
Contents

Common Abbreviations	xi
 Part I Sepsis: Underlying Mechanisms	
Lipid Mediators in the Pathogenesis and Resolution of Sepsis and ARDS	3
B. Hamilton, L. B. Ware, and M. A. Matthay	
Immune Paralysis in Sepsis: Recent Insights and Future Development . . .	13
B. M. Tang, V. Herwanto, and A. S. McLean	
Persistent Inflammation, Immunosuppression and Catabolism after Severe Injury or Infection	25
P. A. Efron, F. A. Moore, and S. C. Brakenridge	
 Part II Infections and Antimicrobial Issues	
Current Trends in Epidemiology and Antimicrobial Resistance in Neonatal Sepsis	39
S. Chavez-Bueno and R. J. McCulloh	
Prolonged Infusion of Beta-lactam Antibiotics in Critically Ill Patients: Revisiting the Evidence	53
S. A. M. Dhaese, V. Stove, and J. J. De Waele	
Colistin Dosing in Continuous Renal Replacement Therapy	71
P. M. Honore, M. L. N. G. Malbrain, and H. D. Spapen	

Part III Cardiovascular Concerns

Left Ventricular Diastolic Dysfunction in the Critically Ill 79
F. Guarracino, P. Bertini, and M. R. Pinsky

**Management of Intraoperative Hypotension: Prediction, Prevention
and Personalization** 89
T. W. L. Scheeren and B. Saugel

Vasodilatory Shock in the ICU: Perils, Pitfalls and Therapeutic Options . 99
S. Vallabhajosyula, J. C. Jentzer, and A. K. Khanna

Angiotensin in Critical Care 113
A. Hall, L. W. Busse, and M. Ostermann

Part IV Cardiovascular Resuscitation

**Making Sense of Early High-dose Intravenous Vitamin C
in Ischemia/Reperfusion Injury** 125
A. M. E. Spoelstra-de Man, P. W. G. Elbers, and H. M. Oudemans-van Straaten

**Optimal Oxygen and Carbon Dioxide Targets During
and after Resuscitated Cardiac Arrest** 141
M. B. Skrifvars, G. M. Eastwood, and R. Bellomo

Outcome after Cardiopulmonary Resuscitation 155
C. J. R. Gough and J. P. Nolan

**Medico-economic Evaluation of Out-of-hospital Cardiac Arrest Patient
Management** 165
G. Geri

Part V Respiratory Support

A Systematic Review of the High-flow Nasal Cannula for Adult Patients . 177
Y. Helviz and S. Einav

**Role of Tissue Viscoelasticity in the Pathogenesis of Ventilator-induced
Lung Injury** 193
A. Protti and E. Votta

**Alveolar Recruitment in Patients with Assisted Ventilation:
Open Up the Lung in Spontaneous Breathing** 205
A. Lovas and Z. Molnár

Close Down the Lungs and Keep them Resting to Minimize Ventilator-induced Lung Injury 217
 P. Pelosi, P. R. M. Rocco, and M. Gama de Abreu

Diaphragm Dysfunction during Weaning from Mechanical Ventilation: An Underestimated Phenomenon with Clinical Implications 231
 M. Dres and A. Demoule

Part VI Monitoring: New Aspects

Emerging Technology Platforms for Optical Molecular Imaging and Sensing at the Alveolar Level in the Critically ill 247
 T. H. Craven, T. S. Walsh, and K. Dhaliwal

Contributors to Differences between Mixed and Central Venous Oxygen Saturation 263
 T. D. Corrêa, J. Takala, and S. M. Jakob

Bioelectrical Impedance Analysis in Critical Care 275
 P. Formenti, L. Bolgiaghi, and D. Chiumello

Part VII Acute Renal Failure

Acute Kidney Injury and Microcirculatory Shock 293
 P. Guerci, B. Ergin, and C. Ince

Critical Care Ultrasonography and Acute Kidney Injury 309
 R. Wiersema, J. Koeze, and I. C. C. van der Horst

