Contents

Section 1: Neonatology

1. Long-term Follow-up of High-risk Neonates **3**

Kanya Mukhopadhyay

- Who is a High-risk Neonate? 3
- Why These Babies Need a Follow-up? 4
- Who Should do the Follow-up? 4
- What to Follow-up? 5
- Which Postnatal Chart to Follow? 6
- Post-discharge Nutrition 7
- Complementary Feeding of Preterm Neonates 7
- Neurological Outcome 8
- Immunization 16
- Early Intervention: Do We Need?/When?/How? 16

2. Infection, Inflammation, and Perinatal Asphyxia **24**

B Bharathi, B Vishnu Bhat

- Pathophysiology of Asphyxia 24
- Role of Inflammation 25
- Perinatal Models of Hypoxic-ischemic Injury 25
- Potentiation of Perinatal Hypoxic-ischemic Brain Injury by Inflammation Provoked by Infection 26
- Inflammation and Brain Injury in Human Infants 26
- Biochemical Mechanisms of Oligodendroglial Death with Hypoxia-ischemia 27
- Diagnosis of Sepsis in Asphyxia Clinical 31
- Investigations 31

3. Neonatal Transport **39**

Preetham Kumar, Dinesh Kumar Chirla

- Status of Neonatal Transfers in India 40
- Types of Transport 40
- Indications for Transport 40
- Organization of a Neonatal Transport Service 41

4. Congenital Diaphragmatic Hernia **50**

M Ragavan

- Types 50
- Embryology 51
- Causes 51
- Clinical Manifestations 52
- Diagnosis 53

- Management 53
- Prognosis 55

5. Neonatal Anemia **58**
Gopakumar Hariharan, R Sivji

- Causes of Neonatal Anemia 59
- Clinical Features 60
- Diagnostic Evaluation 60
- General Guidelines of Treatment and Prevention of Neonatal Anemia 65
- Follow-up of Neonatal Anemia 68

6. Intrauterine Growth Retardation **71**
Bashir A Charoo, Javeed Iqbal Bhat

- Definition 72
- Incidence 72
- Etiology 73
- Diagnosis 74
- Management 74
- Complications 76
- Long-term Consequences of Intrauterine Growth Retardation 76

7. Neonatal Sepsis: Trends in Diagnosis and Management **80**
Sudhanshu Kumar Das

- Newer Diagnostic Tests 80
- Therapeutic Aspects 90
- Immunoglobulin 97

8. Acute Renal Failure in Neonates **115**
R Sivji

- Definition 115
- Incidence 116
- Kidney and Maturity 116
- Genetic Background for ARF 117
- Pathophysiology 117
- Clinical Evaluation 118
- Effect of Hypoxia 120
- Management 121
- Renal Replacement Therapy 128
- Prognosis 128

9. Air Leaks in Newborns: A Neonatologist's Nightmare! **132**
Deepak Louis, Kanya Mukhopadhyay

- Incidence 132
- Pathophysiology 133
- Risk Factors 133
- Pneumothorax 133
- Pulmonary Interstitial Emphysema 135

- Pneumomediastinum 137
- Pneumopericardium 138
- Other Air Leaks 139

10. Developmentally Supportive Care in Preterm Neonates 141
Sriparna Basu, Ashok Kumar

- Developmentally Supportive Care 142
- Development of the Brain 143
- Conceptual Model of Developmentally Supportive Care 144
- Newborn Individualized Developmental Care and Assessment Program 147

11. Proteomics in Fetal and Neonatal Medicine 156
Sriparna Basu, Ashok Kumar

- Definition 157
- Other Definitions Related to Proteomics 157
- Differences Between Traditional Protein Biochemistry and Proteomics 158
- Tools of Proteomics 158
- Techniques for Proteomic Analysis 158
- Applications of Proteomics 160
- Scope of Proteomics 160

Section 2: Nutrition/Malnutrition

12. Infant Feeding Revisited 175
Sanjay Prabhu, Shakuntala S Prabhu, Satish Tiwari

- WHO and UNICEF: Optimal Infant Feeding Guidelines 175
- Complementary Feeding and Infant Nutrition 180

13. Vitamin A Deficiency Disorders: Diagnosis and their Assessment 189
Umesh Kapil, Mamta Tyagi

- Magnitude of Problem 190
- Causes of Vitamin A Deficiency Disorders 191
- Health Consequences of Vitamin A Deficiency Disorders 195
- Clinical Manifestations 196
- Survey for VAD in Communities 198
- Basic Steps in Planning a Community Survey for Vitamin A Deficiency 211
- Recent Issues in Vitamin A Supplementation to Children in India 212
- Recommendation on Eligibility of Children for Vitamin A Supplementation Program: IAP Subspecialty Chapter on Nutrition 214
- VA-Related Deaths in Assam, India during 2001 215

14. Nutritional Deficiencies in Obesity: The Cause or the Effect? 223
KE Elizabeth, Priya Sreenivasan

- Vitamin D, Obesity, and the Metabolic Syndrome 226
- Role of Fat Cells 227
- Other Vitamins and Obesity 228

- Iron and Obesity 229
- Zinc and Obesity 229
- Magnesium and Obesity 230
- Perinatal Nutrition, Long Chain Polyunsaturated Fatty Acids, and Obesity 230
- Hormonal Influence on Energy Balance 231
- Role of Leptin in Obesity 232
- Preventive and Treatment Strategies 233

