

CONTENTS

PART I

OVERVIEW

- CHAPTER 1 NEONATAL AND PERINATAL EPIDEMIOLOGY, 1
Nigel Paneth
- CHAPTER 2 EVALUATION OF THERAPEUTIC RECOMMENDATIONS, DATABASE MANAGEMENT, AND INFORMATION RETRIEVAL, 10
Peter Tarczy-Hornoch
- CHAPTER 3 ETHICS, DATA, AND POLICY IN NEWBORN INTENSIVE CARE, 18
William L. Meadow • John D. Lantos
- CHAPTER 4 GLOBAL NEONATAL HEALTH, 23
Linda L. Wright

PART II

FETAL DEVELOPMENT

- CHAPTER 5 IMMUNOLOGIC BASIS OF PLACENTAL FUNCTION AND DISEASES: THE PLACENTA, FETAL MEMBRANES, AND UMBILICAL CORD, 37
Satyan Kalkunte • James F. Padbury • Surendra Sharma
- CHAPTER 6 ABNORMALITIES OF FETAL GROWTH, 51
Rebecca Simmons
- CHAPTER 7 MULTIPLE GESTATIONS AND ASSISTED REPRODUCTIVE TECHNOLOGY, 60
Kerri Marquard • Kelle Moley
- CHAPTER 8 NONIMMUNE HYDROPS, 67
Scott A. Lorch • Thomas J. Mollen

PART III

MATERNAL HEALTH AFFECTING NEONATAL OUTCOME

- CHAPTER 9 ENDOCRINE DISORDERS IN PREGNANCY, 75
Gladys A. Ramos • Thomas R. Moore
- CHAPTER 10 MATERNAL MEDICAL DISORDERS OF FETAL SIGNIFICANCE: SEIZURE DISORDERS, ISOIMMUNIZATION, CANCER, AND MENTAL HEALTH DISORDERS, 92
Thomas F. Kelly • Thomas R. Moore

- CHAPTER 11 HYPERTENSIVE COMPLICATIONS OF PREGNANCY, 105
Andrew D. Hull • Thomas R. Moore
- CHAPTER 12 PERINATAL SUBSTANCE ABUSE, 111
Linda D. Wallen • Christine A. Gleason

PART IV

LABOR AND DELIVERY

- CHAPTER 13 ANTEPARTUM FETAL ASSESSMENT, 129
Christian M. Pettker • Katherine H. Campbell
- CHAPTER 14 PREMATURITY: CAUSES AND PREVENTION, 140
Tonse N.K. Raju • Caroline Signore
- CHAPTER 15 COMPLICATED DELIVERIES: OVERVIEW, 146
Sarah A. Waller • Sameer Gopalani • Thomas J. Benedetti
- CHAPTER 16 OBSTETRIC ANALGESIA AND ANESTHESIA, 159
Mark D. Rollins • Mark A. Rosen

PART V

GENETICS

- CHAPTER 17 IMPACT OF THE HUMAN GENOME PROJECT ON NEONATAL CARE, 173
Jeffrey C. Murray
- CHAPTER 18 PRENATAL GENETIC DIAGNOSIS, 180
Diana W. Bianchi
- CHAPTER 19 EVALUATION OF THE DYSMORPHIC INFANT, 186
Chad R. Haldeman-Englert • Sulagna C. Saitta • Elaine H. Zackai
- CHAPTER 20 SPECIFIC CHROMOSOME DISORDERS IN NEWBORNS, 196
Chad R. Haldeman-Englert • Sulagna C. Saitta • Elaine H. Zackai

PART VI

METABOLIC AND ENDOCRINE DISORDERS OF THE NEWBORN

- CHAPTER 21 INTRODUCTION TO METABOLIC AND BIOCHEMICAL GENETIC DISEASE, 209
Stephen Cederbaum

CHAPTER 22	INBORN ERRORS OF CARBOHYDRATE, AMMONIA, AMINO ACID, AND ORGANIC ACID METABOLISM, 215 Stephen Cederbaum • Gerard T. Berry
CHAPTER 23	LYSOSOMAL STORAGE, PEROXISOMAL, AND GLYCOSYLATION DISORDERS AND SMITH-LEMli-OPITZ SYNDROME IN THE NEONATE, 239 Janet A. Thomas • Carol L. Greene • Gerard T. Berry
CHAPTER 24	SKELETAL DYSPLASIAS AND CONNECTIVE TISSUE DISORDERS, 258 David L. Rimoin • George E. Tiller

