

Guidelines  
for  
Competency Based Training Programme  
in  
**DNB- PEDIATRICS**



**NATIONAL BOARD OF EXAMINATIONS**

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## **PROGRAMME GOAL**

The goal of DNB course in Pediatrics is to produce a competent pediatrician who:

- Recognizes the health needs of infants, children and adolescents and carries out professional obligations in keeping with principles of National Health Policy and professional ethics
- Has acquired the competencies pertaining to pediatrics that are required to be practiced in the community and at all levels of health care system
- Has acquired skills in effectively communicating with the child, family and the community
- Is aware of the contemporary advances and developments in medical sciences as related to child health
- Is oriented to principles of research methodology
- Has acquired skills in educating medical and paramedical professionals
- Is aware of the contemporary advances and developments in medical sciences as related to child health

## **PROGRAMME OBJECTIVES**

**At the end of the DNB in Pediatrics, the student should be able to:**

- Recognize the key importance of child health in the context of the health priority of the country
- Practice the specialty of Pediatrics in keeping with the principles of professional ethics
- Identify social, economic, environmental, biological and emotional determinants of child and adolescent health, rehabilitative, preventive and promotive measures to provide holistic care to children

- Recognize the importance of growth and development as the foundation of Pediatrics; and help each child realize her/his optimal potential in this regard
- Take detailed history; perform full physical examination including neuro-development and behavioral assessment and anthropometric measurements of the child and make clinical diagnosis performs relevant investigative and therapeutic procedures for the pediatric patient
- Diagnose illness in children based on the analysis of history, physical examination and investigative work up
- Plan and deliver comprehensive treatment for illness in children using principles of rational drug therapy
- Plan and advise measures for the prevention of childhood disease and disability
- Plan rehabilitation of children suffering from chronic illness and handicap, and those with special needs
- Manage childhood emergencies efficiently
- Provide comprehensive care to normal, 'at risk' and sick neonates
- Recognize the emotional and behavioral characteristics of children, and keep these fundamental attributes in focus while dealing with them
- Demonstrate empathy and humane approach towards patients and their families and respect their sensibilities
- Demonstrate communication skills of a high order in explaining management and prognosis, providing counseling and giving health education messages to patients, families and communities
- Develop skills as a self-directed learner, recognize continuing educational needs; use appropriate learning resources, and critically analyze relevant published literature in order to practice evidence based pediatrics
- Demonstrate competence in basic concepts of research methodology and epidemiology facilitate learning of medical/nursing students, practicing physicians, para-medical health workers and other providers as a teacher-trainer
- Play the assigned role in the implementation of national health programs, effectively and responsibly

- Organize and supervise the desired managerial and leadership skills
- Function as a productive member of a team engaged in health care, research and education.
- Demonstrate skills in documentation of case details, and of morbidity and mortality data relevant to the assigned situation
- Develop skills as a self-directed learner, recognize continuing educational needs; use appropriate learning resources, and critically analyze relevant published literature in order to practice evidence-based pediatric
- Recognize the key importance of child health in the context of the health priority of the country
- Practice the specialty of Pediatrics in keeping with the principles of professional ethics
- Identify social, economic, environmental, biological and emotional determinants of child and adolescent health, and institute diagnostic, therapeutic, rehabilitative, preventive and promotive measures to provide holistic care to children
- Recognize the importance of growth, nutrition and development as the foundation of Pediatrics; and help each child realize her/his optimal potential in this regard
- Take detailed history; perform complete physical examination including neurodevelopment and behavioral assessment and anthropometric measurements of the child and make clinical diagnosis
- Perform relevant investigative and therapeutic procedures for the pediatric patient
- Interpret important imaging and laboratory results
- Diagnose illness in children based on the analysis of history, physical examination and investigative work up; Plan and deliver comprehensive treatment for illness in children using principles of rational drug therapy;
- Plan and advice measures for the prevention of childhood disease and disability
- Plan rehabilitation of children suffering from chronic illness and handicap and those with special needs

