (NFPA) Standards
2. Fire and Explosion Hazards

TAGS:
Fuels
Oxidizers
Sources of Ignition

3. Electrical Safety Systems

TAGS:
Isolated and Grounded Power Systems
Line Isolation Monitors

4. Electrical Hazards

TAGS:
Macroshock
Microshock

II. PHARMACOLOGY

A. General Concepts

1. Pharmacogenetics

TAGS:
Butyrylcholinesterase (Pseudocholinesterase) Deficiency
Genetic Factors in Drug Dose-Response Relationships
Malignant Hyperthermia (MH)
Polymorphisms of Drug Metabolism

2. Drug Interactions

TAGS:
Drug-Drug Binding
Enzyme Induction
Enzyme Inhibition
Perioperative Implications of Alternative and Herbal Medicines
Synergistic Drug Interactions

3. Drug Reactions

TAGS:
Anaphylactoid
Anaphylaxis
Idiosyncratic

4. Substance Use Disorder

TAGS:
Anesthetic Implications
Pharmacologic Mechanisms
Physiologic Effects
5. Agonists and Antagonists
B. Anesthetic Gases and Vapors
   1. Indications and Contraindications
   2. Pharmacokinetics
      TAGS:
      Metabolism and Excretion
      Uptake and Distribution
   3. Pharmacodynamics
      TAGS:
      Effects on Circulation
      Effects on Other Organs
      Effects on Central Nervous System
      Effects on Ventilation
   4. Drug Interactions
   5. Side Effects and Toxicity
C. Intravenous Anesthetics: Opioid and Non-Opioid
   1. Indications and Contraindications
   2. Pharmacokinetics
      TAGS:
      Distribution and Redistribution
      Metabolism and Excretion
   3. Pharmacodynamics
      TAGS:
      Effects on Circulation
      Effects on Other Organs
      Effects on the Central Nervous System
      Effects on Ventilation
   4. Drug Interactions
   5. Side Effects and Toxicity
D. Local Anesthetics
   1. Indications and Contraindications
   2. Pharmacokinetics
      TAGS:
      Metabolism and Excretion
      Uptake and Distribution
   3. Pharmacodynamics
      TAGS:
      Effects on Circulation
      Effects on Other Organs
      Effects on the Central Nervous System
      Effects on Ventilation
   4. Drug Interactions
   5. Side Effects and Toxicity
E. Neuromuscular Blocking Agents: Depolarizing and Non-Depolarizing
   1. Indications and Contraindications
   2. Pharmacokinetics
TAGS:
Distribution and Redistribution
Metabolism and Excretion
Prolongation of Action

3. Pharmacodynamics
TAGS:
Differential Effects on Muscle Groups
Effects on Neuromuscular Transmission

4. Drug Interactions

5. Side Effects and Toxicity
TAGS:
Anaphylaxis
Critical Illness Myopathy

6. Reversal of Blockade
TAGS:
Antagonism
Chelation

III. CLINICAL SCIENCES: ANESTHESIA PROCEDURES, METHODS AND TECHNIQUES

A. Patient Evaluation and Preoperative Preparation

1. History and Physical Examination

2. Airway Evaluation
TAGS:
Predictors of Difficult Laryngoscopy and Intubation
Predictors of Difficult Mask Ventilation

3. Standards and Guidelines
TAGS:
ACC/AHA Guidelines on Perioperative Cardiovascular Evaluation
Indications for Preoperative Testing
Preoperative Laboratory Assessment of Hepatic Function

4. Preoperative Management of Chronic Medications
TAGS:
Anticoagulants and Antiplatelet Medications
Antihyperglycemics
Cardiovascular Medications
Central Nervous System Medications

5. Premedication
TAGS:
Antibiotics
Anxiolysis
Aspiration Prophylaxis
PONV Prophylaxis

6. Patients with Specific Disease States
TAGS:
Preoperative Evaluation of the Patient with Cardiovascular Disease
Preoperative Evaluation of the Patient with Pulmonary Disease

B. Perioperative Management of Patients with Chronic Disease States

1. Central and Peripheral Nervous System
TAGS:
III.B.1

Chronic Pain States
Dementia
Multiple Sclerosis
Parkinson
Spinal Cord Injury

2. Respiratory System
   **TAGS:**
   - Asthma
   - COPD
   - Sleep Apnea
   - Smoking

3. Cardiovascular System
   **TAGS:**
   - Coronary Artery Disease/Stents
   - Heart Failure
   - Pacemakers/Defibrillators
   - Valvular Disease

4. Gastrointestinal/Hepatic Systems
   **TAGS:**
   - Eating Disorders
   - GERD
   - Liver Failure

5. Renal and Urinary Systems
   **TAGS:**
   - End-Stage Renal Disease and Dialysis

6. Hematologic System
   **TAGS:**
   - Anemia
   - Coagulopathies
   - Sickle Cell

7. Endocrine and Metabolic Systems
   **TAGS:**
   - Diabetes
   - Morbid Obesity
   - Pheochromocytoma
   - Thyroid Disease

8. Neuromuscular Diseases
   **TAGS:**
   - Muscular Dystrophies
   - Myasthenia
   - Myopathies

9. Special Problems
   **TAGS:**
   - Allergic Reactions
   - Chemotherapy
   - Chronic Alcohol Use
   - Chronic Immunosuppression
   - Malignancy
C. Regional Anesthesia
   1. General Topics
      TAGS:
      Indications and Contraindications
      Guidelines and Standards
      Local Anesthetic Systemic Toxicity
      Nerve Stimulator Guidance
      Ultrasound Guidance

   2. Neuraxial
      TAGS:
      Complications
      Epidural Test Dose
      Factors Influencing Onset and Duration
      Indications and Contraindications
      Medications: Local Anesthetics, Opioids, Adjuncts
      Types: Caudal, Epidural, Spinal, CSE

   3. Regional Blocks
      TAGS:
      Complications
      Factors Influencing Onset and Duration
      Indications and Contraindications
      Intraneural Injections
      Medications: Local anesthetics, Opioids, Adjuncts
      Specific Blocks: Head and Neck, Upper and Lower extremity, Truncal

   4. IV Regional
      TAGS:
      Complications
      Indications and Contraindications
      Factors Influencing Onset and Duration
      Medications: Local Anesthetics, Opioids, Adjuncts

D. General Anesthesia
   1. Techniques
      TAGS:
      Combined General/Regional
      Inhalational
      Total Intravenous

   2. Airway Management
      TAGS:
      Airway Management Devices and Adjuncts
      ASA Difficult Airway Algorithm
      Complications
      Cuff Pressure Management
      Emergency Surgical Airway
      Endotracheal Tube Types
      Flexible Fiberoptic Bronchoscopy
      Indications for Endobronchial Intubation
Indications for Neuromuscular Blockade
Postoperative Considerations
Regional Airway Blocks
Translaryngeal Jet Ventilation

E. Monitored Anesthesia Care and Sedation
   1. Guidelines and Standards
   2. Levels of Sedation
   3. Sedation Guidelines for Non-Anesthesiologists

F. Asanguineous Intravenous Fluid Therapy during Anesthesia
   1. Indications and Contraindications
      **TAGS:**
      Colloids
      Hypertonic Saline
      Lactated Ringer’s
      Normal Saline
      Plasmalyte ™
   2. Complications
   3. Goal-Directed

G. Perioperative Complications: Types, Prevention, Treatment
   1. Types
      **TAGS:**
      Airway Burns
      Anaphylaxis
      Arterial Thrombosis
      Aspiration of Gastric Contents
      Bronchospasm
      Burns
      Cerebrovascular Accident
      Corneal Abrasions
      Esophageal Injury
      Hypothermia and Hyperthermia
      Laryngospasm
      Myocardial Ischemia/Infarction
      Positioning Complications
      Postobstructive Pulmonary Edema
      Postoperative Visual Loss
      Shivering
      Tourniquet, Adverse Effects of
      Unintended Intraoperative Awareness
      Vascular Trauma
      Vascular Air Embolism
      Venous Thromboembolism
   2. Prevention and Treatment
      **TAGS:**
      Airway Fire Prevention
      Management of Intraoperative Patient Temperature
      Perioperative Anticoagulation
      Strategies to Minimize Patient Harm
H. Postoperative Period
  1. Emergence and Recovery of Airway Reflexes
  2. Acute Pain Management
     **TAGS:**
     - Field Block
     - Multimodal Analgesia Strategies
     - Opioids
     - Patient-Controlled Analgesia (PCA)
     - Regional Anesthesia/Nerve Blocks
     - Systemic Local Anesthetics
  3. Respiratory Complications in the PACU
     **TAGS:**
     - Consequences of Anesthesia
     - Consequences of Surgery
  4. Cardiovascular Complications in the PACU
     **TAGS:**
     - Arrhythmias
     - Hypertension
     - Hypotension
     - Myocardial Ischemia
  5. Nausea and Vomiting
     **TAGS:**
     - Etiology
     - Multimodal Drug Therapy
  6. Residual Neuromuscular Blockade
     **TAGS:**
     - Etiology
     - Prevention
     - Recognition
     - Treatment
  7. Neurologic Consequences of Surgery and Anesthesia
     **TAGS:**
     - Cognitive Dysfunction
     - Delirium
     - Failure to Emerge from Anesthesia
     - Stroke

IV. ORGAN-BASED BASIC AND CLINICAL SCIENCES
A. Central and Peripheral Nervous Systems
  1. Anatomy
     **TAGS:**
     - Autonomic Nervous System
     - Blood-Brain Barrier
     - Brain
     - Cranial Nerves
     - Peripheral Nerves
     - Spinal Cord
     - Vascular Anatomy
     - Venous Sinuses and Drainage
2. Physiology

**TAGS:**
- Autoregulation
- Drug Effects
- Intracranial Pressure
- Metabolism
- Spinal Reflexes
- Vagal Reflex

3. Pharmacology

**TAGS:**
- Anticonvulsants
- Drug Effects on CNS Blood Flow
- Drug Effects on CNS Metabolism
- Osmotic Agents

4. Clinical Science

**TAGS:**
- Abscess
- Air Embolism
- Airway Management in the Patient with Cervical Spine Disease
- Autonomic Hyperreflexia
- Cerebrovascular Accident (CVA)
- Coma
- Drug Intoxication
- Fluid Management
- Head Stabilization in Pins
- Hydrocephalus
- Pituitary Adenomas
- Prone and Sitting Positioning: Implications
- Seizures
- Spinal Shock
- Subdural and Epidural Hematomas
- Trans-Sphenoidal Hypophysectomy
- Tumors
- Ventriculostomy

B. Respiratory System

1. Anatomy

**TAGS:**
- Alveoli/ Lung Parenchyma
- Larynx
- Musculoskeletal
- Tracheo-Bronchial tree
- Innervation
- Vascular Supply

2. Physiology: Lung Functions and Cellular Processes

**TAGS:**
- Alveolar-Arterial $O_2$ Gradient ($A-aDO_2$)
- Anion Gap
- Apneic Oxygenation
Arterial-Alveolar CO₂ Gradient (A-aDCO₂)
Central and Peripheral Chemoreceptors
CO₂ and O₂ Response Curves
CO₂ Production
Control of Ventilation
Dead Space to Tidal Volume Ratio (Vd/Vt)
Diffusion Hypoxia
Hypoxic Pulmonary Vasoconstriction
Lung Mechanics
Non-Respiratory Functions of Lungs: Immune and Metabolic
Normal Acid-Base Regulation: Buffer Systems
Pleural Pressure Gradient
Surfactant
Systemic Effects of Hypercarbia and Hypocarbia
Systemic Effects of Hypoxia and Hyperoxia
V/Q Mismatch
Work of Breathing

3. Pharmacology
   **TAGS:**
   Antiinflammatory Medications
   Bronchodilators

4. Clinical Science
   **TAGS:**
   Arterial Blood Gas Interpretation
   Abdominal Compartment Syndrome
   Asthma
   Atelectasis
   Barotrauma
   Bronchiectasis
   Bronchitis
   Bronchopleural Fistula
   Bronchopulmonary Dysplasia
   Bronchospasm: Management
   Chest Trauma
   Chest X-ray: indications and interpretation
   Complications and Side Effects of Mechanical Ventilation
   COPD
   Cystic Fibrosis
   Empyema
   Foreign Body
   Hemothorax
   Lung Abscess
   Mediastinal Masses
   Neoplasm
   Nonventilatory Respiratory Management
   Obstructive Sleep Apnea
   Oxygen Therapy and Toxicity
   Pleural Effusion
C. Cardiovascular System