PART VII

CARE OF THE HEALTHY NEWBORN

CHAPTER 25	INITIAL EVALUATION: HISTORY AND PHYSICAL EXAMINATION OF THE NEWBORN, 277 Jeffrey B. Smith
CHAPTER 26	ROUTINE NEWBORN CARE, 300 James A. Taylor • Jeffrey A. Wright • David Woodrum
CHAPTER 27	NEWBORN SCREENING, 316 Inderneel Sahai • Harvey L. Levy
CHAPTER 28	RESUSCITATION IN THE DELIVERY ROOM, 328 Tina A. Leone • Neil N. Finer

CHAPTER 35	NEONATAL PAIN AND STRESS: ASSESSMENT AND MANAGEMENT, 429 Dennis E. Mayock • Christine A. Gleason
------------	--

PART IX

IMMUNOLOGY AND INFECTIONS

CHAPTER 36	IMMUNOLOGY OF THE FETUS AND NEWBORN, 445 Calvin B. Williams • Eli M. Eisenstein • F. Sessions Cole
CHAPTER 37	VIRAL INFECTIONS OF THE FETUS AND NEWBORN AND HUMAN IMMUNODEFICIENCY VIRUS INFECTION DURING PREGNANCY, 468 Mark R. Schleiss • Janna C. Patterson
CHAPTER 38	TOXOPLASMOSIS, SYPHILIS, MALARIA, AND TUBERCULOSIS, 513 Pablo J. Sánchez • Janna C. Patterson • Amina Ahmed
CHAPTER 39	NEONATAL BACTERIAL SEPSIS, 538 Patricia Ferrieri • Linda D. Wallen
CHAPTER 40	HEALTH CARE-ACQUIRED INFECTIONS IN THE NURSERY, 551 David A. Munson • Jacquelyn R. Evans
CHAPTER 41	FUNGAL INFECTIONS IN THE NEONATAL INTENSIVE CARE UNIT, 565 Margaret K. Hostetter

PART VIII

CARE OF THE HIGH-RISK INFANT

CHAPTER 29	STABILIZATION AND TRANSPORT OF THE HIGH-RISK INFANT, 341 George A. Woodward • Roxanne Kirsch • Michael Stone Trautman • Monica E. Kleinman • Gil Wernovsky • Bradley S. Marino
CHAPTER 30	TEMPERATURE REGULATION OF THE PREMATURE NEONATE, 357 Stephen Baumgart • Sudhish Chandra
CHAPTER 31	ACID-BASE, FLUID, AND ELECTROLYTE MANAGEMENT, 367 Michael A. Posencheg • Jacquelyn R. Evans
CHAPTER 32	CARE OF THE EXTREMELY LOW-BIRTHWEIGHT INFANT, 390 Eric C. Eichenwald
CHAPTER 33	CARE OF THE LATE PRETERM INFANT, 405 Sowmya S. Mohan • Lucky Jain
CHAPTER 34	PHARMACOKINETICS, PHARMACODYNAMICS, AND PHARMACOGENETICS, 417 Robert M. Ward • Steven E. Kern • Ralph A. Lugo

PART X

RESPIRATORY SYSTEM

CHAPTER 42	LUNG DEVELOPMENT: EMBRYOLOGY, GROWTH, MATURATION, AND DEVELOPMENTAL BIOLOGY, 571 Maria Victoria Fraga • Susan Guttentag
CHAPTER 43	CONTROL OF BREATHING, 584 Estelle B. Gauda • Richard J. Martin
CHAPTER 44	PULMONARY PHYSIOLOGY OF THE NEWBORN, 598 Robert M. DiBlasi • C. Peter Richardson • Thomas Hansen
CHAPTER 45	PRINCIPLES OF RESPIRATORY MONITORING AND THERAPY, 612 Eduardo Bancalari • Nelson Claire
CHAPTER 46	RESPIRATORY DISTRESS IN THE PRETERM INFANT, 633 J. Craig Jackson
CHAPTER 47	RESPIRATORY FAILURE IN THE TERM NEWBORN, 647 Thomas A. Parker • John P. Kinsella
CHAPTER 48	BRONCHOPULMONARY DYSPLASIA, 658 Roberta L. Keller • Roberta A. Ballard
CHAPTER 49	SURGICAL DISORDERS OF THE CHEST AND AIRWAYS, 672 Roberta L. Keller • Salvador Guevara-Gallardo • Diana L. Farmer