- Manage childhood emergencies efficiently
- Provide comprehensive care to normal, 'at risk' and sick neonates
- Demonstrate skills in documentation of case details, and of morbidity and mortality data relevant to the assigned situation
- Recognize the emotional and behavioral characteristics of children, and keep these fundamental attributes in focus while dealing with them
- Demonstrate empathy and humane approach towards patients and their families and respect cultural needs
- Demonstrate communication skills of a high order in explaining management and prognosis, providing counseling and giving health education messages to patients, families and communities
- Develop skills as a self-directed learner, recognize continuing educational needs use appropriate learning resources, and critically analyze relevant published literature in order to practice evidence-based pediatrics;
- Demonstrate competence in basic concepts of research methodology and epidemiology
- Facilitate learning of medical/nursing students, practicing physicians, paramedical health workers and other providers as a teacher-trainer
- Play the assigned role in the implementation of national health programs, effectively and responsibly
- Organize and supervise the desired managerial and leadership skills
- Function as a productive member of a team engaged in health care, research and education
- Plan and perform relevant, cost-effective investigative and therapeutic procedures in confirming the possible diagnosis and excluding the other differential diagnosis
- Recognize the need for medico-legal registration and referrals of specific cases and maintenance of appropriate documentation of case details
- To document, collect and send health related information as required by government and other health agencies and help them effectively in formulation of health policies pertaining to child health

## ELIGIBILITY CRITERIA FOR ADMISSIONS TO THE PROGRAMME

### (A) DNB Pediatrics Course:

1. Any medical graduate with **MBBS** qualification , who has qualified the **Entrance Examination** conducted by NBE and fulfill the eligibility criteria for admission to DNB **Broad Specialty** courses at various NBE accredited Medical Colleges/ institutions/Hospitals in India is eligible to participate in the Centralized counseling for allocation of DNB **Pediatrics** seats purely on merit cum choice basis.
2. Admission to 3 years post MBBS DNB **Pediatrics** course is only through **Entrance Examination** conducted by NBE and Centralized Merit Based Counseling conducted by National Board of Examination as per prescribed guidelines.

### (B) DNB (Post diploma) Pediatrics Course:

1. Any medical graduate with MBBS qualification who has successfully completed **DCH** (and fulfill the eligibility criteria for admission to DNB (Post Diploma) Broad Specialty courses at various NBE accredited Medical Colleges/ institutions/Hospitals in India is eligible to participate in the Centralized counseling for allocation of DNB (Post Diploma) **Pediatrics** seats purely on merit cum choice basis.
2. Admission to 2 years post diploma DNB **Pediatrics** course is only through PDCET Centralized Merit Based Counseling conducted by National Board of Examination as per prescribed guidelines.

### Duration of Course:

**For Primary candidates : 3 years**  
**For Secondary Candidates : 2 years**

Every candidate admitted to the training programme shall pursue a regular course of study (on whole time basis) in the concerned recognized institution under the guidance of recognized post graduate teacher for assigned period of the course.

## TEACHING AND TRAINING ACTIVITIES

The fundamental components of the teaching programme should include:

1. Case presentations & discussion- once a week
2. Seminar – Once a week
3. Journal club- Once a week
4. Grand round presentation (by rotation departments and subspecialties)- once a week
5. Faculty lecture teaching- once a month
6. Clinical Audit-Once a Month
7. A poster and have one oral presentation at least once during their training period in a recognized conference.

The rounds should include bedside sessions, file rounds & documentation of case history and examination, progress notes, round discussions, investigations and management plan) interesting and difficult case unit discussions.

The training program would focus on knowledge, skills and attitudes (behavior), all essential components of education. It is being divided into theoretical, clinical and practical in all aspects of the delivery of the rehabilitative care, including methodology of research and teaching.

**Theoretical:** The theoretical knowledge would be imparted to the candidates through discussions, journal clubs, symposia and seminars. The students are exposed to recent advances through discussions in journal clubs. These are considered necessary in view of an inadequate exposure to the subject in the undergraduate curriculum.

**Symposia:** Trainees would be required to present a minimum of 20 topics based on the curriculum in a period of three years to the combined class of teachers and students. A free discussion would be encouraged in these symposia. The topics of the symposia would be given to the trainees with the dates for presentation.



**Clinical:** The trainee would be attached to a faculty member to be able to pick up methods of history taking, examination, prescription writing and management in rehabilitation practice.

**Bedside:** The trainee would work up cases, learn management of cases by discussion with faculty of the department.

**Journal Clubs:** This would be a weekly academic exercise. A list of suggested Journals is given towards the end of this document. The candidate would summarize and discuss the scientific article critically. A faculty member will suggest the article and moderate the discussion, with participation by other faculty members and resident doctors. The contributions made by the article in furtherance of the scientific knowledge and limitations, if any, will be highlighted.

**Research:** The student would carry out the research project and write a thesis/ dissertation in accordance with NBE guidelines. He/ she would also be given exposure to partake in the research projects going on in the departments to learn their planning, methodology and execution so as to learn various aspects of research.