1. Anatomy

**TAGS:**
Conduction System
Coronary Circulation
Innervation
Major Blood Vessels
Normal Cardiac Anatomy
Radiographic Chest Anatomy
Transesophageal Echocardiography (TEE) Views

2. Physiology

**TAGS:**
Baroreceptor Function
Cardiac Output: Regulation
Control of Heart Rate
Coronary Blood Flow Regulation
Determination of Myocardial Oxygen Demand
Diastolic Dysfunction
Normal Intracardiac Pressures
Mixed Venous Oxygen Tension and Saturation
Myocardial Contractility
Myocardial Oxygen Utilization
Preload and Afterload
Systemic and Pulmonary Vascular Resistance
Valve Function
Vascular Compliance/Venous Capacitance
Venous Return

3. Pharmacology

**TAGS:**
Angiotensin Receptor Blockers
Angiotensin Converting Enzyme Inhibitors
Antianginal Drugs
Antiarrhythmics
Betablockers
Calcium Channel Blockers
Chronotropes
Digitalis
Inotropes
Statins
Vasodilators
Vasopressors
4. Clinical Management of Disease States

**TAGS:**
- Cardiac Ischemia
- Cardiac Tamponade and Constrictive Pericarditis
- Cardiac Valvular Abnormalities
- Cardiogenic Shock
- Carotid Artery Disease
- Heart Failure and Cardiomyopathy
- Hypertrophic Cardiomyopathy
- Intracardiac Defects
- Myocardial Infarction and Acute Coronary Syndrome
- Myocarditis
- Peripheral Vascular Disease
- Pulmonary Embolism
- Pulmonary Hypertension
- Rhythm Disturbances
- Right or Left Ventricular Dysfunction

5. Special Considerations in Cardiovascular Anesthesia

**TAGS:**
- Cardiac Ablations
- Cardiac Catheterization
- Cardiac Implantable Electrical Device Management: AICD and Pacemakers
- Left Ventricular Assist Devices
- Perfusion Studies

D. Gastrointestinal/Hepatic Systems

1. Anatomy

**TAGS:**
- Arterial Blood Supply (Celiac, Superior and Inferior Mesenteric Arteries)
- Esophageal Diverticuli
- Esophageal Sphincters
- Hepatic Artery Anatomy
- Innervation-Sympathetic, Parasympathetic, and Enteric
- Portal Venous Anatomy
- Segmental Hepatic Anatomy
- Splanchnic Venous Bed

2. Physiology

**TAGS:**
- Cytochrome P450 Function and Variants
- Dual Hepatic Blood Supply
- Excretory Functions
- Factors Affecting Splanchnic Blood Volume
- Metabolic and Synthetic Functions
- Portal Hypertension

3. Pharmacology

**TAGS:**
- Drug Hepatotoxicity
- Neuromuscular Blocking Drugs
- Sedative-Hypnotic Drugs
4. Clinical Science

**TAGS:**
- Acute Hepatitis
- Anesthetic Management: Full Stomach
- Anesthetic Management: Intestinal obstruction
- Cricoid Pressure
- Esophageal Disease
- Fluid Management for Hepatic Resection
- Hepatic Encephalopathy
- Hepatic Failure
- Hepatorenal Syndrome
- Implication of Ascites
- Liver Transplantation
- Morbid Obesity/Anesthesia for Bariatric Surgery
- Nitrous Oxide and GI Surgery
- Postoperative Hepatic Dysfunction
- Postoperative Ileus

E. Renal and Urinary Systems/Electrolyte Balance

1. Clinical Science

**TAGS:**
- Factors Affecting Glomerular Filtration
- Factors Impacting Renal Blood Flow
- Hormonal Regulation of Extracellular Fluid
- Hormonal Regulation of Osmolality
- Pathophysiology of Renal Disease
- Regulation of Acid-Base Balance
- Regulation of Blood Volume
- Renal Drug Excretion
- Renal Function Tests
- Tubular Reabsorption and Secretion
- Water and Electrolytes: Distribution and Balance

2. Pharmacology

**TAGS:**
- Diuretics
- Dopaminergic Drugs
- Drug Effects on Electrolytes and Acid-Base Balance
- Pharmacologic Protection and Treatment of Renal Failure

3. Clinical Management of Disease States

**TAGS:**
- Anesthetic Management in Chronic Renal Insufficiency and Renal Failure
- Anesthetic Management for Renal Transplantation
- Anesthetic Management for Patients on Renal Replacement Therapy
- Arteriovenous (A-V) Shunts
- Perioperative Oliguria and Anuria
- Protection of Renal Function in Vascular Surgery and with Radiocontrast Exposure
- Risk Factors for Acute Renal Failure

4. Special Considerations with the Renal System

**TAGS:**
Renal Cancer with IVC Tumor Invasion
Transurethral Resection of Prostate (TURP): Complications
Urologic Surgery: Lithotripsy

F. Hematologic System
1. Anatomy
2. Physiology
   **TAGS:**
   - Compensatory Mechanisms
   - Normal Hemostatic Mechanisms
3. Pharmacology
   **TAGS:**
   - Anticoagulants and Antagonists
   - Anti-Platelet Drugs
   - Blood Substitutes
   - Coagulation Factor Replacement Therapy
   - Erythropoietin
   - Immunosuppressive and Anti-Rejection Drugs
   - Iron Therapy
4. Clinical Science
   **TAGS:**
   - Alternatives to Transfusion
   - Anemias
   - Autologous Blood Donation
   - Blood Products
   - Citrate Intoxication
   - Congenital and Acquired Factor Deficiencies
   - Disseminated Intravascular Coagulation
   - Fibrinolysis
   - Hemoglobinopathies
   - Hypothermia: Effects
   - Infections: Cytomegalovirus (CMV), HIV, Hepatitis
   - Massive Transfusion: Acquired Coagulopathy
   - Massive Transfusion Protocol
   - Porphyrias
   - Thrombocytopenia and Thrombocytopeny
   - Transfusion Complications including TACO and TRALI
   - Transfusion Indications
   - Transfusion: Infection Risks

G. Endocrine and Metabolic Systems
1. Anatomy
   **TAGS:**
   - Endocrine Tumors
2. Physiology
   **TAGS:**
   - Adrenal Cortex and Pancreas
   - Adrenal Medulla
   - Hypothalamus
   - Parathyroid
Pituitary: Anterior and Posterior
Thyroid

3. Pharmacology
**TAGS:**
- Antihyperglycemic Drugs
- Glucocorticoid Supplementation
- Mineralocorticoid Supplementation
- Somatostatin/Octreotide

4. Clinical Science
**TAGS:**
- Acromegaly
- Addison Disease
- Carcinoid Syndrome
- Cushing Disease
- Cushing Syndrome
- Diabetes Insipidus
- Diabetic Ketoacidosis
- Diabetes Mellitus
- Hyperosmolar Coma
- Inappropriate ADH Secretion
- Large Thyroid Goiter: Management
- Parathyroid Disease: Hyper and Hypoparathyroidism
- Pancreas Transplantation
- Panhypopituitarism- Substitution Therapy
- Pheochromocytoma
- Pituitary Disease: Hyper and Hypopituitarism
- Primary Aldosteronism
- Recurrent Laryngeal Nerve Injury
- Thyroid Disease: Hyper and Hypothyroidism
- Thyroid Storm Management

5. Biochemistry of Normal Body Metabolism
**TAGS:**
- Antidiuretic Hormone
- Control of Blood Glucose
- Glucagon
- Glucocorticoids
- Human Growth Hormone
- Insulin
- Lipoproteins and Triglycerides
- Liver Metabolism
- Surgical Stress Response

H. Neuromuscular System
1. Anatomy
**TAGS:**
- Acetylcholine Receptor
- Motor Neurons

2. Physiology
**TAGS:**
Factors Impacting Muscle Strength
Neuromuscular Transmission

3. Pharmacology
TAGS:
Antagonists: Anticholinesterases
Antagonists: Selective Relaxant Binding Agents
Neuromuscular Blocking Agents: Depolarizing
Neuromuscular Blocking Agents: Nondepolarizing

4. Diseases and Disorders: Clinical Science
TAGS:
Demyelinating Diseases
Myasthenic Syndromes
Primary Muscle Diseases

V. CLINICAL SUBSPECIALTIES
A. Pain Management
1. Pathophysiology
TAGS:
Acute Pain
Diabetic Neuropathy
Cancer-Related Pain
Chronic Pain States
Complex Regional Pain Syndrome: Types I and II
Neuropathic Pain States
Peripheral Neuropathies
Phantom Limb
Postherpetic Neuralgia
Post-Stroke Pain
Somatic Pain Conditions

2. Diagnostic Strategies
TAGS:
Diagnostic Blocks
Electromyography
History and Physical Exam
Imaging Modalities

3. Treatment of Painful Disease States
TAGS:
Acupuncture
Pharmacologic Therapy
Electrical Stimulation
Neuraxial Opioids
Neurolytic and Non-Neurolytic Blocks
Other Techniques: TENS
Patient-Controlled Analgesia
Peripheral Nerve Blockade and Catheters
Spinal and Epidural Analgesia
Substance Use Disorder
Sympathetic Nerve Blocks

B. Pediatric Anesthesia
1. Clinical Science

**TAGS:**
- Artificial Airway Selection
- Behavioral Development
- Infants: Fluid and Glucose Management
- Infants: Respiratory Physiology
- Infants: Thermoregulation
- Malignant Hyperthermia: Susceptibility and Management
- Neonates: Transitional Circulation
- Organ Function Changes During Development
- Parental Presence
- Upper Respiratory Infections (Colds)

2. Pharmacology

**TAGS:**
- Age-Related Pharmacodynamics and Pharmacokinetics
- Anesthetic Drugs and Adjuvants
- Induction Techniques
- Inhalational Anesthetics
- Intravenous Anesthetics
- Local Anesthetics
- Opioid Tolerance and Sensitivity
- Succinylcholine: Complications

3. Clinical Management of Disease States

**TAGS:**
- Anemias: Congenital and Acquired
- Bronchopulmonary Dysplasia
- Cerebral Palsy
- Chromosomal Abnormalities
- Coagulopathies: Congenital and Acquired
- Congenital Heart Disease
- Congenital Tumors: Wilm’s and Neuroblastoma
- Cystic Fibrosis
- Developmental Abnormalities
- Diaphragmatic Hernia
- Endocrine Diseases: Childhood Diabetes
- Endocrine Diseases: Congenital Adrenal Hyperplasia
- Epiglottitis
- Hydrocephalus and Shunts
- Inborn Errors of Metabolism
- Inherited Musculoskeletal Disorders
- Juvenile Rheumatoid Arthritis
- Laryngotracheobronchitis
- Myelomeningocele
- Obesity
- Obstructive Sleep Apnea
- Omphalocele and Gastroschisis
- Peritonsillar Abscess
- Pyloric Stenosis
Scoliosis
Tracheo-esophageal Fistula

4. Special Considerations in Pediatric Anesthesia

TAGS:
Airway Foreign Bodies
Apnea of Prematurity
Bladder and Urethral Malformations
Bronchoscopy: Flexible and Rigid
Cleft Lip and Palate
Congenital Hip Dysplasia
Craniofacial Abnormalities
Difficult Airway Management
Difficulty with IV Access
Jet Ventilation
Laryngoscopy Techniques
Laryngospasm
Laser Implications
Pediatric Regional Anesthetic Techniques
Pediatric Sedation
PONV Management
Postoperative Pain Management: Codeine
Premedication Techniques
Problems with Intubation and Extubation
Propofol Infusion Syndrome
Strabismus
Stridor
Tonsillectomy and Adenoidectomy
Ureteral Reimplantation

C. Obstetric Anesthesia

1. Clinical Science

TAGS:
Anesthetic Complications
Anesthetic Risks
Coagulation Changes
Combined Spinal/Epidural Technique
Neuraxial Anesthetic Techniques: Epidural, Spinal, and Caudal
Neuraxial Labor Analgesia
Paracervical Block
Physiology of Labor
Pudendal Block
Systemic Labor Analgesia

