

CONTENTS

Part 1: Neurological Critical Care

Chapter 1: Altered Mental Status During Critical Illness: Delirium and Catatonia	1
Lucille Bruncker, MD, Jo Ellen Wilson, MD, MPH, Arna Banerjee, MD, MMHC, and Pratik P. Pandharipande, MD, MSCI	
Chapter 2: Seizures, Stroke, and Other Neurological Emergencies	13
Bryn Weise, MD, and Fred Rincon, MD, MSc, MBE, MBA, FCCM	
Chapter 3: Critical Care Management of Traumatic Brain Injury	33
Luis F. Torres, MD, Ryan S. Kitagawa, MD, and Tiffany R. Chang, MD	
Chapter 4: Neurological Criteria for Death in Adults	51
Mehmet S. Ozcan, MD	

Part 2: Cardiovascular Critical Care

Chapter 5: Shock: Classification, Pathophysiological Characteristics, and Management	59
Antoinette Spevetz, MD, FCCM, FACP, Brendan Gill, MD, and Joseph E. Parrillo, MD, FACC, MCCM	
Chapter 6: Hemodynamic Monitoring	75
Neesha Anand, MD, and Michael R. Pinsky, MD, CM, Dr hc, FCCP, MCCM	
Chapter 7: Cardiac Arrest and Resuscitation	85
Stephanie M. Eosten Joyce, MD, FACS, and Kimberly A. Davis, MD, MBA, FACS, FCCM	
Chapter 8: Severe Heart Failure and Cardiogenic Shock	95
Steven M. Hollenberg, MD	
Chapter 9: Update on Sepsis: Epidemiology, Pathophysiology, Diagnosis, and Management	107
Jisoo Lee, MD, and Mitchell M. Levy, MD, MCCM, FCCP	
Chapter 10: Hypovolemic and Hemorrhagic Shock	117
Katherine L. Nugent, MD, and Craig M. Coopersmith, MD, MCCM	
Chapter 11: Acute Myocardial Infarction and Acute Coronary Syndromes	129
Alfred Samura, MD, Fredric Ginsberg, MD, FACC, FCCP, and Joseph E. Parrillo, MD, FACC, MCCM	
Chapter 12: Arrhythmias and Related Devices	147
Ghanshyam Shantha, MD, MPH, and Sean Patrick Whalen, MD	
Chapter 13: Valvular Heart Disease, Acute Aortic Dissection, and Patient Care	
After Cardiac Surgery	159
Anna Budde, MD, Larry Lindenbaum, MD, Michael Wall, MD, and Monica Lupei, MD	
Chapter 14: Hypertensive Crises	171
Jorge G. Ortiz Garcia, MD, MSCR, and Pamela R. Roberts, MD, FCCM, FCCP	
Chapter 15: Anaphylaxis	179
Sylvia Dolinski, MD, FASA, FCCP, and Pamela R. Roberts, MD, FCCP, FCCM	
Chapter 16: Extracorporeal Membrane Oxygenation	185
Justin Tawil, MD, FASA, and Sylvia Dolinski, MD, FASA, FCCP	

Part 3: Respiratory Critical Care

Chapter 17: Airway Management	203
George Williams, MD, FASA, FCCM, FCCP	
Chapter 18: Arterial Blood Gas Interpretation, Capnography, and Pulse Oximetry	217
Benjamin N. Cragun MD, Letitia E. Bible MD, and Bellal A. Joseph MD, FACS	