# SYLLABUS

## Basic Sciences

1. Embryogenesis of different organ systems especially heart, genitourinary system, gastrointestinal tract, applied anatomy of different organs, functions of kidney, liver, lungs, heart and endocrinal glands.
2. Physiology of micturition and defecation, placental physiology, fetal and neonatal circulation, regulation of temperature (especially newborn), blood pressure, acid base balance, fluid electrolyte balance, calcium metabolism, vitamins and their functions, hematopoiesis, hemostasis, bilirubin metabolism.
3. Growth and development at different ages, puberty and its regulation, nutrition, normal requirements of various nutrients
4. Basic immunology
5. Biostatistics, clinical epidemiology, Research Methodology, ethical and medico legal issues
6. Teaching methodology and managerial skills
7. Pharmacokinetics of commonly used drugs
8. Microbes and their epidemiology

## Basic and applied Sciences

S. No	Topic
1.	Embryogenesis of different organ systems especially, heart, genito-urinary system, gastro-intestinal system and brain
2	Gross and applied anatomy of liver, lung, heart, kidney, brain & spinal cord and endocrine glands and their functions

3	Osteology
4	Details of various metabolic pathways
5	Physiology of micturition and defecation
6	Physiology of Placenta
7	Integrative physiology (environmental physiology, exercise physiology and yoga).
8	Fetal and neonatal circulation
9	Regulation of temperature (especially newborn) and blood pressure
10	Growth and development at different ages
11	Puberty and its regulation
12	Nutrition and normal requirements of various nutrients
13	Basic immunology
14	Bio-Statistics, clinical epidemiology, ethical and Medico legal issues; teaching methodology and management skills
15	Pharmacology of commonly used drugs in neonates and children
16	Pharmaco-epidemiology of common drugs
17	Common microbial agents and their epidemiology
18	Morphological properties of organisms causing childhood diseases
19	Vitamins and their functions
20	Haematopoiesis , Haemostasis and Bilirubin metabolism
21	Calcium metabolism
22	Acid-Base balance and Fluid electrolyte balance

23	Etio-pathogenesis of common neonatal and childhood diseases
24	Histopathology
25	Basics of Genetics

### **Growth and development**

- Principles of growth and development
- Assessment of Growth and Development
- Normal growth and development (Fetal, Infant, Preschool, Early school, School, Adolescence)
- Bio-psychological models of Development
- Normal growth and development in sexual maturation and its disturbances
- Childhood and adolescence failure to thrive and short stature
- Normal newborn

### **Psychological Disorders**

#### **Assessment, Interviewing and Management**

- Vegetative Disorders – Rumination, Pica, Enuresis, Encopresis, Sleep
- Habit Disorders
- Anxiety Disorders including Suicide
- ADHD
- ASD
- Poor Scholastic Performance
- Psychosomatic illness
- Psychiatric Considerations of CNS injury
- Mood Disorders
- Psychosis/Schizophrenia

#### **Social Issues**

- Adoption
- Street children
- Childcare
- Separation, death
- Abuse and neglect
- Child Labour
- Media and its effect on the Children

- Foster care

### **Children with Special Needs**

- FTT-Problem, Approach and Evaluation
- Development Disabilities
- Intellectual Disabilities- Problems, Approach and Evaluation

### **Perinatology and Neonatology**

Perinatal care

Normal newborn,

High risk pregnancy and high risk neonates,

Care in the labor room and resuscitation,

Dysmorphology,

Preterm and low birth weight newborn,

Other high risk and sick newborn states,

Neonatal diseases including antenatal,

Prenatal problems and disturbances

Newborn feeding,

Common transient phenomena,

Respiratory distress,

Apnea, prenatal, perinatal and postnatal infections,

Jaundice, anemia and bleeding disorders,

Neurologic disorders,

Gastrointestinal disorders,

Renal disorders,

Malformations,

Thermoregulation and its disorders,

Neonatal emergencies

Metabolic infections, cardiac, respiratory, gastrointestinal, endocrinal, renal and neurologic -understanding of perinatal medicine and pharmacology

Ventilation (Invasive and Non Invasive)

CPAP

ECMO

#### **ANTENATAL CARE**

- Fetus
- Growth and Development
- Fetal Distress
- Maternal Medications
- Detection, treatment, prevention of fetal diseases (Antenatal diagnosis, Fetal therapy, Antenatal Therapy, Counseling, Teratogens, Radiation)

