

# Contents

## SECTION I

## GENERAL CRITICAL CARE

Section Editor: **Suhail Sarwar Siddiqui**

- 1. Admission and Discharge Criteria for Intensive Care Unit ..... 3**  
*Raghavendra K, Armin Ahmed*
- 2. Triage in Critical Care ..... 7**  
*Mozammil Shafi, Aleem Abdul Mohammad*
- 3. Severity of Illness Scores in Critical Care..... 11**  
*Suhail Sarwar Siddiqui, Rohit Kumar Patnaik*
- 4. Key Aspects in General Care of Critically Ill: FAST HUGS BID..... 16**  
*Satish Patel, Sulakshana Tripathi, Anil Verma*
- 5. Airway Management in Critically Ill ..... 19**  
*Jyoti Sharma, Armin Ahmed, Suhail Sarwar Siddiqui*
- 6. Glycemic Control in Critically Ill Patients ..... 25**  
*Anupama Vijay Zade, Suhail Sarwar Siddiqui*
- 7. Critical Care Nursing ..... 32**  
*Armin Ahmed*
- 8. Handover Process in an Intensive Care Unit ..... 35**  
*Rohit Kumar Patnaik, Suhail Sarwar Siddiqui*
- 9. Enteral and Parenteral Nutrition in Critically Ill Patients..... 40**  
*Natesh Prabu R, Hemalatha RV*
- 10. Transporting a Critically Ill Patient: Intra- and Interhospital ..... 47**  
*Arshad Ayub*
- 11. Communication with Family of Critically Ill Patient ..... 56**  
*VS Pavan Kumar, Pankaj Kumta*
- 12. Palliative Care in an Indian Intensive Care Setting: Perspectives of an ICU Physician ..... 60**  
*Vishal Shanbhag*

## SECTION II

## RESPIRATORY CRITICAL CARE

Section Editor: **Ashish Srivastava**

- 13. Acute Exacerbation of Chronic Obstructive Pulmonary Disease ..... 69**  
*Rishabh Kumar, Dipanjan Halder*
- 14. Status Asthmaticus ..... 76**  
*Alok Kumar Panigrahy, Gouri Kumar Rath*
- 15. Pleural Diseases in the Intensive Care Unit..... 80**  
*Priyankar Kumar Datta, Ajisha Aravindan*
- 16. Acute Cor Pulmonale in the Intensive Care Unit..... 84**  
*Riddhi Kundu*

<b>17. Management of Severe Acute Respiratory Distress Syndrome.....</b>	<b>88</b>
<i>Indubala Maurya, Ram Gopal Maurya</i>	
<b>18. Basics of Mechanical Ventilation (Noninvasive and Invasive) .....</b>	<b>94</b>
<i>Gourishankar Reddy M, Nidhi M</i>	
<b>19. Noninvasive Oxygen Therapy in Intensive Care Unit .....</b>	<b>100</b>
<i>Chirag Yadav, Megha Agrawal</i>	
<b>20. Approach to a Difficult-to-wean Patient .....</b>	<b>104</b>
<i>Ashish Srivastava, Sadhana Srivastava</i>	
<b>21. Extracorporeal Respiratory Support (VV-ECMO, ECCO<sub>2</sub>R) .....</b>	<b>107</b>
<i>Anant Vikram Pachisia, Divya Pal</i>	

## SECTION III

## HEPATIC, GASTROINTESTINAL, AND ENDOCRINE EMERGENCIES IN ICU

Section Editor: **Gaurav Jain**

<b>22. Upper Gastrointestinal Bleeding .....</b>	<b>115</b>
<i>Arvind B Guledagudd, Udhayachander</i>	
<b>23. Lower Gastrointestinal Bleeding .....</b>	<b>119</b>
<i>Ankila Gupta, Deepak Daunaria</i>	
<b>24. Severe Acute Pancreatitis .....</b>	<b>124</b>
<i>Pankaj Singh Rana, Saurabh Chandrakar</i>	
<b>25. Approach to a Patient with Acute Liver Failure .....</b>	<b>131</b>
<i>Richa Lohani, Ankit Agarwal</i>	
<b>26. Approach to a Patient with Acute Abdomen .....</b>	<b>140</b>
<i>Manish Kumar Shah, Davis Cherian</i>	
<b>27. Abdominal Compartment Syndrome .....</b>	<b>148</b>
<i>Saurabh Chandrakar, Gaurav Jain</i>	
<b>28. Approach to Thyroid and Adrenal Emergency .....</b>	<b>153</b>
<i>Nupur B Patel, Davis Cherian</i>	
<b>29. Approach to Diabetic Emergencies .....</b>	<b>161</b>
<i>Haritha I, Vadhan Prasanna S</i>	

