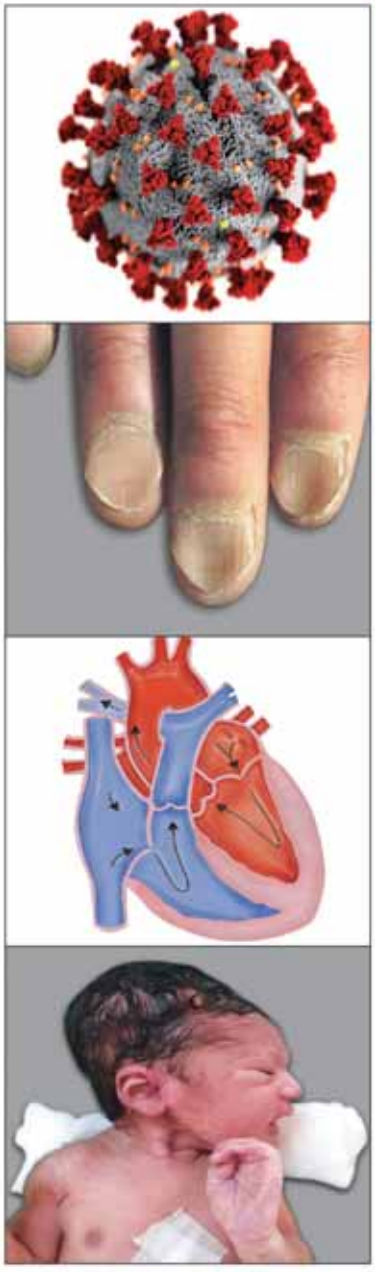
others.com, for detailed information on pediatric books, visit our website www.jaypeebrothers.com, for detailed information on pediatric books

Snehal Patel
Halak Vasavada

Access the Videos by Scanning the QR Code Inside



Exam Preparatory Manual for Undergraduates

Pediatrics

As per the Competency Based Medical Education Curriculum (NMC)

HIGHLIGHTS

- **Incorporated the competencies as per CBME-Competency Based Medical Education curriculum**
- All topics presented in reader friendly manner with flowcharts, tables and figures.
- All-in-One book for theory, practical examinations and PG NEET preparation.
- **Covid-19 and covid vaccine—the myths, miseries and masterstrokes**
- **Short video clips for competencies and ward procedures—feel in the ward while being in the library.**

diginerve
A Jaypee Initiative
Your Guide at Every Step
Video Lectures | Notes | Self-Assessment
Scan code to check out courses

3rd Edition

JAYPEE

Contents

Chapter 1: Growth and its Disorders **1**
- ❖ Normal Growth and Factors Affecting Growth *1*
- ❖ Assessment of Growth *3*
- ❖ Failure to Thrive *9*

Chapter 2: Normal and Abnormal Development **11**
- ❖ Normal Development *11*
- ❖ Developmental Assessment *14*
- ❖ Approach to a Child with Global Developmental Delay *15*
- ❖ Approach to a Child with Delayed Speech *19*
- ❖ Cerebral Palsy *21*
- ❖ Mental Retardation (Intellectual Disability) *25*
- ❖ Specific Learning Disorder *26*
- ❖ Scholastic Backwardness *26*
- ❖ Attention Deficit Hyperkinetic Disorder *27*
- ❖ Autism Spectrum Disorder *27*

Chapter 3: Adolescent Health **29**
- ❖ Growth and Development in Adolescents *29*
- ❖ Sexual Maturity Rating *30*
- ❖ Health Problems in Adolescents *32*
- ❖ Management of Adolescent Care *36*

Chapter 4: Behavioral Disorders **37**
- ❖ Pica *37*
- ❖ Thumb Sucking *38*
- ❖ Enuresis *38*
- ❖ Breath-holding Spells *39*
- ❖ Temper Tantrums *40*
- ❖ Nail Biting *40*
- ❖ Eating Disorders *40*
- ❖ Some Miscellaneous Behavioral Disorders *41*

Chapter 5: Immunization **42**
- ❖ Cold Chain and Vaccine Storage *43*
- ❖ Immunization Schedules 2021 *46*
  - ♦ National Immunization Schedule 2021 *46*
  - ♦ IAP Immunization Schedule 2021 *47*
  - ♦ Immunizing Adolescents *48*
- ❖ Catch-up Vaccination *49*
- ❖ Combination Vaccines *49*
- ❖ Individual Vaccines *51*
  - ♦ BCG Vaccine *51*
  - ♦ DPT Vaccine, Pentavalent Vaccine, DT, TDAP Vaccine, TT *51*
  - ♦ Measles Vaccine, MMR Vaccine *53*
  - ♦ Polio Vaccines *53*
  - ♦ Polio Eradication—Endgame Strategy *55*
  - ♦ Hepatitis B Vaccine *55*
  - ♦ Hepatitis a Vaccine *56*
  - ♦ Pneumococcal Vaccine *56*
  - ♦ Varicella Vaccine *57*
  - ♦ Rotavirus Vaccine *58*
  - ♦ Rabies Vaccine *58*
  - ♦ Typhoid Vaccine *59*
  - ♦ Human Papillomavirus *60*
  - ♦ Influenza Vaccine *60*
  - ♦ MMR-V Vaccine *61*
  - ♦ Hexavalent Vaccine *62*
- ❖ Adverse Event Following Immunization *62*
- ❖ Vaccine Preventable Disease Surveillance *63*

Chapter 6: Fluid and Electrolyte Disturbances **64**
- ❖ Maintenance and Deficit Fluid Therapy *64*
- ❖ Hyponatremia *65*
- ❖ Hypernatremia *67*
- ❖ Hypokalemia *68*
- ❖ Hyperkalemia *69*
- ❖ Acid–base Balance and Imbalance *70*

Chapter 7: Nutrition **75**
- ❖ Normal Nutrition *75*
- ❖ Assessment of Nutritional Status *79*
- ❖ Undernutrition *80*
- ❖ Severe Acute Malnutrition and its Management *83*

Chapter 8: Micronutrients in Health and Disease **91**
- ❖ Vitamins *92*
  - ♦ Vitamin A *92*
  - ♦ Vitamin D *94*
  - ♦ Vitamin C (Ascorbic Acid) *101*
  - ♦ Vitamin E (Tocopherol) *102*
  - ♦ Vitamin K *102*
  - ♦ Vitamin B Complex *103*
- ❖ Minerals and Trace Elements *103*
  - ♦ Calcium *103*
  - ♦ Magnesium *108*
  - ♦ Zinc *108*
  - ♦ Iodine *109*

Chapter 9: Neonatology **111**
- ❖ Some Definitions and Terminology Related to Newborn Care *111*
- ❖ Care of Newborn at Birth *113*
  - ♦ Routine Care of Newborn and Neonatal Resuscitation Protocol *113*
  - ♦ Examination of Normal Newborn *121*
  - ♦ Danger Signs in Newborn *125*
  - ♦ Neonatal Reflexes *125*
- ❖ Thermoregulation in Newborn *127*
- ❖ Breastfeeding and Complementary Feeding *130*
- ❖ Fluids and Electrolytes in Newborn *136*
- ❖ Care of Low Birth Weight Babies *136*
  - ♦ Prematurity and Iugr *136*
  - ♦ Kangaroo Mother Care *138*
  - ♦ Feeding of Low Birth Weight Babies *139*
  - ♦ Growth Monitoring in LBW Babies *141*
- ❖ Neonatal Sepsis *141*
- ❖ Gastrointestinal Problems in Newborn *146*
  - ♦ Neonatal Jaundice *146*
  - ♦ Necrotizing Enterocolitis *152*

JAYPEE BROTHERS

- Respiratory Problems 154
  - Apnea of Prematurity 154
  - Respiratory Distress in Neonate 156
  - Hyaline Membrane Disease (Respiratory Distress Syndrome) 161
  - Meconium Aspiration Syndrome 165
  - Bronchopulmonary Dysplasia 167
  - Persistent Pulmonary Hypertension of the Newborn 168
- Central Nervous System Problems in Newborn 170
  - Perinatal Asphyxia and Hypoxic Ischemic Encephalopathy 170
  - Neonatal Seizures 175
  - Intracranial Hemorrhage and Preterm Brain Injury 179
- Hematological Problems in Newborn 182
  - Vitamin K Deficiency Bleeding 182
  - Approach to a Bleeding Neonate 183
- Metabolic Disorders 185
  - Hypoglycemia 185
  - Hypocalcemia 186
  - Inborn Errors of Metabolism in Newborn 187
- Effect of Maternal Conditions on Fetus and Neonate 189
  - Infant of Diabetic Mother 189
  - Congenital Rubella Syndrome 189
  - Infant Born to Mother with Tuberculosis 190
  - Infant Born to Mother with Hepatitis B Infection 191
  - Maternal Syphilis Affecting Newborn 191
  - Maternal Medications Affecting Newborn 191
- Miscellaneous 192
  - Birth Injuries 192
  - Follow-up of High-risk Newborns 193
  - Neonatal Transport 194
  - Hydrops Fetalis 194
  - Retinopathy of Prematurity 195
  - Approach to a Neonate with Delayed Passage of Meconium after Birth 197
  - Approach to a Neonate with Delayed Passage of Urine After Birth 198
  - A Crying Neonate/Infant 199

Chapter 10: Infections and Infestations 201

- Rational Antimicrobial Usage—*Curb Your Enthusiasm!* **201**
- Fever with Rash 203
- Fever Without Focus 205
- Chemoprophylaxis 208
- Common Infections in Children 209
  - Malaria 209
  - Pediatric Tuberculosis 214
  - Measles 224
  - Enteric Fever 225
  - Dengue 228
  - Chickenpox (Varicella) 231
  - H1N1 Infection (Swine Flu) or Seasonal Flu 233
  - Diphtheria 236
  - Whooping Cough (Pertussis) 237
  - Tetanus 238
  - Mumps 239
  - Leptospirosis (Weil's Disease) 240
  - Brucellosis 241
  - Chikungunya 242
  - Hand-foot-and-Mouth Disease 243
  - Toxic Shock Syndrome 243
  - Kala Azar 244
  - Rickettsial Diseases 245
  - Novel Virus Infections 246
  - Tropical Fever 247
  - Osteomyelitis (Om) in Children 248
- Pediatric HIV and PPTCT 249
  - Worm Infestations in Children 256
- Infection-induced HLH (Hemophagocytic Lymphohistiocytosis) 260
- Congenital Infections 262
  - Multidrug Resistant Gram-negative Bacterial Infections in NICU/PICU—Recent Trends 263
  - Primary Immunodeficiency Disorders 264
  - Febrile Neutropenia 264

Chapter 11: Covid-19 266

- Pediatric Coronavirus Disease 266
- Multisystem Inflammatory Syndrome in Children: MIS-C 271
- Mucormycosis 274
- Perinatal and Neonatal Covid-19 274
- Covid-19 Vaccines—The Master Stroke 275
- The Omicron Variant 277

Chapter 12: Disorders of Gastrointestinal System 278

- Acute Diarrhea 278
  - Probiotics—Where Enemies are Our Friends 284
- Persistent Diarrhea 285
- Approach to Chronic Diarrhea 286
- Lactose Intolerance 288
- Celiac Disease 288
- Vomiting in Children 289
- Gastroesophageal Reflux Disease 290
- Constipation in Children 292
- Chronic (Recurrent) Abdominal Pain in Children 296
- Acute Hepatitis 299
- Clinical Relevance of Common Liver Function Tests 302
- Acute Liver Failure in Children 304
- Neonatal Cholestasis (Prolonged Cholestasis of Infancy) 307
- Portal Hypertension 311
- Ascites in Children 315
- Acute Pancreatitis 318
- Metabolic Liver Disease 318
- Liver Transplantation 321

Chapter 13: Hematological Disorders 324

- Anemia in Children 324
  - Deficiency Anemias 325
  - Hemolytic Anemias 333
  - Aplastic Anemia 346
  - Physiological Anemia of Infancy 347
- Approach to a Bleeding Child 347
- Immune Thrombocytopenic Purpura 350
- Hemophilia 351
- Von Willebrand Disease 355
- Blood Component Therapy 356

Chapter 14: Disorders of Respiratory System 359

- Clinical Pulmonology in a Nutshell 359
- The Upper Respiratory Tract 360
- Allergic Rhinitis 364
- Stridor in Children 365
- Acute Laryngotracheobronchitis 366
- Pneumonia in Children 367
- Acute Respiratory Infection Control Program (IMNCI Approach) 369
- Recurrent Pneumonia 372
- Nosocomial Pneumonia 373
- Bronchial Asthma 374
- Bronchiolitis 379
- Approach to a Child with Recurrent Wheeze 381
- Empyema 382
- Cystic Fibrosis 384
- Acute Respiratory Distress Syndrome 385

JAYPEE BROTHERS

- Foreign Body Inhalation *387*
- Oxygen Therapy *387*
- Pulmonary Function Tests *389*
- Chest Physiotherapy *390*

Chapter 15: Disorders of Cardiovascular System 392
- Congenital Heart Disease *392*
  - Ventricular Septal Defect *395*
  - Patent Ductus Arteriosus *398*
  - Atrial Septal Defect *400*
  - Cyanosis in Children *401*
  - Tetralogy of Fallot *403*
  - Miscellaneous CHDS *406*
  - Timing of Intervention in CHDS *407*
  - Acute Rheumatic Fever *409*
- Congestive Heart Failure *413*
- Infective Endocarditis *415*
- Myocardial Disorders *418*
- Pericardial Disorders *420*
- Hypertension in Children *421*
- Arrhythmias in Children *424*
- Syncope in Children *427*
- Cardiac Manifestations of Systemic Disorders *428*
- Prevention of Adult Cardiovascular Disease—A Pediatrician's Perspective *429*

