

Contents

List of Contributors *ix*

About the Companion Website *xii*

Part One Surgical Critical Care 1

- 1 **Respiratory and Cardiovascular Physiology** 3
Anne Warner, MD, Harsh Desai, MD, and Frederick Giberson, MD
- 2 **Cardiopulmonary Resuscitation, Oxygen Delivery and Shock** 11
Kevin W. Cahill, MD, Harsh Desai, MD, and Luis Cardenas, DO, PhD
- 3 **ECMO** 19
Mauer Biscotti III, MD, Matthew A. Goldshore, MD, PhD, MPH, and Jeremy W. Cannon, MD, SM
- 4 **Arrhythmias, Acute Coronary Syndromes, and Hypertensive Emergencies** 33
Ryan Malcom, MD
- 5 **Sepsis and the Inflammatory Response to Injury** 45
Ilya Shnaydman, MD and Matthew Bronstein, MD
- 6 **Hemodynamic and Respiratory Monitoring** 55
Jared Sheppard, MD, Christopher S. Nelson, MD, and Stephen L. Barnes, MD
- 7 **Airway and Perioperative Management** 67
Jared Sheppard, MD, Jeffrey P. Coughenour, MD, and Stephen L. Barnes, MD
- 8 **Acute Respiratory Failure and Mechanical Ventilation** 77
Adrian A. Maung, MD and Lewis J. Kaplan, MD
- 9 **Infectious Disease** 85
Rathnayaka M. K. Gunasingha, MD, Patrick Benoit, DO, and Matthew J. Bradley, MD
- 10 **Pharmacology and Antibiotics** 99
Michelle Strong, MD, PhD and Elaine Cleveland, MD
- 11 **Transfusion, Hemostasis, and Coagulation** 113
Lindsey Karavites, MD and Kazuhide Matsushima, MD
- 12 **Analgesia and Anesthesia** 123
Toni Manougian, MD, MBA and Bardiya Zangbar, MD
- 13 **Delirium, Alcohol Withdrawal and Psychiatric Disorders** 137
Thomas Muse, MD and Rondi Gelbard, MD

- 14 Acid-Base, Fluids, and Electrolytes 145**
Joshua Dilday, DO, Catherine Cameron, MD, and Christopher Bell, MD
- 15 Metabolic Illness and Endocrinopathies 155**
Andrew J. Young, MD and Therese M. Duane, MD
- 16 Hypothermia and Hyperthermia 165**
Drew Farmer, MD and Shariq Raza, MD
- 17 Acute Kidney Injury 173**
Cassandra Q. White, MD and Terence O’Keeffe, MB ChB
- 18 Liver Failure 181**
Bellal Joseph, MD and Omar Obaid, MD
- 19 Nutrition Support in Critically Ill Patients 189**
Ida Molavi, MD and Jorge Con, MD
- 20 Neurocritical Care 203**
Kevin W. Cahill, MD and Frederick Giberson, MD
- 21 Venous Thromboembolism 213**
Brett M. Chapman, MD and Herb A. Phelan, MD, MSCS
- 22 Transplantation, Immunology, and Cell Biology 225**
Jarrett Santorelli, MD and Leslie Kobayashi, MD
- 23 Obstetric Critical Care 237**
Gary Lombardo, MD
- 24 Pediatric Critical Care 251**
Juan P. Gurria, MD and J. Craig Egan, MD
- 25 Envenomation, Poisoning, and Toxicology 261**
Michelle Strong, MD, PhD and Elaine Cleveland, MD
- 26 Common Procedures in the ICU 273**
Fariha Sheikh, MD and Adam D. Fox, DO, DPM
- 27 Diagnostic Imaging, Ultrasound and Interventional Radiology 281**
Hang Ho, MD and Terence O’Keeffe, MB ChB
- Part Two Emergency Surgery 293**
- 28 Neurotrauma 295**
Bellal Joseph, MD and Raul Reina Limon, MD
- 29 Blunt and Penetrating Neck Trauma 307**
Eric Raschke, DO and Leslie Kobayashi, MD
- 30 Cardiothoracic and Thoracic Vascular Injury 319**
Charles J. Fox, MD and Annalise Penikis, MD
- 31 Abdominal and Abdominal Vascular Injury 333**
Melike Harfouche, MD and Joseph DuBose, MD

- 32 Orthopedic and Hand Trauma 349**
Brett D. Crist, MD and Gregory J. Della Rocca, MD, PhD
- 33 Peripheral Vascular Trauma 359**
Yousef Abuhakmeh, DO and Jonathan Swisher, MD
- 34 Urologic Trauma and Disorders 369**
Daniel Roubik, MD and Luke Hofmann, DO
- 35 Care of the Pregnant Trauma Patient 379**
Navdeep Samra, MD and Jaideep Sandhu, MBBS, MPH
- 36 Esophagus, Stomach, and Duodenum 391**
Collin Stewart, MD and Andrew Tang, MD
- 37 Small Intestine, Appendix, and Colorectal 403**
Elise Sienicki, MD, Vishal Bansal, MD, and Jay J. Doucet, MD, MSc
- 38 Gallbladder and Pancreas 415**
Kirstie Jarrett, MD and Andrew Tang, MD
- 39 Liver and Spleen 429**
Narong Kulvatunyou, MD and Peter M. Rhee, MD
- 40 Incarcerated Hernias and Abdominal Wall Reconstruction 443**
Michael C. Smith, MD and Richard S. Miller, MD
- 41 Necrotizing Soft Tissue Infections and Other Soft Tissue Infections 451**
MAJ Jacob Swann, MD and Joseph DuBose, MD
- 42 Obesity and Bariatric Surgery 459**
Thomas A. O'Hara, DO and Gregory S. Peirce, MD
- 43 Burns, Inhalational Injury, and Lightning Injury 471**
MAJ Jacob Swann, MD and William Mohr, III, MD
- 44 Gynecologic Surgery 481**
Joshua Klein, DO
- 45 Cardiovascular and Thoracic Surgery 493**
Kristine Tolentino Parra, MD, Theodore Pratt, MD, and Matthew J. Martin, MD
- 46 Pediatric Surgery 505**
Brandt Sisson, MD, Matthew J. Martin, MD, and Romeo Ignacio, MD
- 47 Geriatrics 523**
Douglas James, MD and Kartik Prabhakaran, MD
- 48 Statistics 537**
Alan Cook, MD, MS
- 49 Ethics, End-of-Life, and Organ Retrieval 549**
Lewis J. Kaplan, MD
- Index 559**

