Contents

Section 1: Introduction to Newborn Medicine

1. **Evidence-based Neonatology in the Age of Information and Big Data** 3
   Balaji Govindaswami
2. **Historical Understanding and Current Approaches in Neonatology** 12
   Sharyn Frentner, Robin Daughters Wu, Balaji Govindaswami
3. **Educational Interventions to Improve Newborn Care** 21
   Emily Altick Hartford
4. **Managing Your Patients' Data with an Electronic Database** 31
   Joseph Schulman
5. **Quality and Safety** 46
   Aarti Raghavan

Section 2: Healthcare Services Delivery

6. **Mental Health and Emotional Well-being in the NICU: Addressing the Next Frontier in Family-integrated Care** 59
   Sangeeta Mallik
7. **Utilization of Advanced Practice Providers in the Neonatal Intensive Care Unit** 65
   Valerie D Phebus, Korinne S Van Keuren
8. **Pediatric Hospital Medicine and its Evolution in the United States** 70
   Susan Flesher
9. **Home Follow-up of the High-risk Infant** 74
   Rupalee Patel, Adebola Olarewaju
10. **How Charitable Giving can Enhance Newborn Care** 85
    Elizabeth M Nielsen

Section 3: Perinatal

11. **Obstetric Contributions to Neonatal Morbidity and Mortality—Overview** 95
    Francesca C Ianovich, Matthew J Garabedian
12. **Disorders of the Membranes, Placenta, and Cord** 104
    Shannon Dralla, Matthew J Garabedian
13. **Neonatal Encephalopathy: An Obstetric Perspective** 112
    Stacy Yadava, Matthew J Garabedian

Section 4: Normal Newborn Care

14. **Newborn Physical Examination** 121
    Cherry C Uy
15. **Caring for Families through Pregnancy Loss or Death of an Infant** 129
    Donna F Wallerstein

16. **Circumcision** 136
Stephen Harris

17. **Couplet Care and Common Nursery Issues** 145
Priya Jegatheesan, Sudha Rani Narasimhan, Dongli Song

Section 5: Disorders of Structure and Function in the Fetus and Neonate

18. **Prenatal Diagnosis** 155
Robert L Wallerstein

19. **Birth Defects** 160
Robert L Wallerstein

20. **Inborn Errors of Metabolism and Newborn Screening** 166
Gregory M Enns

21. **Common Surgical Conditions of the Neonate** 177
Stephanie D Chao, Julie R Fuchs

22. **Point-of-Care Testing in Newborn Screening: Hearing Loss and Critical Congenital Heart Disease** 191
Rebecca Barnett

Section 6: Cardiorespiratory Disorders

23. **Extracorporeal Membrane Oxygenation in the Neonate** 205
John Patrick Cleary

24. **Assessment and Treatment Options for Neonates with Congenital Heart Disease** 211
Christina T Sheridan

25. **Pulmonary Hypertension in the Neonatal Intensive Care Unit Setting** 223
Yueh-Tze Lan

26. **Patent Ductus Arteriosus** 235
Priya Jegatheesan, Balaji Govindaswami

27. **Common Cardiorespiratory Disorders at Birth** 243
Kamakshi Devarajan, Balaji Govindaswami

Section 7: Fetal and Neonatal Brain Development, and Neurodevelopmental Follow-up

28. **Feeding and Brain Development in Preterm Infants: Central Pattern Generation and Suck Dynamics** 255
Steven M Barlow, Austin O Rosner, Dongli Song

29. **Feeding and Brain Development in Preterm Infants: Role of Sensory Stimulation** 264
Steven M Barlow, Austin O Rosner, Dongli Song

30. **The Gut-Microbiota-Brain Axis: Implications for Neonatal Neurodevelopment** 275
Dongli Song, Laishuan Wang

31. **Neonatal Seizures** 284
John Sum

32. **Newborn Populations at Risk for Adverse Neurodevelopmental Outcomes** 292
Ira Adams-Chapman

33. **Late Preterm Infants, Cerebral Palsy, and Hypoxic-Ischemic Encephalopathy** 305
Ira Adams-Chapman

Section 8: Growth, Lactation and Nutrition

34. Body Composition and Electrolytes **321**
Sonya Misra

35. Macronutrients and Micronutrients **331**
Sonya Misra

36. Stages of Nutritional Support **345**
Sonya Misra

37. Human Milk Composition and Lactation **355**
Sudha Rani Narasimhan, Alganesh G Kifle

38. Necrotizing Enterocolitis **365**
Arwin Valencia, Antoine Soliman

Section 9: Pain and Addiction

39. Newborn Pain: Recognition and Management **377**
Matthew JR Nudelman

40. Introduction to Addiction Medicine **390**
Balaji Govindaswami

Section 10: Other Common Newborn Conditions

41. Skin Disorders in the Newborn **403**
Noah Craft, Zachary Max Goldstein, Ki-Young Yoo

42. Common Orthopedic Problems in the Newborn **423**
Robert M Bernstein, Ronald A Roiz

43. Oxygenation, Oxygen Saturation, Retinopathy of Prematurity and Other Hyperoxia-related Damage in Newborn Infants: A Return to the Basics **432**
Augusto Sola, Lily C Chen

44. Neonatal Gastrointestinal and Liver Disease **441**
Christopher Fink

45. Nephrology in the Neonate **451**
Dechu P Puliyanda, Rashmi Kirpekar

Index *465*