2. Pharmacology

TAGS:
Anesthetic Drugs and Adjuvants
Drug Effects on Newborn
Drug Metabolism
Fetal Disposition of Drugs
Magnesium Sulfate
Mechanisms of Placental Transfer
Oxytocic Drugs
Protein Binding of Drugs
Tocolytic Drugs

3. Clinical Management of Disease States

TAGS:
Amniocentesis
Amniotic Fluid Embolism
Antepartum Hemorrhage
Antepartum Fetal Therapy
Anticoagulant Therapy
Cardiovascular Disease
Dystocia
Ectopic Pregnancy
Endocrine Disease
Ex-utero Intrapartum Treatment (EXIT)
Fever and Infection
Fetal Malposition
Fetal Malpresentation
Gestational Trophoblastic Surgery Disease
Hematologic Disease
Maternal Cardiopulmonary Resuscitation
Multiple Gestation
Neurologic Disease
Placenta Abruption
Placenta Accreta/Increta/Percreta
Placenta Previa
Postpartum Hemorrhage
Preeclampsia and Eclampsia
Preterm Labor
Renal Disease
Respiratory Disease
Resuscitation of Newborn
Retained Placenta
Rh and ABO Incompatibility
Spontaneous Abortion
Trial of Labor after Cesarean (TOLAC)
Umbilical Cord Blood Gas Measurements
Umbilical Cord Prolapse
Uterine Atony
Uterine Rupture

4. Special Considerations in Obstetric Anesthesia

TAGS:
Abnormal Placenta
Antepartum Fetal Assessment
Aorto-Caval Compression
Cesarean Delivery: Elective Anesthesia
Cesarean Delivery: Emergency Anesthesia
Cesarean Delivery: Indications
Difficult Airway
Gastroesophageal Sphincter Function
Influence of Anesthetic Technique on Labor
Intrapartum Fetal Monitoring
Intrauterine Fetal Resuscitation
Neonatal Assessment: Apgar Score
Nonobstetric Anesthesia in Pregnancy
Operative Vaginal Delivery
Pulmonary Aspiration
Regulation of Uterine Blood Flow
Thermoregulation

5. Maternal Physiology
   TAGS:
   Acid Base Changes
   Airway Changes
   Anatomic Position
   Barrier Function
   Cardiovascular Changes
   Coagulation Changes
   Gastrointestinal Changes
   Hematologic Changes
   Nervous System Changes
   Renal Changes
   Respiratory Changes

6. Maternal-Fetal Considerations

7. Pathophysiology of Complicated Pregnancy

D. Otorhinolaryngology (ENT) Anesthesia
1. Surgical Procedures
   TAGS:
   Airway Endoscopy
   Microlaryngeal Surgery
   Radical Neck Dissection
   Sinus Endoscopy
   Tonsillectomy
   Uvulopalatopharyngoplasty

2. Laser Surgery
   TAGS:
   Airway Fires
   Lasers: Safety Implications
   Laser-Safe Endotracheal Tubes

3. Anesthetic Management
   TAGS:
   Airway Management
   Choice of Anesthetic
   Effects of Radiation Therapy
   Jet Ventilation
   Ventilation Strategies
E. Anesthesia for Plastic Surgery
   1. Liposuction
   2. Tumescent – Volume Overload
   3. Fire Risk
   4. Local Anesthetic Toxicity
F. Anesthesia for Laparoscopic Surgery
   1. Surgical Procedures
      TAGS:
      Appendectomy
      Bariatric Surgery
      Cholecectomy
      Gynecologic Procedures
      Hiatus Hernia Repair
   2. Anesthetic Management
      TAGS:
      Monitoring
      Patient Positioning
      Ventilation
   3. Risks
      TAGS:
      Hemorrhage
      Hypercapnea
      Hypotension
      Subcutaneous Emphysema
      Vascular or Organ Perforation
G. Ophthalmologic Anesthesia
   1. Clinical Science
      TAGS:
      Retrobulbar and Peribulbar Blocks
   2. Pharmacology
   3. Clinical Management of Disease States
      TAGS:
      Open Eye Injuries
   4. Special Considerations in Ophthalmologic Anesthesia
H. Orthopedic Anesthesia
   1. Tourniquet Management
      TAGS:
      Ischemia
      Nerve Injury
      Reperfusion
   2. Spinal Surgery
      TAGS:
      Neurophysiologic Monitoring
      Postoperative Visual Loss
   3. Complications
      TAGS:
      Blood Loss
      Fat Embolism
Methyl Methacrylate
Positioning Injury
Venous Air Embolism

4. Regional vs. General Anesthesia
5. Special Considerations in Orthopedic Surgery
**TAGS:**
Ankylosing Spondylitis
Rheumatoid Arthritis
Scoliosis
Thromboprophylaxis

I. Trauma Anesthesia
1. Primary Survey and Resuscitation
   **TAGS:**
   Emergency Airway
   Hemorrhagic Shock
   Initial Evaluation
   Mass Casualty Response
   Penetrating vs. Blunt Trauma
   Prehospital and EMS
   Team Function in Trauma
   Triage
2. Secondary Survey and Stabilization
   **TAGS:**
   Fluid Management
   Hemostatic Resuscitation
   Hypothermia
   Massive Transfusion
   Monitoring
   Protection of Cervical Spine
3. Organ System Trauma
   **TAGS:**
   Abdominal Trauma
   Aortic and Vascular Trauma
   Orthopedic and Soft Tissue Trauma
   Spinal Cord
   Thoracic Trauma
   Traumatic Brain Injury
   Traumatic Coagulopathy
4. Thermal and Electrical Injury
   **TAGS:**
   Airway Management
   Carbon Monoxide/Carboxyhemoglobin
   Fluids and Electrolytes
   Inhalation Injury
   Non-depolarizing Muscle Relaxants
   Succinylcholine Use
   Vasoconstrictor Effects and Complications
5. Special Considerations in Trauma Anesthesia
   **TAGS:**
Decontamination  
Exposure/Hypothermia  
Near Drowning  
Nuclear, Biological, and Chemical Injury  
Pain Management  
Pediatric Trauma  

J. Anesthesia for Ambulatory Surgery  
1. Patient Selection and Preoperative Management  
2. Anesthetic Management  
3. Discharge Criteria and Postoperative Follow-Up  
   **TAGS:**  
   Continuous Nerve Blocks  
4. Office-Based Anesthesia  
   **TAGS:**  
   Equipment  
   Organization  
   Patient Management  
   Safety  

K. Geriatric Anesthesia/Aging  
1. Preoperative Evaluation  
   **TAGS:**  
   Co-Existing/Chronic Disease Processes  
   Medication Management  
   Risk Reduction and Stratification  
2. Organ Function Changes with Aging  
   **TAGS:**  
   Cardiovascular System  
   Central Nervous System  
   Endocrine System  
   Hematologic System  
   Hepatic System  
   Renal System  
   Respiratory System  
3. Pharmacology  
   **TAGS:**  
   Adverse Response to Medications  
   Beers Criteria  
   Changes in PK/PD with Aging  
4. Anesthetics  
   **TAGS:**  
   General  
   Local  
   Monitored Anesthesia Care  
   Regional  
5. Fluid Management  
6. Pain Management  
7. Thermoregulation  
8. Ethics and Informed Consent
9. Postoperative Care and Transitions of Care

**TAGS:**
- Delirium
- Postoperative Cognitive Dysfunction

10. Patient Safety

L. Critical Care Anesthesia

1. Central Nervous System Dysfunction

**TAGS:**
- Altered Mental Status
- Brain Death
- Brain Trauma
- Metabolic Encephalopathy
- Neuromuscular Pathology
- Spinal Cord Compromise
- Stroke: Ischemic or Hemorrhagic
- Subarachnoid, Epidural Bleed

2. Cardiac Dysfunction/Failure

**TAGS:**
- Cardiac Interventions: Lysis, Catheter, PCI, Pacer
- Cardiogenic Shock
- Congestive Heart Failure
- Device Management
- Dysrhythmias
- Myocardial Ischemia/Infarction
- Vascular Disease: Aneurysm, Dissection, Thrombosis

3. Respiratory Dysfunction/Failure

**TAGS:**
- Acute Lung Injury/Acute Respiratory Distress Syndrome
- Acute or Chronic Respiratory Insufficiency or Failure
- ECMO
- Noninvasive Ventilatory Support
- Mechanical Ventilation
- Thromboembolic Disease: DVT/PE

4. Immune Dysfunction/Infection

**TAGS:**
- Antimicrobial Resistance
- Antimicrobials: Antibiotics, Antivirals, Antifungals, Antiparasitics
- Autoimmune Disease
- General and Universal Precautions
- Hand Washing
- Hospital Acquired Infection
- Immunosuppression
- Infection Control
- Needle Stick Injury
- Sepsis
- Septic Shock

5. Hepatic Dysfunction/Failure

**TAGS:**
6. Renal Dysfunction/Failure

**TAGS:**
- Acute Kidney Injury
- Chronic Kidney Disease
- Dialytic Support: CRRT, IHD
- End-stage renal disease

7. Hematologic Dysfunction

**TAGS:**
- Anemia, Neutropenia, Thrombocytopenia, Pancytopenia
- Anticoagulation/Antiplatelet/Antifibrinolytic Therapy
- Bone Marrow Transplant
- Coagulopathy: DIC, Consumptive, Dilutional
- Transfusion Therapy

8. Gastrointestinal Dysfunction

**TAGS:**
- Hemorrhage
- Ileus
- Inflammatory/Infectious

9. Endocrine Dysfunction

**TAGS:**
- Adrenal
- Pancreatic
- Pituitary
- Thyroid

10. Dermatologic Dysfunction

11. Additional Critical Care Topics

**TAGS:**
- Drug Overdose
- Epidemic Management
- ICU Management/Organization
- ICU Monitoring
- ICU Procedures
- Multi-Organ Failure
- Nutritional Support
- Toxicology
- Transplantation management

M. Neuroanesthesia

1. Clinical Science

**TAGS:**
- Factors Impacting Cerebral Blood Flow
- Factors Impacting Intracranial Pressure
- Factors Impacting Neuronal Function

2. Pharmacology
3. Clinical Management of Disease States

TAGS:
Arteriovenous Malformations
Brainstem
Cerebellar Resection: Implications
Cervical Spine Disease
Coma
Hydrocephalus
Intracranial Aneurysms
Intracranial Masses
Intracranial Vascular Lesions
Moyamoya Disease
Pituitary Adenomas
Skull-base Tumors
Traumatic Brain Injury

4. Special Considerations in Neuroanesthesia

TAGS:
Cerebral Blood Flow
Cerebral Herniation
Cerebral Ischemia
Cerebral Vasospasm
Interventional Radiology
Intraoperative MRI
Neurophysiologic Monitoring
Patient Positioning
Seizures
Spinal Drains
Venous Air Embolism
Ventriculostomy

N. Thoracic Anesthesia

1. Clinical Science

TAGS:
Anesthetic Techniques for Thoracic and Pulmonary Surgery
Anesthetic Techniques for Thoracoscopic Surgery
Hypoxic Pulmonary Vasoconstriction
Ventilation-Perfusion Matching

2. Pharmacology

TAGS:
Bronchodilators
Fluid Management
Pulmonary Vasodilators

3. Clinical Management of Disease States

**TAGS:**
- Bronchopulmonary Fistula
- Bullae/Recurrent Pneumothorax
- Chronic Obstructive Pulmonary Disease
- Empyema
- Endocrine-Secreting Tumors
- Myasthenia Gravis/Myasthenic Syndromes
- Reactive Airways Disease
- Restrictive Pulmonary Disease

4. Special Considerations in Thoracic Anesthesia

**TAGS:**
- Esophageal Resection
- Hypoxemia
- Isolated Lung Ventilation
- Jet Ventilation
- Lung Resection
- Mediastinal Masses
- Mediastinoscopy
- Pain Management
- Pleural Disease
- Pneumonectomy
- Rigid Bronchoscopy
- Thymectomy
- Tracheal Resection

O. Cardiac Anesthesia

1. Clinical Science

**TAGS:**
- Factors Impacting Cardiopulmonary Pressures
- Factors Impacting Contractile Heart Function
- Factors Impacting Coronary Blood Flow
- Myocardial Ischemia/Reperfusion

2. Pharmacology

**TAGS:**
- Antiarrhythmics
- Anti-Platelet Agents
- Beta Blockers
- Chronotropes
- Heparin
- Inotropes
- Protamine
- Statins
- Vasodilators and Constrictors

