

BASIC SCIENCES

Monitoring Methods

1. Vascular Pressures
2. Brain and Spinal Cord Function
3. Mixed Venous Oxygen Saturation
4. Cardiac Output
5. Coagulation Monitors
6. Ultrasound-Guided Placement of Vascular Catheters
7. Point-of-Care Ultrasound (POCUS)
8. ASA Monitoring Standards

Ventilators

9. Continuous Positive Airway Pressure (CPAP) and Positive End-Expiratory Pressure (PEEP)
10. Nebulizers, Humidifiers, Drug Delivery Systems
11. Electrical, Fire, and Explosion Hazards

Anesthesia Procedures, Methods, and Techniques

12. Controlled Hypotension
13. Hyperbaric Medicine: Indications and Application of Hyperbaric Oxygen Therapy
14. High Altitude Anesthesia

Nervous System

15. Central and Peripheral Nervous Systems
16. Drug Metabolism
17. Intracranial Pressure
18. Brain Volume
19. Intracranial Pressure and Herniation
20. Electroencephalography (EEG)
21. Evoked Potentials

CLINICAL SCIENCES

Regional Anesthesia

22. Common Complications of Local Anesthetics
23. Peripheral and Autonomic Nerve Blocks
24. Automatic Nerve Blocks
25. Nerve Blocks (Head)
26. Nerve Blocks (Neck)
27. Extremities Nerve Blocks
28. Truncal Nerve Blocks
29. Spine Related Procedures
30. Diagnosis and Management of Local Anesthetic Systemic Toxicity (LAST)
31. Intravenous Lipid Emulsion Therapy and the American Society of Regional Anesthesia Checklist for Local Anesthetic Toxicity
32. Role of Regional Anesthesia in Enhanced Recovery Protocols
33. Innervation of Pelvic Structures

Pharmacology

34. General Concepts in Pharmacology
35. Pharmacogenetics and Genetic Factors in Drug Dose-Response Relationships
36. Malignant Hyperthermia
37. Butyrylcholinesterase (Pseudocholinesterase) Deficiency
38. Prolonged QT Syndrome
39. Rapid Metabolizers
40. Addiction
41. Anesthetic Implications of Addiction
42. Addiction versus Tolerance
43. CNS Drugs for Non-Anesthetic Use
44. Non-Steroidal Anti-Inflammatory Drugs (NSAIDs)
45. Acetaminophen
46. Alpha-2 Agonists
47. Tranquilizers
48. Antidepressants, Anti-Parkinson Drugs
49. Arousal Agents
50. Antiemetics

51. Anti-aspiration medications
52. Chronic Opioid Dependence and Therapy
53. Sympathetic Nervous System: Anatomy, Drugs, Receptors, Transmitters
54. Parasympathetic: Anatomy, Drugs Receptors Transmitters

Central Nervous System

55. Anatomy of Central Nervous System
56. Neurologic Disorders
57. Musculoskeletal System
58. Epilepsy
59. Coma and Hyperosmolar Coma
60. Therapeutic Barbiturate Coma
61. Drug Intoxication
62. Paraplegia, Quadriplegia, Spinal Shock, Autonomic Hyperreflexia, Acute Spinal Cord Injury
63. Airway Management in the Patient with Cervical Spine Disease
64. Tetanus
65. Positioning and Anesthesia in the Sitting Position
67. Cerebral Protection
68. Intracranial Aneurysms and A-V Malformations
69. Interventional Neuroradiology
70. Pituitary Adenoma
71. Fluid Management in Neurosurgery
72. Spinal Fluid Drainage
73. Stereotactic and Gamma-Knife Techniques, Deep Brain Stimulator Placement, Intraoperative Wake-Up Techniques
74. Ventriculostomy
75. Awake Craniotomy
76. Postoperative Visual Loss
77. Hypothermia
78. MAC and Sedation