Acute Kidney Injury Risk Prediction 321
 K. Kashani

Early Detection of Acute Kidney Injury after Cardiac Surgery: A Problem Solved? 333
 M. Heringlake, C. Schmidt, and A. E. Berggreen

Biomarker-guided Care Bundles for Acute Kidney Injury: The Time has Come 345
 J. A. Kellum, A. Zarbock, and I. Göcze

Part VIII Renal Replacement Therapy

High Cut-off Membranes for Continuous Renal Replacement Therapy . . . 357
Z. Ricci, S. Romagnoli, and C. Ronco

**The Role of Intraoperative Renal Replacement Therapy
in Liver Transplantation 371**
C. J. Karvellas and S. M. Bagshaw

Part IX Fluid Administration

Effects of Fluids on the Macro- and Microcirculations 383
V. A. Bennett, A. Vidouris, and M. Cecconi

Regulation of Cardiac Output and Manipulation with Fluids 395
H. D. Aya, M. Cecconi, and M. I. Monge García

**Assessment of Fluid Responsiveness in Patients
with Intraabdominal Hypertension 407**
A. Beurton, X. Monnet, and J.-L. Teboul

**Assessment of Fluid Overload in Critically Ill Patients:
Role of Bioelectrical Impedance Analysis 417**
M. L. N. G. Malbrain, E. De Waele, and P. M. Honoré

Part X Coagulopathy and Blood Products

**Prothrombin Complex Concentrate: Anticoagulation Reversal
and Beyond 439**
O. Grottke and H. Schöchl

**Advances in Mechanisms, Diagnosis and Treatment of Coagulopathy
and Progression of Hemorrhage After Traumatic Brain Injury 451**
M. Maegele

Blood Transfusion in Critically Ill Patients with Traumatic Brain Injury 473
A. F. Turgeon, F. Lauzier, and D. A. Fergusson

Part XI Acute Cerebral Concerns

Systemic Inflammation and Cerebral Dysfunction 487
A. M. Peters van Ton, P. Pickkers, and W. F. Abdo

Opening a Window to the Injured Brain: Non-invasive Neuromonitoring with Quantitative Pupillometry	503
D. Solari, J.-P. Miroz, and M. Oddo	
Brain Ultrasound: How, Why, When and Where?	519
C. Robba and G. Citerio	
Continuous Electroencephalography Monitoring in Adults in the Intensive Care Unit	535
A. Caricato, I. Melchionda, and M. Antonelli	
Respiratory Management in Patients with Severe Brain Injury	549
K. Asehnoune, A. Roquilly, and R. Cinotti	
 Part XII Therapeutic Issues	
Central α2-adrenoreceptor Agonists in Intensive Care	561
D. Liu and M. C. Reade	
Rituximab-related Severe Toxicity	579
E. Ghrenassia, E. Mariotte, and E. Azoulay	
Between Dream and Reality in Nutritional Therapy: How to Fill the Gap	597
E. De Waele, P. M. Honoré, and M. L. N. G. Malbrain	
 Part XIII Moving the Patient	
Inter-hospital Transport on Extracorporeal Membrane Oxygenation	609
R. S. Stephens, D. Abrams, and D. Brodie	
Early Mobilization of Patients in Intensive Care: Organization, Communication and Safety Factors that Influence Translation into Clinical Practice	621
C. L. Hodgson, E. Capell, and C. J. Tipping	
 Part XIV The Future	
The Emerging Role of the Microbiota in the ICU	635
N. S. Wolff, F. Hugenholtz, and W. J. Wiersinga	
In Pursuit of Precision Medicine in the Critically Ill	649
M. Shankar-Hari, C. Summers, and K. Baillie	
Future Roles for Xenon in Emergency Medicine and Critical Care	659
T. Laitio and M. Maze	

**Electronic Health Record Research in Critical Care:
The End of the Randomized Controlled Trial? 673**
S. Harris, N. MacCallum, and D. Brealey

Using Telemedicine in the ICU Setting 691
P. R. Menon, T. D. Rabinowitz, and R. D. Stapleton

Index 701