Chapter 16: Disorders of Kidney and Urinary Tract 432
- Clinical and Laboratory Evaluation of Renal Diseases *433*
- Approach to a Child with Hematuria *435*
- Disorders of Glomerular Function *437*
  - Nephrotic Syndrome *437*
  - Steroid-Resistant Nephrotic Syndrome *444*
  - Acute Glomerulonephritis *446*
- Hemolytic Uremic Syndrome *448*
- Acute Kidney Injury *451*
- Chronic Kidney Disease *454*
- Renal Replacement Therapy *455*
- Urinary Tract Infection in Children *457*
- Tubular Disorders in Children *460*
  - Renal Tubular Acidosis *460*
  - Bartter and Gitelman Syndrome *461*
- Urolithiasis (Kidney Stones) *462*
- Congenital Anomalies of Kidney and Urinary Tract *463*
- Antenatal Hydronephrosis *465*
- Cryptorchidism (Undescended Testis) *466*
- Vesicoureteric Reflux *467*

Chapter 17: Endocrine Disorders 471
- Thyroid Disorders *471*
- Disorders of Parathyroid Gland *473*
- Congenital Adrenal Hyperplasia *475*
- Disorders of Sex Differentiation (Ambiguous Genitalia) *479*
- Precocious Puberty *482*
- Delayed Puberty *484*
- Obesity in Children *487*
- Short Stature *489*
- Diabetes Mellitus *492*
- Diabetic Ketoacidosis *496*

Chapter 18: Central Nervous System and Neuromuscular Disorders 500
- Febrile Seizures and Fever-related Epilepsy *500*
- Childhood Epilepsy *503*
  - West Syndrome *508*
- Status Epilepticus *509*
- Localization of Neurological Disorders *511*
- Acute Febrile Encephalopathy *514*
- Acute Encephalitis Syndrome *516*
- Approach to Altered Level of Consciousness and Coma *519*
- Ataxia in Children *521*
- Acute Pyogenic Meningitis *522*
- Lumbar Puncture and Clinical Interpretation of CSF Examination *524*
- Microcephaly and Macrocephaly *526*
- Hydrocephalus *527*
- Neural Tube Defects *529*
- Parasitic Diseases of CNS: Neurocysticercosis *532*
- Acute Stroke Syndrome in Children *534*
- Neurocutaneous Syndromes *536*
- Neurodegenerative Disorders *538*
- Approach to a Child with Headache *541*
- Approach to a Floppy Infant *543*
- Acute Flaccid Paralysis *544*
- Duchenne Muscular Dystrophy *546*

Chapter 19: Childhood Malignancies 548
- Leukemias *548*
- Lymphomas *552*
- CNS Malignancies *553*
- Neuroblastoma *554*
- Wilms Tumor *555*
- Retinoblastoma *555*
- Bone Tumors *556*
- Histiocytosis *556*

Chapter 20: Pediatric Rheumatology 557
- Juvenile Idiopathic Arthritis *557*
- Kawasaki's Disease and Other Vasculitides *559*
- Systemic Lupus Erythematosus *561*
- Henoch-Schönlein Purpura *563*

Chapter 21: Childhood Genetic Disorders 564
- Basic Genetics *564*
- Down Syndrome *565*
- Turner Syndrome *568*
- Klinefelter Syndrome *570*
- Recent Advances in Genetics and Gene Therapy *570*

Chapter 22: Inborn Errors of Metabolism 572
- Inborn Errors of Metabolism in Children—A Simplified Approach *572*
- Common Iems *577*
  - Phenylketonuria *577*
  - Glycogen Storage Disorders *577*
  - Galactosemia *578*
  - Gaucher Disease *578*
  - Mucopolysaccharidosis *578*

Chapter 23: Diseases of the Eye 579
- Congenital and Developmental Cataracts *579*
- Red Eye in Children *580*

Chapter 24: Pediatric Dermatology 582
- Atopic Dermatitis *582*
- Scabies *583*
- Napkin Dermatitis (Nappy Rash Dermatitis) *584*
- Urticaria, Angioedema and Anaphylaxis *585*
- Staphylococcal Scalded Skin Syndrome *586*
- Ichthyosis *587*
- Stevens–Johnson Syndrome *588*
- Mongolian Spots *588*

Chapter 25: Common ENT Problems 589
- Acute Otitis Media *589*
- Deafness in Children *591*
- Acute Tonsillitis and Adenotonsillar Hypertrophy *591*

JAYPEE BROTHERS

Chapter 26: Pediatric Dentistry 593
- Normal Dentition 593
- Dental Caries 594

Chapter 27: Poisonings and Accidents 596
- General Aspects of Poisoning 596
- Approach to a Patient with Poisoning 597
- Kerosene Poisoning 598
- Organophosphorous Poisoning 598
- Some Other Common Poisonings 600
- Envenomation 601
- Drowning 604
- Electrocution and Lightning 605

Chapter 28: Pediatric Critical Care 607
- Pediatric Intensive Care Unit 608
- Basic Life Support and Pediatric Advanced Life Support 608
- Basics of Mechanical Ventilation 611
- Total Parenteral Nutrition 613
- Shock 614
- Pain Management and Sedation in Pediatrics 620

Chapter 29: Pediatric Surgical Conditions 623
- Pediatric GI Surgical Conditions 623
  - Acute Abdomen 623
  - Foreign Body in GIT 626
  - Cleft Lip and Palate 626
  - Tracheoesophageal Fistula 627
  - Congenital Diaphragmatic Hernia 628
  - Pyloric Stenosis 629
  - Gastroschisis and Omphalocele 630
  - Duodenal Atresia 630
  - Volvulus and Malrotation of Gut 631
  - Anorectal Malformation 632
- Pediatric Urosurgical Conditions 632
  - Phimosis 632
  - Epispadias 633
  - Hypospadias 634
- Pediatric Orthopedic Conditions 634
  - Developmental Dysplasia of Hip (Congenital Dislocation of Hip) 634
  - CTEV 635
- Brachial Plexus Injury 637
- Optimal Timing of Surgery For Common Pediatric Surgical Conditions 638

Chapter 30: Community Pediatrics 639
- Integrated Management of Neonatal and Childhood Illnesses 639
- F-IMNCI 643
  - Facility-based Newborn Care 645
- District Early Intervention Centre 646
- Mamta Kit 647
- Mamta Card 647
- Under Five Clinics 648
- National Health Programs for Child Welfare and Health 649
- Indicators of Maternal and Child Health 656
- World Breastfeeding Week 657
- Child Labor 657
- Child Abuse and Neglect 658
- Adoption 659
- Girl–Child—The "Lesser" Sex 659
- Effects of Television Viewing in Children and Screen Time 660
- Fast Food in Pediatrics 661

Chapter 31: Pediatrics Made Easy for Practical Exam 663
- Format of Pediatric Case Presentation 664
- Commonly Asked Practical Cases—Sample Case Presentations with FAQs 680
  - Thalassemia 680
  - Cerebral Palsy (GDD) 683
  - Nephrotic Syndrome 686
  - Rheumatic Heart Disease 689
  - FAQs on CVS Short Cases 691
  - Tuberculous Meningoencephalitis 692
- Format of Newborn Case Presentation 695
- Sample Case Presentation with FAQs—Newborn 698
- Commonly Asked Instruments 700
  - Common Instruments 700
  - Inhalation Devices in Asthma 704
  - Equipment for Neonatal Resuscitation 707
- Commonly Asked Drugs and IV Fluids 712
- Pediatric Radiology 719
- Bedside Interpretation of Common Lab and Radiological Investigations 724

Chapter 32: Aetcom and Skill Modules 730
- Mortality—An Immortal Fact 734

Annexures 735

Index 753

JAYPEE BROTHERS

List of Videos (QR Codes)

1. **Anthropometry:** Video 1, Chapter 1, *Page No.10*
2. **Neonatal Rescuscitation Procotol:** Video 2, Chapter 9, *Page No. 121*
3. **Abdominal Examination:** Video 3, Chapter 31, *Page No. 670*
4. **Examination of Facial Nerve:** Video 4, Chapter 31, *Page No. 676*
5. **Insertion of Infant Feeding tube in a Neonate:** Video 5, Chapter 31, *Page No. 701*
6. **Intravenous Cannulation:** Video 6, Chapter 32, *Page No. 733*

Competency Table (As per NMC-based Index)

Number	Competency The student should be able to	Core Y/N	Suggested teaching learning methods	Suggested assessment methods	Chapter no.	Page no.
Topic: Normal growth and development						
PE 1.1	Define the terminologies growth and development and discuss the factors affecting normal growth and development	Y	Lecture, small group discussion	Written/Viva voce	1	1
PE 1.2	Discuss and describe the patterns of growth in infants, children and adolescents	Y	Lecture, small group discussion	Written/Viva voce	1	2
PE 1.3	Discuss and describe the methods of assessment of growth including use of WHO and Indian National Standards. Enumerate the parameters used for assessment of physical growth in infants, children and adolescents	Y	Lecture, small group discussion	Written/Viva voce	1	3-5
PE 1.4	Perform anthropometric measurements, document in growth charts and interpret	Y	Small group discussion	Document in log book	1	6
PE 1.5	Define development and discuss the normal developmental mile stones with respect to motor, behavior, social, adaptive and language	Y	Lecture, small group discussion	Written/Viva voce	2	11, 12
PE 1.6	Discuss the methods of assessment of development	Y	Lecture, small group discussion	Written/Viva voce	2	14, 15
PE 1.7	Perform developmental assessment and interpret	N	Bedside clinics, skills lab	Document in log book	2	14, 15
Topic: Common problems related to growth						
PE 2.1	Discuss the etiopathogenesis, clinical features and management of a child who fails to thrive	Y	Lecture, small group discussion	Written/Viva voce	1	9
PE 2.2	Assessment of a child with failing to thrive including eliciting an appropriate history and examination	Y	Bedside clinics	Skills station	1	9, 10
PE 2.3	Counseling a parent with failing to thrive child	Y	OSPE	Document in log book	32	731
PE 2.4	Discuss the etiopathogenesis, clinical features and management of a child with short stature	Y	Lecture, small group discussion	Written/Viva voce	17	489
PE 2.5	Assessment of a child with short stature: Elicit history, perform examination, document and present	Y	Bedside clinics, skill lab	Skill assessment	17	489-492
PE 3.1	Define, enumerate and discuss the causes of developmental delay and disability including intellectual disability in children	Y	Lecture, small group discussion	Written/Viva voce	2	13
PE 3.2	Discuss the approach to a child with developmental delay	Y	Lecture, small group discussion	Written/Viva voce	2	15-19
PE 3.3	Assessment of a child with developmental delay—elicit document and present history	Y	Bedside clinics, skills lab	Skill assessment	2	15-19
PE 3.4	Counsel a parent of a child with developmental delay	Y	DOAP session	Document in log book	32	731
PE 3.7	Visit a Child developmental unit and observe its functioning	Y	Lecture, small group discussion	Log book entry		
PE 3.8	Discuss the etiopathogenesis, clinical presentation and multidisciplinary approach in the management of cerebral palsy	Y	Lecture, Small group, Bedside clinics	Written/Viva voce	2	21-26
PE 4.1	Discuss the causes and approach to a child with scholastic backwardness	N	Lecture, small group discussion	Written	2	26

JAYPEE BROTHERS

Number	Competency The student should be able to	Core Y/N	Suggested teaching learning methods	Suggested assessment methods	Chapter no.	Page no.
PE 4.2	Discuss the etiology, clinical features, diagnosis and management of a child with learning disabilities	N	Lecture, small group discussion	Written	2	26
PE 4.3	Discuss the etiology, clinical features, diagnosis and management of a child with attention deficit hyperactivity disorder (ADHD)	N	Lecture, small group discussion	Written	2	27
PE 4.4	Discuss the etiology, clinical features, diagnosis and management of a child with autism	N	Lecture, small group discussion	Written	2	27
PE 5.1	Describe the clinical features, diagnosis and management of thumb sucking	N	Lecture, small group discussion	Written	4	38
PE 5.3	Describe the clinical features, diagnosis and management of nail biting	N	Lecture, small group discussion	Written/Viva voce	4	40
PE 5.4	Describe the clinical features, diagnosis and management of breath holding spells	N	Lecture, small group discussion	Written/Viva voce	4	39
PE 5.5	Describe the clinical features, diagnosis and management of temper tantrums	N	Lecture, small group discussion	Written/Viva voce	4	40
PE 5.6	Describe the clinical features, diagnosis and management of pica	N	Lecture, small group discussion	Written/Viva voce	4	37
PE 5.8	Discuss the etiology, clinical features and management of enuresis	N	Lecture, small group discussion	Written/Viva voce	4	38
PE 6.1	Define adolescence and stages of adolescence	Y	Lecture, small group discussion	Written/Viva voce	3	29.30
PE 6.2	Describe the physical, physiological and psychological changes during adolescence (Puberty)	Y	Lecture, small group discussion	Written/Viva voce	3	30
PE 6.3	Discuss the general health problems during adolescence	Y	Lecture, small group discussion	Written/Viva voce	3	32-35
PE 6.4	Describe adolescent sexuality and common problems related to it	N	Lecture, small group discussion	Written/Viva voce	3	32-35
PE 6.5	Explain the adolescent nutrition and common nutritional problems	Y	Lecture, small group discussion	Written/Viva voce	3	32-35
PE 6.6	Discuss the common adolescent eating disorders (anorexia nervosa, bulimia)	N	Lecture, small group discussion	Written/Viva voce	4	41
PE 6.7	Describe the common mental health problems during adolescence	Y	Lecture, small group discussion	Written/Viva voce	3	35
PE 6.8	Respecting patient privacy and maintaining confidentiality while dealing with adolescence	Y	Bedside clinics	Document in log book	3	35
PE 6.9	Perform routine adolescent health check-up including eliciting history, performing examination including SMR (sexual maturity rating), growth assessments (using growth charts) and systemic exam including thyroid and breast exam and the HEADSS screening	Y	Bedside clinics	Skills station	3	35
PE 6.10	Discuss the objectives and functions of AFHS (adolescent friendly health services) and the referral criteria	N	Lecture, small group discussion	Written/Viva voce	3	36
PE 6.11	Visit to the adolescent clinic	Y	DOAP session	Document in log book	3	36
PE 6.12	Enumerate the importance of obesity and other NCD in adolescents	Y	Lecture, small group discussion	Written/Viva voce	3	32
PE 6.13	Enumerate the prevalence and the importance of recognition of sexual drug abuse in adolescents and children	N	Lecture, small group discussion	Written/Viva voce	3	35
PE 7.1	Awareness on the cultural beliefs and practices of breastfeeding	N	Lecture, small group discussion	Viva	9	131
PE 7.2	Explain the physiology of lactation	Y	Lecture, small group discussion	Written/Viva voce	9	131
PE 7.3	Describe the composition and types of breast milk and discuss the differences between cow's milk and human milk	KH	Lecture, debate	Written/Viva voce	9	133