3. Clinical Management of Disease States

**TAGS:**
- ACLS/BLS
- Aortic Aneurysm - Thoracic
Aortic Dissection
Aortic Insufficiency
Aortic Stenosis
Arrhythmias
Atrial Septal Defects
Carcinoid Heart Disease
Congenital Heart Disease in Adults
Congestive Heart Failure
Diastolic Dysfunction/Heart Failure
Endocarditis
Hypertrophic Cardiomyopathy
Ischemic Cardiomyopathy
Ischemic Coronary Disease
Mitral Regurgitation
Mitral Stenosis
Non-ischemic Cardiomyopathy
Pericardial Effusion/Tamponade
Post Cardiac Arrest Care/Normothermia/Hypothermia
Pulmonary Valve Disease
Tricuspid Regurgitation
Tricuspid Stenosis
Ventricular Septal Defects

4. Special Considerations in Cardiac Anesthesia

TAGS:
Anticoagulation and Reversal
Blood Conservation
Circulatory Assist Devices
Electrophysiologic Procedures
Extracorporeal Circulation
Pacemaker Function and Application
Unintended Intraoperative Awareness

P. Vascular Anesthesia

1. Clinical Science

TAGS:
Cardiac Risk Assessment
Factors Affecting Organ/Peripheral Perfusion

2. Pharmacology

TAGS:
Heparin
Protamine
Statins

3. Clinical Management of Disease States

TAGS:
Aortic Aneurysm
Atherosclerosis
Carotid Stenosis
Peripheral Vascular Disease

4. Special Considerations in Vascular Anesthesia
Q. Regional Anesthesia

1. General Topics

TAGS:
Anticoagulation inRegional Anesthesia
Block Performance Assessment - Competency
Guidelines and Standards
Indications and Contraindications
Informed Consent
Nerve Localization: Nerve Stimulator
Nerve Localization: Paresthesia, Landmark Approaches
Nerve Structural Anatomy
Sedation and Monitoring

2. Pharmacology

TAGS:
Epidural Local Anesthetics
Epidural Opioids
Intralipid Therapy
Intrathecal Local Anesthetics
Intrathecal Opioids
Liposomal Bupivacaine
Local Anesthetic Pharmacology
Local Anesthetic Selection
Markers of Vascular Injection
Minimal Local Anesthetic Volume and Concentration
Perineural Adjuncts

3. Neuraxial Anesthesia

TAGS:
Caudal Anesthesia
Combined Spinal Epidural Anesthesia
Complications
Epidural Anesthesia
Epidural Blood Patch
Epidural Space and Spine Anatomy and Sonoanatomy
Epidural Test Dose
Factors Influencing Onset and Duration
Indications and Contraindications
Infusion Settings
Medications: Local Anesthetics, Opioids, Adjuncts
Patient Controlled Epidural Analgesia
Subarachnoid Block

4. Upper Extremity Regional Anesthesia

TAGS:
Brachial Plexus Anatomy and Sonoanatomy
Cervical Plexus Blocks: Superficial, Deep
Major Brachial Plexus Blocks: Interscalene, Supraclavicular, Infracavicular, Axillary
Minor Brachial Plexus Blocks: Suprascapular, Axillary Nerve, Median, Radial, Ulnar

5. Lower Extremity Regional Anesthesia

TAGS:
Ankle Block
Lumbar Plexus, Femoral, and Saphenous Anatomy and Sonoanatomy
Inguinal Region Nerve Blocks: Femoral, LFCN, Obturator, Fascia Iliaca, 3-in-1
Saphenous, Adductor Canal Blocks
Sciatic Nerve and Sacral Plexus Anatomy and Sonoanatomy
Sciatic Nerve Blocks: Popliteal, Transgluteal, Infragluteal

6. Truncal Regional Anesthesia

TAGS:
Abdominal Wall Blocks: TAP, Ilioinguinal, Iliohypogastric, Rectus Sheath
Anterior and Lateral Chest Blocks: PECS, Serratus
Paravertebral Anatomy and Sonoanatomy
Paravertebral Blocks
Posterior Truncal Blocks: Quadratus Lumborum, Erector Spinae, Retrolaminar
Truncal Block Anatomy and Sonoanatomy

7. Complications and Side Effects

TAGS:
Epidural Hematoma
Falls
Infection: Epidural Abscess
Intraneural Injections
Local Anesthetic Systemic Toxicity
Neuropraxia, Nerve injury
Opioid
Phrenic Nerve Block
Postdural Puncture Headache
Rebound Pain

8. Ultrasound-Guided Regional Anesthesia

TAGS:
Factors Influencing Onset and Duration
Image Generation and Display
Medications: Local Anesthetics, Opioids, Adjuncts
Needle and Probe Alignment
Ultrasound Artifacts
Ultrasound Physics

9. Continuous Anesthesia

TAGS:
Ambulatory Regional Anesthesia
Indications and Contraindications
Perineural Infusions: Medications, Pumps, Dosing Parameters

10. IV Regional

TAGS:
Complications
R. Acute Pain Management

1. Analgesic Pharmacology

**TAGS:**
- Acetaminophen
- Alpha-2 agonists
- Anticonvulsants
- Antidepressants
- Gabapentinoids
- Intravenous Local Anesthetic Infusions
- Intravenous Medications
- Multimodal Analgesia
- Muscle Relaxants
- NMDA Antagonists
- NSAIDs/COX-2 Inhibitors
- Opioid Agonists, Antagonists
- Opioids
- Oral/Transdermal Opioids
- Parenteral Medications
- Patient-Controlled Analgesia
- Transdermal Medications

2. Alternative Analgesic Modalities

**TAGS:**
- Acupuncture
- Complimentary Therapies
- Hypnosis
- TENS Therapy

3. Acute Pain Evaluation and Treatment

**TAGS:**
- Acute on Chronic Pain
- Cancer Pain
- Discharge Planning
- Escalation of Therapy
- Inflammatory Pain
- Neuropathic Pain
- Nociceptive Pain
- Opioid Conversion
- Opioid-Induced Hyperalgesia
- Opioid Tolerance
- Oral Therapy
- Parenteral Therapy
- Patient-Controlled Analgesia
- Physical Therapy
- Psychiatric Comorbidities
- Substance Use Disorder
- Transdermal Therapy
Transition to Chronic Pain

4. Monitoring and Safety
   TAGS:
   Cardiopulmonary Monitoring
   Complications and Side Effects
   Controlled Substance Prescribing
   Drug Testing
   Legal Issues
   Level of Care

VI. SPECIAL PROBLEMS OR ISSUES IN ANESTHESIOLOGY

A. Electroconvulsive Therapy
   1. Physiology
      TAGS:
      Central Nervous System Effects
      Hemodynamic Effects
   2. Pharmacology
      TAGS:
      Anticholinergics
      Beta Blockers
      Sedative-hypnotics
      Vasodilators

B. Organ Donors
   1. Pathophysiology
   2. Clinical Management
      TAGS:
      Criteria for Brain Death
      Donation after Cardiac Death

C. Radiologic Procedures
   1. CT Scan
      TAGS:
      Intravenous Contrast
   2. MRI-Anesthetic Implications/Management
      TAGS:
      Magnet Safety
      Monitoring
   3. Anesthesia in Locations Outside the Operating Room
      TAGS:
      Airway Management
      Monitoring Requirements
      Radiation Therapy

D. Physician Impairment or Disability
   1. Substance Abuse
   2. Fatigue
   3. Aging
   4. Visual and Auditory Impairment
   5. Americans with Disabilities Act (ADA)
   6. Abusive or Disruptive Physicians
   7. Sexual Harassment
E. Ethics, Practice Management and Medicolegal Issues

1. Professionalism and Licensure
2. Ethics
   TAGS:
   Do Not Resuscitate (DNR) Orders and Advance Directives
   End-of-Life Issues (Withholding/Withdrawal)
   Jehovah’s Witness Patient Care
3. Informed Consent
   TAGS:
   Components
   Principles
4. Malpractice
   TAGS:
   Anesthetic Accidents
   Closed Claims Findings
   Definition
   Expert Testimony
   Legal Actions and Consequences
   National Practitioner Database
   Professional Liability Insurance
5. Practice Management
   TAGS:
   Health Insurance Portability and Accountability Act (HIPAA)
   Medicare/Medicaid Requirements
   Patient Privacy Issues
6. Costs of Medical/Anesthesia Care
   TAGS:
   Operating Room Management
7. Patient Safety
   TAGS:
   Disclosure of Errors to Patients
   Medication Errors: Assessment and Prevention
8. Healthcare Disparities
   TAGS:
   Approaches to Reducing Disparities (Race and Ethnicity, Gender, Sexual Identity and
   Orientation, Disability Status, Geographic Location)
   Cultural Competency
   Determinants of Disparities, Including Systemic Racism
   Effects of Disparities on Access to and Quality of Care
   Effects of Disparities on Outcomes and Health Status
   Social Determinants of Health
9. Diversity, Equity, and Inclusion (DEI) in the Healthcare Workplace
   TAGS:
   Approaches to Improving DEI in Healthcare
   Gender Equity in the Workplace
   Rationale for DEI in Healthcare
   Threats to DEI, Including Unconscious Bias, Microaggressions, and Stereotype Threat
VII. QUALITY IMPROVEMENT
   A. Quality Assurance and Performance Improvement
      1. Design and Implementation of a QI project
         TAGS:
         Tools for Process Improvement
         QI Methods
      2. Communication and Reporting
         TAGS:
         Outcomes Registries
         Public Reporting
      3. Analysis/Assessment of Information
         TAGS:
         Artificial Intelligence
         Data Analytics
         Failure Modes and Effects Analyses
         Morbidity and Mortality
         Peer Review
         Quality Reporting and Dashboards
         Root Cause Analyses
      4. Patient Safety
         TAGS:
         Communication
         Culture of Safety
         Epidemiology of Error
         Evidence-Based Practice
         Human Factors
         Methods and Tools for Evaluating Safety Events
         Outcomes Improvement
         Prevention of Harm/Complications
         Safety Enhancing Technology
         Systems Thinking and the Effect of the System on Patient Safety

VIII. OVERVIEW OF ANESTHESIOLOGY TOPICS
   A. Review of Current Topics in Anesthesiology

IX. CRITICAL CARE MEDICINE
   A. Basic Pathophysiology
      1. Central Nervous System
         TAGS:
         Altered Mental Status
         Brain Death
         Central Pontine Myelinolysis
         Cerebral Blood Flow
         Embolic/Thrombotic
         Hemorrhagic
         Infection
         Intracranial Compliance, Mass Lesion
         Ischemic
         Neuromuscular Disorders
         Seizures and Status Epilepticus
         Spinal Cord Injury
IX.A.1

Stroke
Vascular Malformations

2. Cardiovascular

**TAGS:**
Aneurysm, Abdominal
Aneurysms, Thoracic
Aortic Insufficiency
Aortic Stenosis
Aortic Valve
Asystole
Cardiac Contusion
Cardiac Transplantation
Cardiogenic
Congenital Heart Disease in Adults
Coronary Artery Disease, Myocardial Ischemia/Infarction
Diastolic Dysfunction
Dissections
Distributive
DVT
Eisenmenger Syndrome
Endocarditis
Heart Block
Hypertension
Hypertrophic Cardiomyopathy (HOCM, ASH, IHSS)
Hypovolemic
Infection/Inflammation
Intracardiac Shunts
Junctional or Nodal Rhythm
Left Ventricular
Mitral Regurgitation
Mitral Stenosis
Mitral Valve
Myocardial Function/Dysfunction
Myocarditis
Obstructive
Other Conduction Abnormalities
Other Myocardial
Oxygen Supply and Demand
Pericardial
Pericarditis
Peripheral Vascular Disease
Pulmonary Hypertension
Pulmonary Valve
Pulmonic Insufficiency
Pulmonic Stenosis
Pulseless Electrical Activity (PEA)
Rhythm Disturbances
Right Ventricular
Shock States
Structural
Supraventricular Tachyarrhythmias, Including Atrial Flutter, Fibrillation
Systemic Hypertension
Systolic Dysfunction
Tetralogy of Fallot
Trauma
Tricuspid Valve Dysfunction
Valvular
Ventricular Tachycardia/Fibrillation