Chapter 19: Acute Respiratory Failure.	223
Nicholas Ward, MD	
Chapter 20: ICU Management of Obstructive Airway Disease	231
Tony Abdo, MD, FCCP, and Adam Przebinda, MD	
Chapter 21: Principles of Mechanical Ventilation	241
Neil MacIntyre, MD	
Chapter 22: Pulmonary Embolism and Pulmonary Hypertension in the Intensive Care Unit.	251
Jason A. Stamm, MD, MBA	
Chapter 23: Hemoptysis, Pneumothorax, and Inhalational Injuries	263
Scott E. Kopec, MD, FCCP, Marie T. Mullen, MD, FACEP, and Evan W. Jones, MD	
Chapter 24: Interstitial and Immunologic Lung Disease	275
Abhaya P. Trivedi, MD, Samuel Goodman, MD, Micah Levine, MD, and Robert A. Balk, MD	
 Part 4: Critical Care Infectious Diseases	
Chapter 25: Nosocomial Infectious Diseases in the Intensive Care Unit.	287
Gillian Hoshal, DO, and Christine S. Cocanour, MD, FACS, FCCM	
Chapter 26: Antibiotic, Antifungal, and Antiviral Therapies	301
Sylvain Lothier, MD, Gloria Vazquez-Grande, MD, PhD, and Anand Kumar, MD	
Chapter 27: Infections in the Immunosuppressed and Immunocompromised Patient	315
Gloria Vasquez-Grande, MD, PhD, and Anand Kumar, MD	
Chapter 28: Infections in the Critically Ill	327
Alexander Lawandi, MD, MS, and Sameer S. Kadri, MD, MS, FIDSA	
Chapter 29: Severe Epidemics and Pandemics: SARS, MERS, Ebola, and COVID-19	343
Capt. Daniel S. Chertow, MD, MPH	
 Part 5: Hepatic, Gastrointestinal, Hematologic/Oncologic Disease in the ICU	
Chapter 30: Liver Failure, Gastrointestinal Bleeding, and Acute Pancreatitis	351
Gary Alan Bass, MD, MSc, MBA, PhD, MRCSI, FEBS (Em Surg), Jose Pascual Lopez, MD, PhD, FACS, FRCS(C), FCCM, and Lewis J. Kaplan, MD, FACS, FCCP, FCCM	
Chapter 31: Abdominal Problems in the Intensive Care Unit	375
April A. Grant, MD, FACS, Christine Castater, MD, and Cameron Paterson, MD	
Chapter 32: Coagulopathies, Thrombotic Disorders, and Blood Component Therapy	389
Nicholas Duletzke, MD, and Martin Schreiber, MD, FACS, FCCM	
Chapter 33: Oncological Emergencies	403
Padmastuti Akella, MD, and Stephen M. Pastores, MD, MACP, FCCP, FCCM	
 Part 6: Renal and Metabolic Disorders in the ICU	
Chapter 34: Acute Kidney Injury Biomarkers.	413
Jacob Ninan, MD, and Kianoush Kashani, MD	
Chapter 35: Acute Kidney Injury	423
Joseph Ghata, MD, and Adam Przebinda, MD	
Chapter 36: Acute Acid-Base Disorders.	441
Alisha Bhatia, MD, and David M. Rothenberg, MD, FCCM	
Chapter 37: Electrolyte and Metabolic Abnormalities	453
Linda L. Maerz, MD, FACS, FCCM	

Chapter 38: Hyperglycemia, Hypoglycemia, and Acute Diabetic Emergencies.	461
Jan Gunst and Greet Van den Berghe	
Chapter 39: Pituitary, Adrenal, and Thyroid Diseases in the Critically Ill Patient.	469
Abhishek Dutta, MD, and Stephen M. Pastores, MACP, FCCP, FCCM	
Chapter 40: Nutritional Therapies in Critically Ill Patients	479
Pamela R. Roberts, MD, FCCM, FCCP	
Part 7: Environmental and Toxicologic Injury	
Chapter 41: Critical Care of the Burn Patient.	491
Manuel E. Portalatin, DO, MPH, and Robert L. Sheridan, MD	
Chapter 42: Poisoning and Toxicology in the Critically Ill.	503
Michael Sirimaturus, PharmD, BCNSP, BCCCP, FCCM, and Janice L. Zimmerman, MD, MCCM, MACP, FCCP, FRCP	
Chapter 43: Hypothermia, Hyperthermia, and Near Drowning	515
Gabrielle M. Horstman, MD, PhD, and Janice L. Zimmerman, MD, MCCM, MACP, FCCP, FRCP	
Part 8: Pharmacologic Issues in the ICU	
Chapter 44: Sedatives, Analgesics, and Neuromuscular Blockade in the ICU	527
Quinn A. Czosnowski, PharmD, and Craig B. Whitman, PharmD, BCPS, BCCCP	
Chapter 45: Special Caveats of Drugs Used in Critical Care Medicine.	545
Courtney B. McKinney, PharmD, and Brian L. Erstad, PharmD, MCCM	
Part 9: Surgical and Obstetrical Critical Care	
Chapter 46: Solid Organ Transplantation in the ICU	557
Angela Slampak-Cindric, PharmD, BCPS, BCCCP, Christopher Koo, MD, Salman Khan, MD, Cassiopia Lippold, MD, Yatin Mehta, MD, Patricio A. Sanchez-Cueva, MD, and Mary Jane Reed, MD, FACS, FCCM, FCCP	
Chapter 47: Management of the Severely Injured Trauma Patient.	569
Kristin Sonderman, MD, MPH, and Rosemary Kozar, MD, PhD	
Chapter 48: Critical Care Issues in the Postoperative Period	587
S. Rob Todd, MD	
Chapter 49: Obstetric Critical Care.	595
Michael F. O'Connor, MD, FCCM	
Part 10: Administrative and Ethical Issues in the Critically Ill	
Chapter 50: A Perspective on ICU Leadership and Administration.	603
Craig S. Jabaley, MD, FCCM, and Craig M. Coopersmith, MD, MCCM	
Chapter 51: Severity of Illness Scoring Systems	615
Jean-Louis Vincent, MD, PhD, FCCM	
Chapter 52: Principles of Statistics and Evidence-Based Medicine	623
Andrew M. Naidech, MD, MSPH	
Chapter 53: Ethical Concerns in the Management of Critically Ill Patients	631
Fred Rincon, MD, MSc, MBE, MBA, FCCM	
Chapter 54: Patient Centered Care: The ABCDEF Bundle.	639
Christina Boncyk, MD, Brenda Pun, DNP, RN, and E. Wesley Ely, MD, MPH	
Chapter 55: Burnout and Wellness in ICU Clinicians	653
Sarah Gray, MD, and Tina Shah, MD, MPH	
Index.	677