JAYPEE BROTHERS

Number	Competency The student should be able to	Core Y/N	Suggested teaching learning methods	Suggested assessment methods	Chapter no.	Page no.
PE 7.4	Discuss the advantages of breast milk	KH	Lecture, small group discussion	Written/Viva voce	9	134
PE 7.5	Observe the correct technique of breastfeeding and distinguish right from wrong techniques	P	Bedside clinics, skills lab	Skill assessment	9	133
PE 7.7	Perform breast examination and identify common problems during lactation, such as retracted nipples, cracked nipples, breast engorgement, breast abscess	SH	Bedside clinics, skill lab	Skill assessment	9	135
PE 7.8	Educate mothers on ante natal breast care and prepare mothers for lactation	SH	DOAP session	Document in log book	32	732
PE 7.9	Educate and counsel mothers for best practices in breastfeeding	SH	DOAP session	Document in log book	32	732
PE 7.10	Respects patient privacy	SH	DOAP session	Document in log book	32	732
PE 7.11	Participate in breastfeeding Week Celebration	SH	DOAP session	Document in log book	30	657
PE 8.1	Define the term complementary feeding	K	Lecture, small group discussion	Written/Viva voce	7	78
PE 8.2	Discuss the principles, the initiation, attributes, frequency, techniques and hygiene related to complementary feeding including IYCF	Y	Lecture, small group discussion	Written/Viva voce	7	78
PE 8.3	Enumerate the common complimentary foods	Y	Lecture, small group discussion	Written/Viva voce	7	78
PE 8.4	Elicit history on the complementary feeding habits	Y	Bedside clinics, skills lab	Skill assessment	7	78
PE 8.5	Counsel and educate mothers on the best practices in complimentary feeding	Y	DOAP session	Document in log book	7	78
PE 9.1	Describe the age related nutritional needs of infants, children and adolescents including micronutrients and vitamins	Y	Lecture, small group discussion	Written/Viva voce	7	75
PE 9.2	Describe the tools and methods for assessment and classification of nutritional status of infants, children and adolescents	Y	Lecture, small group discussion	Written/Viva voce	7	79
PE 9.3	Explains the calorific value of common Indian foods	Y	Lecture, small group discussion	Written/Viva voce	Annexure	735
PE 9.4	Elicit document and present an appropriate nutritional history and perform a dietary recall	Y	Bedside clinic, Skills lab	Skill assessment	7	75
PE 9.5	Calculate the age-related calorie requirement in health and disease and identify gap	Y	Bedside clinics, Small group discussion	Skill assessment	7	75
PE 9.6	Assess and classify the nutrition status of infants, children and adolescents and recognize deviations	Y	Bedside clinic, small group discussion	Skill assessment	7	81
PE 9.7	Plan an appropriate diet in health and disease	N	Bedside clinic, small group discussion	Document in log book	7	78
PE 10.1	Define and describe the etiopathogenesis, classify including WHO classification, clinical features, complication and management of severe acute malnourishment (SAM) and moderate acute malnutrition (MAM)	Y	Lecture, small group discussion	Written/Viva voce	7	80-90
PE 10.2	Outline the clinical approach to a child with SAM and MAM	Y	Lecture, small group discussion	Written/Viva voce	7	80-90
PE 10.3	Assessment of a patient with SAM and MAM, diagnosis, classification and planning management including hospital and community-based intervention, rehabilitation and prevention	Y	Bedside clinics, skills lab	Skill station	7	80-90
PE 10.4	Identify children with under nutrition as per IMNCI criteria and plan referral	Y	DOAP session	Document in log book	7	80-90
PE 10.6	Enumerate the role of locally prepared therapeutic diets and ready to use therapeutic diets	N	Lecture, small group discussion	Written/Viva voce	7	80-90

JAYPEE BROTHERS

Number	Competency The student should be able to	Core Y/N	Suggested teaching learning methods	Suggested assessment methods	Chapter no.	Page no.
PE 11.1	Describe the common etiology, clinical features and management of obesity in children	Y	Lecture, small group discussion	Written/Viva voce	16	427
PE 11.2	Discuss the risk approach for obesity and discuss the prevention strategies	Y	Lecture, small group discussion	Written/Viva voce	16	487-488
PE 11.3	Assessment of a child with obesity with regard to eliciting history including physical activity, charting and dietary recall	Y	Bedside clinics, Standardized patients	Document in log book	16	487-488
PE 11.4	Examination including calculation of BMI, measurement of waist hip ratio, identifying external markers, such as acanthosis, striae, pseudogynecomastia, etc.	Y	Bedside clinics, Standardized patients, Videos	Skills station	16	487-488
PE 11.5	Calculate BMI, document in BMI chart and interpret	Y	Bedside clinics, Small group discussion	Document in log book	Annexure	740-741
PE 12.1	Discuss the RDA, dietary sources of vitamin A and their role in health and disease	Y	Lecture, small group discussion	Written/Viva voce	8	92-94
PE 12.2	Describe the causes, clinical features, diagnosis and management of Deficiency/excess of vitamin A	Y	Lecture, small group discussion	Written/Viva voce	8	92-94
PE 12.3	Identify the clinical features of dietary deficiency/ excess of vitamin A	Y	Bedside clinics, Small group discussion	Document in log book	8	92-94
PE 12.4	Diagnose patients with vitamin A deficiency, classify and plan management	N	Bedside clinics, Skill Station	Document in log book	8	92-94
PE 12.5	Discuss the vitamin A prophylaxis program and their recommendations	Y	Lecture, small group discussion	Written/Viva voce	30	654
PE 12.6	Discuss the RDA, dietary sources of vitamin D and their role in health and disease	Y	Lecture, small group discussion	Written/Viva voce	8	95-100
PE 12.7	Describe the causes, clinical features, diagnosis and management of deficiency/excess of vitamin D (rickets and hypervitaminosis D)	Y	Lecture, small group discussion	Written/Viva voce	8	95-100
PE 12.8	Identify the clinical features of dietary deficiency of vitamin D	Y	Bedside clinics, skills lab	Document in log book	8	95-100
PE 12.9	Assess patients with vitamin D deficiency, diagnose, classify and plan management	Y	Bedside clinics	Document in log book	8	95-100
PE 12.10	Discuss the role of screening for vitamin D deficiency	Y	Lecture, small group discussion	Written/Viva voce	8	95-100
PE 12.11	Discuss the RDA, dietary sources of vitamin E and their role in health and disease	N	Lecture, small group discussion	Written/Viva voce	8	102
PE 12.12	Describe the causes, clinical features, diagnosis and management of deficiency of vitamin E	N	Lecture, small group discussion	Written/Viva voce	8	102
PE 12.13	Discuss the RDA, dietary sources of vitamin K and their role in health and disease	N	Lecture, small group discussion	Written/Viva voce	8	102
PE 12.14	Describe the causes, clinical features, diagnosis management and prevention of deficiency of vitamin K	N	Lecture, small group discussion	Written/Viva voce	8	102
PE 12.15	Discuss the RDA, dietary sources of vitamin B and their role in health and disease	Y	Lecture, small group discussion	Written/Viva voce	8	103
PE 12.16	Describe the causes, clinical features, diagnosis and management of deficiency of B complex Vitamins	Y	Lecture, small group discussion	Written/Viva voce	8	103
PE 12.17	Identify the clinical features of vitamin B complex deficiency	Y	Bedside clinics, skills lab	Document in log book	8	103
PE 12.18	Diagnose patients with vitamin B complex deficiency and plan management	Y	Bedside clinics, skills lab	Document in log book	8	103
PE 12.19	Discuss the RDA, dietary sources of vitamin C and their role in health and disease	N	Lecture, small group discussion	Written/Viva voce	8	101

JAYPEE BROTHERS

Number	Competency The student should be able to	Core Y/N	Suggested teaching learning methods	Suggested assessment methods	Chapter no.	Page no.
PE 12.20	Describe the causes, clinical features, diagnosis and management of deficiency of vitamin C (scurvy)	N	Lecture, small group discussion	Written/Viva voce	8	101
PE 12.21	Identify the clinical features of vitamin C deficiency	N	Bedside clinics, skill lab	Document in log book	8	101
PE 13.1	Discuss the RDA, dietary sources of Iron and their role in health and disease	Y	Lecture, small group discussion	Written/Viva voce	13	325-329
PE 13.2	Describe the causes, diagnosis and management of Fe deficiency	Y	Lecture, small group discussion	Written/Viva voce	13	325-329
PE 13.3	Identify the clinical features of dietary deficiency of Iron and make a diagnosis	Y	Bedside clinics, skills lab	Document in log book	13	325-329
PE 13.4	Interpret hemogram and iron panel	Y	Bedside clinic, small group discussion	Skill assessment	13	325-329
PE 13.5	Propose a management plan for Fe deficiency anemia	Y	Bedside clinics, skills lab	Skill assessment	13	325-329
PE 13.6	Discuss the National anemia control program and its recommendations	Y	Lecture, small group discussion	Written/Viva voce	30	654
PE 13.7	Discuss the RDA, dietary sources of Iodine and their role in health and disease	Y	Lecture, small group discussion	Written/Viva voce	8	109
PE 13.8	Describe the causes, diagnosis and management of deficiency of Iodine	Y	Lecture, small group discussion	Written/Viva voce	8	109
PE 13.9	Identify the clinical features of Iodine deficiency disorders	N	Lecture, Bedside clinic	Written/Viva voce	8	109
PE 13.10	Discuss the National Goiter Control program and their recommendations	Y	Lecture, small group discussion	Written/Viva voce	30	654
PE 13.11	Discuss the RDA, dietary sources of calcium and their role in health and disease	Y	Lecture, small group discussion	Written/Viva voce	8	104-108
PE 13.12	Describe the causes, clinical features, diagnosis and management of Ca deficiency	Y	Lecture, small group discussion	Written/Viva voce	8	104-108
PE 13.13	Discuss the RDA, dietary sources of magnesium and their role in health and disease	N	Lecture, small group discussion	Written/Viva voce	8	108
PE 13.14	Describe the causes, clinical features, diagnosis and management of magnesium deficiency	N	Lecture, small group discussion	Written/Viva voce	8	108
PE 14.1	Discuss the risk factors, clinical features, diagnosis and management of lead poisoning	N	Lecture, small group discussion	Written/Viva voce	27	597
PE 14.2	Discuss the risk factors, clinical features, diagnosis and management of kerosene ingestion	N	Lecture, small group discussion	Written/Viva voce	27	598
PE 14.3	Discuss the risk factors, clinical features, diagnosis and management of organophosphorous poisoning	N	Lecture, small group discussion	Written/Viva voce	27	589-599
PE 14.4	Discuss the risk factors, clinical features, diagnosis and management of paracetamol poisoning	N	Lecture, small group discussion	Written/Viva voce	27	600
PE 14.5	Discuss the risk factors, clinical features, diagnosis and management of oxygen toxicity	N	Lecture, small group discussion	Written/Viva voce	14	389
PE 15.1	Discuss the fluid and electrolyte requirement in health and disease	Y	Lecture, small group discussion	Written/Viva voce	6	64-65
PE 15.2	Discuss the clinical features and complications of fluid and electrolyte imbalance and outline the management	Y	Lecture, small group discussion	Written/Viva voce	6	64-65
PE 15.3	Calculate the fluid and electrolyte requirement in health	Y	Bedside clinics, Small group discussion	Skill assessment	6	64-65
PE 15.4	Interpret electrolyte report	Y	Bedside clinics, Small group discussion	Skill assessment	31	66-70
PE 15.5	Calculate fluid and electrolyte imbalance	Y	Bedside clinics, Small group discussion	Skill assessment	6	66-70