PART XI

CARDIOVASCULAR SYSTEM

-
- | | |
|------------|--|
| CHAPTER 50 | EMBRYOLOGY AND PHYSIOLOGY OF THE CARDIOVASCULAR SYSTEM, 699
H. Scott Baldwin • Ellen Dees |
| CHAPTER 51 | CARDIOVASCULAR COMPROMISE IN THE NEWBORN INFANT, 714
Istvan Seri • Barry Markovitz |
| CHAPTER 52 | PERSISTENT PULMONARY HYPERTENSION, 732
Robin H. Steinhorn • Steven H. Abman |
| CHAPTER 53 | FETAL AND NEONATAL ECHOCARDIOGRAPHY, 741
Margaret M. Vernon • Mark Lewin |
| CHAPTER 54 | PATENT DUCTUS ARTERIOSUS IN THE PRETERM INFANT, 751
Ronald I. Clyman |
| CHAPTER 55 | CONGENITAL HEART DISEASE, 762
Thomas D. Scholz • Benjamin E. Reinking |
| CHAPTER 56 | ARRHYTHMIAS IN THE NEWBORN AND FETUS, 789
Jeremy P. Moore • Gary M. Satou • Thomas S. Klitzner |
| CHAPTER 57 | NEURODEVELOPMENTAL OUTCOMES IN CHILDREN WITH CONGENITAL HEART DISEASE, 801
Gil Wernovsky |

PART XII

NEUROLOGIC SYSTEM

-
- | | |
|------------|---|
| CHAPTER 58 | DEVELOPMENTAL PHYSIOLOGY OF THE CENTRAL NERVOUS SYSTEM, 811
Christine A. Gleason • A. Roger Hohimer • Stephen A. Back |
| CHAPTER 59 | NEONATAL NEUROIMAGING, 816
Sanjay P. Prabhu • P. Ellen Grant • Richard L. Robertson • George A. Taylor |
| CHAPTER 60 | CONGENITAL MALFORMATIONS OF THE CENTRAL NERVOUS SYSTEM, 844
Stephen A. Back • Lauren L. Plawner |
| CHAPTER 61 | CENTRAL NERVOUS SYSTEM INJURY AND NEUROPROTECTION, 869
Sonia L. Bonifacio • Fernando Gonzalez • Donna M. Ferriero |
| CHAPTER 62 | NEONATAL NEUROMUSCULAR DISORDERS, 892
Eugenio Mercuri • Marika Pane |
| CHAPTER 63 | NEONATAL SEIZURES, 901
Mark S. Scher |
| CHAPTER 64 | RISK ASSESSMENT AND NEURODEVELOPMENTAL OUTCOMES, 920
Mary Leppert • Marilee C. Allen |

PART XIII

NUTRITION

-
- | | |
|------------|---|
| CHAPTER 65 | BREASTFEEDING, 937
Lydia Furman • Richard J. Schanler |
| CHAPTER 66 | ENTERAL NUTRITION FOR THE HIGH-RISK NEONATE, 952
Brenda B. Poindexter • Richard J. Schanler |
| CHAPTER 67 | PARENTERAL NUTRITION, 963
Brenda B. Poindexter • Scott C. Denne |

PART XIV

GASTROINTESTINAL SYSTEM

-
- | | |
|------------|--|
| CHAPTER 68 | DEVELOPMENTAL ANATOMY AND PHYSIOLOGY OF THE GASTROINTESTINAL TRACT, 973
Reed A. Dimmitt • Eric Sibley |
| CHAPTER 69 | STRUCTURAL ANOMALIES OF THE GASTROINTESTINAL TRACT, 979
Clara Song • Jeffrey S. Upperman • Victoria Niklas |
| CHAPTER 70 | INNATE AND MUCOSAL IMMUNITY IN THE DEVELOPING GASTROINTESTINAL TRACT: RELATIONSHIP TO EARLY AND LATER DISEASE, 994
Camilia R. Martin • W. Allan Walker • Dan Poenaru |
| CHAPTER 71 | ABDOMINAL WALL PROBLEMS, 1007
Josef Neu • Christopher M. Young • Volker Mai |
| CHAPTER 72 | THE DEVELOPING INTESTINAL MICROBIOME: IMPLICATIONS FOR THE NEONATE, 1016
Michael Caplan |
| CHAPTER 73 | NECROTIZING ENTEROCOLITIS AND SHORT BOWEL SYNDROME, 1022
Frederick J. Suchy • Nanda Kerkar |
| CHAPTER 74 | DISORDERS OF THE LIVER, 1030
Annie Nguyen-Vermillion • Sandra E. Juul |

PART XV

HEMATOLOGIC SYSTEM AND DISORDERS OF BILIRUBIN METABOLISM

-
- | | |
|------------|--|
| CHAPTER 75 | DEVELOPMENTAL BIOLOGY OF THE HEMATOLOGIC SYSTEM, 1047
Annie Nguyen-Vermillion • Sandra E. Juul |
| CHAPTER 76 | HEMOSTATIC DISORDERS OF THE NEWBORN, 1056
Guy Young |
| CHAPTER 77 | ERYTHROCYTE DISORDERS IN INFANCY, 1080
Dana C. Matthews • Bertil Glader |

