Contents

SECTION 1: Basic Concepts

1. **Pathophysiology of Critical Illness** 3
   Gunadhar Padhi, Masood Ahmed Chandsha
2. **Nutrient Metabolism in Critical Illness** 14
   Dedeepiya Devaprasad, Krishnan Sriram, Nagarajan Ramakrishnan
3. **Immune Responses and Immunometabolism: An Overview** 21
   B Ravinder Reddy
4. **Malnutrition and Body Composition Assessment in Critical Illness** 32
   Radha Reddy Chada
5. **Nutritional Assessment in Critical Illness** 41
   Daphnee Lovesley
6. **Nutrition in Inflammatory Bowel Disease** 58
   Ritu Sudhakar, Kirandeep Kaur

SECTION 2: Planning and Nutritional Interventions

7. **Indirect Calorimetry in Critical Illness** 91
   Sanjith Saseedharan
8. **Macronutrients in Critical Illness: Nutrition Backbones for Survival and Recovery!** 98
   Varsha M Asrani
9. **Micronutrient Physiology and Requirements in Critical Illness** 112
   Ranil Jayawardena
10. **Probiotics, Prebiotics, Synbiotics, and Postbiotics** 118
    B Ravinder Reddy
11. **Mechanical and Metabolic Complications of Parenteral Nutrition** 124
    Subhankar Paul, Rajesh Pande

SECTION 3: Enteral Nutrition in Critical Illness

12. **Enteral Nutrition in Critical Illness: Physiological Benefits and Beyond** 137
    Krishnan Sriram, Chitra Mahesh
13. **Gastrointestinal Disturbances in Critically Ill Patients** 146
    Ganshyam Jagathkar, Radha Reddy Chada
14. **Enteral Access: Device and Selection** 155
    Srinivas Samavedam, Arun Kumar

15. **Initiation, Maintenance, and Progression of Enteral Feeds 161**
Urvi Shukla, Arti Bhalerao, Anuja Phalle
16. **Monitoring and Management of Complications of Enteral Nutrition 171**
Deven Juneja, Anjali Mishra

SECTION 4: Parenteral Nutrition in Critical Illness

17. **Parenteral Nutrition: Indications and Formulations 187**
Arijit Sardar, Rajesh Pande
18. **Intravenous Access for Parenteral Nutrition 191**
Viswanath Atreyapurapu, PC Gupta
19. **Safe Practices in Parenteral Nutrition Therapy 198**
Priya Mistry, Gil Hardy
20. **Nutrient–Drug: Interactions and Compatibility 210**
T Mohan S Maharaj, Varalakshmi Diwakarla
21. **Fluid and Electrolytes in Critical Illness 227**
Bharat Jagiasi, Priya Sonavdekar

SECTION 5: Nutrition in Specific Situations

22. **Nutrition in Medical ICU Patients 245**
Chitra Mehta, Yatin Mehta
23. **Nutrition in Pediatric ICUs 252**
Anshu Joshi
24. **Nutritional Therapy in the Perioperative Period 258**
Robert Martindale, Sarah Warren, Malissa Warren
25. **Nutrition in Cardiac and Cardiothoracic Intensive Care 268**
Shweta Suri Kandpal
26. **Clinical Nutrition in Oncology 281**
Vanessa Fuchs-Tarlovsky
27. **Nutrition in Severe Acute Pancreatitis 301**
Deeksha Kapoor, Adarsh Chaudhary
28. **Nutrition in Short Bowel Syndrome and Enterocutaneous Fistulas 313**
Gil Hardy, Chen Liu, Emma Ludlow, Ian Bissett
29. **Nutrition in Critically Ill Patients with Renal Failure 322**
Penmetsa Vijay Varma, Rajasekara Chakravarthi, Mahesh Kota
30. **Nutrition in Critically Ill Patients with Respiratory Failure 327**
Dhruva Chaudhry, Vineela Surapaneni
31. **Nutrition in the Critical Patient with Obesity 334**
Anna Ferreira, Idiberto José, Zotarelli Filho, Durval Ribas Filho

32. Nutrition in Critically Ill Patients with Liver Dysfunction and Failure 342
Keerti Brar, Rahul Harne, Sweta J Patel

33. Nutrition in Major Trauma and Burns 348
Khusrav Bajan, Shradha K Bajan

34. Nutrition in Neurology and Neurosurgical Patients 360
Barkha Bindu, Amit Goyal, Indu Kapoor, Hemanshu Prabhakar

35. Nutrition in Solid Organ Transplantation and Immunocompromised Patients 376
Pooja Tyagi, Sweta J Patel, Jagadeesh KN

36. Nutritional Support in a Critically Ill Parturient 390
Sunil T Pandya, Nishanth Aasuri

SECTION 6: Special Issues in Critical Illness

37. Immunonutrition in the Critically Ill 401
William Manzanares, Gil Hardy

38. Dysglycemia in Critical Illness 413
Shweta Ram Chandankhede, Balguri Mukesh Kumar

39. Refeeding Syndrome in Critically Ill Adults: Preemptive Strategies 425
Krishnan Sriram, Chitra Mahesh

40. Nutrition in Severe Hemodynamic Failure and in Noninvasive Ventilation 436
Khalid Ismail Khatib, Subhal Bhalchandra Dixit

41. Gut Microbiome in Critical Illness 440
B Ravinder Reddy

42. Evaluation of Sarcopenia in Critical Illness 447
Deeksha Kapoor

43. Feeding Options in Patients with Intra-abdominal Hypertension 456
Sunil Karanth, Mahesha P

44. Nutrition and Wound Healing 459
Sónia Maria Cabral

SECTION 7: Organization of Nutritional Support Teams

45. Nutrition Support Team 471
Bamini Arthi G Murugesh

46. Is it Cost-effective to Feed Critically Ill Patients? 477
Sadanand Kulkarni, Sunil Honkalas

Index 485