JAYPEE BROTHERS

Number	Competency The student should be able to	Core Y/N	Suggested teaching learning methods	Suggested assessment methods	Chapter no.	Page no.
PE 15.6	Demonstrate the steps of inserting an IV cannula in a model	Y	Skills Lab	mannequin	32	733
PE 15.7	Demonstrate the steps of inserting an interosseous line in a mannequin	Y	Skills Lab	mannequin	32	733
PE 16.1	Explain the components of Integrated management of neonatal and childhood illness (IMNCI) guidelines and method of risk stratification	Y	Lecture, small group discussion	Written/Viva voce	30	639-643
PE 16.2	Assess children <2 months using IMNCI guidelines	Y	DOAP session	Document in log book	29	639-643
PE 16.3	Assess children >2 to 5 years using IMNCI guidelines and stratify risk	Y	DOAP session	Document in log book	29	639-643
PE 17.1	State the vision and outline the goals, strategies and plan of action of NHM and other important national programs pertaining to maternal and child health including RMNCH A+, RBSK, RKSK, JSSK mission Indradhanush and ICDS	Y	Lecture, small group discussion	Written/Viva voce	30	650-656
PE 17.2	Analyze the outcomes and appraise the monitoring and evaluation of NHM	Y	Debate	Written/Viva voce	30	650-656
PE 18.1	List and explain the components, plan, outcome of reproductive child health (RCH) program and appraise its monitoring and evaluation	Y	Lecture, small group discussion	Written/Viva voce	30	650-656
PE 18.2	Explain preventive interventions for child survival and safe motherhood	Y	Lecture, small group discussion	Written/Viva voce	30	650-656
PE 18.6	Perform postnatal assessment of newborn and mother, provide advice on breastfeeding, weaning and on family planning	Y	Bed side clinics, Skill Lab	Skill assessment	9	121
PE 19.1	Explain the components of the Universal Immunization Program and the National Immunization Program	Y	Lecture, small group discussion	Written/Viva voce	5	46-48
PE 19.3	Vaccine description with regard to classification of vaccines, strain used, dose, route, schedule, risks, benefits and side effects, indications and contraindications	Y	Lecture, small group discussion	Written/Viva voce	5	51-62
PE 19.4	Define cold chain and discuss the methods of safe storage and handling of vaccines	Y	Lecture, small group discussion	Written/Viva voce	5	43-46
PE 19.5	Discuss immunization in special situations—HIV positive children, immunodeficiency, pre-term, organ transplants, those who received blood and blood products, splenectomised children, adolescents, travelers	Y	Lecture, small group discussion	Written/Viva voce	5	51-62
PE 19.6	Assess patient for fitness for immunization and prescribe an age appropriate immunization schedule	Y	Outpatient clinics skills lab	Skill assessment	5	46-48
PE 19.9	Describe the components of safe vaccine practice—patient education/counseling; adverse events following immunization, safe injection practices, documentation and medicolegal implications	Y	Lecture, small group discussion	Written/Viva voce	5	62
PE 19.10	Observe the handling and storing of vaccines	Y	DOAP session	Written/Viva voce	5	43-46
PE 19.12	Observe the administration of UIP vaccines	Y	DOAP session	Document in log book	5	43-62
PE 19.16	Enumerate available newer vaccines and their indications including pentavalent pneumococcal, rotavirus, JE, typhoid IPV and HPV	N	Lecture, small group discussion	Written/Viva voce	5	51-62
PE 20.1	Define the common neonatal nomenclatures including the classification and describe the characteristics of a normal term neonate and high risk neonates	Y	Lecture, small group discussion	Written/Viva voce	9	111-112

JAYPEE BROTHERS

Number	Competency The student should be able to	Core Y/N	Suggested teaching learning methods	Suggested assessment methods	Chapter no.	Page no.
PE 20.2	Explain the care of a normal neonate	Y	Lecture, small group discussion	Written/Viva voce	9	113
PE 20.3	Perform neonatal resuscitation in a manikin	Y	DOAP session	Log book entry of performance	9	114-119
PE 20.4	Assessment of a normal neonate	Y	Bedside clinics, skills lab	Skill assessment	9	121
PE 20.5	Counsel/educate mothers on the care of neonates	Y	DOAP session	Log book documentation	9	120
PE 20.6	Explain the follow up care for neonates including breastfeeding, temperature maintenance, immunization, importance of growth monitoring and red flags	Y	DOAP session	Log book entry	9	120
PE 20.7	Discuss the etiology, clinical features and management of birth asphyxia	Y	Lecture, small group discussion	Written/Viva voce	9	170
PE 20.8	Discuss the etiology, clinical features and management of respiratory distress in newborn including meconium aspiration and transient tachypnea of newborn	Y	Lecture, small group discussion	Written/Viva voce	9	156
PE 20.9	Discuss the etiology, clinical features and management of birth injuries	Y	Lecture, small group discussion	Written/Viva voce	9	192
PE 20.10	Discuss the etiology, clinical features and management of hemorrhagic disease of newborn	Y	Lecture, small group discussion	Written/Viva voce	9	182
PE 20.11	Discuss the clinical characteristics, complications and management of low birth weight (preterm and small for gestation)	Y	Lecture, small group discussion	Written/Viva voce	9	136
PE 20.12	Discuss the temperature regulation in neonates, clinical features and management of neonatal hypothermia	Y	Lecture, small group discussion	Written/Viva voce	9	127
PE 20.13	Discuss the temperature regulation in neonates, clinical features and management of Neonatal Hypoglycemia	Y	Lecture, small group discussion	Written/Viva voce	9	185
PE 20.14	Discuss the etiology, clinical features and management of neonatal hypocalcemia	Y	Lecture, small group discussion	Written/Viva voce	9	186
PE 20.15	Discuss the etiology, clinical features and management of neonatal seizures	Y	Lecture, small group discussion	Written/Viva voce	9	175
PE 20.16	Discuss the etiology, clinical features and management of neonatal sepsis	Y	Lecture, small group discussion	Written/Viva voce	9	141
PE 20.17	Discuss the etiology, clinical features and management of perinatal infections	Y	Lecture, small group discussion	Written/Viva voce	9	189
PE 20.18	Identify and stratify risk in a sick neonate using IMNCI guidelines	Y	DOAP session	Document in log book	30	639-643
PE 20.19	Discuss the etiology, clinical features and management of neonatal hyperbilirubinemia	Y	Lecture, small group discussion	Written/Viva voce	9	146
PE 20.20	Identify clinical presentations of common surgical conditions in the newborn including TEF, esophageal atresia, anal atresia, cleft lip and palate, congenital diaphragmatic hernia and causes of acute abdomen	Y	Lecture, small group discussion	Written/Viva voce	29	623-629
PE 21.1	Enumerate the etiopathogenesis, clinical features, complications and management of urinary tract infection in children	Y	Lecture, small group discussion	Written/Viva voce	16	457
PE 21.2	Enumerate the etiopathogenesis, clinical features, complications and management of acute post-streptococcal glomerular nephritis in children	Y	Lecture, small group discussion	Written/Viva voce	16	446
PE 21.3	Discuss the approach and referral criteria to a child with proteinuria	Y	Lecture, small group discussion	Written/Viva voce	16	437
PE 21.4	Discuss the approach and referral criteria to a child with hematuria	Y	Lecture, small group discussion	Written/Viva voce	16	435

JAYPEE BROTHERS

Number	Competency The student should be able to	Core Y/N	Suggested teaching learning methods	Suggested assessment methods	Chapter no.	Page no.
PE 21.5	Enumerate the etiopathogenesis, clinical features, complications and management of acute renal failure in children	Y	Lecture, small group discussion	Written/Viva voce	16	451
PE 21.6	Enumerate the etiopathogenesis, clinical features, complications and management of chronic renal failure in children	Y	Lecture, small group discussion	Written/Viva voce	16	454
PE 21.7	Enumerate the etiopathogenesis, clinical features, complications and management of Wilms tumor	Y	Lecture, small group discussion	Written/Viva voce	19	555
PE 21.8	Elicit, document and present a history pertaining to diseases of the genitourinary tract	Y	Bedside clinics, skills lab	Skill assessment	31	667, 686
PE 21.9	Identify external markers for kidney disease, such as failing to thrive, hypertension, pallor, Ichthyosis, anasarca	Y	Bedside clinics, skills lab	Document in log book	31	667, 687
PE 21.10	Analyze symptom and interpret the physical findings and arrive at an appropriate provisional/differential diagnosis	Y	Bedside clinics, skills lab	Log book	31	667, 687
PE 21.11	Perform and interpret the common analytes in a urine examination	Y	Bedside clinics, skills lab	Skill assessment	18	433
PE 21.12	Interpret report of plain X-ray of KUB	Y	Bedside clinics, skills lab	Log book	31	724
PE 21.13	Enumerate the indications for and Interpret the written report of ultrasonogram of KUB	Y	Bedside clinics, skills lab	Log book	31	725
PE 21.14	Recognize common surgical conditions of the abdomen and genitourinary system and enumerate the indications for referral including acute and subacute intestinal obstruction, appendicitis, pancreatitis, perforation intussusception, phimosis, undescended testis, chordee, hypospadiasis, torsion testis, hernia hydrocele, vulval synechiae	Y	Bedside clinics, skills lab	Log book assessment	29	623-634
PE 21.16	Counsel/educate a patient for referral appropriately	Y	DOAP session	Document in log book	32	732
PE 21.17	Describe the etiopathogenesis, grading, clinical features and management of hypertension in children	Y	Lecture, small group discussion	Short notes	15	421
PE 22.1	Enumerate the common rheumatological problems in children. Discuss the clinical approach to recognition and referral of a child with rheumatological problem	Y	Lecture, small group discussion	Written/Viva voce	20	557
PE 22.2	Counsel a patient with chronic illness	N	Bedside clinics skills lab	Log book	32	732
PE 22.3	Describe the diagnosis and management of common vasculitic disorders including Henoch-Schonlein purpura, Kawasaki disease, SLE, JIA	N	Lecture, small group discussion	Written/Viva voce	20	558
PE 23.1	Discuss the Hemodynamic changes, clinical presentation, complications and management of acyanotic heart diseases	Y	Lecture, small group discussion	Written/Viva voce	15	395
PE 23.2	Discuss the hemodynamic changes, clinical presentation, complications and management of cyanotic heart diseases—fallot's physiology	Y	Lecture, small group discussion	Written/Viva voce	15	401
PE 23.3	Discuss the etiopathogenesis, clinical presentation and management of cardiac failure in infant and children	Y	Lecture, small group discussion	Written/Viva voce	15	413
PE 23.4	Discuss the etiopathogenesis, clinical presentation and management of acute rheumatic fever in children	Y	Lecture, small group discussion	Written/Viva voce	15	409-413
PE 23.5	Discuss the clinical features, complications, diagnosis, management and prevention of acute rheumatic fever	Y	Lecture, small group discussion	Written/Viva voce	15	409-413
PE 23.6	Discuss the etiopathogenesis, clinical features and management of Infective endocarditis in children	Y	Lecture, small group discussion	Written/Viva voce	15	415

JAYPEE BROTHERS

Number	Competency The student should be able to	Core Y/N	Suggested teaching learning methods	Suggested assessment methods	Chapter no.	Page no.
PE 23.7	Elicit appropriate history for a cardiac disease, analyze the symptoms, e.g., breathlessness, chest pain, tachycardia, feeding difficulty, failing to thrive, reduced urinary output, swelling, syncope, cyanotic spells, suck rest cycle, frontal swelling in infants. Document and present	Y	Bedside clinics, skills lab	Skill assessment	31	672, 689
PE 23.8	Identify external markers of a cardiac disease e.g. Cyanosis, Clubbing, dependent edema, dental caries, arthritis, erythema rash, chorea, subcutaneous nodules, Oslers node, Janeway lesions and document	Y	Bedside clinics, skills lab	Skill assessment	31	672, 689
PE 23.9	Record pulse, blood pressure, temperature and respiratory rate and interpret as per the age	Y	Bedside clinics, skills lab	Skill assessment	31	672, 689
PE 23.10	Perform independently examination of the cardiovascular system—look for precordial bulge, pulsations in the precordium, JVP and its significance in children and infants, relevance of percussion in Pediatric examination, auscultation and other system examination and document	Y	Bedside clinics, skills lab	Skill station	31	672, 689
PE 23.11	Develop a treatment plan and prescribe appropriate drugs including fluids in cardiac diseases, anti-failure drugs, and inotropic agents	Y	Bedside clinics, skills lab	log book	31	715
PE 23.12	Interpret a chest X-ray and recognize cardiomegaly	Y	Bedside clinics, skills lab	Log book entry	31	719
PE 23.13	Choose and Interpret blood reports in cardiac illness	Y	Bedside clinics, Small group discussion	Log book entry	31	728
PE 23.14	Interpret pediatric ECG	Y	Bedside clinics, skills lab	Log book entry	31	727
PE 23.15	Use the ECHO reports in management of cases	Y	Bedside clinics	Log book entry	31	727
PE 23.16	Discuss the indications and limitations of cardiac catheterization	N	Small group discussion	Viva voce	31	728
PE 23.17	Enumerate some common cardiac surgeries, such as BT shunt, Potts and Waterston's and corrective surgeries	N	Small group discussion	Viva voce	15	401-408
PE 23.18	Demonstrate empathy while dealing with children with cardiac diseases in every patient encounter	Y	Small group discussion	Document in log book	32	732
PE 24.1	Discuss the etiopathogenesis, classification, clinical presentation and management of diarrheal diseases in children	Y	Lecture, small group discussion	Written/Viva voce	12	278-285
PE 24.2	Discuss the classification and clinical presentation of various types of diarrheal dehydration	Y	Lecture, small group discussion	Written/Viva voce	12	278-285
PE 24.3	Discuss the physiological basis of ORT, types of ORS and the composition of various types of ORS	Y	Lecture, small group discussion	Written/Viva voce	12	278-285
PE 24.4	Discuss the types of fluid used in pediatric diarrheal diseases and their composition	Y	Lecture, small group discussion	Written/Viva voce	12	278-285
PE 24.5	Discuss the role of antibiotics, antispasmodics, anti-secretory drugs, probiotics, anti-emetics in acute diarrheal diseases	Y	Lecture, small group discussion	Written/Viva voce	12	278-285
PE 24.6	Discuss the causes, clinical presentation and management of persistent diarrhea in children	Y	Lecture, small group discussion	Written/Viva voce	12	285
PE 24.7	Discuss the causes, clinical presentation and management of chronic diarrhea in children	Y	Lecture, small group discussion	Written/Viva voce	12	286
PE 24.8	Discuss the causes, clinical presentation and management of dysentery in children	Y	Lecture, small group discussion	Written/Viva voce	12	278-285
PE 24.9	Elicit, document and present history pertaining to diarrheal diseases	Y	Bedside clinics, skills lab	Skill assessment	12	278-285
PE 24.10	Assess for signs of dehydration, document and present	Y	Bedside clinics, skills lab	Skill assessment	12	278-285

