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         MRI Compatibility
         Oxygen Supply Systems
         Valves
         Vaporizers
         Waste Gas Evacuation Systems
      2. Safety Features
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         Troubleshooting
      3. Design and Ergonomics
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         Modes of Mechanical Ventilation
         Non-Invasive Techniques
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         Ventilator Settings and Controls
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         Inhaled Nitric Oxide
         Nebulizers
      4. Ventilation Monitors
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         Apnea, FiO₂, Airway Pressure Monitoring
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         ECG
         Neuromuscular Blockade
         Noninvasive Blood Pressure
         Pulse Oximetry
         Temperature
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         Cardiac Output
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   - Oxidizers
   - Sources of Ignition
3. Electrical Safety Systems
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   - 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 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 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
II.E.2

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

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   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
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         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’s
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
   Post-Obstructive 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
IV.A.2

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\textsubscript{2} Gradient (A-aDO\textsubscript{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
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    Complications and Side Effects of Mechanical Ventilation
    COPD
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    Obstructive Sleep Apnea
    Oxygen Therapy and Toxicity
    Pleural Effusion
Pneumonia
Pneumothorax
Postoperative Extubation Criteria
Postoperative Mechanical Ventilation
Pulmonary Fibrosis
Respiratory Distress Syndrome (ARDS)
Respiratory Failure Management

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 Hepatoxicity
- 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's Disease
   - Carcinoid Syndrome
   - Cushing's Disease
   - Cushing's 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 Placentation
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
      - Cholycestectomy
      - 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
      - Post-Operative Visual Loss
   3. Complications
      **TAGS:**
      - Blood Loss
      - Fat Embolism
V. H. 3

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:
Acute Hepatic Failure
Cannilicular
Chronic Hepatic Failure
Infectious
Hepatocellular

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
TAGS:
Anesthetics
Anticonvulsants
Anti-Parkinsonian Medications
Diuretics
Fluid Management
Steroids
Vasodilators and Constrictors

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
Moya Moya 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 in Regional 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, Infracalvicular, 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
Neuropatxia, 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
Factors Influencing Onset and Duration
Indications and Contraindications
Medications: Local Anesthetics, Opioids, Adjuncts

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
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

VII. QUALITY IMPROVEMENT
   A. Quality Improvement Basics: Design, Analysis, Implementation of QI Project
      1. Anesthesia Quality Institute, Data Entry, Information
         TAGS:
         Assessing QI Methods
         Barriers to Quality Improvement
         Lean Six Sigma
         Physician Quality Reporting System: Significance and Role in Practice
         Root Cause Analysis

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
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
IX.A.9

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
Interventional Radiology
Ischemic
Jugular Venous Saturation
Lumbar Puncture
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
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 Ventilatory Support Volutrauma/Barotrauma

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
Thrombolitics
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
12. Poisonings, Toxic Ingestion, Overdoses, and Withdrawal

13. Procedures

**TAGS:**
- Airway
- Arterial
- Chest Tubes
- Complications
- Indications, Application
- Interpretation
- Intraosseous
- LMA/Others
- Monitoring Techniques and Troubleshooting
- Physics of Ultrasound
- Tracheostomy
- Ultrasound
- Vascular Access
- Venous

14. Thermoregulation

**TAGS:**
- Environmental
- Fever
- Heat Stroke
- Hyperthermia
- Hypothermia
- Malignant Hyperthermia
- Neuroleptic Malignant Syndrome
- Therapeutic

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

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
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
- 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
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

**TAGS:**
- Clinical Science
- Prenatal and Postnatal Development
- Renal Failure

6. Endocrine/Metabolic

**TAGS:**
- Adrenal Disorders
- Clinical Science
- Diabetes Insipidus
- Diabetes Mellitus
- Digeorge Syndrome
- Disorders of Sodium Regulation
- Pheochromocytoma
- Thyroid Disorders

7. Hematology/Oncology

**TAGS:**
- 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)
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
   Pharmacology and Toxicity of Local Anesthetics

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
   Postoperative 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