

**BHARATI VIDYAPEETH**  
**(DEEMED TO BE UNIVERSITY), PUNE, INDIA**  
**PhD Entrance Test – 2024**  
**SECTION-II: Pediatrics - 35 Marks**

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**Vital statistics**

- Definition and overview of Pediatrics with particular reference to age-related disorders. Population structure, pattern of morbidity and mortality in children.
- Maternal, perinatal, neonatal, infant, and preschool mortality rates. Definition, causes, present status, and measures for attainment of goals.
- Current National programs such as ICDS, RCH, Vitamin A prophylaxis, UIP, Pulse polio, ARI,
- Diarrhea Control Program, Other National programs

**Growth and Development**

- Normal growth from conception to maturity.
- Anthropometry — measurement, and interpretation of weight, length/height, head circumference, and mid-arm circumference. Use of weighing machines and infantometers.
- Interpretation of Growth Charts: Road to Health card and percentile growth curves
- Abnormal growth patterns-failure to thrive, short stature.
- Growth patterns of organ systems such as lymphoids, brain, and sex organs.
- Normal pattern of teeth eruption.
- Principles of normal development.
- Important milestones in infancy and early childhood in gross motor, fine motor, language and personal-social development. 3-4 milestones in each developmental field, age of normal appearance, and the upper age of normal.
- Preventable causes and assessment of developmental retardation.
- Psychological and behavioral problems.

**Nutrition**

- Normal protein, carbohydrates, fat, minerals, and vitamins requirements for newborns, children, pregnant and lactating mothers. Common food sources.
- Breastfeeding—physiology of lactation, the composition of breast milk, colostrum, initiation, and technique of feeding. Exclusive breastfeeding - Definition and benefits. Characteristics and advantages of breast milk. Hazards and demerits of pre-lacteal feed, top milk, and bottle feeding.
- Feeding of LBW babies.
- Infant feeding/weaning foods, method of weaning.
- Assessment of a child's nutritional status based on history and physical examination.
- Protein-energy malnutrition - Definition, classification according to IAP/Wellcome Trust, acute versus chronic malnutrition. Clinical features of marasmus and kwashiorkar. Causes and management of PEM, including complications. Planning a diet for PEM.
- Vitamins—Recognition of vitamin deficiencies (A, D, K, C, B-Complex). Etiopathogenesis, clinical features, biochemical and radiological findings, differential diagnosis and management of nutritional rickets and scurvy. Hypervitaminosis A and D.

## **Immunization**

- National Immunization Programme.
- Principles of Immunization. Vaccine preservation and cold chain.
- Types, contents, efficacy storage, dose, site, route, contra-indications, and adverse reactions of vaccines — BCG, DPT, OPV, IPV, Measles, MMR, Hepatitis B, H. influenzae b, Typhoid, JE Rationale and methodology of Pulse Polio Immunization.
- Investigation and reporting of vaccine-preventable diseases. AFP (Acute Flaccid Paralysis)
- Special vaccines like Pneumococcal, Hepatitis A, Chicken pox, Meningococcal, and Rabies.

## **Infectious Diseases**

- Epidemiology, primary pathology, natural history, symptoms, signs, complications, investigations, differential diagnosis, management and prevention of common bacterial, viral and parasitic infections in the region, with particular reference to vaccine-preventable diseases: Tuberculosis, poliomyelitis, diphtheria, whooping cough, tetanus including neonatal tetanus, measles, mumps, rubella, typhoid, viral hepatitis, cholera, chickenpox, giardiasis, amebiasis, intestinal helminthiasis, malaria, dengue fever, AIDS, COVID-19.

## **Hematology**

- Causes of anemia in childhood. Classification based on etiology and morphology.
- Epidemiology, recognition, diagnosis, management, and prevention of nutritional anemia-iron deficiency, megaloblastic.
- Clinical approach to a child with anemia with lymphadenopathy and hepato-splenomegaly.
- Epidemiology, clinical features, investigations, and management of thalassemia and sickle cell anemia.
- Approach to a bleeding child.
- Diagnosis of acute lymphoblastic leukemia and principles of treatment.
- Clinical features and management of hemophilia, purpura.
- Diagnosis and principles of management of lymphomas.
- Types, clinical features, and management of acute hemolytic anemia.

## **Respiratory system**

- Clinical approach to a child with cyanosis, respiratory distress, and wheezing. Significance of recession, retraction.
- Etiopathogenesis, clinical features, complications, investigations, differential diagnosis, and management of acute upper respiratory infections, pneumonia emphasizing bronchopneumonia, bronchiolitis, and bronchitis. Acute and chronic otitis media.
- Etiopathogenesis, clinical features, diagnosis, classification, and management of bronchial asthma. Treatment of acute severe asthma.
- Pulmonary tuberculosis- infection versus disease, difference between primary and post-primary tuberculosis. Etiopathogenesis, diagnostic criteria in children versus adults. Diagnostic aids - technique and interpretation of Mantoux test. Radiological patterns, chemo-prophylaxis and treatment.
- Diagnosis and management of foreign body aspiration. Differential diagnosis of stridor.
- Pathogenesis, clinical features, and management of pneumothorax, pleural effusion, and empyema.