JAYPEE BROTHERS

Number	Competency The student should be able to	Core Y/N	Suggested teaching learning methods	Suggested assessment methods	Chapter no.	Page no.
PE 24.11	Apply the IMNCI guidelines in risk stratification of children with diarrheal dehydration and refer	Y	Bedside clinics, skills lab	Document in log book	30	639-643
PE 24.13	Interpret RFT and electrolyte report	Y	Bedside clinics, Small group discussion	Document in log book	16	433
PE 24.14	Plan fluid management as per the WHO criteria	Y	Bedside clinics, Small group activity	Skills station	12	278-285
PE 24.15	Perform NG tube insertion in a manikin	Y	DOAP session	Document in log book	31	701
PE 24.16	Perform IV cannulation in a model	Y	DOAP session	Document in log book	32	732
PE 24.17	Perform Interosseous insertion model	Y	DOAP session	Document in log book	32	733
PE 25.1	Discuss the etiopathogenesis, clinical presentation and management of malabsorption in children and its causes including celiac disease	N	Lecture, small group discussion	Written/Viva voce	12	288
PE 26.1	Discuss the etiopathogenesis, clinical features and management of acute hepatitis in children	Y	Lecture, Small group activity	Written/Viva voce	12	299
PE 26.2	Discuss the etiopathogenesis, clinical features and management of fulminant hepatic failure in children	Y	Lecture, Small group activity	Written/Viva voce	12	304
PE 26.3	Discuss the etiopathogenesis, clinical features and management of chronic liver diseases in children	Y	Lecture, Small group activity	Written/Viva voce	12	317
PE 26.4	Discuss the etiopathogenesis, clinical features and management of portal hypertension in children	Y	Lecture, Small group activity	Written/Viva voce	12	313
PE 26.5	Elicit document and present the history related to diseases of gastrointestinal system	Y	Bedside clinics, skills lab	Skills station	31	667, 680
PE 26.6	Identify external markers for GI and Liver disorders, e.g., jaundice, pallor, gynecomastia, spider angioma, palmar erythema, ichthyosis, caput medusae, clubbing, failing to thrive, vitamin A and D deficiency	Y	Bedside clinics, skills lab	Skill assessment	31	667, 680 17
PE 26.7	Perform examination of the abdomen, demonstrate organomegaly, ascites, etc.	Y	Bedside clinics, skills lab	Skill assessment	31	667, 680
PE 26.8	Analyze symptoms and interpret physical signs to make a provisional/differential diagnosis	Y	Bedside clinics, skill lab	Skill assessment	31	667, 680
PE 26.9	Interpret liver function tests, viral markers, ultra sonogram report	Y	Bedside clinics, skills lab	Skill assessment	12	302
PE 26.10	Demonstrate the technique of liver biopsy in a perform liver biopsy in a simulated environment	Y	DOAP session	Document in log book	31	702
PE 26.11	Enumerate the indications for upper GI endoscopy	N	Small group discussion	Viva voce	12	313
PE 26.12	Discuss the prevention of hepatitis B infection—universal precautions and immunization	Y	Lecture, Small group activity	Written/Viva voce	5	55
PE 26.13	Counsel and educate patients and their family appropriately on liver diseases	y	Bedside clinics, skills lab	Document in log book	32	732
PE 27.1	List the common causes of morbidity and mortality in the under five children	Y	Lecture, small group discussion	Written/Viva voce	30	648
PE 27.2	Describe the etiopathogenesis, clinical approach and management of cardiorespiratory arrest in children	Y	Lecture, small group discussion	Written/Viva voce	28	608
PE 27.4	Describe the clinical approach and management of respiratory distress in children	Y	Lecture, small group discussion	Written/Viva voce	28	608
PE 27.5	Describe the etiopathogenesis, clinical approach and management of shock in children	Y	Lecture, small group discussion	Written/Viva voce	28	614
PE 27.6	Describe the etiopathogenesis, clinical approach and management of status epilepticus	Y	Lecture, small group discussion	Written/Viva voce	18	509

JAYPEE BROTHERS

Number	Competency The student should be able to	Core Y/N	Suggested teaching learning methods	Suggested assessment methods	Chapter no.	Page no.
PE 27.7	Describe the etiopathogenesis, clinical approach and management of an unconscious child	Y	Lecture, small group discussion	Written/Viva voce	18	519
PE 27.8	Discuss the common types, clinical presentations and management of poisoning in children	Y	Lecture, small group discussion	Written/Viva voce	27	597
PE 27.9	Discuss oxygen therapy, in pediatric emergencies and modes of administration	Y	Lecture, small group discussion	Written/Viva voce	14	387
PE 27.10	Observe the various methods of administering oxygen	Y	Demonstration	Document in log book	14	387
PE 27.11	Explain the need and process of triage of sick children brought to health facility	Y	Lecture, small group discussion	Written/Viva voce	30	644
PE 27.12	Enumerate emergency signs and priority signs	Y	Lecture, small group discussion	Written/Viva voce	30	644
PE 27.13	List the sequential approach of assessment of emergency and priority signs	Y	Lecture, small group discussion	Written/Viva voce	30	644
PE 27.14	Assess emergency signs and prioritize	Y	DOAP session, Skills lab	Skills assessment	30	644
PE 27.15	Assess airway and breathing: recognise signs of severe respiratory distress. Check for cyanosis, severe chest indrawing, grunting	Y	DOAP session, Skills lab	Skills assessment	28	608
PE 27.16	Assess airway and breathing. Demonstrate the method of positioning of an infant and child to open airway in a simulated environment	Y	DOAP session, Skills Lab	Skills assessment	28	608
PE 27.17	Assess airway and breathing: administer oxygen using correct technique and appropriate flow rate	Y	DOAP session, skills lab	Skills assessment	28	608
PE 27.18	Assess airway and breathing: perform assisted ventilation by bag and mask in a simulated environment	Y	DOAP session, skills lab	Skills assessment	28	608
PE 27.19	Check for signs of shock, i.e., pulse, blood pressure, CRT	Y	DOAP session, skills lab	Skills assessment	28	614
PE 27.20	Secure an IV access in a simulated environment	Y	DOAP session, skills lab	Skills assessment	32	733
PF27.21	Choose the type of fluid and calculate the fluid requirement in shock	Y	DOAP session, Small group activity	Skills assessment	28	614
PE 27.22	Assess level of consciousness and provide emergency treatment to a child with convulsions/coma • Position an unconscious child • Position a child with suspected trauma • Administer IV/per rectal diazepam for a convulsing child in a simulated environment	Y	DOAP session, skills lab	Skills assessment	18	519
PE 27.23	Assess for signs of severe dehydration	Y	Bedside clinics, skills lab	Skill station	12	280
PE 27.24	Monitoring and maintaining temperature: define hypothermia. Describe the clinical features, complications and management of hypothermia	Y	Lecture, small group discussion	Written/Viva voce	9	128
PE 27.25	Describe the advantages and correct method of keeping an infant warm by skin-to-skin contact	Y	Lecture, small group discussion	Written/Viva voce	9	128
PE 27.26	Describe the environmental measures to maintain temperature	Y	Lecture, small group discussion	Written/Viva voce	9	128
PE 27.27	Assess for hypothermia and maintain temperature	Y	Skills lab	Skills assessment	9	128
PE 27.28	Provide BLS for children in manikin	Y	Skills Lab		28	608
PE .27.29	Discuss the common causes, clinical presentation, medicolegal implications of abuse	Y	Lecture, small group discussion	Written/Viva voce	30	658
PE 27.30	Demonstrate confidentiality with regard to abuse	Y	Skills lab, standardized patients	Skills station	30	658

JAYPEE BROTHERS

Number	Competency The student should be able to	Core Y/N	Suggested teaching learning methods	Suggested assessment methods	Chapter no.	Page no.
PE 27.31	Assess child for signs of abuse	Y	DOAP session, skills lab	Log book	30	658
PE 27.32	Counsel parents of dangerously ill/terminally ill child to break a bad news	Y	DOAP session	Document in log book	32	733
PE 27.33	Obtain informed consent	Y	DOAP session	Document in log book	-	-
PE 27.34	Willing to be a part of the ER team	Y	DOAP session	Document in log book	-	-
PE 27.35	Attends to emergency calls promptly	Y	DOAP session	Document in log book	-	-
PE 28.1	Discuss the etiopathogenesis, clinical features and management of nasopharyngitis	Y	Lecture, small group discussion	Written/Viva voce	14	360
PE 28.2	Discuss the etiopathogenesis of pharyngotonsillitis	Y	Lecture, small group discussion	Written/Viva voce	14	591
***PE 28.3**	Discuss the clinical features and management of Pharyngo Tonsillitis	Y	Lecture, small group discussion	Written/Viva voce	25	591
PE 28.4	Discuss the etiopathogenesis, clinical features and management of acute otitis media (AOM)	Y	Lecture, small group discussion	Written/Viva voce	25	589
PE 28.5	Discuss the etiopathogenesis, clinical features and management of epiglottitis	Y	Lecture, small group discussion	Written/Viva voce	14	366
PE 28.6	Discuss the etiopathogenesis, clinical features and management of acute laryngo-tracheo-bronchitis	Y	Lecture, small group discussion	Written/Viva voce	14	366
PE 28.7	Discuss the etiology, clinical features and management of stridor in children	Y	Lecture, small group discussion	Written/Viva voce	14	365
PE 28.8	Discuss the types, clinical presentation, and management of foreign body aspiration in infants and children	Y	Lecture, small group discussion	Written/Viva voce	29	627
PE 28.9	Elicit, document and present age appropriate history of a child with upper respiratory problem including stridor	Y	Bedside clinics, skill lab	Skill assessment	14	360
PE 28.11	Perform throat examination using tongue depressor	Y	DOAP session	Skills assessment	14	362
PE 28.14	Develop a treatment plan and document appropriately in a child with upper respiratory symptoms	Y	Bedside clinics	Skills assessment	14	360
PE 28.15	Stratify risk in children with stridor using IMNCI guidelines	Y	Bedside clinics	Log book documentation	30	639
PE 28.16	Interpret blood tests relevant to upper respiratory problems	N	Bedside clinics, Small group discussion	Log book	31	728
PE 28.17	Interpret X-ray of the paranasal sinuses and mastoid; and /or use written report in case of management Interpret CXR in foreign body aspiration and lower respiratory tract infection, understand the significance of thymic shadow in pediatric chest X-rays	Y	Bedside clinics, Small group discussion	Skills assessment	31	724
PE 28.18	Describe the etiopathogenesis, diagnosis, clinical features, management and prevention of lower respiratory infections including bronchiolitis, wheeze associated LRTI pneumonia and empyema	Y	Bedside clinics, Small group discussion, Lecture	Skill assessment/ Written/Viva voce	14	367
PE 28.19	Describe the etiopathogenesis, diagnosis, clinical features, management and prevention of asthma in children	Y	Bedside clinics, small group discussion, lecture	Skill assessment/ Written/Viva voce	14	374
PE 28.20	Counsel the child with asthma on the correct use of inhalers in a simulated environment	Y	Bedside clinics, small group discussion, lecture	Skills assessment/ Written/Viva voce	31	704