3. Pulmonary
TAGS:
Airway Diseases
Airway Disruption
ARDS
Aspiration
Bronchopleural Fistula
Central
Chest Trauma
Community-acquired
Embolic Disorders
Empyema/Abscess
Health-care Associated
Hypercapnic (Acute and Chronic)
Hypoxic (Acute and Chronic)
Infection
Inflammatory and Autoimmune Diseases
Lung and Chest Wall Tumors
Lung Transplantation
Mediastinitis
Obstructive
Other Ventilation-Perfusion Abnormalities
Pleural Effusion
Pneumonia
Pneumothorax, Volutrauma
Pulmonary Mechanics
Reactive
Respiratory Failure
Restrictive
Sleep Apnea
Tracheal Disruption
Tracheobronchitis
TRALI
Ventilator-associated

4. Renal
TAGS:
Acute Kidney Injury
Infection
Intrinsic Renal
Post-Renal
Pre-Renal
Renal Tubular Acidosis

5. Hematologic/Oncologic

**TAGS:**
Acquired
Anemia
Bone Marrow/Stem Cell Transplantation
Carboxyhemoglobin
Coagulopathies
Congenital
DIC
Fibrinolysis
Hemoglobin Abnormalities
Isolated Factor Abnormalities
Leukemia, Lymphoma
Methemoglobin
Other Hemoglobinopathies
Polycythemia
Platelet Abnormalities
Thrombocytopenia
Thrombocytosis
Tumor Lysis Syndrome
Vitamin K Dependent Coagulopathy
White Blood Cell Disorder

6. Obstetric

**TAGS:**
Airway Changes
Coagulopathy, Bleeding Disorders
Complications of Pregnancy
Emboli
Liver Function Abnormalities
Physiology of Pregnancy
Pre-Eclampsia/Eclampsia
Pulmonary Physiology
Respiratory Physiology of Pregnancy

7. Endocrine

**TAGS:**
Adrenal
Adrenal Insufficiency
Cerebral Salt Wasting
Critical Illness Effects on Thyroid Function
Cushing Syndrome
Diabetes Insipidus, Including Central, Nephrogenic
Diabetes Mellitus
Hyperglycemia, Diabetic Ketoacidosis (DKA), Nonketotic Hyperglycemic Coma (NKHC)
Hyperthyroidism, Including Thyroid Storm
Hypoglycemia
Hypothyroidism, Including Myxedema
Pheochromocytoma
Pituitary
SIADH
Thyroid Function Abnormalities

8. Gastrointestinal
**TAGS:**
Abdominal Compartment Syndrome
Bowel Disorders
Diarrhea, Nausea, Vomiting
Gall Bladder Disease (Stones, Cholecystitis)
GI Hemorrhage
GI Motility Dysfunction
Hepatic
Hepatic Dysfunction/Failure (Acute and Chronic)
Hepatic Encephalopathy
Hepatitis
Hepatocellular Carcinoma
Hepatorenal Syndrome
Ileus
Infectious
Lower
Malabsorption
Pancreas
Pancreatic Cancer
Pancreatitis
Perforation, Volvulus
Pseudomembranous Colitis
Stomach
Toxic Megacolon
Upper
Vascular Diseases

9. Dermatologic
**TAGS:**
Allergic Reactions
Cellulitis
Disruption of the Skin Barrier
Infection
Inflammatory Diseases of the Skin
Necrotizing Fasciitis
Stevens Johnson Syndrome

10. Immunologic/Infectious Disease
**TAGS:**
Acquired
Autoimmune
Congenital
Graft vs. Host Disease
HIV/AIDS
Immune Suppression
Mixed Connective Tissue Disease
RA
Sepsis
SIRS
SLE
Therapeutic
Vasculitides

11. Acid-base and Electrolyte Abnormalities

**TAGS:**
- Acid-base Abnormalities
- Calcium
- Chloride
- Electrolyte Abnormalities
- Magnesium
- Metabolic
- Mixed
- Phosphorus
- Potassium
- Respiratory
- Sodium

B. Critical Illness Diagnosis and Management

1. Central Nervous System

**TAGS:**
- Abscess
- Altered Mental Status
- Angiography
- Anticonvulsants
- Antimicrobials
- Brain Death
- Coma
- Critical Illness Polyneuropathy
- Degenerative Disease of the Brain
- Delirium
- Demyelinating
- Diagnoses
- Diagnostic Modalities
- EEG, Processed EEG
- Embolic/Thrombotic
- Encephalitis
- Evoked Potential
- Guillain-Barré Syndrome
- Hallucinations
- Head Injury, Closed or Open
- Hemorrhagic (Subarachnoid, Subdural, Epidural Hematoma)
- ICP Measurement
- ICP-Controlling Medications
Infectious Management Strategies
Meningitis/Ventriculitis Myasthenia Gravis Myopathy Nerve Conduction Studies/EMG Neuromuscular Disorders Neuroprotectants Nuclear Medicine Studies Other Imaging Other Therapies Pituitary Disorders Plasmapheresis/Plasma Exchange Seizures and Status Epilepticus Spinal Cord Injury Steroids Stroke Subarachnoid, Subdural, Epidural Hematoma Surgical Interventions Transcranial Doppler Vascular Malformations Vasoactive Drugs

2. Cardiovascular

TAGS:
Acquired ASD, VSD AICDs Aneurysm, Abdominal Aneurysms, Thoracic Anticoagulants and Antithrombotics Antidysrhythmics Antifibrinolytics Antihypertensives Antimicrobials Antiplatelet Agents Aortic Arterial Pressure Asystole Atrial Flutter/Fibrillation Biomarkers Cardiac Contusion Cardiac Output Monitoring Cardiac Transplantation, Rejection, Complications Cardiac Ultrasound (TTE, TEE) Cardiogenic
Cardiomyopathy
Circulatory Support Systems
Congenital Heart Disease in Adults
Coronary Artery Disease, Myocardial Ischemia/Infarction
CT, MRI
CVP
Diagnoses
Diagnostic Modalities
Diastolic Dysfunction
Dissections
Distributive
ECG
ECMO
Eisenmenger Syndrome
Endocarditis
External Defibrillators
Heart Block
Hemodynamic Monitoring
Heparin
Heparinoids
Hypertension
Hypertrophic Cardiomyopathy (HOCM, ASH, IHSS)
Hypovolemic
Imaging
Infectious
Inotropes/Chronotropes/Lusitropes
Insufficiency
Interventional Imaging
Intraaortic Balloon Pump
Junctional or Nodal Rhythm
Left or Right Ventricular Assist Device
Left Ventricular
LMWH
Management Strategies
Mitral
Myocardial Function/Dysfunction
Myocarditis
Non-infectious Myocarditis
Nuclear Imaging
Obstructive
Other Bedside Ultrasound
Other Conduction Abnormalities
Other Myocardial
Pacemakers/Defibrillators
Papillary Muscle Dysfunction
Pericardial
Pericardial Effusion
Pericardiocentesis
Pericarditis
Peripheral Vascular Disease
Pulmonary Hypertension
Pulmonic Valve Disease
Pulseless Electrical Activity (PEA)
Regurgitation
Rhythm Disturbances
Right Ventricular
Shock States
Stenosis
Stress-Induced Cardiomyopathy
Structural
Stunned Myocardium
Supraventricular Tachyarrhythmias, Other
Systemic Hypertension
Systemic Oxygen Supply and Demand
Systolic Dysfunction
Tamponade
Tetralogy of Fallot
Thrombin Inhibitors
Thrombolytics
Transthoracic
Transvenous/Epicardial
Traumatic
Tricuspid Valve Disease
Unfractionated
Valvular
Vasoactive or Modulating Drugs
Vasoconstrictors
Vasodilators
Ventricular Tachycardia/Fibrillation
Warfarin

3. Pulmonary

**TAGS:**

Air
Airway Diseases
Airway Disruption
Airway Pressure-Release Ventilation
Antimicrobials/Antivirals
ARDS
Arterial Blood Gas
Aspiration
Assist Control
BIPAP
Capnography
Chest Trauma
Chest X-ray
Community-acquired
CPAP
CT/MRI
Diagnoses
Diagnostic Modalities
Differential Lung Ventilation
Embolic Disorders
Empyema/Abscess
Fat
Health Care Associated
High-Frequency/Oscillation
Hypercapnic (Acute and Chronic)
Hypoxic (Acute and Chronic)
Imaging
Infection
Inflammatory and Autoimmune Diseases
Invasive Ventilation Modes
Laryngoscopy and Bronchoscopy
Lung and Chest Wall Tumors
Lung Transplantation, Rejection, Complications
Management of Bronchopleural and Bronchocutaneous Fistulae
Management Strategies
Mediastinitis
Noninvasive
Nuclear Studies
Obstructive
Other Ventilator Strategies
PC/Volume Control
Pleural Drainage and Evacuation
Pleural Effusion
Pneumonia
Positioning
Pressure-Support Ventilation
Pulmonary Function Studies/Pulmonary Mechanics
Pulmonary Medications
Pulse Oximetry
Reactive
Respiratory Failure
Restrictive
SIMV
Sleep Studies
Spontaneous Breathing Trials
Thoracentesis
Thromboembolic
Tracheobronchitis
TRALI
Ultrasound
Vaccination (Pneumovax)
Ventilator Associated
4. Renal

**TAGS:**
- Angiography
- Antimicrobials/Antifungals
- Biomarkers
- Buffers
- Continuous Renal Replacement Therapies Including Ultrafiltration
- Contrast Induced-Nephropathy
- CT/MRI
- Diagnoses
- Diagnostic Modalities
- Diagnostic X-ray
- Diuretic Therapy
- Electrolytes, Osmolarity, and Specific Gravity (Serum, Urine)
- Fluid and Electrolyte Management
- Imaging
- Infection
- Intermittent Hemodialysis
- Intrinsic Renal Management Strategies
- N-Acetylcysteine
- Peritoneal Dialysis
- Pharmacologic Therapies
- Post-Renal
- Pre-Renal
- Renal Biopsy
- Renal Failure
- Renal Replacement Therapies
- Renal Transplantation
- Renal Trauma
- Renal Tubular Acidosis
- Ultrasound

5. Hematologic/Oncologic

**TAGS:**
- Acquired
- Anemia
- Anticoagulants
- Antiplatelet Agents
- Bone Marrow Biopsy, Culture
- Bone Marrow/Stem Cell Transplantation, Rejection, Complications
- Carboxyhemoglobin
- Coagulation Studies
- Coagulopathies
- Congenital
- Diagnoses
- Diagnostic Modalities
DIC
Erythropoietin, GCSF
Fibrinolysis
Hemoglobin Abnormalities
Heparin
Heparinoids
Hypercoagulable State
Isolated Factor Abnormalities
IVC Filters, Other Mechanical Devices
Leukemia, Lymphoma
LMWH
Management Strategies
Methemoglobin
Other Hemoglobinopathies
Plasmapheresis/Plasma Exchange
Platelet Abnormalities
Polycythemia
Reversal Agents
Routine Blood Studies
Thrombin Inhibitors
Thrombocytopenia (Including HIT)
Thrombocytosis
Thrombolytics
Transfusion and Factor Replacement
Tumor Lysis Syndrome
Unfractionated
Vitamin K Dependent
Warfarin
White Blood Cell Disorder

6. Obstetric

TAGS:
Anticoagulants
Anticonvulsants
Antihypertensive therapy
Antimicrobials
Cardiotocography
Coagulopathy, Bleeding Disorders
Delivery
Diagnoses
Diagnostic Modalities
Emboli (Amniotic Fluid, Thromboemboli, Other)
Laboratory Studies (Serum, Urine)
Liver Function Abnormalities
Management Strategies
Peripartum Infection
Pre-Eclampsia/Eclampsia
Ultrasound

7. Endocrine
TAGS:
Adrenal
Adrenal Insufficiency
Antihypertensives
Cerebral Salt Wasting
Critical Illness Effects on Thyroid Function
CT
Cushing Syndrome
Diabetes Insipidus Including Central, Nephrogenic
Diabetes Mellitus
Diagnoses
Diagnostic Modalities
Glucose Management
Hormone Replacement Therapy
Hyperglycemia, Diabetic Ketoacidosis (DKA), Non-Ketotic Hyperglycemic Coma (NKHC)
Hyperthyroidism, Including Thyroid Storm
Hypoglycemia
Hypothyroidism, Including Myxedema
Insulin
Laboratory Studies (Serum, Urine)
Management Strategies
Oral Hypoglycemic Agents
Other Therapies
Pheochromocytoma
Pituitary
SIADH
Steroids (Glucocorticoid and Mineralocorticoid)
Thyroid Function Abnormalities
Ultrasound
Vasodilators
Vasopressins/DDAVP