## SECTION IV

## NEUROCRITICAL CARE

Section Editor: **Suhail Sarwar Siddiqui**

<b>30. Approach to a Patient with Altered Consciousness Presenting to the Intensive Care Unit .....</b>	<b>171</b>
<i>Mohd Mustahsin Malik</i>	
<b>31. Acute Meningitis and Encephalitis .....</b>	<b>175</b>
<i>Ujwal Prakash Dhundi</i>	
<b>32. Guillain-Barré Syndrome .....</b>	<b>183</b>
<i>Vikas Bhagat, Avijit Das</i>	
<b>33. Status Epilepticus .....</b>	<b>195</b>
<i>Satish Vishnu Sarode, Suhail Sarwar Siddiqui</i>	
<b>34. ICU-acquired Weakness .....</b>	<b>202</b>
<i>Jacob George P</i>	
<b>35. Intracranial Pressure: Monitoring and Management.....</b>	<b>205</b>
<i>Nupur Karan, Shakti Bedanta Mishra</i>	

<b>36. Delirium in Intensive Care Unit: Detection, Evaluation, and Prevention .....</b>	<b>211</b>
<i>Harish MM, Shridhar M Gidaganti</i>	
<b>37. Acute Cerebrovascular Diseases: Ischemic and Hemorrhagic Strokes .....</b>	<b>216</b>
<i>Rishi Shankar, Mohd Saif Khan</i>	
<b>38. Declaration of Brain Death .....</b>	<b>227</b>
<i>Satyajit Choudhury, Rupali Patnaik</i>	

## SECTION V

## NEPHROCRITICAL CARE

Section Editor: **Ranajit Chatterjee**

<b>39. Arterial Blood Gas Interpretation: From Bench to Bedside .....</b>	<b>235</b>
<i>Sanjay Dhanuka, Vishvesh Mehta</i>	
<b>40. Metabolic Acidosis .....</b>	<b>242</b>
<i>Sumit Sachan, Bikram Kumar Gupta, Yash Javeri</i>	
<b>41. Metabolic Alkalosis: Practical Considerations .....</b>	<b>246</b>
<i>YP Singh, Akhil Taneja</i>	
<b>42. Dysnatremias: From Bench to Bedside .....</b>	<b>251</b>
<i>Vivek Joshi, Sourabh Jain</i>	
<b>43. Dyskalemias: From Bench to Bedside .....</b>	<b>259</b>
<i>Anirban Hom Choudhuri, Sakshi Duggal</i>	
<b>44. Crystalloids for Resuscitation: A Balanced Approach .....</b>	<b>264</b>
<i>Ranajit Chatterjee, Ahsina Jahan Lopa, Proma Orchi</i>	
<b>45. Colloids for Resuscitation: Present Status in ICU Management .....</b>	<b>268</b>
<i>Srinivas Samadevan</i>	
<b>46. De-resuscitation: Current Practice in ICU .....</b>	<b>272</b>
<i>Raghavendra Kotal, Pradeep Rangappa</i>	
<b>47. Acute Kidney Injury: Definition, Diagnosis, Evaluation, and Management .....</b>	<b>279</b>
<i>Sharmili Sinha, Vivek Gupta</i>	
<b>48. Renal Replacement Therapy: What, When, How? .....</b>	<b>284</b>
<i>Ajith Kumar AK, Sridhar NV Reddy</i>	
<b>49. Continuous Renal Replacement Therapy: Basics Including Anticoagulation Strategies .....</b>	<b>290</b>
<i>Vinay Singhal, Ashutosh Bhardwaj</i>	
<b>50. Renal Replacement Therapy and Antibiotic Dosing .....</b>	<b>296</b>
<i>Vivek Gupta, Sharmili Sinha</i>	
<b>51. Continuous Renal Replacement Therapy: Dose and Prescription .....</b>	<b>302</b>
<i>Ranajit Chatterjee, Nikhilesh Jain</i>	

## SECTION VI

## INFECTIONS AND ANTIBIOTICS

Section Editor: **Mohd Saif Khan**

<b>52. Fever in the Intensive Care Unit: Approach and Management .....</b>	<b>309</b>
<i>Nishanth Baliga, Kandaswamy N</i>	
<b>53. Pneumonias in ICU: CAP, HAP, and VAP .....</b>	<b>317</b>
<i>Atri Gangopadhyay, Tejveer Singh</i>	
<b>54. Surgical Wound Classification and Perioperative Antibiotic Therapy .....</b>	<b>326</b>
<i>Himaaldev GJ, Divya Shetty</i>	