Developmentally Supportive Care  
Congenital Anomalies/ malformations  
Neonatal Infections

### **Adolescent Health**

- Epidemiology
- Sexual development and SMR stages
- Deliveries of health care
- Problems
- Pregnancy
- Contraception
- Vaccinations
- STDs
- Menstrual problem
- Anorexia/Bulimia nervosa
- Depression
- Substance Abuse
- Suicide
- Sleep Disorders

### **Nutrition**

- Nutritional Requirements- Water, energy, Protein, CHO, Fats, Minerals, Vitamins
- Maternal nutritional disorders
- Nutrition for the low birth weight and impact on fetal outcome
- Breast feeding
- Breast milk feeding, Human Lactation Management, BFHI, IYCF
- Infant feeding including vitamin and mineral deficiencies
- Complementary feeding
- Feeding through 1<sup>st</sup> and 2<sup>nd</sup> Years
- Protein energy malnutrition
- Obesity
- Adolescent nutrition
- Parenteral and enteral nutrition
- Vitamin D deficiency and excess
- Vitamin A deficiency and excess
- Nutritional management of systemic neonates and children
- Chronic Illness (Celiac disease, Hepatobiliary disorders, nephrotic syndrome)
- Inborn Errors of Metabolism (I.E.M ) I.E.M of Protein and aminoacids, carbohydrate, Lipids,etc.

## **Immunological System**

- Basics
- Approach to immunodeficiency
- HIV
- BMT
- Primary B cell diseases
- Primary T cell diseases
- Complement and phagocytic diseases
- CGD
- Chediak Higashi Disease
- Neutrophil Abnormalities
- Adhesion Disorders

## **Allergic Disorders**

- Basics of allergy and immunologic association
- Diagnosis
- Therapy – principles
- Allergic Rhinitis
- Asthma
- Atopic Dermatitis
- Urticaria
- Angioedema
- Anaphylaxis
- Serum Sickness
- Adverse Drug Reactions
- Insect and Ocular allergy
- Adverse Food Reaction

## **Cardiovascular**

- Physiology and Pathophysiology of Transitional Circulation and embryology of heart
- ECG, ECHO, CXR, Cath.
- Congenital heart diseases(cyanotic and acyanotic)
- Rheumatic fever and rheumatic heart disease
- Infective endocarditis
- Arrhythmia
- Disease of myocardium
- Diseases of pericardium (cardiomyopathy, myocarditis)
- Systemic hypertension

- Hyperlipidemia in children

## **Respiratory**

- Congenital and acquired disorders of nose
- Development and Function of lung
- Infections of upper respiratory tract
- Obstructive sleep apnea
- Congenital anomalies of lower respiratory tract
- Foreign body in larynx, trachea & bronchus
- Trauma to larynx
- Neoplasm of larynx and trachea chronic
- Bronchitis
- Bronchiolitis
- Aspiration pneumonia
- GER
- Acute pneumonia
- Recurrent and interstitial pneumonia
- Suppurative lung diseases like bronchiectasia
- Atelectasis
- Lung cysts
- Emphysema and hyper-inflation
- Bronchial asthma
- Pulmonary edema
- Pleural effusion
- Pulmonary leaks
- CYSTIC FIBROSIS
- Neuromuscular skeletal Disorders
- Cough syncope
- Mediastinal mass

## **GIT, Liver and Pancreas Embryology, Malformation, Functions**

- Disease of mouth, oral cavity and tongue
- Disorders of deglutition and esophagus
- Peptic ulcer disease
- H. pylori infection
- Foreign body
- Congenital pyloric stenosis
- Intestinal obstruction
- Malabsorption syndrome
- Acute and chronic diarrhea



- Irritable bowel syndrome
- Ulcerative colitis
- Hirschsprung's disease
- Anorectal malformations
- Hepatitis & hepatic failure
- Chronic liver disease
- Auto immune Hepatitis
- Wilson's disease
- Budd-Chiari syndrome
- Metabolic diseases of liver
- Cirrhosis and portal hypertension
  