15. Severe Acute Malnutrition: Therapeutic Strides **239**
Urmila Deshmukh, Satish Tiwari

- Definitions and Classification 239
- Treatment of SAM 240

Section 3: Gastroenterology/Hepatology

16. Gastroesophageal Reflux Disease **263**
Ajay Gaur

- Complications 265
- Diagnosis 266
- Management 268

17. Chronic Abdominal Pain **274**
Rajniti Prasad, Nishant Verma, Utpal Kant Singh

- Epidemiology 275
- Etiology 275
- Management 284
- Treatment Modalities 285
- Prognosis 287

18. Acute Liver Failure **291**
Neelam Mohan, Maninder Dhaliwal

- Definition and Classification 291
- Etiology and Epidemiology 292
- Pathogenesis 294
- Clinical Features 295
- Goals of Management 297
- Outcome 305

Section 4: Developmental Pediatrics/Child Psychiatry

19. Attention Deficit Hyperactivity Disorder **311**
Vinesh Gupta, Anjali Tyagi

- Historical Aspects 311
- Assessment and Diagnosis 312
- Prevalance and Gender Differences 317
- Comorbidity 318

- Etiologic Theories 319
- Treatment 319

20. Conversion Disorder and Hysteria—A Cry for Help! 325
Anjan Bhattacharya

- Diagnostic Criteria 325
- Causes 326
- Symptoms 326
- Diagnosis 327
- Treatment 329
- Prognosis 330
- Prevention 330

Section 5: Endocrinal and Metabolic Disorders

21. The Metabolic Syndrome—Stomp the Spark 337
Bratati Banerjee

- Background 337
- Problem Statement 338
- Components of Metabolic Syndrome and Cut-off Values 339
- Definition of Metabolic Syndrome in Children and Adolescents 340
- Measurement of Obesity 341
- Etiopathogenesis 343
- Barker's Hypothesis 346
- Management of Metabolic Syndrome 346

22. Pediatric Thyroid Disorders 357
PV Pradeep

- Thyroid in the Past 357
- Thyroid Embryogenesis and Physiology 358
- Pediatric Hypothyroidism 359
- Pediatric Hyperthyroidism 364
- Goiter in Children 367

Section 6: Critical Care

23. Management of Raised Intracranial Pressure 375
M Sridhar, VSV Prasad, Anjul Dayal

- Pathophysiology 375
- Signs and Symptoms 377
- Neuroimaging 377
- Neurocritical Care Monitoring 379
- Management 379

24. Acute Renal Failure in Children 386
Satya Prasad Veeturi, VSV Prasad

- Etiology and Diagnosis of Acute Kidney Injury 386
- Etiology of ARF 387

- Recent Advances in Management of Acute Kidney Injury in Children 392
- Prognosis of Acute Kidney Injury 393

25. Toxic Shock Syndrome **397**
Farhan Shaikh, Dinesh Kumar Chirla

- History and Epidemiology 397
- Clinical Pathogenesis 397
- Life-threatening Complications of Toxic Shock Syndrome 401
- Management 402

26. Management of Diabetic Ketoacidosis **407**
J Leenatha Reddy, VSV Prasad

- Pathophysiology 407

Section 7: Vaccines

27. Edible Vaccines **421**
KE Elizabeth, Gopakumar Hariharan, Gibby Koshy

- History 422
- Concept of Edible Vaccines 422
- Technology 422
- Vector 423
- Administration of Edible Vaccines 423
- Fate of Edible Vaccines in the Body 423
- Second Generation Edible Vaccines 424
- Targeting Strategy 424
- Edible Vaccines using Recombinant Technology 425
- Immunity Mechanism 425
- Passive Immunization 426
- Advantages 426
- Concerns on Edible Vaccines 426
- Challenges 427
- Future of Edible Vaccines 427

28. Newer and Future Vaccines **430**
Balraj Yadav, Vishesh Kumar, Satish Tiwari

- Unmet Medical Needs 431
- Technologies for New and Improved Vaccines 431
- Newer Vaccines for India 432
- Need for New Vaccines 433
- Classification of Vaccines 434
- Timeline of Vaccines 435
- New and Under-utilized Vaccines 436
- New Licensed Vaccines 436
- Vaccines in the Pipeline 437
- DNA Vaccine 438
- Vaccines in Cancer 438
- Fungal Vaccines 439

- Antiobesity Vaccines 439
- Chikungunya Vaccine 439
- Schistosomiasis and Hookworm Vaccines 439
- Oral Rabies Vaccine 439
- New Vaccine for Tuberculosis 440
- Future Vaccines in India 440
- The Impact of Immunization 443

Section 8: Pediatric Pharmacotherapy

29. Pediatric Pharmacotherapy: Special Aspects in Nutshell 451
PV Pradeep, Novy Gupte, Suraj Gupte

- Developmental Pharmacodynamics 451
- Pharmacokinetics 453
- Pharmacodynamics and Receptor Sensitivity 457
- Towards Rational Drug Therapy 458

30. Pharmacotherapy in Child Psychiatry 462
C Harihar

- Baseline Assessments of Psychiatric Symptoms 462
- Childhood Pharmacokinetics 463
- Psychopharmacological Treatment in Children and Adolescents 463
- Disruptive Behavior Disorders 463
- Conduct Disorder 464
- Mood Disorders 465
- Endocrine and Metabolic Effects of Psychotropic Medications 471
- Psychopharmacological Treatment for Very Young Children 472

31. Pharmacotherapy of Pediatric Malaria 478
Novy Gupte, Suraj Gupte, Abida Jan

- Aims and Objectives 479
- Drug Therapy 479
- Salient Features of Key Antimalarial Drugs 481

Index 491