<b>55. Approach to Acute Febrile Illness in Tropical Countries .....</b>	<b>331</b>
<i>Gopal Chawla, Nupur Abrol, Mohd Saif Khan</i>	
<b>56. Diarrhea in Intensive Care Unit .....</b>	<b>338</b>
<i>Sumalatha Arunachala, Jeevan J</i>	
<b>57. Complicated Intra-abdominal Infections .....</b>	<b>345</b>
<i>Sudipto Banerjee, Barun Ram, Priyesh Kumar</i>	
<b>58. Hepatobiliary Infections in ICU .....</b>	<b>351</b>
<i>Preetham Chandrappa, Puneeth J</i>	
<b>59. Complicated Urinary Tract Infections in Intensive Care Unit .....</b>	<b>358</b>
<i>Palanisamy Matheswaran, Shashank Shivarama Danndhiganaahalli, Mohd Saif Khan</i>	
<b>60. Central Line-associated and Catheter-related Bloodstream Infections and Infective Endocarditis .....</b>	<b>363</b>
<i>Ammapalli Srilekha</i>	
<b>61. Severe Soft-tissue Infections in ICU .....</b>	<b>369</b>
<i>Prasoon Gupta, Sangeeta Chakroborty</i>	
<b>62. Antibiotic Resistance in Intensive Care Unit: Classification, Risk Factors, and Preventive Strategies .....</b>	<b>376</b>
<i>Asif Ahmed, Mahajyoti Chakravorty, Sujeet Ashok Joshi</i>	
<b>63. Prevention and Control of Infections in Intensive Care Unit: Protocols and Bundles .....</b>	<b>382</b>
<i>Kumari Seema, Mohd Saif Khan, Abhay Kumar</i>	
<b>64. Basic Principles Governing the Judicious Use of Antibiotics in Intensive Care Unit .....</b>	<b>387</b>
<i>Asif Ahmed, Anu Prasad</i>	
<b>65. Detection, Evaluation, and Management of Sepsis: Highlights from the Recent Surviving Sepsis Campaign Guidelines .....</b>	<b>392</b>
<i>Arun Raj Pandey, Arnavjyoti Das</i>	
<b>66. Invasive Fungal Infections in ICU .....</b>	<b>399</b>
<i>Nupur Gupta, Utsav Sharma</i>	
<b>67. Infections in Immunocompromised Patients .....</b>	<b>406</b>
<i>Swapna Chitra Vijayakumaran, Mohd Saif Khan</i>	

## SECTION VII

## OBSTETRIC CRITICAL CARE

Section Editors: **Neeraj Kumar, Vanita Mhaske**

<b>68. Physiological Changes in Pregnancy: The Intensivist's Perspective .....</b>	<b>417</b>
<i>Vanita Mhaske, Bikram Kumar Gupta, Diptimala Agarwal</i>	
<b>69. Approach to a Pregnant Patient with Respiratory Distress .....</b>	<b>420</b>
<i>Nikesh Kumar Roshan</i>	
<b>70. Approach to a Pregnant Patient with Altered Mental Status and Seizures .....</b>	<b>425</b>
<i>Prakash Kumar Dubey, Shagufta Naaz</i>	
<b>71. Approach to a Pregnant Patient with Acute Liver Failure .....</b>	<b>432</b>
<i>Kunal Singh</i>	
<b>72. Peripartum Cardiomyopathy .....</b>	<b>436</b>
<i>OP Sanjeev, Tanmoy Ghatak</i>	
<b>73. Maternal Sepsis: Sepsis in Pregnancy and Puerperium .....</b>	<b>438</b>
<i>Monika Anant</i>	

<b>74. Embolic Syndromes in Pregnancy .....</b>	<b>444</b>
<i>Abhyuday Kumar</i>	
<b>75. Postpartum Hemorrhage with Blood Component Therapy and Massive Transfusion .....</b>	<b>448</b>
<i>Neeraj Kumar</i>	
<b>76. Obstetric Critical Care Nursing.....</b>	<b>456</b>
<i>Hansmukh Jain, Khumukcham Anupama Devi</i>	

## SECTION VIII

## TRAUMA CRITICAL CARE

Section Editor: **Natesh Prabu R**

<b>77. Approach to Polytrauma with Point-of-care Ultrasound.....</b>	<b>463</b>
<i>Carol Shayne D Silva, Jaikumar Darshan Mulchandani</i>	
<b>78. Approach to Spine Injury: A Focus on C-spine.....</b>	<b>472</b>
<i>Kiran Kumar G, Virinchi Sanapala</i>	
<b>79. New Advances in Trauma Management .....</b>	<b>479</b>
<i>Manu Varma MK, Vanitha N</i>	
<b>80. Approach to Polytrauma in a Pregnant Patient.....</b>	<b>485</b>
<i>Thomas Sudarsan, Lovely Thomas</i>	
<b>81. Trauma-induced Coagulopathy .....</b>	<b>491</b>
<i>Karthikkeyan Rajachandran, Santhosh Raja</i>	
<b>82. Approach to a Patient with Burns: Challenges in the First 48 hours.....</b>	<b>499</b>
<i>Shivakumar N</i>	