- Development of Pancrease
  
- Acute, chronic and recurrent pancreatitis
  
- GI Function Tests

### **Nephrologic & Urologic disorders: Embryology, functions, evaluation**

- Structure and Function of Kidney
- Renal Function Tests
- HEMATURIA-Acute and chronic glomerulonephritis
- PROTEINURIA-Nephrotic syndrome
- Hemolytic uremic syndrome
- Urinary tract infection
- VUR and renal scarring
- Renal involvement in systemic diseases
- Renal tubular disorders (RTA, DI)
- INTERSTITIAL NEPHRITIS
- CORTICAL NECROSIS
- RENAL FAILURE
- RRT
- Congenital and hereditary renal disorders
- Renal and bladder stones
- Posterior urethral valves
- Hydronephrosis, voiding dysfunction
- Undescended testis
- GENITOURINARY TRAUMA
- NEUROGENIC BLADDER
- Wilm's tumor
- Fluid and Electrolyte disturbances

## **GYNAECOLOGICAL PROBLEMS**

- Examination of genital system of child
- Vulvovaginitis, Congenital Anomalies

## **Neurological disorders: Neuromuscular system**

Embryology, Functions, assessment and clinical evaluation, Limping child, convulsions, abnormality of gait, intracranial space occupying lesion, paraplegia, quadriplegia, large head, small head, floppy infant, acute flaccid paralysis, cerebral palsy and other neuromotor disability, headache. Seizure and non seizure paroxysmal events, epilepsy and epileptic syndromes of childhood, meningitis, brain abscess, coma, acute encephalitis and febrile encephalopathies, Guillain-Barre syndrome, neurocysticercosis and other neuroinfestations, HIV encephalopathy, SSPE, cerebral palsy, neurometabolic disorders, mental retardation, muscular dystrophies, acute flaccid paralysis and AFP surveillance, ataxia, movement disorders of child-hood, CNS tumors and malformations.

- EXAMINATION, LOCALIZATION OF LESION
- Seizure and non-seizure paroxysmal events
- Epilepsy and epileptic syndromes
- Meningitis of childhood
- Brain abscess
- Coma
- Acute encephalitis and febrile encephalopathies
- Autoimmune Encephalitis
- Guillain-Barre syndrome
- Neurocysticercosis
- HIV encephalopathy
- SSPE
- Cerebral palsy
- Neurometabolic disorders
- Neurodegenerative disorders
- Neuromuscular disorders
- Mental retardation----→ INTELLECTUAL DISABILITY
- Learning disabilities
- Muscular dystrophies
- Acute flaccid paralysis and AFP surveillance
- Ataxias
- Movement disorders of childhood

- CNS tumors
- Malformations and Neuronal Migration Disorders
- BRAIN DEATH
- Bell's Palsy
- Newer AEDs

### **Hematology & Oncology**

- Development of Hematopoietic system
- Deficiency anemias
- Hemolytic anemias
- Aplastic anemias
- Thrombocytopenia
- Hemostasis
- Hemorrhagic Disorders(acquired and congenital, Physiology, Bleeding and Coagulation disorders)
- Hypercoagulable states
- Blood component therapy
- Transfusion related infections
- Bone marrow transplant/stem cell transplant
- Acute and chronic leukemia
- Myelodysplastic syndrome
- Hodgkin disease
- Non-Hodgkin's lymphoma
- Neuroblastoma
- Retinoblastoma
- Bone Neoplasm
- Soft tissue sarcoma
- GCT
- Childhood Histiocytosis
- Oncological Emergencies
- HLH

### **Lymphoreticular system**

Tonsils, adenoids, Lymphadenopathy, splenic disorders including, hypersplenism, Hyposplenism and histiocytosis

### **Endocrinology**

- Hypopituitarism/hyperpituitarism
- Diabetes insipidus
- Pubertal disorders

- Hypo- and hyperthyroidism
- Adrenal insufficiency
- Cushing's syndrome
- Adrenogenital syndromes
- Diabetes mellitus
- Hypoglycemia
- Short stature
- Gonadal dysfunction and intersexuality
- Obesity

### **Infections**

- Fever
- Fever without focus
- Sepsis and shock
- CNS infections
- Pneumonia
- Gastroenteritis
- Osteomyelitis, septic arthritis
- Bacterial
- Viral
- Fungal
- Parasitic
- Rickettsial
- Mycoplasma
- Protozoal
- Tuberculosis
- Nosocomial
- HIV
- Control of epidemics and infection prevention
- Safe disposal of infective material
- Safe Injection Practice
- Health advice for travelling
- Immunization- Principles, Schedules, Controversies, Standard and Optional vaccines, Recent advances in Vaccines

### **Acutely ill child**

- Evaluation in emergency
- Control
- Emergency Medical Services
- Emergency care of shock & cardio-respiratory arrest
- NALS
- PALS