8. Gastrointestinal

TAGS:
Abdominal Compartment Syndrome
Abdominal Pressure Measurement
Additional Relevant Studies
Antimicrobials
Assessment of Bowel Motility
Blood Product Selection and Administration
Bowel Disorders
Coagulation Parameters
CT
Diagnoses
Diagnostic Modalities
Diuretics, Renal Replacement Therapies
Dysfunction/Failure, Acute and Chronic
Endoscopy, Upper, Lower
Endoscopy, Upper, Lower with Therapeutic Intervention
Endoscopy, Upper, Lower; ERCP
Gall Bladder Disease (Stones, Cholecystitis)
Gastritis
GI Blood Flow Modulators
GI Hemorrhage
GI Motility Dysfunction, GERD
Hepatic
Hepatic Encephalopathy
Hepatitis
Hepatocellular Carcinoma
Hepatorenal Syndrome
Imaging
Immunologic Studies
Immunologic Therapy, Steroids
Immunotherapy
Interventional Radiology
Interventional Radiology (Embolization, Coiling)
Laboratory Studies
Lactulose, Rifaximin
Liver Transplantation, Rejection, Complications
Lower
Management of Increased Intracranial Pressure
Management Strategies
MRI
Nuclear Medicine Studies
Nutritional Assessment (Albumin, Prealbumin)
Nutritional Support (Enteral, Parenteral)
Pancreas
Pancreatic Cancer
Pancreatitis
Paracentesis, Diagnostic
Paracentesis, Therapeutic
Pharmacologic Management
Routine Blood Studies (CBC, Electrolytes, Renal Function)
Serology (Hepatitis, HIV)
Stomach
Stool Assessment (Occult Blood, C. Diff Toxin)
Surgical Intervention (Timing, Therapeutic Options)
Ulcer
Ultrasound
Upper
Urine Electrolytes (Fractional Excretion of Sodium)
Vaccination
X-ray

9. Dermatologic

**TAGS:**
Allergic Reactions
Antimicrobials, Antihistamines
Biopsy (with Culture and Appropriate Stains)
CBC with Differential
Cellulitis
Diagnoses
Diagnostic Modalities
Disruption of the Skin Barrier
Immunologic Studies
Infection
Inflammatory Diseases of the Skin
Laboratory Studies
Management Strategies
Medication Review
Necrotizing Fasciitis
Other Immunotherapies
Other Topical Medications
Pharmacologic
Sedimentation Rate
Steroids, Systemic and Topical
Stevens Johnson Syndrome
Wound Care (Surgical and Other)

10. Immune/Infectious Disease

**TAGS:**
- Acquired
- Antimicrobials (Including Prophylaxis)
- Autoimmune
- Biomarkers
- Biopsy, Selective Aspiration
- Congenital
- Cultures
- Diagnoses
- Diagnostic Modalities
- Graft vs. Host Disease
- HAART
- HIV/AIDS
- Immune Suppression
- Immunologic Studies
- Laboratory Studies
- Management Strategies
- Mixed Connective Tissue Disease
- Neutropenia
- Pharmacologic
- RA
- Routine (CBC, etc.)
- Sepsis
- Serologies
- SIRS
- SLE
- Steroids
Vasculitides

11. Acid-base and Electrolyte Abnormalities

**TAGS:**
- Acid-base Abnormalities
- Albumin
- Appropriate Renal and Endocrine Strategies
- Arterial Blood Gas
- Calcium
- Chloride
- Diagnoses
- Diagnostic Modalities
- Electrolyte Abnormalities
- Electrolyte Replacement as Appropriate
- Electrolytes, Osmolarity, and Specific Gravity (Serum, Urine)
- Laboratory Studies
- Magnesium
- Management Strategies
- Metabolic
- Mixed
- Phosphorus
- Potassium
- Respiratory
- Selective Imaging
- Sodium
- Ventilatory Support

C. Specialized Areas

1. Biostatistics

**TAGS:**
- Chi Squared
- Kaplan Meier
- Meta Analysis
- Number Needed to Treat
- Odds Ratio
- Propensity Score
- Regression Analysis
- Relative Risk
- ROC
- Sample Size Estimate
- Sensitivity, Specificity
- Statistical Significance (P-Value)
- Study Design

2. Burns

**TAGS:**
- Airway Management
- Antimicrobials
- Complications
- Electrical Burns
- Fluids and Resuscitation
Inhalation Injury
Management
Other Therapies (Hyperbaric, Pharmacologic, Surgical)

3. Disaster Management
**TAGS:**
Biologic, Chemical, and Nuclear Exposures
Epidemic

4. Drowning, Fatal, Near-drowning
**TAGS:**
Fresh Water
Salt Water

5. ICU Ethics
**TAGS:**
Brain Death
End-of-Life, Futility
Impaired Providers
Informed Consent
Living Will/DPOA/Healthcare Surrogate
Organ Donation
Palliative Care, Hospice
Patient Autonomy

6. ICU Management and Organization
**TAGS:**
Clinical Care Bundles
Compliance
Daily Wake-Up Test
Handover/Communication
HIPAA (Privacy and Security)
ICU Transport
Outcome and Performance Measures (HCAPS)
QA/QI (Patient Safety)
Regulatory Requirements
Scoring Systems
Sedation/Analgesia/Delirium Assessment
Triage and Resource Utilization

7. Infection Control
**TAGS:**
Blood and Body Fluid Exposure
Catheter Associated Infections
Environmental Exposures
General/Universal Precautions
Isolation Techniques
Nosocomial Infections
Pneumonia (Ventilator Associated, Hospital Associated, Etc.)
Preparation Techniques
Reverse Isolation
Specific Isolation Procedures
UTI, Catheter-Associated UTI
8. Life Support and Resuscitation
   **TAGS:**
   - ACLS
   - Other

9. Nutrition Management
   **TAGS:**
   - Enteral and Parenteral Nutrition (Formula, Caloric Intake)
   - Enteral Tubes
   - Re-feeding Syndrome

10. Assessment and Management of Pain, Sedation, and Delirium
    **TAGS:**
    - Multimodal Analgesia
    - Opiate Management
    - Regional Analgesia Techniques
    - Sedation/Analgesia/Pain/Delirium Assessment

11. Pharmacology (Indications, Contraindications, and Complications)
    **TAGS:**
    - Anaerobes
    - Antibiotics
    - Antidepressants
    - Antifungal
    - Antimicrobial Resistance
    - Antimicrobials
    - Antiparasitic
    - Antipsychotics
    - Antiviral
    - Genetic Considerations
    - Gram-Negative Organisms
    - Gram-Positive Organisms
    - Lithium
    - Neuromuscular Blocking Drugs
    - Pharmacokinetics and Pharmacodynamics and Drug Metabolism
    - Prophylactic Antimicrobials
    - Sedatives/Hypnotics
    - Spirochetal and Rickettsial
    - SSRIS
    - TB
    - Tricyclic Antidepressants

12. Poisonings, Toxic Ingestion, Overdoses, and Withdrawal

13. Procedures
    **TAGS:**
    - Airway
    - Arterial
    - Chest Tubes
    - Complications
    - Indications, Application
    - Interpretation
    - Intraosseous
X. PAIN MEDICINE

A. General

1. Anatomy and Physiology: Mechanisms of Nociceptive Transmission

   TAGS:
   Peripheral Mechanisms
   Central Mechanisms: Spinal and Medullary Dorsal Horns
   Central Mechanisms: Segmental and Brain Stem
   Central Mechanisms: Thalamocortical

2. Pharmacology of Pain Transmission and Modulation

   TAGS:
   Central and Peripheral Sensitization: Mechanisms and Implications for Treatment of Pain
   Neurotransmitters Involved in Pain Modulation
   Peripheral Mechanisms of Pain Transmission and Modulation
   Synaptic Transmission of Pain in the Dorsal Horn

3. Designing, Reporting, and Interpreting Clinical Research Studies about Treatments for Pain: Evidence-Based Medicine

   TAGS:
   Cohort Studies: Use to Determine Natural History and Predictors of Outcome
   Components of Clinical Trials
   Critical Analysis of Literature and Evidence-Based Medicine: Basic Concepts
   Effects of Analysis on the Clinical Applicability of Study Results
   Ethical Standards of Research Design, Review and Implementation, Informed Consent Principles of Valid Clinical Research
   Observational Studies: Uses and Limitations (e.g., Measurement of Strength of Association Between Risk Factors and Pain); Known Major Risk Factors for Development of Chronic Pain
   Special Features of Study of Pain
   Use of Data from Epidemiologic Studies of Pain
Use of Risk Factors to Guide Treatment

4. Ethical Standards in Pain Management
   **TAGS:**
   - Boundary Issues (e.g., Inappropriate Prescribing, Overfamiliarity with Patients)
   - Documentation Including Appropriate Coding and Billing
   - Ethics of Pain Management
   - Informed Consent
   - Professionalism
   - Quality Assurance
   - Managing Difficult and Disruptive Patients, Including Safety in the Workplace

5. Factors Complicating the Treatment Chronic Pain
   **TAGS:**
   - Obesity
   - Sleep Disorders
   - Tobacco Use and Abuse

B. Assessment and Psychology of Pain

1. Assessment and Psychology of Pain
   **TAGS:**
   - Direct Pain Measurement: Self-Report
   - Indirect Pain Measurement: Observations
   - Introspection and Measurement of Subjective Experience: Basic Concepts
   - Outcome Measures in Clinical Studies: Basic Issues
   - Outcomes Measures in Studies of the Impact of Pain: Requirements
   - Pain as a Subjective, Multidimensional Experience

2. Placebo and Pain
   **TAGS:**
   - Ethics of Placebo in Clinical Trials and Clinical Practice
   - Nocebo Effect
   - Placebo as Treatment Modality
   - Placebo Response: Mechanisms and Interpretation
   - Placebo: Definition and Incidence

3. Clinical Nerve Function Studies and Imaging
   **TAGS:**
   - EEG, MEG: Uses
   - Electrical Nerve Stimulation EMG/NCV/Evoked Potentials): Uses and Limitations
   - MRI, FMRI, and MR Spectroscopy: Uses
   - PET Scans: Uses
   - Quantitative Sensory Testing: Uses and Limitations
   - Skin Punch Biopsy: Assessment of Innervation Density

4. Psychosocial and Cultural Aspects of Pain
   **TAGS:**
   - Common Emotional Problems and Psychiatric Disorders Associated with Pain
   - Coping Styles: Definition and Effect on Pain Experience and Response to Treatment
   - Cultural, Environmental, and Racial Variations in Experience and Expression of Pain
   - Expectations, Coping, Cultural and Environmental Factors: Effect on Disability,
   - Treatment Outcome, Maintenance of Treatment Effects
   - Individual Differences in Affective, Cognitive, and Behavioral Responses to Pain
   - Pain as a Biopsychological Experience: Definition and Measurement
Role of Care Givers in Promoting Illness and Well Behavior

5. Sex, Gender and Race Issues in Pain

TAGS:
Analgesic Response: Differences Between Sexes and Within the Same Sex (e.g., Child Bearing)
Definition of Sex and Gender
Sex Differences: Biologic and Psychosocial Contributions to Pain Response
Sex Differences: Role in Epidemiology of Pain in Relation to Age and Reproductive History
Sex Differences: Role in Treatment Seeking, Delivery and Effectiveness of Treatment

C. Treatment of Pain: Pharmacokinetics, Pharmacodynamics, Adverse Effects, Drug Interactions, and Indications/Contraindications
1. Opioids

TAGS:
Differential Response, Opioid-Induced Hyperalgesia
Federal Regulations Regarding Prescribing of Controlled Substances
Opioid Metabolism, Genetic Variability
Pharmacokinetics, Pharmacodynamics, Adverse Effects, Drug Interactions, and Indications/Contraindications
Pharmacology of Buprenorphine and Methadone
Pharmacology of Pain Transmission and Modulation
Risk Assessment and Management of the Patient on Chronic Opioid Therapy

2. Antipyretic Analgesics: Nonsteroidals, Acetaminophen, and Phenazone Derivatives

TAGS:
Adverse Effects
Drug Interactions
Indications/Contraindications
Pharmacodynamics
Pharmacokinetics