## SECTION IX

## CARDIAC CRITICAL CARE

Section Editor: **Ritu Singh**

<b>83. Post-ROSC: Care in Intensive Care Unit .....</b>	<b>505</b>
<i>Akrity Singh, Akhileshwar</i>	
<b>84. Acute Coronary Syndromes.....</b>	<b>510</b>
<i>Shankar Vallapu, Kobdamudi Sai Kiran</i>	
<b>85. Acute Left Ventricular Failure.....</b>	<b>516</b>
<i>Sunil Kumar Jena, Saumitra Misra</i>	
<b>86. Heart Failure with Preserved Ejection Fraction .....</b>	<b>521</b>
<i>Santosh Kumar Nayan, Raj Bahadur Singh, Santosh Kumar</i>	
<b>87. Hypertensive Emergencies.....</b>	<b>527</b>
<i>Jay Prakash, Tushar Kumar, Sanjeev Kumar</i>	
<b>88. Pulmonary Embolism and Deep Venous Thrombosis .....</b>	<b>531</b>
<i>Ranjeet Rana De, Saurav Shekhar</i>	
<b>89. Acute Aortic Syndrome.....</b>	<b>536</b>
<i>Amarja Havaladar, Veronica Lobo</i>	
<b>90. Tachyarrhythmia .....</b>	<b>542</b>
<i>Nitin Kumar, Siddharth Singh, Jaimala Misra</i>	
<b>91. Bradyarrhythmia .....</b>	<b>551</b>
<i>Sulakshana Tripathi, Soumya Sankar Nath</i>	

- 92. Vasopressors and Inotropes.....555**  
*Prabhat Kumar, Ravi Anand*
- 93. Recent Advances in Cardiopulmonary Resuscitation .....560**  
*Bhavya Dube, Mallikarjun Dube*
- 94. Approach to a Patient with Shock .....565**  
*Swapna Chitra Vijaykumaran, Nishanth Baliga, Sheila Nainan Myatra*

**SECTION X****POISONING**

Section Editor: **Syed Moied Ahmed**

- 95. Approach and General Management of a Patient with Unknown Poisoning .....575**  
*Jyotishka Pal, Bihan Dey Niyogi, Rakesh Kumar Tyagi*
- 96. Aluminum Phosphide Poisoning .....580**  
*Gyanendra Kumar Gautam, Bikram Kumar Gupta, Saravana Babu*
- 97. Alcohol Poisonings: Methanol and Ethylene Glycol.....584**  
*Abu Nadeem, Ranvir Singh Tyagi, Geeta Karki*
- 98. Beta-blocker Poisoning: Diagnosis and Management.....589**  
*Priti Sood, Jasbir Singh Chhabra, Mohd Sabihul Islam*
- 99. Organophosphates and Organochlorine Toxicity: Diagnosis and Management .....592**  
*Manpreet Singh, Dheeraj Kapoor, Lalit Singh*
- 100. Snake Bite Poisoning: All that we must know.....598**  
*Syed Moied Ahmed, Saikat Sengupta, Ahsan Ahmed*

**SECTION XI****ONCOCRITICAL CARE**

Section Editor: **Rakesh Garg**

- 101. Critical Care Management in Patients after Thoracic Cancer Surgeries .....607**  
*Mahima Gupta, Rakesh Garg*
- 102. Hepato-pancreato-biliary Oncosurgeries: Critical Care Principles for Rapid Recovery .....611**  
*Sohan Lal Solanki, Shreya Raha*
- 103. Vascular Access Care in Cancer Patients: Key Principles and Strategies.....617**  
*Vibhavari Naik, Basanth Kumar Rayani*
- 104. Need for Dedicated Oncocritical Care Setup .....622**  
*Rakesh Garg, Kiran Mahendru*
- 105. Tumor Lysis Syndrome.....625**  
*Saurav Mitra Mustafi, Swati Bhan*
- 106. Metabolic Emergencies in Oncology Patients .....629**  
*Deven Juneja, Anish Gupta, Omender Singh*
- 107. Coagulation Derangements in Critically Ill Cancer Patients.....635**  
*Rohini Dattatri, Indubala Maurya*
- 108. Role of Point-of-care Ultrasound in a Critically Ill Patient .....642**  
*Saurabh Taneja, Gourav Mittal*