Respiratory System Anatomy

79. Divisions and Bronchoscopic Anatomy
80. Bronchial and Pulmonary Circulations
81. Lung Mechanics
82. Normal Acid-Base Regulation
83. Effects of Imbalance on Electrolytes and Organ Perfusion
84. Strong Ionic Difference (SID)
85. Arterial Blood Gas Interpretation
86. The Anion Gap and Metabolic Acidosis
87. Temperature Effect on Blood Gases: Alpha-Stat vs. pH-Stat
88. Lung Functions and Cellular Processes
89. Ventilation
90. Lung Volumes
91. Pulmonary Function Tests
92. Obstructive Lung Disease
93. Restrictive Lung Disease
94. Evaluation and Management of the Patient with Respiratory Disease (Intraoperative Management)
95. Respiratory Adjuncts: Heliox, Nitric Oxide, Epoprostenol and Intraoperative Steroids
96. Preoperative Evaluation and Preparation of the Patient with Pulmonary Disease
97. Choice of Anesthesia and Anesthetic Techniques in Thoracic Surgery
98. Non-Pulmonary Surgery
99. Thoracic and Pulmonary Surgery
100. Bronchopleural Fistula
101. One-Lung Ventilation
102. Thoracoscopy
103. Postoperative Pain
104. Ventilator Support and Extubation Criteria
105. Management of Respiratory Failure

106. Modes of Ventilation
107. BIPAP, Airway Pressure Release Ventilation, and Prone Ventilation
108. Sleep Apnea
109. Complications and Side Effects of Mechanical Ventilation
110. Volutrauma, Barotrauma, Biotrauma
111. Management of Bronchospasm
112. Lung Transplantation

Cardiovascular System Anatomy

113. Normal Anatomy of Heart and Major Vessels
114. Echocardiographic Heart Anatomy
115. Cardiac Catheterization
116. Ischemic Heart Disease
117. Coronary Artery Bypass Procedures
118. Valvular Heart Disease
119. Subacute Bacterial Endocarditis Prophylaxis
120. Rhythm Disorders and Conduction Defects
121. Pacemakers and Automated Implantable Cardioverter/Defibrillator (AICD)
122. Perioperative Implications of Pacemaker and AICD
123. Ventricular Synchronization
124. Ablations, Cryotherapy, and Maze Procedure
125. Heart Failure and Cardiomyopathy
126. Systolic vs. Diastolic Dysfunction
127. Post-obstructive Pulmonary Edema
128. Pulmonary Hypertension
129. Heart Transplantation
130. Cardiac Tamponade
131. Constrictive Pericarditis
132. Mechanical Circulatory Assist Devices
133. Cardiopulmonary Bypass
134. Myocardial Preservation
135. Preconditioning
137. Off-Pump Coronary Artery Bypass (OPCAB)
138. Minimally Invasive Direct Coronary Artery Bypass (MIDCAB)
139. Percutaneous Valve Repair/Replacement
140. Intraaortic Balloon Pump
141. Extracorporeal Membrane Oxygenation (ECMO)
142. Ventricular Assist Devices
143. Pulmonary Embolism
144. Hypertension
145. Effect of Intracardiac Shunts on Inhalation Induction

Vascular Diseases

146. Carotid Endarterectomy
147. Peripheral Arteriosclerotic Disease
148. Aortic Aneurysm
149. Advanced Cardiopulmonary Resuscitation

Gastrointestinal and Hepatic Systems

150. Anatomy of the Gastrointestinal System
151. Parenteral Nutrition
152. Morbid Obesity/Anesthesia for Bariatric Surgery
153. Postoperative Hepatic Dysfunction
154. Liver Transplant Surgery
155. Anesthesia for Upper and Lower GI Endoscopy

Renal and Urinary Systems

156. Renal Anatomy
157. Pathophysiology of Renal Disease
158. Anesthetic Management in Renal Failure and Arteriovenous (A-V) Shunts
159. Anesthetic Management for Kidney Transplantation
160. Anesthesia for Extracorporeal Shock Wave Lithotripsy
161. Perioperative Oliguria and Anuria

162. Dialysis and Hemofiltration
163. Pharmacologic Prevention and Treatment of Renal Failure
164. Urologic Surgery
165. Perioperative Electrolyte Abnormalities
166. Fluid Therapy and Homeostasis
167. Fluid Balance During Surgery
168. Assessment of Fluid Responsiveness and Goal-Directed Therapies
169. Esophageal Doppler
170. Complications of Transurethral Resection of the Prostate

Hematologic System

171. Anemias
172. Polycythemias
173. Thrombocytopenia and Thrombocytopathy
174. Congenital and Acquired Factor Deficiencies
175. Disseminated Intravascular Coagulation
176. Fibrinolysis
177. Anticoagulants and Antagonists
178. Coagulopathy in Trauma Patients
179. Hemoglobinopathies and Porphyrias
180. Transfusion Indications and Reactions
181. Complications of Transfusions
182. Transfusion Therapy for Massive Hemorrhage
183. Transfusion Ratios: Red Blood Cells to Plasma
184. Use of Uncross Matched Products