3. Antidepressants and Anticonvulsants

TAGS:
Anticonvulsants: Pharmacokinetics, Pharmacodynamics, Adverse Effects, Drug Interactions, Indications/Contraindications
Antidepressants: Pharmacokinetics, Pharmacodynamics, Adverse Effects, Drug Interactions, Indications/Contraindications


TAGS:
Analeptic Drugs
Antihistamines
Benzodiazepines
Cannabinoids
Corticosteroids
Local Anesthetics and Membrane-Stabilizing Drugs
Muscle Relaxants and Antispasticity Drugs
Neuroleptic Drugs
NMDA Antagonists
Sympatholytic Drugs
D. Treatment of Pain: Other Methods

1. Psychological Treatments (Cognitive-Behavioral and Behavioral Interventions)

   TAGS:
   Cognitive and Behavioral Strategies: Application to Specific Pain Syndromes (e.g., TMJ Pain, Neck and Back Pain, Fibromyalgia, Arthritis Pain, Burn Pain, Postoperative Pain)
   Integration of Approaches: Cognitive Behavioral Treatments, Combined Behavioral and Drug Treatments; Economic Benefits of Integrating Treatment

2. Psychiatric Treatment

   TAGS:
   Anger in Chronic Pain Patients and Relation to Perceived Pain
   Differential Diagnosis of Anxiety Disorders That May Augment Pain and Suffering
   Opioids in Chronic Noncancer Pain: Use in Persons with Substance Use Disorders; Addiction Vs Pharmacological Tolerance; Withdrawal Symptoms; Role of Buprenorphine
   Pharmacotherapy for Treatment of Comorbid Conditions: Antidepressants, Mood-Stabilizing Agents, Anxiolytics, Antipsychotics
   Psychiatric and Psychologic Morbidities of Chronic Pain (e.g., Depressive Disorders, Anxiety Disorders, Substance-Related and Addictive Disorders, Somatic Symptom and Related Disorders, Bipolar and Related Disorders)
   Psychiatric and Psychological Factors That Impact Treatment Adherence and the Therapeutic Alliance with Treatment Providers (e.g., Psychological Factors Affecting Other Medical Conditions)
   Psychotherapy for Depressive Disorders: Cognitive Behavioral, Marital, Family, Interpretive, Group Therapy
   Role of Family and Other Caregivers: Importance of Interviewing and Training Patient and Relatives; Evaluating Information from Relatives
   Role of Patient Beliefs and Expectations in Pain and Disability; Coping Strategies
   Sleep Disorders in Chronic Pain; Diagnosis and Evaluation
   Somatic Complaints in Chronic Pain: Conversion (Functional Neurological Symptom) Disorder, Somatic Symptom Disorder and Illness Anxiety Disorder
   Work History and Education in Evaluation of Chronic Pain

3. Stimulation-Produced Analgesia

   TAGS:
   Clinical Applications and Efficacy
   Indications, Risks, Associated Complications
   Postulated Mechanisms
   Stimulation Techniques (TENS, Vibration, Peripheral Nerve Stimulation, Spinal Cord Stimulation)

4. Interventional Pain Management Including Nerve Blocks and Lesioning

   TAGS:
   Anatomy
   Image Guided Injection Techniques (e.g., Ultrasound, Fluoroscopy, CT)
   Intrathecal Drug Delivery: Indications, Risks, Associated Complications
   Joint, Bursa, Soft Tissue Injections: Clinical Indications, Risks, Associated Complications
   Management of Anticoagulation
   Neuraxial Injections: Clinical Indications, Risks, Associated Complications
   Neurolytic Blocks: Indications, Risks, Associated Complications
Peripheral Nerve Blocks: Clinical Indications, Risks, Associated Complications
Pharmacology and Use of Drugs
Radiofrequency Treatment: Indications, Risks, Associated Complications
Sympathetic Nerve Blocks: Clinical Indications, Risks, Associated Complications

5. Physical Medicine and Rehabilitation

**TAGS:**
- Casting and Splinting
- Exercise Therapy
- Manipulation, Mobilization, Massage, Traction
- Other-Treatment of Pain (Methods): Physical Medicine and Rehabilitation
- Temperature Modalities (e.g., Heat, Cold, Ultrasound)

6. Work Rehabilitation

**TAGS:**
- Components of Successful Comprehensive Rehabilitation Program (General Exercise, Cognitive Therapy, Vocational Elements)
- Functional Capacity Evaluation: Definition, Usefulness, and Limitations
- Identification of Obstacles to Recovery (e.g., Fear of Reinjury, Low Expectations of Recovery, Low Mood, Anxiety, Withdrawal from Social Interaction); Reliance on Passive Treatments; Negative Attitude to Physical Activity and Self-Management
- Importance of Early Intervention and Early Return to Work in Reducing Absence
- Psychosocial Factors as the Main Determinants of Disability and as Predictors of Prolonged Work Absence
- Work Rehabilitation

7. Complementary Therapies (CAM)

**TAGS:**
- Alternative Medical Systems (e.g., Traditional Eastern Medicine, Homeopathy, Acupuncture, Acupressure)
- Biologically Based Therapies (e.g., Herbs, Foods, Vitamins)
- Energy Therapy
- Evidence Base
- Implications, Costs and Side Effects (Including Drug Interactions)
- Manipulative Methods (e.g., Osteopathy, Chiropractic)
- Mind-Body Interventions (e.g., Yoga, Mindfulness, Meditation, Tai Chi)
- Prevalence and Patient Reasons for Use

E. Tissue Pain

1. Acute Pain

**TAGS:**
- Clinical Outcomes to Be Evaluated in an Organized Approach to Acute Pain Management
- Employing Multimodal Analgesia for Optimal Perioperative Pain Management:
  - Formulation Based On Type and Cause of Pain, Patient Preference, Physical and Mental Status, and Available Expertise and Technology
- Epidemiology of Inadequate Control of Acute Pain
- Nonpharmacologic Treatment
- Perioperative Management of the Patient with Chronic Pain
- Pharmacologic Properties of Major Classes of Drugs Used for Acute Pain Management
- Physiologic and Psychologic Effects: Identification and Control
- Treatment of Acute Pain in the Opioid Tolerant Patient
Treatment of Nonsurgical Pain (e.g., Burns, Sickle Cell Disease)

2. Cancer Pain

TAGS:
- Analgesic Approach; Indications, Pharmacologic Properties, Therapeutic Guidelines, Adverse Effects of Opioids and Other-Analgesics, Including Drugs for Neuropathic Pain
- Anesthetic Approaches: Indications, Risks, Practical Implications
- Comprehensive Evaluation of Patients with Cancer Pain: Needs and Approach
- Needs of Special Populations: Children, Patients with Learning Disabilities; Older Adults
- Pain Treatment in the Cancer Patient with Coexisting Substance Use Disorder or Other Psychiatric Disorder
- Palliative Care: Definition and Scope; Frequency of Pain and Multiple Sites of Pain, Barriers to Treatment, Importance of Development of Evidence-Based Practice in the Management of Cancer Pain
- Physical Therapy: Usefulness
- Principles of Treatment, Including Treatment of Underlying Disease, Analgesic Pharmacotherapy; Integration of Other-Modalities (e.g., Physical, Psychological, and Anesthetic)
- Psychological Approaches: Usefulness
- Surgical and Interventional Approaches: Indications, Risks, Practical Implications
- Treatment of Persistent Pain in Cancer Survivors

3. Cervical Spinal Pain

TAGS:
- Anatomy
- Causes and Differentiation from Neck Pain and Somatic Nerve Pain
- Electrodiagnostic Studies: Reliability and Validity
- Evidence for Commonly Used Treatments
- History Taking and Neurologic Examination: Role and Limitations
- Injection Therapy: Indications, Use, and Complications
- Medical Imaging: Reliability and Validity
- Natural History and Relevance to Management, Including Whiplash Injury
- Nonsurgical Intervention: Evidence for Efficacy of Reassurance, Maintaining Activity, and Exercises
- Surgical Treatment: Indications and Use, Including Indications for Urgent Surgical Referral

4. Lumbar Spinal Pain

TAGS:
- Anatomy
- Differentiation of Low Back Pain and Referred Somatic Pain from Radicular Pain, Radiculopathy, and Sciatica; Relevance to Investigation and Treatment
- Electrodiagnostic Studies: Reliability and Validity
- Etiologic and Prognostic Risk Factors: Differences, Clinical Significance, and Use
- History Taking: Significance and Use
- Interventions Commonly Used for Acute and Chronic Low Back Pain: Evidence for Efficacy
- Invasive Tests (e.g., Diagnostic Joint Blocks, Diskography): Use
- Medical Imaging: Reliability and Validity
- Multidisciplinary Therapy: Use and Limitations
Natural History
Nonsurgical Intervention: Evidence for Efficacy of Reassurance, Maintaining Activity, and Exercises
Physical Examination
Psychosocial and Occupational Factors Related to Low Back Pain and Chronicity
Surgical Treatment, Including Indications for Urgent Surgical Referral
5. Musculoskeletal Pain
   **TAGS:**
   - Anatomy and Biomechanics of Joints and Muscles
   - Anatomy and Physiology
   - Autoimmune and Rheumatic Disorders Including Assessment of Activity and Severity of Rheumatic Disease
   - Classification and Clinical Characteristics of Musculoskeletal Diseases
   - Diagnostic Labels for Muscle Pain: Myalgia, Nonskeletal Musculoskeletal Pain, Chronic Regional Pain, Regional Soft-Tissue Pain, Myofascial Pain, Fibromyalgia, Spasticity, and Myopathies
   - Epidemiology
   - Mediators of Inflammation, Tissue Destruction, and Repair
   - Treatment and Rehabilitation of Musculoskeletal Pain/Disability

F. Visceral Pain
1. Chronic Abdominal Pain
   **TAGS:**
   - Anatomy: Organization of Peripheral and Central Visceral Innervation, Properties of Visceral Nociceptors, and Mechanisms of Visceral Nociceptor Sensitization
   - Clinical Differentiation of Gastrointestinal, Urologic, Gynecologic, and Musculoskeletal Pain
   - Diagnostic Evaluation and Treatment
   - Distinct Clinical Features, e.g. Chronic Pancreatitis, Irritable Bowel Syndrome, Inflammatory Bowel Disease, Functional Abdominal Pain
   - Epidemiology
   - Psychological Principles in Clinical Assessment, Explanation, and Treatment

2. Chronic Pelvic Pain
   **TAGS:**
   - Anatomy
   - Epidemiology
   - Clinical Differentiation of Gastrointestinal, Urologic, Gynecologic, and Musculoskeletal Pain
   - Common Causes, Diagnostic Evaluation, and Treatment in Men
   - Common Causes, Diagnostic Evaluation, and Treatment in Women
   - Psychological Principles in Clinical Assessment, Explanation, and Treatment

G. Headache and Facial Pain
1. Headache
   **TAGS:**
   - Anatomy and Physiology
   - Diagnosis and Management of Post Dural Puncture Headache
   - Headache: Indications for Further Investigation of Headache
   - Internationally Accepted Diagnostic Criteria for Classification of Headache Disorders
   - Major Hypotheses about Mechanisms
Pharmacologic Treatment and Alternatives
Physical, Psychological, and Social Factors Contributing to Headache; Role of Counseling and Other - Nonpharmacologic Treatment, e.g. Botulinum Toxin
Role of Medication Overuse
Systematic Case History, Use of Headache Diary, Selection of Appropriate Examination Based on History

2. Orofacial Pain (e.g., Trigeminal Neuralgia, Post Herpetic Neuralgia, Atypical Facial Pain)
   TAGS: Anatomic, Physiologic, Psychosocial Aspects
          Evidence-Based Treatment Options
          History Taking, Physical Examination, and Diagnostic Studies

H. Neuropathic pain
1. Peripheral Neuropathic Pain (e.g., Diabetic Peripheral Neuropathy, Post Herpetic Neuralgia, Peripheral Nerve Injuries)
   TAGS: Clinical Characteristics
          Common Neuropathic Pain Syndromes: Differential Diagnosis, Natural Course
          Pathologic Mechanisms in Nervous System Diagnostic Studies: Clinical, Electrodiagnostic, Laboratory, and Radiographic Findings
          Definition
          Epidemiology
          Therapeutic Modalities: Pharmacologic, Interventional, Rehabilitative