## **Gastrointestinal tract**

- Clinical approach to a child with jaundice, vomiting, abdominal pain, bleeding, hepatosplenomegaly.
- Acute diarrhea disease - Etiopathogenesis, clinical differentiation of watery and invasive diarrhea, complications of diarrheal illness. Assessment of dehydration, treatment at home and in hospital. Fluid and electrolyte management. Oral rehydration, composition of ORS.
- Clinical features and management of acute viral hepatitis, causes, and diagnosis of chronic liver disease. Reye's syndrome
- Common causes of constipation
- Abdominal tuberculosis
- Celiac disease.

## **Central Nervous System**

- Clinical approach to a child with coma, convulsions, mental retardation.
- Clinical diagnosis, investigations, and treatment of acute pyogenic meningitis, encephalitis, and tubercular meningitis.
- Seizure disorders - Causes and types of convulsions at different ages. Diagnosis, categorization, and management of epilepsy (broad outline). Febrile convulsions - definition, types, management.
- Causes, diagnosis, and management of cerebral palsy.
- Acute flaccid paralysis - Differentiation between Polio and Guillain-Barre syndrome.
- Microcephaly, hydrocephalus, chorea

## **Cardiovascular system**

- Clinical features, diagnosis, investigation, treatment, and prevention of acute rheumatic fever. Common forms of rheumatic heart disease in childhood. Differentiation between rheumatic and rheumatoid arthritis.
- Recognition of congenital acyanotic and cyanotic heart disease. Hemodynamics, clinical features, and management of VSD, PDA, ASD, and Fallot's tetralogy.
- Recognition of congestive cardiac failure in infants and children.
- Hypertension in children-recognition, etiology, referral.

## **Genitourinary system**

- Etiopathogenesis, clinical features, diagnosis, complications, and acute poststreptococcal glomerulonephritis and nephrotic syndrome management.
- Etiology, clinical features, diagnosis, and management of urinary tract infection-related problems.
- Etiology, diagnosis, and principles of management of acute renal failure.
- Causes and diagnosis of obstructive uropathy in children.
- Hemolytic uremic syndrome

## **Endocrinology**

- Etiology clinical features and diagnosis of diabetes and hypothyroidism, hyperthyroidism, and goiter in children.
- Delayed and precocious puberty

## **Neonatology**

- Definition - live birth, neonatal period, classification according to weight and gestation, mortality rates.
- Delivery room management, including neonatal resuscitation and temperature control

- Etiology, clinical features, management principles, and birth asphyxia prevention.
- Birth injuries - causes and their recognition.
- Care of the normal newborn in the first week of life. Normal variations and clinical signs in the neonate.
- Breastfeeding - physiology and its clinical management.
- Identification of congenital anomalies at birth with particular reference to anorectal anomalies, tracheoesophageal fistula, diaphragmatic hernia, and neural tube defects.
- Neonatal jaundice: causes, diagnosis, and principles of management.
- Neonatal infection - etiology, diagnosis, principles of management. Superficial infections, sepsis.
- Low birth weight babies - causes of prematurity and small-for-date babies, clinical features, and differentiation. Principles of feeding and temperature regulation. Problems of low birth weight babies, including retinopathy of prematurity.
- Identification of sick newborns (i.e., detection of abnormal signs - cyanosis, jaundice, respiratory distress, bleeding, seizures, refusal to feed, abdominal distension, failure to pass meconium and urine).
- Common intra-uterine infections.
- Transportation of a sick neonate.

### **Pediatric Emergencies**

- Status epilepticus.
- Status asthmaticus / Acute severe asthma.
- Shock and anaphylaxis.
- Burns.
- Gastrointestinal bleeding.
- Comatose child.
- Congestive cardiac failure.

### **Fluid-Electrolyte**

- Principles of fluid and electrolyte therapy in children
- Pathophysiology of acid-base imbalance and principle of management

### **Genetics**

- Principles of inheritance and diagnosis of genetic disorders
- Down's syndrome.

### **Behavioral Problems and Developmental Disorders in a Child**

- Breath-holding spells, nocturnal enuresis, temper tantrums, pica.
- Attention Deficit Disorder; oppositional Defiant and Conduct Disorder-causes and management;
- Childhood Anxiety and Depression Disorders;
- Enuresis, Encopresis,
- Learning Disability; Autism-causes and management;

### **Pediatric Surgical Problems**

- Diagnosis and timing of surgery of cleft lip/palate, hypospadias, undescended testis, tracheoesophageal fistula, hydrocephalus, CTEV, umbilical and inguinal hernia, anorectal malformations, hypertrophic pyloric stenosis

### **Rheumatologic Disorders**

- Juvenile Idiopathic arthritis, Systemic lupus erythematosus, Juvenile dermatomyositis, Scleroderma, Vasculitides.

### **Childhood malignancies**

- Retinoblastoma, Wilms tumor, Neuroblastoma, Tumours of the liver, soft tissue sarcoma, bone tumors, brain tumors, histiocytoses, hemophagocytic lymphohistiocytoses
- Acute Leukemia
- Bone marrow transplantation

### **Reference Books**

1. Parthasarathy, A. (2013). Iap textbook of pediatrics (5th ed.). Jaypee Brothers Medical.
2. Vinod K Paul, Arvind Bagga, Ghai Essential Pediatrics, 10th Edition 2023, CBS Publishers & Distributors