Endocrine and Metabolic Systems

185. Anatomy of the Endocrine system
186. Hypopituitary Disease
187. Thyroid Gland
188. Parathyroid Disease
189. Adrenal Disease
190. Carcinoid Syndrome
191. Diabetes Mellitus
192. Pancreas Transplantation

Neuromuscular Diseases and Disorders

193. Multiple Sclerosis
194. Guillain-Barre Syndrome
195. Charcot-Marie-Tooth Disease
196. Muscular Dystrophies
197. Mitochondrial Myopathies
198. Myasthenia Gravis
199. Lambert-Eaton Myasthenic Syndrome
200. Congenital Myasthenic Syndromes
201. Ion Channel Myotonias, Myotonia Congenita and Acquired Neuromyotonia
202. Hyperkalemic Periodic Paralysis
203. Hypokalemic Periodic Paralysis

Clinical Subspecialties

115. Painful Disease States
116. Cancer Pain
117. Acute and Chronic Neck and Low Back Pain
118. Neuropathic Pain States
119. Complex Regional Pain Syndrome
120. Postherpetic Neuralgia
121. Phantom Limb Pain
122. Peripheral Neuropathies
123. Postoperative Epidural Analgesia
124. Neuraxial Opioids
125. Patient-Controlled Analgesia
126. Systemic Multimodal Analgesia
127. Continuous Spinal and Epidural Analgesia

- 128. Neurolytic and Non-Neurolytic Blocks
- 219. World Health Organization (WHO) Analgesic Ladder

Pediatric Anesthesia

- 220. Apparatus and Breathing Circuits
- 221. Endotracheal Tube Selection
- 222. Warming Devices
- 223. Premedications
- 224. Agents, Techniques and Mapleson Circuits
- 225. Induction Techniques
- 226. Anesthetics Actions Different From Adults
- 227. Drug Toxicities Preferentially Occurring in Children
- 228. Opioid Dosing and Sensitivity
- 229. Neuromuscular Blockers
- 230. Regional Anesthesia
- 231. Fluid Therapy and Blood Replacement
- 232. NPO Guidelines for Pediatric Patients
- 233. Problems in Intubation and Extubation
- 234. Neonatal Physiology
- 235. Cardiovascular System
- 236. Metabolism, Fluid Distribution and Renal Function
- 237. Thermal Regulation
- 239. Fetal Hemoglobin
- 240. Bronchopulmonary Dysplasia
- 241. Congenital Heart and Major Vascular Disease
- 242. Cyanotic Defects
- 243. Acyanotic Defects
- 244. Primary Pulmonary Hypertension
- 245. Major Vascular Malformations
- 246. Altered Uptake/Distribution of IV and Inhalation Anesthetics
- 247. Cardiac Surgery; Corrective and Palliative
- 248. Noncardiac Surgery
- 249. Chronic Congenital Heart Disease
- 250. Congenital Diaphragmatic Hernia
- 251. Tracheoesophageal Fistula
- 252. Neonatal Lobar Emphysema
- 253. Pyloric Stenosis
- 254. Necrotizing Enterocolitis
- 255. Omphalocele/Gastroschisis
- 256. Meconium Aspiration
- 257. Respiratory Distress Syndrome
- 258. Myelomeningocele
- 259. Pnemo, Hemo, and Chylothorces
- 260. Upper Respiratory Infections (Colds, Epiglottitis, Laryngotracheobronchitis),
Bronchopulmonary Dysplasia, Cystic Fibrosis
- 261. Musculoskeletal Disease
- 262. Hydrocephalus
- 263. Developmental Delay, Cerebral Palsy, Autism
- 264. Childhood Obesity
- 265. Skeletal Abnormalities in Children
- 266. Trisomy 21 (Down syndrome) and VATER Association
- 267. Chromosomal Abnormalities and Other Common Pediatric Syndromes
- 268. Juvenile Idiopathic Arthritis
- 269. Malignant Hyperthermia in Children

Anesthetic Implications for Common Non-Neonatal Pediatric Subspecialty Surgery

- 270. Otolaryngology
- 271. Neurosurgery
- 272. Thoracic Surgery
- 273. General and Urologic Surgery

