
Contents

Part I Precision Medicine

- 1 **The Role of Transcriptomics in Redefining Critical Illness** 3
T. M. Pelaia, M. Shojaei, and A. S. McLean
- 2 **Metagenomic Sequencing in the ICU for Precision
Diagnosis of Critical Infectious Illnesses.** 15
L. P. A. Neyton, C. R. Langelier, and C. S. Calfee
- 3 **Risk Stratification and Precision Medicine: Is It Feasible
for Severe Infections?** 27
E. J. Giamarellos-Bourboulis, M. Mouktaroudi, and M. G. Netea
- 4 **Interrogating the Sepsis Host Immune Response Using Cytomics.** 39
R. B. Lindell and N. J. Meyer
- 5 **Precision Medicine in Septic Shock.** 49
L. Chiscano-Camón, J. C. Ruiz-Rodriguez, and R. Ferrer

Part II Sepsis Biomarkers and Organ Dysfunction Scores

- 6 **Host Response Biomarkers for Sepsis in the Emergency Room.** 71
O. Turgman, M. Schinkel, and W. J. Wiersinga
- 7 **Repetitive Assessment of Biomarker Combinations as a
New Paradigm to Detect Sepsis Early.** 83
P. Eggimann, Y. -A. Que, and F. Ventura
- 8 **Organ Dysfunction Scores in the Adult ICU** 93
A. Reintam Blaser, K. F. Bachmann, and Y. M. Arabi

Part III ARDS

- 9 ***Ex Vivo* Lung Perfusion Models to Explore the Pathobiology
of ARDS** 111
A. Abdalla, K. Dhaliwal, and M. Shankar-Hari
- 10 **Interpretation of Lung Perfusion in ARDS** 121
L. Ball, F. Marchese, and P. Pelosi

- 11 A Structured Diagnostic Algorithm for Patients with ARDS** 139
L. D. J. Bos, H. -J. de Groot, and P. R. Tuinman
- 12 Hemodynamic Implications of Prone Positioning in Patients with ARDS** 151
C. Lai, X. Monnet, and J. -L. Teboul

Part IV Ventilatory Support

- 13 Update on the Management of Acute Respiratory Failure Using Non-invasive Ventilation and Pulse Oximetry** 165
T. Abe, T. Takagi, and T. Fujii
- 14 Managing the Physiologically Difficult Airway in Critically Ill Adults** 177
C. S. Jabaley
- 15 Dyspnea in Patients Receiving Invasive Mechanical Ventilation** 191
M. Decavèle, C. Bureau, and A. Demoule
- 16 The Potential Risks of Pressure Support Ventilation** 207
A. Proklou, V. Karageorgos, and K. Vaporidi
- 17 Advancing Sedation Strategies to Improve Clinical Outcomes in Ventilated Critically Ill Patients** 221
Y. Shehabi, W. Al-Bassam, and D. Antognini

Part V Extracorporeal Support

- 18 Setting and Monitoring of Mechanical Ventilation During Venovenous ECMO** 239
B. Assouline, A. Combes, and M. Schmidt
- 19 Early Mobilization in Patients Receiving ECMO for Respiratory Failure** 253
K. E. Melville, D. Brodie, and D. Abrams
- 20 Physiological Adaptations During Weaning from Venovenous ECMO** 263
P. D. Collins, L. Giosa, and L. Camporota
- 21 Novel Strategies to Enhance the Efficiency of Extracorporeal CO₂ Removal** 287
G. Florio, A. Zanella, and G. Grasselli
- 22 Extracorporeal Cardiopulmonary Resuscitation for Out-Of-Hospital Cardiac Arrest: A Systematic Approach** 301
D. Rob and J. Bělohávek

23	Temporary and Durable Mechanical Circulatory Support in the ICU	311
	A. Pinsino, M. N. Gong, and M. Rahmanian	
Part VI Fluids and Transfusion		
24	Venous Congestion: Why Examine the Abdomen with Ultrasound in Critically Ill Patients?	327
	A. Y. Denault, P. Rola, and W. Beaubien-Souligny	
25	The Most Important Questions in the Current Practice of Transfusion of Critically Bleeding Patients	339
	A. W. Flint, J. Winearls, and M. C. Reade	
Part VII Acute Renal Failure		
26	Fluid Management and Acute Kidney Injury	357
	N. Lumlertgul, N. Z. Nordin, and M. Ostermann	
27	Cardiorenal Syndrome 1: What's in a Name?	377
	H. A. I. Schaubroeck, W. Vandenberghe, and E. A. J. Hoste	
Part VIII The Microcirculation and Metabolism		
28	Update on the Microcirculatory Assessment of the Critically Ill Patient	391
	S. H. Kuo, B. Ergin, and C. Ince	
29	Intracellular Measurements of Micronutrients in the Critically Ill	401
	A. M. E. de Man, F. A. L. van der Horst, and X. Forceville	
30	Optimal Glycemic Targets in Critically Ill Patients with Diabetes	415
	A. P. Poole, M. Horowitz, and A. Deane	
Part IX A Look Back at COVID-19		
31	Hydroxychloroquine: Time for Reappraisal of Its Effect in COVID-19 Patients	431
	V. Cés de Souza Dantas, J. P. Cidade, and P. Póvoa	
32	Blood Purification in COVID-19 in the Absence of Acute Kidney Injury	441
	P. M. Honoré, S. Blackman, and E. Perriens	
Part X Neurologic Considerations		
33	Epidemiology, Outcomes, and Costs of Pediatric Traumatic Brain Injury Treated in the ICU	453
	E. Mikkonen, R. Raj, and M. B. Skrifvars	

34	Quality Improvement in the Determination of Death by Neurologic Criteria Around the World	467
	A. Lewis, M. P. Kirschen, and R. Badenes	
Part XI Obstetric Issues		
35	COVID-19 ARDS in Pregnancy: Implications for the Non-COVID Era	489
	M. Di Nardo, M. C. Casadio, and V. M. Ranieri	
36	Amniotic Fluid Embolism	503
	E. LaFond and J. Bakker	
Part XII Pre- and Post-Intensive Care		
37	Remote Telehealth Aid During Humanitarian Crisis	513
	J. A. Yelon, S. Subramanian, and L. J. Kaplan	
38	Boarding in the Emergency Department: Challenges and Success Strategies to Mitigate the Current Crisis	523
	H. Bailey	
39	Post-Intensive Care Syndrome Revisited in Light of the COVID-19 Pandemic	533
	K. Kotfis, K. Lechowicz, and W. Dąbrowski	
Part XIII Ethical Issues		
40	Rethinking the Role of Palliative Care in the ICU	549
	M. S. F. Chong and V. Metaxa	
	Index	561