JAYPEE BROTHERS

Number	Competency The student should be able to	Core Y/N	Suggested teaching learning methods	Suggested assessment methods	Chapter no.	Page no.
PE 29.1	Discuss the etiopathogenesis, clinical features, classification and approach to a child with anemia	Y	Lecture, small group discussion	Written/Viva voce	13	324
PE 29.2	Discuss the etiopathogenesis, clinical features and management of Iron Deficiency anemia	Y	Lecture, small group discussion	Written/Viva voce	13	324
PE 29.3	Discuss the etiopathogenesis, clinical features and management of VIT B12, Folate deficiency anemia	Y	Lecture, small group discussion	Written/Viva voce	13	324
PE 29.4	Discuss the etiopathogenesis, clinical features and management of hemolytic anemia, thalassemia major, sickle cell anemia, hereditary spherocytosis, auto-immune hemolytic anemia and hemolytic uremic syndrome	Y	Lecture, small group discussion	Written/Viva voce	13	333
PE 29.5	Discuss the national anemia control program	Y	Lecture, small group discussion	Written/Viva voce	30	654
PE 29.6	Discuss the cause of thrombocytopenia in children: describe the clinical features and management of idiopathic thrombocytopenic purpura (ITP)	N	Lecture, small group discussion	Written/Viva voce	13	350
PE 29.7	Discuss the etiology, classification, pathogenesis and clinical features of hemophilia in children	N	Lecture, small group discussion	Written/Viva voce	13	351
PE 29.8	Discuss the etiology, clinical presentation and management of acute lymphoblastic leukemia in children	N	Lecture, small group discussion	Written/Viva voce	19	549
PE 29.9	Discuss the etiology, clinical presentation and management of lymphoma in children	N	Lecture, small group discussion	Written/Viva voce	19	552
PE 29.10	Elicit, document and present the history related to hematology	Y	Bedside clinics, skills lab	Skills station	31	666
PE 29.11	Identify external markers for hematological disorders e.G., Jaundice, pallor, petechiae purpura, ecchymosis, lymphadenopathy, bone tenderness, loss of weight, mucosal and large joint bleed	Y	Bedside clinics, skills lab	Skill assessment	31	666
PE 29.12	Perform examination of the abdomen, demonstrate organomegaly	Y	Bedside clinics, skills lab	Skill assessment	31	667
PE 29.13	Analyze symptoms and interpret physical signs to make a provisional/differential diagnosis	Y	Bedside clinics, skill lab	Skill assessment	31	666, 680
PE 29.14	Interpret CBC, LFT	Y	Bedside clinics, skills lab	Skill assessment	31	728
PE 29.15	Perform and interpret peripheral smear	Y	DOAP session	Document in log book	31	728
PE 29.16	Discuss the indications for hemoglobin electrophoresis and interpret report	N	Small group discussion	Viva voce	13	333
PE 29.17	Demonstrate performance of bone marrow aspiration in manikin	Y	Skills lab	Document in log book	32	733
PE 29.20	Enumerate the indications for splenectomy and precautions	N	Small group Activity	Viva voce	13	333
PE 30.1	Discuss the etiopathogenesis, clinical features, complications, management and prevention of meningitis in children	Y	Lecture, small group discussion	Written/Viva voce	18	522
PE 30.2	Distinguish bacterial, viral and tuberculous meningitis	Y	Lecture, small group discussion	Written/Viva voce	18	514
PE 30.3	Discuss the etiopathogenesis, classification, clinical features, complication and management of hydrocephalus in children	Y	Lecture, small group discussion	Written/Viva voce	18	527
PE 30.4	Discuss the etiopathogenesis, classification, clinical features, and management of microcephaly in children	Y	Lecture, small group discussion	Written/Viva voce	18	526
PE 30.5	Enumerate the neural tube defects. Discuss the causes, clinical features, types, and management of neural tube defect	Y	Lecture, small group discussion	Written/Viva voce	18	529

JAYPEE BROTHERS

Number	Competency The student should be able to	Core Y/N	Suggested teaching learning methods	Suggested assessment methods	Chapter no.	Page no.
PE 30.6	Discuss the etiopathogenesis, clinical features, and management of Infantile hemiplegia	Y	Lecture, small group discussion	Written/Viva voce	18	534
PE 30.7	Discuss the etiopathogenesis, clinical features, complications and management of febrile seizures in children	Y	Lecture, small group discussion	Written/Viva voce	18	500
PE 30.8	Define epilepsy. Discuss the pathogenesis, clinical types, presentation and management of epilepsy in children	Y	Lecture, small group discussion	Written/Viva voce	18	503
PE 30.9	Define status epilepticus. Discuss the clinical presentation and management	Y	Lecture, small group discussion	Written/Viva voce	18	503
PE 30.10	Discuss the etiopathogenesis, clinical features and management of mental retardation in children	Y	Lecture, small group discussion	Written/Viva voce	2	25
PE 30.11	Discuss the etiopathogenesis, clinical features and management of children with cerebral palsy	Y	Lecture, small group discussion	Written/Viva voce	2	21
PE 30.12	Enumerate the causes of floppiness in an infant and discuss the clinical features, differential diagnosis and management	Y	Lecture, small group discussion	Written/Viva voce	18	544
PE 30.14	Discuss the etiopathogenesis, clinical features and management of Duchenne muscular dystrophy	Y	Lecture, small group discussion	Written/Viva voce	18	546
PE 30.15	Discuss the etiopathogenesis, clinical features and management of ataxia in children	Y	Lecture, small group discussion	Written/Viva voce	18	522
PE 30.16	Discuss the approach to and management of a child with headache	Y	Lecture, small group discussion	Written/Viva voce	18	541
PE 30.17	Elicit document and present an age appropriate history pertaining to the CNS	Y	Bedside clinics, skills lab	Skill assessment	31	675
PE 30.18	Demonstrate the correct method for physical examination of CNS including identification of external markers. Document and present clinical findings	Y	Bedside clinics, skills lab	Skill assessment	31	675, 692
PE 30.19	Analyze symptoms and interpret physical findings and propose a provisional/differential diagnosis	Y	Bedside clinics, skills lab	Skill assessment	31	675, 692
PE 30.20	Interpret and explain the findings in a CSF analysis	Y	Small group discussion	Log book	18	524
PE 30.21	Enumerate the indication and discuss the limitations of EEG, CT, MRI	N	Bedside clinics	Log book	31	503, 727
PE 30.22	Interpret the reports of EEG, CT, MRI	Y	Bedside clinics, skills lab	Log book	31	503, 727
PE 30.23	Perform in a mannequin lumbar puncture. Discuss the indications, contraindication of the procedure	Y	Bedside clinics, skills lab	Skill assessment	18	524
PE 31.1	Describe the etiopathogenesis, management and prevention of allergic rhinitis in children	Y	Lecture, small group discussion	Written/Viva voce	14	364
PE 31.2	Recognize the clinical signs of allergic rhinitis	Y	Bedside clinics' Skill Lab	Skill assessment	14	364
PE 31.3	Describe the etiopathogenesis, clinical features and management of atopic dermatitis in children	Y	Lecture small group discussion	Written/Viva voce	24	582
PE 31.4	Identify atopic dermatitis and manage		Bedside clinics Skills lab	Skill assessment	24	582
PE 31.5	Discuss the etiopathogenesis, clinical types, presentations, management and prevention of childhood asthma	Y	Lecture small group discussion	Written/Viva voce	14	374
PE 31.6	Recognise symptoms and signs of Asthma	Y	Bedside clinic, small group activity	Skill assessment	14	374
PE 31.7	Develop a treatment plan for Asthma appropriate to clinical presentation and severity	Y	Bedside clinic, small group activity	Skill assessment	14	374
PE 31.9	Interpret CBC and chest X-ray in asthma	Y	Bedside clinic, small group activity	Skill assessment	14	374
PE 31.10	Enumerate the indications for PFT	N	Bedside clinic, small group activity	Viva voce	14	389

JAYPEE BROTHERS

Number	Competency The student should be able to	Core Y/N	Suggested teaching learning methods	Suggested assessment methods	Chapter no.	Page no.
PE 31.11	Observe administration of nebulization	Y	DOAP session	Document in log book	31	704
PE 31.12	Discuss the etiopathogenesis, clinical features and complications and management of urticaria angioedema	Y	Lecture, small group discussion	Written/Viva voce	24	585
PE 32.1	Discuss the genetic basis, risk factors, complications, prenatal diagnosis, management and genetic counseling in down's syndrome	Y	Lecture, small group discussion	Written/Viva voce	21	565
PE 32.2	Identify the clinical features of Down's syndrome	Y	Bedside clinics, skills lab	log book	21	565
PE 32.3	Interpret normal karyotype and recognize-trisomy 21	Y	Bedside clinics, skills lab	Log book	21	565
PE 32.4	Discuss the referral criteria and multidisciplinary approach to management	Y	Lecture, small group discussion	Written/Viva voce	21	565
PE 32.5	Counsel parents regarding 1. Present child, 2. Risk in the next pregnancy	N	Bedside clinics, skills lab	Log book	21	571
PE 32.6	Discuss the genetic basis, risk factors, clinical features, complications, prenatal diagnosis, management and genetic Counseling in turner's syndrome	N	Lecture, small group discussion	Written/Viva voce	21	568
PE 32.7	Identify the clinical features of turner's syndrome	N	Bedside clinics, skills lab	Log book	21	568
PE 32.8	Interpret normal karyotype and recognize the turner's karyotype	N	Bedside clinics, skills lab	log book	21	568
PE 32.9	Discuss the referral criteria and multidisciplinary approach to management of Turner Syndrome	N	Lecture, small group discussion	Written/Viva voce	21	568
PE 32.10	Counsel parents regarding 1. Present child, 2. Risk in the next pregnancy	N	Bedside clinics, skills lab	Log book	21	571
PE 32.11	Discuss the genetic basis, risk factors, complications, prenatal diagnosis, management and genetic Counseling in Klinefelter syndrome	Y	Lecture, small group discussion	Written/Viva voce	21	570
PE 32.12	Identify the clinical features of Klinefelter syndrome	N	Bedside clinics, skills lab	Log book	21	570
PE 32.13	Interpret normal karyotype and recognize the klineferlter karyotype	N	Bedside clinics, skills lab	Log book	21	570
PE 33.1	Describe the etiopathogenesis clinical features, management of hypothyroidism in children	Y	Lecture, small group discussion	Written/Viva voce	17	471
PE 33.2	Recognize the clinical signs of hypothyroidism and refer	Y	Bedside clinics, skill lab	Skill assessment	17	471
PE 33.3	Interpret and explain neonatal thyroid screening report	Y	Bedside clinics, Small group discussion	Skill assessment	17	471
PE 33.4	Discuss the etiopathogenesis, clinical types, presentations, complication and management of Diabetes mellitus in children	Y	Lecture, small group discussions	Written/Viva voce	17	492
PE 33.5	Interpret Blood sugar reports and explain the diagnostic criteria for Type 1 Diabetes	Y	Bedside clinic, small group activity	Skill assessment	17	492
PE 33.7	Perform genital examination and recognize ambiguous genitalia and refer appropriately	Y	Bedside clinic Skills lab	Skill assessment	17	479
PE 33.8	Define precocious and delayed Puberty	Y	Lecture, small group discussion	Written/Viva voce	17	484
PE 33.9	Perform sexual maturity rating (SMR) and interpret	Y	Bedside clinics Skills Lab	Skill assessment	3	30
PE 33.10	Recognize precocious and delayed puberty and refer	Y	Bedside clinics Skills Lab	log book	17	484
PE 33.11	Identify deviations in growth and plan appropriate referral	Y	Bedside clinics Skills Lab	log book	17	489
PE 34.1	Discuss the epidemiology, clinical features, clinical types, complications of tuberculosis in children and adolescents	Y	Lecture, small group discussion	Written/Viva voce	10	214
PE 34.2	Discuss the various diagnostic tools for childhood tuberculosis	Y	Lecture, small group discussion	Written/Viva voce	10	218

JAYPEE BROTHERS

Number	Competency The student should be able to	Core Y/N	Suggested teaching learning methods	Suggested assessment methods	Chapter no.	Page no.
PE 34.3	Discuss the various regimens for management of tuberculosis as per National Guidelines	Y	Lecture, small group discussion	Written/Viva voce	10	219
PE 34.4	Discuss the preventive strategies adopted and the objectives and outcome of the national tuberculosis control programme	Y	Lecture, small group discussion	Written/Viva voce	10	217
PE 34.5	Able to elicit, document and present history of contact with tuberculosis in every patient encounter	Y	Bedside clinics, skill lab	Skill assessment	10	214
PE 34.6	Identify a BCG scar	Y	Bedside clinics, skills lab	Skill assessment	10	214
PE 34.7	Interpret a mantoux test	Y	Bedside clinics Skills lab	Skill assessment	10	215
PE 34.8	Interpret a chest radiograph	Y	Bedside clinics Skills lab	Skill assessment	31	724
PE 34.9	Interpret blood tests in the context of laboratory evidence for tuberculosis	N	Bedside clinics, Small group discussion	log book	10	215
PE 34.10	Discuss the various samples for demonstrating the organism, e.g. gastric aspirate, sputum, CSF, FNAC	Y	Bedside clinics, Small group discussion	Written/Viva voce	10	215
PE 34.11	Perform AFB staining	Y	DOAP session	Log book/ Journal	10	215
PE 34.12	Enumerate the indications and discuss the limitations of methods of culturing *M.Tuberculii*	Y	Small group discussion	Written/Viva voce	10	215
PE 34.13	Enumerate the newer diagnostic tools for Tuberculosis including BACTEC CBNAAT and their indications	N	Lecture, small group discussion	Written/Viva voce	10	215
PE 34.14	Enumerate the common causes of fever and discuss the etiopathogenesis, clinical features, complications and management of fever in children	Y	Lecture, small group discussion	Written/Viva voce	10	205
PE 34.15	Enumerate the common causes of fever and discuss the etiopathogenesis, clinical features, complications and management of child with exanthematous illnesses like measles, mumps, rubella and chicken pox	Y	Lecture, small group discussion	Written/Viva voce	10	224, 231, 239
PE 34.16	Enumerate the common causes of fever and discuss the etiopathogenesis, clinical features, complications and management of child with diphtheria, pertussis, tetanus.	Y	Lecture, small group discussion	Written/Viva voce	10	236, 237, 238
PE 34.17	Enumerate the common causes of fever and discuss the etiopathogenesis, clinical features, complications and management of child with typhoid	Y	Lecture, small group discussion	Written/Viva voce	10	226
PE 34.18	Enumerate the common causes of fever and discuss the etiopathogenesis, clinical features, complications and management of child with dengue, chikungunya and other vector born diseases	Y	Lecture, small group discussion	Written/Viva voce	10	228, 242
PE 34.19	Enumerate the common causes of fever and discuss the etiopathogenesis, clinical features, complications and management of children with common parasitic infections, malaria, leishmaniasis, filariasis, helminthic infestations, amebiasis, giardiasis	Y	Lecture, small group discussion	Written/Viva voce	10	256
PE 34.20	Enumerate the common causes of fever and discuss the etiopathogenesis, clinical features, complications and management of child with Ricketsial diseases	Y	Lecture, small group discussion	Written/Viva voce	10	245
PE 35.1	Identify, discuss and defend medicolegal, socio-cultural and ethical issues as they pertain to health care in children (including parental rights and right to refuse treatment)	Y	Small group discussion	Written/Viva voce	33	734

JAYPEE BROTHERS

CHAPTER

12

Disorders of Gastrointestinal System

'Your gut feeling...'