2. Central Pain Syndromes (e.g. Post Stroke Pain, Phantom Limb Pain, Pain after Spinal Cord Injury)
   TAGS: Clinical Characteristics
          Common Central Pain Syndromes: Differential Diagnosis, Natural Course
          Definition
          Diagnostic Studies: Clinical, Electrodiagnostic, and Radiographic Findings
          Epidemiology
          Pathologic Mechanisms in Nervous System
          Therapeutic Modalities: Pharmacologic, Interventional, Rehabilitative

3. Complex Regional Pain Syndromes
   TAGS: Definition
          Diagnostic Studies
          Epidemiology
          Pathophysiologic Mechanisms
          Therapeutic Modalities: Pharmacologic, Interventional, Rehabilitative

I. Special Cases
1. Pain in Children and Adolescents
   TAGS: Acute and Chronic Pain in Children and Adolescents: Special Considerations in Management/Palliative Care
          Ethics of Treatment of Pain in Children and Adolescents
          Factors Affecting Pain Perception in Children and Adolescents (e.g., Development Level, Family Beliefs, Past Pain Experience, Abuse/Trauma)
          Pain Assessment Tools in Children and Adolescents: Use and Limitations
Pain Syndromes Commonly Seen in Children and Adolescents (e.g. Functional Abdominal Pain, Sickle Cell Disease, Muscle Skeletal Pain, Headache)

Treatment of Pain in Children and Adolescents: Pharmacologic and Nonpharmacologic (e.g., Counseling, Guided Imagery, Hypnosis, Biofeedback)

2. Pain in Older Adults

TAGS:
Access to Care
Age-Related Changes in Pharmacology (e.g. Drug-Drug Interactions, Clearance, Coexisting Disease)
Epidemiology
Ethics of Treatment of Pain in Older Adults
Heterogeneity in Physiologic, Psychological, and Functional Capacity of Persons of the Same Chronologic Age
Issues Related to Age Differences
Pain Assessment: Limitations

3. Pain Issues in Individuals with Limited Ability to Communicate Due to Neurocognitive Impairments

TAGS:
Conditions Leading to Limitations in Ability to Communicate
Difficulties in Assessment and Treatment of Pain
Role of Caregivers and Social Context in Assessment and Treatment of Pain

4. Pain Relief in Persons with Substance Use Disorders

TAGS:
Acute Pain Management of Patients with Substance Use Disorder
Biopharmacologic and Neurophysiologic Basis of Addiction
Interactions between Substance Use Disorder and Pain
Interpretation of Drug Toxicology Testing
Legal and Regulatory Issues When Prescribing Controlled Substances to Patients with Pain and Substance Use Disorder
Pharmacologic Treatment of Patients with Substance Use Disorder
Principles of Comprehensive Approach to Pain Management in Patients with Substance Use Disorder
Recognition of Aberrant Drug-Related Behavior Including Diversion and Misuse
Risks and Benefits of Opioid Use in Treatment of Chronic/Cancer Pain in Patients with Substance Use Disorder
Screening and Referral for Substance Use Disorder in Patients with Pain

5. Chronic Pain in Pregnancy and Lactation

TAGS:
Causes of Pain during Pregnancy
Management of Opioids during Pregnancy Including Neonatal Abstinence
Pharmacologic Management of Pain in Pregnancy and Lactation
Principles of Pain Management in Pregnancy

XI. PEDIATRIC ANESTHESIOLOGY
A. Basic Science
1. Anatomy

TAGS:
Airway
Airway Management
Anatomy for Procedures
Atresias, Stenoses and Webs
Body Habitus
Central Neuraxial Blockade
General Development
Peripheral Nerve Blockade
Vascular Cannulation
Water, Volume, and Blood Composition

2. Physics and Anesthesia Equipment
TAGS:
Brain, Spinal Cord, and Neuromuscular Function
Breathing Circuits
Cardiac Rhythm and Vascular Pressures
Methods for Monitoring
Oxygenation, Gas Concentration, and Ventilation
Point-of-Care Ultrasound
Respiration
Temperature
Ventilation Devices and Techniques

3. Anesthetic Pharmacology: Physiologic States, Pathophysiologic States and Adverse Effects
TAGS:
Agents Affecting Coagulation
Anti-Emetics
Biotransformation and Excretion
Blood-Brain Barrier
Drug Absorption
Drug Distribution
Inhalation Anesthetics
Local Anesthetics
Neuromuscular Blocking and Reversal Agents
Non-Opioid Analgesics
Opioid Analgesics
Pharmacogenetics
Pharmacokinetics and Pharmacodynamics
Sedative and Anxiolytic Agents
Sympathetic and Parasympathetic Agents

B. Organ-Based Basic and Clinical Sciences
1. Respiratory System
TAGS:
Anatomy and Physiology
Anesthesia for Thoracic Procedures
Chest Wall Surgery/Reconstruction
Clinical Sciences
Congenital Pulmonary Airway Malformation (CPAM)
Lung Physiology
Mediastinal Masses
Musculoskeletal
Obstructive Disease
One Lung Ventilation
Oxygen Transport
Parenchymal
Pleural
Prenatal and Postnatal Development
Respiratory Mechanics, Ventilation, and Lung Volumes
Restrictive Disease
Surfactant and Surface Tension
Tracheobronchial
Upper Airway
Ventilation/Perfusion Matching
Video-Assisted Thoracoscopy

2. Cardiovascular System

TAGS:
Acyanotic Lesions
Anatomy and Physiology
Anesthesia for Cardiac Patients
Anesthesia for Diagnostic, Interventional and Electrophysical Procedures
Anesthesia in Patient with Pacemaker or AICD
Anesthetic Effects on the Cardiovascular System
Arrhythmic Lesions
Cardiomyopathies
Cardiopulmonary Resuscitation and PALS
Cardiovascular Effects on Anesthetic Uptake and Delivery
Clinical Science
Cyanotic Lesions
Disease States
Fetal, Transitional, and Adult Circulation
General Considerations
Heart Transplantation
Infectious Diseases
Intracardiac Masses
Palliative Procedures
Pericardial Disease
Prenatal and Postnatal Development
Pulmonary Hypertension
Vasoactive Medications

3. Central and Peripheral Nervous Systems

TAGS:
Anatomy and Physiology
Anesthesia for Neurosurgical Procedures
Clinical Science
Craniofacial Reconstruction/Cranioplasty
EEG Changes
General Considerations
Intracranial Pressure and Blood Flow
Intracranial Tumors and Vascular Lesions
Meningomyelocele/Spinal Surgery
Myelinization, Autonomic Nervous Systems, and Pain Pathways
Neurocognitive and Behavioral Changes after Anesthesia
Neurologic Imaging
Pharmacology of Diuretics, Steroids, and Anticonvulsant Medications
Prenatal and Postnatal Development
Preoperative Anxiety, Postoperative Behavior, and Emergence Delirium
Seizure Surgery
Serotonin Syndrome
SMART Tots Consensus Statement And Animal Studies

4. Gastrointestinal System

TAGS:
Abdominal Wall Defects
Atresias, Stenoses and Webs
Clinical Science
Esophageal/Gastrointestinal Foreign Bodies
Esophageal, Stomach and Intestine Disorders
Hernias
Liver, Biliary Tract and Spleen Disorders
Morbid Obesity/Bariatric Surgery
Necrotizing Enterocolitis

5. Renal/Urinary

Clinical Science
Prenatal and Postnatal Development
Renal Failure

6. Endocrine/Metabolic

Adrenal Disorders
Clinical Science
Diabetes Insipidus
Diabetes Mellitus
Digeorge Syndrome
Disorders of Sodium Regulation
Pheochromocytoma
Thyroid Disorders

7. Hematology/Oncology

Anemias
Anterior Mediastinal Mass
Bone Marrow and Stem Cell Transplants
Chemotherapeutic Agents and Side Effects
Clinical Science
Coagulation Disorders
Hematology
Oncology
Radiation Therapy
Sickle Cell Disease
Tumor Lysis Syndrome

8. Genetics

Clinical Sciences
Craniofacial Syndromes
Genetic Abnormalities
Inborn Errors of Metabolism
Malignant Hyperthermia
Mitochondrial Myopathies
Muscular Dystrophies
Myopathic Disorders and Myotonias
Osteochondrodysplastic Syndromes
Skin and Connective Tissue Disorders
Trisomy 21

C. Clinical Subspecialties

1. Neonatal

**TAGS:**
- Apnea and Bradycardia
- Clinical Science
- Congenital Cystic Adenomatoid Malformation
- Congenital Diaphragmatic Hernia
- General Considerations
- Medical Disease States
- Neonatal Resuscitation
- Retinopathy of Prematurity
- Surgical Disease States

2. Painful Disease States

**TAGS:**
- Chronic Pain States
- Pathophysiology
- Pharmacologic and Non-Pharmacologic Techniques of Pain Management
- Regional Analgesia
- Treatment

3. Otolaryngology

**TAGS:**
- Airway Procedures
- Bronchoscopic Procedures
- Choanal Atresia Repair
- Cochlear Implant, Tympanoplasty, and Mastoidectomy
- Laser Procedures
- Myringotomy and Tubes
- Obstructive Sleep Apnea (OSA)
- Otologic Procedures
- Tonsillectomy, Adenoidectomy, and Abscess Drainage
- Tracheotomy

4. Plastic and Oral-Maxillary Facial Surgery

**TAGS:**
- Cleft Repairs
- Clinical Science
- Mandibular Repairs
- Vascular Malformations

5. Ophthalmology

**TAGS:**
Clinical Science
General Considerations
Pharmacology of Ophthalmologic Medications
Strabismus Repair
Trauma

6. Orthopedic Surgery
TAGS:
Anterior, Posterior, and Combined Spine Fusion
Clinical Science

7. Trauma and Burns
TAGS:
Anesthetic and Pain Management of the Burn Patient
Burns
Dressing Changes
Fluid Resuscitation and Calculating Burn Surface Area
Hypothermia and Submersion Injury
Incidence, Patterns, Implications of Abuse
Inhalation Injuries/Airway Management
Management of the Polytrauma Victim
Trauma
Types, Mechanisms, Locations and Implications of Injuries

D. Clinical Science of Anesthesia

1. Evaluation and Preoperative Preparation of the Pediatric Patient (See Specific Disease States)
TAGS:
Autism Spectrum Disorders
Concussion
Evaluation of Coexisting Disease
Fasting Requirements
General Considerations
Informed Consent
Laboratory Testing
Normal Developmental Milestones
Parental Presence and Pharmacologic Preparation for Anesthetic Induction
Physical Examination
Psychosocial Preparation of the Patient and Family
Upper Respiratory Tract infections

2. General Considerations of the Perioperative Period
TAGS:
Fluid, Electrolyte, and Glycemic Management
Thermoregulation
Transfusion Therapy and Blood Conservation Techniques

3. Regional Anesthesia and Analgesia
TAGS:
Central Neuraxial Blockade: Indications, Contraindications, Techniques, Adjuvants, and Controversies
Peripheral Nerve Blockade: Indications, Contraindications, Techniques, Adjuvants, and Controversies
4. General Anesthesia  
**TAGS:**  
Management of the Difficult Airway

5. Complications of Anesthesia  
**TAGS:**  
Airway Obstruction  
Anaphylactic and Anaphylactoid Reactions  
Awareness and Recall under Anesthesia  
Cardiopulmonary Resuscitation  
Dysrhythmias  
Iatrogenic Drug Errors  
Iatrogenic Trauma/Positioning Injury  
Inadequate Vascular Access

6. Special Techniques and Situations  
**TAGS:**  
Non-Operating Room Anesthesia (NORA)  
Transition of Patient Care

7. Postoperative Period  
**TAGS:**  
Management and Diagnosis of Pain, Anxiety and Emergence Agitation  
Post-operative Nausea and Vomiting

8. Acute and Chronic Pain Management  
**TAGS:**  
Enhanced Recovery after Surgery (ERAS)  
Opioid Induced Hyperalgesia  
Opioid Tolerance

E. Special Problems or Issues

1. Professional Issues  
**TAGS:**  
Continuous Quality Improvement  
Ethical and Legal Obligations of Pediatric Anesthesia Care and Research  
Practice-Based Learning and Improvement  
Teaching, Supervision, and the Anesthesia Care Team

2. Principles of Biostatistics and Study Design