

MOCA 2.0[®]

Maintenance of Certification in Anesthesiology[®] (MOCA[®])

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I. FUNDAMENTAL TOPICS IN ANESTHESIOLOGY

A. Anesthesia Machines and Breathing Systems

1. Components

TAGS:

- Circuit Types
- 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

TAGS:

- Ventilator Settings and Controls

3. Drug Delivery Systems

TAGS:

- Inhaled Nitric Oxide
- Nebulizers

4. Ventilation Monitors

TAGS:

- 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

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:

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

Previous Organ Transplant
Substance Abuse

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 O₂ Gradient (A-aDO₂)
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 (V_d/V_t)
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

- 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 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 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
- Cholecystectomy
- 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:

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

TAGS:

Anticoagulation and Reversal
Aortic Clamping
Carotid Clamping
Endovascular Surgery
Renal Protection

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, Infraclavicular, 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

Paravetebral 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

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

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

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 (NKHG)
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
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
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

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
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 (NKHG)
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

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
 Measurement of Burden in a Population, Including Epidemiologic Measures of Occurrence (Prevalence, Incidence)
 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

4. Miscellaneous Agents: 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
- 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
- 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
- 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
Myelination, 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
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
Bone Marrow and Stem Cell Transplants
Chemotherapeutic Agents and Side Effects
Clinical Science
Coagulation Disorders
Hematology
Oncology
Radiation Therapy

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

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
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

Evaluation of Coexisting Disease

Fasting Requirements

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

Dysrhythmias

Iatrogenic Drug Errors

Iatrogenic Trauma/Positioning Injury

Inadequate Vascular Access

6. Special Techniques and Situations

TAGS:

Anesthesia for Satellite and Remote Locations

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