274. Orthopedic Surgery
275. Ophthalmologic Surgeries
276. Pediatric Outpatient Surgery
277. Systemic Medications and Routes of Administration, Multimodal Therapy.
278. Regional Techniques
279. Pediatric Management of Postoperative Nausea and Vomiting
280. Pediatric Sedation. Kasia. kasia.rubin@gmail.com
281. Pediatric Anesthesia Outside the Operating Room
- Obstetric Anesthesia**
282. Maternal Physiology
283. Placenta
284. Anesthetic Drugs and Adjuvants
- 285 Oxytocic Drugs
286. Tocolytic Drugs
287. Mechanisms of Placental Transfer and Placental Transfer of Specific Drugs
288. Fetal Disposition of Drugs
289. Drug Effects on Newborn
290. Amniotic Fluid
291. Labor Analgesia
292. Systemic Medications
293. Other Blocks
294. Complications of Obstetric Anesthesia
295. Physiology of Labor
296. Influence of Anesthetic Technique on Labor
297. Cesarean Section
298. Anesthesia for Cerclage or Non-Obstetric Surgery
299. Ectopic Pregnancy
300. Spontaneous Abortion
301. Gestational Trophoblastic Disease
302. Autoimmune Disorders
- 303 Endocrine Disorders
304. Heart Disease
305. Hematologic Disorders
306. Hypertension
307. Neurologic Disorders
308. Respiratory Disorders
309. Renal Changes During Pregnancy
310. Fetal Monitoring
311. Preeclampsia and Eclampsia
312. Supine Hypotensive Syndrome
313. Aspiration of Gastric Contents
314. Embolic Disorders
315. Antepartum Hemorrhage
316. Postpartum Hemorrhage
317. Umbilical Cord Prolapse
318. Retained Placenta
319. Dystocia, Malposition, and Malrepresentation
320. Maternal Cardiopulmonary Resuscitation
321. Fever and Infection
322. Preterm Labor
323. Trial of Labor after Cesarean Delivery
324. Multiple Gestation
325. Neonatal Resuscitation
326. Apgar Scoring
327. Umbilical Cord Blood Gas
328. Intrauterine Surgery
329. Anesthetic Considerations in Breast-Feeding
- Otorhinolaryngology (ENT) Anesthesia**
330. Airway Endoscopy, Microlaryngeal Surgery, Laser Surgery

- 331. Hazards and Complications
- 332. Intraoperative Thyroid and Parathyroid Function Monitoring
- 333. Nerve Injury Monitoring During ENT Surgery

Miscellaneous

- 334. Liposuction
- 335. Anesthesia for Laparoscopic Surgery
- 336. Ophthalmologic Anesthesia
- 337. Orthopedic Anesthesia
- 338. Anesthesia for Trauma Patient
- 339. Anesthesia for MRI
- 340. Hemorrhagic Shock
- 341. Mass Casualty Events
- 342. Chemical and Biological Warfare
- 343. Anesthesia for Outpatient Surgery
- 344. Patient Selection and Preoperative Management
- 345. Discharge Criteria and Postoperative Follow Up
- 346. Office-Based Anesthesia
- 347. Geriatrics
- 348. Pharmacological Implications
- 349. Shock States
- 350. Systemic Inflammatory Response Syndrome
- 351. Multiple Organ Dysfunction Syndrome
- 352. Prescription Medication Overdose
- 353. Carbon Monoxide Poisoning
- 354. Drowning
- 355. Infection Control
- 356. Needle Stick Injury
- 357. Intravascular Catheter and Urinary Catheter Infection
- 358. Ventilator Associated Pneumonia
- 359. Antimicrobials
- 360. Mechanical Ventilation
- 361. Post-Operative Headache

Special Problems in Anesthesiology

- 363. Electroconvulsive Therapy
- 364. Organ Donors and Procurement
- 365. Brain Death Criteria
- 366. Radiological Procedures
- 367. Ethics, Practice Management, Professionalism and Medicolegal Issues
- 368. Ethics, Advance Directives/Do Not Resuscitate (DNR) Orders
- 369. Malpractice
- 370. Initial Certification, Recertification, Maintenance of Certification and Related Issues
- 371. Costs of Medical/Anesthesia Care and Operating Room Management
- 372. Definitions
- 373. Medications Errors
- 374. Reporting: Mandatory and Voluntary Systems, Legal Requirements, Anesthesia Quality Institute and Physician Quality Reporting System
- 375. Safety Practices
- 376. Root Cause Analysis
- 377. Crisis Management and Teamwork
- 378. Quality Improvement
- 379. Six Sigma and Lean Operations for the Anesthesiologist
- 380. Barriers to Quality Improvement
- 381. Federal Regulatory Requirements and Quality Payment Programs