CHAPTER 78	NEONATAL LEUKOCYTE PHYSIOLOGY AND DISORDERS, 1108 <i>Evan B. Shereck • Carmella van de Ven • Mitchell S. Cairo</i>	CHAPTER 90	DISORDERS OF CALCIUM AND PHOSPHORUS METABOLISM, 1255 <i>Lewis P. Rubin</i>
CHAPTER 79	NEONATAL INDIRECT HYPERBILIRUBINEMIA AND KERNICTERUS, 1123 <i>Jon F. Watchko</i>	CHAPTER 91	DISORDERS OF THE ADRENAL GLAND, 1274 <i>Saroj Nimkarn • Maria I. New</i>
		CHAPTER 92	AMBIGUOUS GENITALIA IN THE NEWBORN, 1286 <i>Karen Lin-Su • Maria I. New</i>
		CHAPTER 93	DISORDERS OF THE THYROID GLAND, 1307 <i>Sureka Bollepalli • Susan R. Rose</i>
		CHAPTER 94	DISORDERS OF CARBOHYDRATE METABOLISM, 1320 <i>Vandana Jain • Ming Chen • Ram K. Menon</i>

PART XVI

NEOPLASIA

CHAPTER 80	CONGENITAL MALIGNANT DISORDERS, 1143 <i>Elizabeth Robbins • Mignon L. Loh • Katherine K. Matthay</i>
------------	---

PART XVII

RENAL AND GENITOURINARY SYSTEMS

CHAPTER 81	RENAL MORPHOGENESIS AND DEVELOPMENT OF RENAL FUNCTION, 1165 <i>Jean-Pierre Guignard • Endre Sulyok</i>
CHAPTER 82	CLINICAL EVALUATION OF RENAL AND URINARY TRACT DISEASE, 1176 <i>Carlton M. Bates • Andrew L. Schwaderer</i>
CHAPTER 83	DEVELOPMENTAL ABNORMALITIES OF THE KIDNEYS, 1182 <i>Lawrence Copelovitch • Bernard S. Kaplan</i>
CHAPTER 84	DEVELOPMENTAL ABNORMALITIES OF THE GENITOURINARY SYSTEM, 1191 <i>Stephen A. Zderic • Sarah M. Lambert</i>
CHAPTER 85	ACUTE KIDNEY INJURY AND CHRONIC KIDNEY DISEASE, 1205 <i>David Askenazi • Lorie B. Smith • Susan Furth • Bradley A. Warady</i>
CHAPTER 86	GLOMERULONEPHROPATHIES AND DISORDERS OF TUBULAR FUNCTION, 1222 <i>Lawrence Copelovitch • Bernard S. Kaplan</i>
CHAPTER 87	URINARY TRACT INFECTIONS AND VESICOURETERAL REFLUX, 1228 <i>Stephen A. Zderic</i>
CHAPTER 88	RENAL VASCULAR DISEASE IN THE NEWBORN, 1235 <i>Halima Saadia Janjua • Donald L. Batisky</i>

PART XVIII

ENDOCRINE DISORDERS

CHAPTER 89	EMBRYOLOGY, DEVELOPMENTAL BIOLOGY, AND ANATOMY OF THE ENDOCRINE SYSTEM, 1245 <i>Lewis P. Rubin</i>
------------	---

PART XIX

CRANIOFACIAL AND ORTHOPEDIC CONDITIONS

CHAPTER 95	CRANIOFACIAL MALFORMATIONS, 1331 <i>Kelly Evans • Anne V. Hing • Michael Cunningham</i>
CHAPTER 96	COMMON NEONATAL ORTHOPEDIC AILMENTS, 1351 <i>Klane K. White • Michael J. Goldberg</i>

PART XX

DERMATOLOGIC CONDITIONS

CHAPTER 97	NEWBORN SKIN: DEVELOPMENT AND BASIC CONCEPTS, 1363 <i>Bernard A. Cohen • Katherine B. Püttgen</i>
CHAPTER 98	CONGENITAL AND HEREDITARY DISORDERS OF THE SKIN, 1373 <i>Mark M. Tran • Bernard A. Cohen</i>
CHAPTER 99	INFECTIONS OF THE SKIN, 1390 <i>Dakara Rucker Wright • Bernard A. Cohen</i>
CHAPTER 100	COMMON NEWBORN DERMATOSES, 1397 <i>Dakara Rucker Wright • Bernard A. Cohen</i>
CHAPTER 101	CUTANEOUS CONGENITAL DEFECTS, 1406 <i>Katherine B. Püttgen • Bernard A. Cohen</i>

PART XXI

THE EYE

CHAPTER 102	DISORDERS OF THE EYE, 1423 <i>Alejandra G. de Alba Campomanes • Gil Binenbaum • Graham E. Quinn</i>
-------------	--