Contents

Section 1: Basic Facts of Oxygen

1. **Industrial and Medical Oxygen Production and Differences 3**
   Balkrishna Nimavat, Abhijit Deshmukh, Kapil Zirpe
2. **Medical Piped Gas Structure, Design, and Safety Systems 8**
   Prajakta Pote, Kapil Zirpe
3. **Medical Compressed Gas Cylinder: Handling and Use 16**
   Vikas Marwah, Deepu K Peter, Robin Choudhary
4. **Cryogenic Liquid Medical Oxygen..... 22**
   Shikha Sahi, Apoorva Tiwari, Jeetendra Sharma
5. **Oxygen Concentrators..... 32**
   Khalid Ismail Khatib, Sameer V Kulkarni, Subhal B Dixit
6. **Oxygen Hazards and Safety 35**
   Deven Juneja, Prashant Nasa, Sahil Kataria
7. **Oxygen Audit 40**
   Rahul Pandit

Section 2: Physiology and Monitoring of Oxygen Therapy

8. **Physiology of Gas Exchange 47**
   Shilpushp Bhosale, Malini Joshi, Atul P Kulkarni
9. **Goals of Oxygen Therapy 51**
   Vikram Damaraju, Inderpaul Sehgal
10. **Drive to Breathe and Carbon Dioxide Retention..... 55**
    Prashant Nasa, Deven Juneja
11. **Oxygen Transport 59**
    Ujwala Mhatre Ahluwalia, Kapil Borawake
12. **Oxyhemoglobin Dissociation Curve..... 64**
    Srinivas Samavedam, Shabeer Ahmed Khan
13. **Diffusion of Oxygen and its Applied Physiology 69**
    Srinivas Samavedam, Kiran Raghavendra Asrnanna

14. Pulse Oximetry: Understanding and Limitations 73
Kanwalpreet Sodhi, Manender Kumar

15. Venous and Arterial Blood Gas Analysis 80
Rajesh Pande, Maitree Pandey, Jitin Sharma

SECTION 3: Oxygen Delivery Systems for the Individual Patients

16. Oxygen-Delivery Devices 91
Tapas Kumar Sahoo, Santanu Bagchi, Rajesh Chandra

17. Humidification 99
Vikram Damaraju, Inderpaul Sehgal

18. High-Flow Nasal Cannula 103
Harjit Dumra, Mansi Dandnaik

19. Hyperbaric Oxygen Therapy 109
Gunjan Chanchalani, Sunil Amin, Kanwalpreet Sodhi

20. Oxygen Toxicity 115
Shrikant Sahasrabudhe, Beena Daniel

SECTION 4: Oxygen Targets

21. Effects of Hypoxia and Hypoxemia 123
Supradip Ghosh, Sonali Ghosh

22. How does Oxygen Therapy Work? 128
Deepak Govil, Divya Pal

23. Oxygen Therapy and Targets in Disease Specifics 134
Sachin Gupta, Deeksha Singh Tomar

Index 139