No.	Competency
PE 24.1 to PE 24.8	a. Discuss the etiopathogenesis, clinical features and management of diarrheal disease in children. b. Discuss the classification and clinical presentation of various types of diarrheal dehydration. c. Discuss the physiological basis of ORT, types of ORS and composition of various types of ORS in children. d. Discuss the types of fluids used in pediatric diarrheal diseases and their composition. e. Discuss the role of antibiotics, antispasmodics, antisecretory drugs, probiotics, antiemetics in acute diarrheal diseases. f. Discuss the causes, clinical presentation and management of persistent diarrhea in children. g. Discuss the causes, clinical presentation and management of chronic diarrhea in children. h. Discuss the causes, clinical presentation and management of dysentery in children.
PE 24.9 to PE 24.14	a. Elicit, document and present history pertaining to diarrheal diseases. b. Assess for signs of dehydration, document and present. c. Plan fluid management as per WHO criteria.
PE 25.1	Discuss the etiopathogenesis, clinical presentation and management of malabsorption in children and its causes including celiac disease.
PE 26.1 to PE 26.4	a. Discuss the etiopathogenesis, clinical features and management of acute hepatitis in children. b. Discuss the etiopathogenesis, clinical features and management of fulminant hepatic failure in children. c. Discuss the etiopathogenesis, clinical features and management of chronic liver diseases in children. d. Discuss the etiopathogenesis, clinical features and management of portal hypertension in children.
PE 26.10	a. Demonstrate technique of liver biopsy. b. Perform liver biopsy in a simulated environment.
PE 26.11	Enumerate the indications of upper GI endoscopy

JAYPEE BROTHERS

12.1: ACUTE DIARRHEA

Q. Describe the WHO plans for management of acute diarrhea in children. Short notes:

- Signs of dehydration
- Persistent diarrhea
- Chronic diarrhea, celiac disease, lactose intolerance
- Common causes of vomiting in children.

DEFINITION

- Passage of three or more loose stools in 24-hour period
- Loose stool that takes the shape of the container
- Recent change in consistency or character of stool.

What is not Diarrhea?

- Frequent passage of formed stools (irritable bowel syndrome)
- Passage of pasty golden yellow stools in a breastfed infant
- Passage of watery stools by a newborn after 3–4 days of birth
- During or immediately after feeding in newborn or infant (gastrocolic reflex).

Acute Watery Diarrhea

- Lasts <7 days, up to 14 days without visible blood
- Prone to dehydration.

Dysentery

Visible blood and mucus.

EPIDEMIOLOGY

- 1.5 million children die of diarrhea annually
- 8 out of 10 deaths in first 2 years of life
- 20% of hospitalized pediatric cases in India.

RISK FACTORS

- Infections
- Poverty
- Non-breastfed babies
- Severe acute malnutrition (SAM)
- Measles
- Human immunodeficiency virus (HIV).

ETIOLOGY

Acute Watery Diarrhea

- Bacterial—*Escherichia* [enterotoxigenic *E. coli* (ETEC), enteropathogenic *E. coli* (EPEC), *Shigella*, *Campylobacter jejuni*
- Viruses—Rotavirus—very common in infants, *Enterovirus*
- *Vibrio cholerae* (rice watery stool).

Rotavirus diarrhea

- Common between 9 months and 12 months
- Common in winter in India
- Reversible patchy villous atrophy with loss of brush border enzymes
- Important clinical feature is **vomiting** preceding the onset of diarrhea

Dysentery

Shigella dysenteriae, *C. jejuni*, *Salmonella*, *Entamoeba histolytica* (more in adults).

Others

- Traveler's diarrhea
- Drug-induced diarrhea (antibiotic induced)
- Celiac disease
- Inflammatory bowel disease.

Osmotic versus Secretory Diarrhea

	Osmotic	*Secretory*
Cause	Due to nonabsorption of substances, due to inherent character of solute (e.g., magnesium, concentrated fruit juices) or due to small bowel defect, e.g., lactase deficiency in brush border	❖ Active secretion of fluid into the gut ❖ Due to infections like cholera, *E. coli* ❖ Due to drugs and laxatives
Clinical features	❖ Stops on stopping the offending agents/on starvation ❖ Acidic stools, reducing substances + ❖ Perianal excoriation ❖ Prone to develop hypernatremia ❖ Stools large, frothy, explosive	❖ Persists despite starvation ❖ Normal stool osmolality ❖ pH >6 ❖ Stool sodium <70 mEq/L ❖ Causative organisms are *Salmonella, Shigella, Campylobacter*

JAYPEE BROTHERS

CLINICAL FEATURES OF ACUTE DIARRHEA

- Most important clinical consequence is dehydration.
- Treatment plan depends upon severity of dehydration.

Assessment of Dehydration—WHO

Signs	*No dehydration*	*Some dehydration*	*Severe dehydration*
Look at general condition	Well alert	Restless, irritable	Lethargic or unconscious, floppy
Eyes	Normal	Sunken	Very sunken and dry
Tears	Present	Absent	Absent
Mouth and tongue	Moist	Dry	Very dry
Thirst	Drinks normally, not thirsty	Thirsty, drinks eagerly	Drinks poorly or not able to drink
Feel skin pinch	Goes back quickly	Goes back slowly	Goes back very slowly
Decide	No dehydration	Two or more signs—some dehydration	Two or more signs—severe dehydration
Treat	Plan A	Plan B	Plan C

Other Signs of Dehydration

	No dehydration	*Some dehydration*	*Severe dehydration*
Heart rate	Normal	Increased	Markedly increased/decreased
Urine output	Normal	Decreased	Much decreased
Fluid deficit (% of body weight)	<5%	5–10%	>10%
Fluid deficit (mL/kg)	<50	50–100	>100

Types of Dehydration

- *Isotonic:* Loss of isotonic fluid (most common), e.g., acute gastroenteritis
- *Hyponatremic:* Loss of sodium-rich fluids, e.g., cholera
- *Hypernatremic:* Increased sodium administration for fluid loss or fluid loss exceeds sodium loss, e.g., faulty oral rehydration solution (ORS).

INVESTIGATIONS

- Routine
- **Stool examination—no role in acute watery diarrhea**—except rare indications
- **Stool** culture sensitivity—limited role as most laboratories do not differentiate between commensals and enteropathogenic organisms.
- Electrolytes, renal function tests.
- Serum bicarbonate <17 mEq/L is a laboratory indicator of severe dehydration (>15%).

TIP

No role of blood culture except to detect *Salmonella* in acute gastroenteritis.

Rare indications of stool culture in acute diarrhea

- Cholera
- Hospital acquired diarrhea (>3 days of hospitalization) <3 months with severe course
- Suspected giardiasis
- Suspected *Clostridium difficile* infection
- HIV or subacute combined immunodeficiency

MANAGEMENT

Treatment of Dehydration

Principle

- Correction of existing water and electrolyte deficit
- Replacement of ongoing losses
- Provision of normal daily fluid requirements.

JAYPEE BROTHERS

Principle of Oral Rehydration Therapy

- Glucose-dependent sodium cotransport is unaffected in acute diarrheal diseases
- Potassium prevents hypokalemia
- Citrate corrects acid-base imbalance.

Low-osmolarity ORS is available in the hospital and being preferred now. WHO ORS was available previously which carried potential risk of hypernatremia.

Composition of Oral Rehydration Solution

Components	Conventional	Low osmolarity
Sodium	90	75
Chloride	80	65
Citrate	10	10
Potassium	20	20
Glucose	111	75
Total	311	245



Preparation of Oral Rehydration Solution

At Home

Taste the drink before giving! It should be no more salty than tears.

Steps in preparing oral rehydration solution (ORS)

- Wash hands thoroughly with soap and water
- Put 1 L of clean, potable water in a pot. Boiling is not required if water is clean
- Empty the contents of ORS in the packet while stirring
- Give the sick child as much ORS as advised slowly

Advantages of Low Osmolarity ORS

- Treatment of acute diarrheal disease in newborn and young infants—minimum chance of hypernatremia
- As effective as adults in cholera
- More effective sodium and water reabsorption
- Less stool output, less vomiting
- Can be used in malnourished also.

Rehydration Solution for Malnourished (ReSoMal)

- For dehydration in severely malnourished children
- Contains more potassium, less sodium
- Magnesium, zinc and copper are added.

Cereal-based ORS

- More effective in cholera
- Decreased purge rate
- Slow release of glucose from starch
- Similar efficacy in noncholera diarrhea.

ORS with Micronutrients

- Zinc-fortified ORS decreases severity of diarrhea and prevents recurrence
- Amino acid fortified ORS is hyperosmolar and hence helpful only in cholera.

Precautions with ORS

- High-fiber diet to be avoided
- Give in small sips or with a spoon
- If vomiting, wait for 10 minutes
- If severe vomiting, give IV fluids
- Staple food continued, e.g., rice with milk or curd and sugar.

World ORS Week is celebrated in last week of July while *World Breastfeeding Week* is 1st week of August.

JAYPEE BROTHERS

Home Available Fluids

- Easily available, low cost, easy to prepare, acceptable taste and culturally acceptable
- But many lack glucose precursor, salt or both.
- So, effective only in presence of continued feeding. Fluids + Food = Oral rehydration therapy (ORT)

Recommended solutions	What is not ORT?
Lemon water	Simple sugar solution
Rice water	Glucose solution
Soups	Carbonated soft drinks
Dal water	Fruit juices
Coconut water	Fluids for athletes
Plain water	Tea/coffee

When is Oral Rehydration Therapy (ORT) Ineffective?

- High purge rate
- Persistent vomiting
- Paralytic ileus
- Shock
- Glucose malabsorption
- Incorrect preparation/administration.

WHO Plan A—No Dehydration (Home Management)

- *Rule 1:* Give the child more fluids than usual, to prevent dehydration
  - ORS/home available fluids
  - *Children under 2 years of age:* 50–100 mL (a quarter to half a large cup) of fluid
  - *Children aged 2 up to 10 years:* 100–200 mL (a half to one large cup)
  - *Older children and adults:* As much fluid as they want.
  - Replace 10 cc/kg for every large loose stool and 2 cc/kg for every vomitus.
- *Rule 2:* Give supplemental zinc (10–20 mg) to the child, every day for 10–14 days
  - Recent guideline: Give 20 mg zinc to all children more than 3 months of age during and for upto 7 days after diarrhea.
- *Rule 3:* Continue to feed the child
  - *Infants of any age who are breastfed* should be allowed to breastfeed
  - *Infants who are not breastfed* should be given their usual milk feed (or formula) at least every 3 hours
  - If the child is at least 6 months old or is already taking soft foods, he or she should be given cereals, vegetables, legumes, banana and other foods
  - After the diarrhea stops, continue giving the same energy-rich foods and provide one more meal than usual each for at least 2 weeks.
- *Rule 4:* Explain the warning signs, starts to pass many watery stools
  - Has repeated vomiting
  - Becomes very thirsty
  - Is eating or drinking poorly
  - Develops a fever
  - Has blood in the stool or
  - Does not get better in 3 days.

WHO Plan A

- Give more fluids than usual
- Supplemental zinc
- Continue to feed the child
- Explain the warning signs

WHO Plan B—Some Dehydration

- Outpatient department (OPD) management—administration of ORS for 4 hours under supervision of medical staff.
- 75 mL/kg + 10–20 mL/kg for each loose stool
- In malnourished and infants—over 6 hours.

Continue Feeding

Age	<4 months	4–11 months	12–23 months
Weight (kg)	<5	5–8	8–11
Amount in mL	200–400	400–600	600–800

Age	2–4 years	5–14 years	>14 years
Weight (kg)	11–16	16–30	>30
ORS (mL)	800–1,200	1,200–2,200	>2,200

- If child wants more ORS, give more if no signs of overhydration
- If puffy face, stop ORS and give clear fluids, especially with standard WHO ORS
- Zinc supplements to be given
- Continue breastfeeding

JAYPEE BROTHERS

- If ORT interrupted, e.g., mother wants to go home—give ORS packets to continue rehydration at home
- Reassess in 4 hours—no dehydration—Plan A, still some dehydration—Plan B, severe dehydration—Plan C.

WHO Plan C—Severe Dehydration

- Immediate intravenous fluids: 100 mL/kg
- If IV line not available: use nasogastric tube: 20 mL/kg/h ORS
- If abdominal distention, give more slowly
- Continue ORS by mouth if possible
- Ringer's lactate or normal saline can be used
- Repeat bolus once if pulse undetectable
- Reassess every 1–2 hours, shift to plan B accordingly
- Start ORS as soon as child can drink.

Age	*30 mL/kg*	*70 mL/kg*
<12 months	1 hour	5 hours
Older child	30 minutes	2.5 hours

Diarrhea with SAM—described with SAM guidelines in Chapter 'Nutrition.'

Antibiotics in Diarrhea

- Viral diarrhea obviously does not need antibiotics
- Watery diarrhea due to bacteria is usually toxin mediated, wherein antibiotics do not change the course of illness, as toxin has been already released.
- So, **no role of antibiotics in acute watery diarrhea.**

Exceptions

Antibiotics in diarrhea

Feature	*Suspect*	*Antibiotics*	*Duration*
Rice watery stool	Cholera	Doxycycline 6 mg/kg Azithromycin Ciprofloxacin	Single dose 3 days Single dose
Acute dysentery	*Shigella*	Ciprofloxacin or ceftriaxone	3–5 days
Typhoid	*Salmonella*	Ceftriaxone	10–14 days
Immunocompromised host	*Clostridium difficile*	Vancomycin+/-metronidazole	7–10 days
Recurrent/prolonged course	Giardiasis	Metronidazole	7 days

TIP

First line and second line antibiotics would differ according to sensitivity of *Shigella* in that area.

Antiemetics

- Vomiting is usually self-limiting
- Use ondansetron/domperidone in severe cases where it interferes with oral intake.
- Watch for cardiac arrhythmias with ondansetron.

Racecadotril : Antisecretory agent that prevents fluid electrolyte depletion without affecting the intestinal maturity.

- Limited evidence for routine use.

TIP

No role of special infant formulae, e.g., lactose free milk/soy based product in acute diarrhea.

Do not use antimotility agents (loperamide) in acute childhood diarrhea.

Continue age appropriate feeding, breastfeeding when possible as enteral feeding is responsible for regeneration of enterocytes in GIT.

COMPLICATIONS OF ACUTE DIARRHEA

- Electrolyte imbalance—hypernatremia, hyponatremia, hypokalemia
- Hypoglycemia
- Metabolic acidosis
- Acute renal failure.

PREVENTION

- Breastfeeding promotion
- Hygiene and clean water
- Rotavirus vaccine
- Measles vaccine as per schedule because measles is often associated with acute watery diarrhea.

JAYPEE BROTHERS

12.1A: PROBIOTICS—WHERE ENEMIES ARE OUR FRIENDS

DEFINITION

Probiotic	❖ Oral supplement/food product ❖ Contains sufficient viable microbes ❖ Alters microflora of the host ❖ Has practical health benefits
Prebiotic	❖ Non-digestible food ingredient ❖ Benefits host ❖ Selectively promotes growth of probiotic bacteria

Symbiotic = probiotic + prebiotic
Postbiotic = useful metabolic product generated by probiotic microorganism.

Prebiotic vs postbiotic

Prebiotic	*Probiotic*
❖ Not alive (chemical that induces growth of probiotic)	❖ Alive microorganisms
❖ Focus on colon, e.g., fructo-oligosaccharides	❖ Can act on numerous sites around the body, e.g., lactobacilli, *B. lactis*
❖ Beneficial health effect	❖ Beneficial health effect

THE CONCEPT

❖ 'Death sits in the bowels'—said Hippocrates in 400 BC
❖ Hygiene hypothesis-modern lifestyle has decreased exposure to bacteria
↓
Altered our gut microbiota
↓
Inadequate immune response

Era of- allergies, obesity, diabetes, autoimmune disorders

FACTORS AFFECTING GUT MICROBIOTA

Time	*Factor*
Birth	❖ Genetic ❖ Mode of delivery (vaginal delivery better than CS) ❖ Antibiotics
Day 4–10	Feeding type
Day 11–120	Environmental exposure and feeding
6 months	Complementary food

It takes years to reach a stable gut microbiota.

CHARACTERISTICS OF A GOOD PROBIOTIC

Probiotic should be
❖ Non-pathogenic
❖ Resistant to destruction by technical processing
❖ Resistant to gastric acid
❖ Colonize intestinal epithelial tissue
❖ Measurable benefit to the host

HOW DO PROBIOTICS ACT?

❖ Lower the intestinal pH
❖ Decreased production of toxic/carcinogenic metabolites
❖ Increased absorption of minerals especially calcium
❖ Provide vitamins B and K
❖ Produce beta-galactosidase enzyme for lactose breakdown
❖ Produce antimicrobial substances, e.g., acidophilus
❖ Barriers to prevent harmful bacteria to colonize the gut
❖ IgA, IgG and IgM secreting cells.

COMMON PROBIOTIC STRAINS AVAILABLE—WHEN NATURE BECOMES THERAPY

Group	*Strains*
Lactobacillus	*Lactobacillus GG, L reuteri, L acidophilus*
Bifidobacterium strain	*B. lactis, B. infantis, B. longum*
Others	*Saccharomyces boulardi, L. lactis*

JAYPEE BROTHERS

Strain Specific uses of Probiotics in Pediatrics

Strain	Disease
S. boulardi	Bacterial diarrhea
L. GG (rhamnosus)	Viral diarrhea (rotavirus)
L. reuteri	Infantile colic NEC, regurgitation
L. acidophilus	Lactose intolerance

General Non-specific Uses

- Dental caries
- Constipation
- Obesity
- *H. pylori* infection
- Eczema.

How to Choose a Probiotic Supplement—The Smart Shopper

Look at:

- The strain
- Single/multiple (single better)
- Storage, handling, shipping
- Glass vs plastic—glass bottle better
- CFU—2–5 billion live cells are must.

Safety

- Very safe, 2% have bloating, diarrhea.
- Rare case reports of bacteremia in immunocompromised children.

Future of Probiotic Therapy

- FMT—fecal microbiotic transplant
- Tablets made from stool of healthy individuals.
- Promising results in ulcerative colitis, irritable bowel syndrome, metabolic syndrome.
- Gut Microbiota-100 trillion friends you did not know you had !!!

12.2: PERSISTENT DIARRHEA

DEFINITION

- A diarrhea of:
  - Abrupt onset
  - At least 14 days duration
  - Usually infective etiology.
- Hydration is well-preserved but malnutrition of varying degrees is present.

COMMON CONDITIONS ASSOCIATED WITH PERSISTENT DIARRHEA

- Protracted course of infection/reinfection
  - Enteropathogenic *E. coli*
  - *Salmonella*
  - *Shigella*
  - *Clostridium difficile*
- Small intestinal bacterial overgrowth—malabsorption of carbohydrates
- Milk intolerance.

MANAGEMENT

- Management:
  - At home

JAYPEE BROTHERS

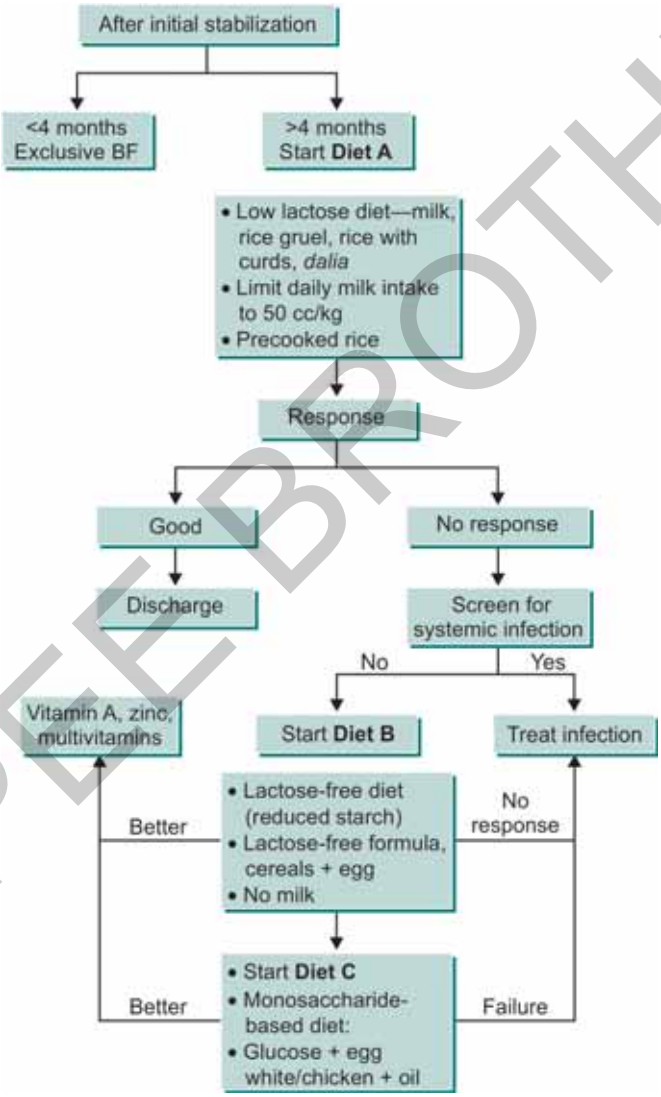
- Hospitalization if:
  - Age <4 months, not breastfed
  - Dehydration
  - Severe malnutrition
  - Systemic infection.

❖ Antimicrobial therapy (ceftriaxone ± metronidazole)—not in all patients, only if
- Blood in stool
- Associated systemic infection
- Severe malnutrition

❖ Investigations—not always necessary
- Stool RM—for trophozoites of *E. histolytica* and *G. lamblia*
- Complete blood count (CBC)
- Human immunodeficiency virus (HIV)

❖ Nutritional management:
- Stepwise diet-based regimens
- Micronutrient supplementation

Algorithm for Management of Persistent Diarrhea



JAYPEE BROTHERS

12.3: APPROACH TO CHRONIC DIARRHEA

DEFINITION

Diarrhea that has:
❖ Insidious onset
❖ Lasts for >2 weeks
❖ Noninfectious, usually a manifestation of malabsorption.

HISTORY

- Confirm that it is diarrhea and is chronic
- Nature, consistency/presence of blood/visible oil in stool
- Age of onset of disease
- Relation to change in diet of animal milk introduction and cow's milk protein allergy (CMPA), wheat and celiac disease
- History of weight loss
- History of systemic symptoms, recurrent illness
- Family history of celiac disease, chronic disease, etc.

PHYSICAL EXAMINATION

- Check for dehydration
- Check for vitamin and mineral deficiencies
- Edema—pitting/bilateral → hypoalbuminemia
- Clubbing, e.g., celiac disease, TB
- Perianal excoriation (lactose intolerance)
- Per abdomen—organomegaly, etc.

COMMON CAUSES OF CHRONIC DIARRHEA

- Chronic infections like giardiasis
- Cow milk protein allergy
- Lactose intolerance
- Celiac disease
- Inflammatory bowel disease
- Tuberculosis
- Pancreatic disease.

INVESTIGATIONS

- Hematologic—to know anemia and its type
- Biochemistry—serum proteins, electrolytes, liver function test (LFT)
- Stool examination—microscopy for ova and parasites, fat globules (for malabsorption)

Inference—Clinical

- Gastrointestinal (GI) endoscopy and biopsy—very important tool for celiac disease, TB
- CT scan abdomen—for pancreatic disease
- Serology—e.g., IgA anti-TTG for celiac disease.

	Small bowel diarrhea	*Large bowel diarrhea*
Stool volume	Large	Small
Blood	-	+
Rectal symptoms	-	+
Steatorrhea/greasy stool	+	-
Carbohydrate malabsorption	+	-

	Malabsorption	*Maldigestion*
Stool fat	+++	++
Anemia	++	-
Hypoalbuminemia	++	-
Stool volume	+++	++
Flatulence	++	-

TREATMENT

- Supportive—correct fluid, electrolyte imbalances, vitamin and mineral deficiencies
- Nutritional support—is the cornerstone of investigations
- Diet modification according to the diagnosis, e.g., gluten-free diet (GFD) in celiac, cow's milk avoidance in CMPA.
- Albumin infusion if symptomatic hypoalbuminemia
- Treatment of cause if possible.

Outcome—largely depends on the primary diagnosis.

JAYPEE BROTHERS

r detailed information on pediatric books, visit our website www.jaypeebrothers.com, for detailed information on pediatric books, visit our

Exam Preparatory Manual for Undergraduates

Pediatrics

What is new in this edition?

- **CBME—Competency Based Medical Curriculum based book as per the NMC norms.**
- **Covid-19 and covid 19 vaccines—a completely new chapter—includes myths, miseries and masterstrokes.**
- All recent advances till December 2021 included in each topic.
- AETCOM—chapter on pediatric communication skills.
- Short video clips for common ward procedures and competencies.
- Clinical case scenarios at the end of chapters, and making it a PG entrance-oriented book too.
- Bedside practical interpretations of common investigations—rational investigative approach.

Most features of previous edition that are maintained

- A comprehensive book for exam preparation for UGs, PGs and PG NEET aspirants.
- Unique chapter on 'Practical Pediatric Examination' sample case presentations with FAQs and viva questions. No need to buy a separate book for practical exams.
- Important clinical tips in each topic—a must remember.
- Flowcharts, tables and figures—a point wise reader-friendly presentation in question-answer format.
- All-in-One book—theory, practicals, PG NEET and clinical practice.

Snehal Patel MD D Pediatrics working as Senior Professor in Smt NHL Municipal Medical College, Ahmedabad, Gujarat, India. He is a popular teacher and examiner for MBBS, DCh and MD (Ped) courses in various universities across India. He is also a renowned practicing pediatrician in Ahmedabad, and hence can provide useful insights into office practice in pediatrics. He has published many papers in national and international journals and chapters in renowned books. He has also been a faculty in many Continuing Medical Education (CME) and workshops conducted throughout India. His area of interest apart from general pediatrics, is infectious diseases.

Halak Vasavada MD Pediatrics working as Senior Associate Professor in Smt NHL Municipal Medical College, Ahmedabad, Gujarat, India. She loves to work closely with UG students and guide them in exam and research work. She has keen interest in pediatric cardiology. She has many publications in national and international journals.

Gargi Pathak MD D Pediatrics working as Senior Professor in BJ Medical College, Ahmedabad, Gujarat, India. She has a teaching experience of nearly two decades in Pediatrics and is closely associated with academics and UG/PG exams. She has contributed as an author in *Standard Treatment Guidelines, 2014*, issued by the Department of Health and Family Welfare, Government of Gujarat. She is the Vice President IMA, 2022.

Printed in India

Available at all medical bookstores or buy online at www.jaypeebrothers.com

JAYPEE BROTHERS
Medical Publishers (P) Ltd.
EMCA House, 23/23-B, Ansari Road,
Daryaganj, New Delhi - 110 002, INDIA
www.jaypeebrothers.com

Join us on facebook.com/JaypeeMedicalPublishers

Shelving Recommendation
PEDIATRICS

ISBN 978-93-5465-297-4

9 789354 652974