- Transportation of sick Children / Neonate
- Post-Operative supportive care
- Pediatrics Sedation and drugs
- Equipment and Organization of PICU / NICU

### **Emergency & Critical care**

- Fluid and electrolyte disturbances and its therapy
- Acid-base disturbances
- Thermoregulation problems
- Hypertensive crisis
- CCF
- Respiratory failure
- Acute renal failure
- Status epilepticus
- Acute severe asthma
- Poisoning
- Accidents
- Scorpion and snake bites
- Endocrine emergencies (DKA, Adrenal Crisis)
- Febrile Seizure
- Status asthmaticus and foreign body aspirations
- Pneumothorax
- Hydrothorax
- Empyema
- Ascites
- Animal Bites
- Near Drowning
- Burns/ Electrocutation
- Cardiac Tamponade
- Severe Anemia, Bleeding Child, Neutropenia
- Pain management and drugs
- Sickle Cell Crisis
- Severe Complicated Malaria
- GI Bleeds – Hematemesis, Melena, Hematochezia
- Metabolic Problems – Hyperammonemia, Lactic acidosis, Acid base abnormalities, Hypoglycemia
- Physical abuse
- Sexual Abuse

### **Rheumatology**

- Autoimmunity

- Laboratory Evaluation
- Arthritis (acute and chronic)-JIA
- Connective tissue disorders (Including MAS and HLH)-SLE, Vasculitis, Erythema Nodosum, Ankylosing Spondylosis, Neonatal lupus, Scleroderma, MCTD, JDM, Behcet, Sjogren)
- Kawasaki disease
- Pain Syndromes

## **ENT**

- Otitis Externa
- Acute and chronic otitis media
- Deafness/ Hearing Loss
- Post-diphtheritic palatal palsy
- Acute/chronic tonsillitis/adenoids
- Allergic rhinitis/sinusitis
- Foreign body
- Trauma
- Newborn hearing screening
- BAER
- Inner Ear Diseases

## **Skin Diseases**

- Anatomy
- Hypersensitivity
- Exanthematous illnesses
- Vascular lesions
- Pigment disorders
- Vesicobullous disorders
- Infections: pyogenic, viral, fungal and parasitic
- Stevens-Johnson syndrome
- Eczema
- Seborrheic dermatitis
- Drug rash
- Urticaria
- Alopecia
- Ichthyosis

## **Eye diseases**

- Refraction and accommodation
- Evaluation techniques for Vision in infants and childrens
- Partial/total loss of vision
- Cataract
- Night blindness-Vitamin A Deficiency

- Chorioretinitis
- Strabismus
- Conjunctival and corneal disorders
- Retinopathy of prematurity
- Retinoblastoma
- Optic atrophy
- Papilloedema
- VER
- Trauma

### **Orthopedics**

- Major congenital orthopedic deformities
- Bone and joint infections
- Common bone tumors

### **Miscellaneous**

- Arthralgia
- Arthritis
- Multiple congenital anomalies
- SIDS
- POISONING (Pb, OP, Kerosene, Phenobarbitone, Iron, Hg)
- Progeria
- Radiation
- Chronic Fatigue Syndrome
- Chemical and Environmental Pollutants

General Neoplasms: Includes important of childhood malignancies, neoplastic and paraneoplastic disorders

Fluid, Electrolyte and Acid-Base Balance Normal physiology, Disturbances - Recognition and Management

Preventive Paediatrics Childhood and adolescent immunizations, prevention of communicable diseases, nutritional, adult onset diseases and environmental problems like lead poisoning, fluorosis, endemic goiters etc.

Clinical Epidemiology, medical biostatistics principles and Research Methodology and Vital Statistics

## **Paediatric Pharmacology**

- Principles of essential and rational drug therapy
- Pharmacokinetics
- Pharmacogenomics and Pharmacoepidemiology

## **Primary Health Care and other levels of health care**

Principles of medical ethics and its application to Pediatrics'

## **Community and Social Pediatrics**

- National health nutrition programs
- Nutrition screening of community
- Prevention of blindness
- School health programs
- Prevention of sexually transmitted diseases
- Contraception
- Health legislation
- National policy on children
- Adoption
- Child labor
- Juvenile delinquency
- Government and non-government investigation of adverse events following support services for children immunization in the community
- General principles of prevention and control of infections including food borne waterborne soil born and vector born diseases
- Investigation of an outbreak in a Community
- National health programs related to health of neonates. Children and adolescents, IMNCI,
- Reproductive child health Programme
- Child abuse and neglect, disability and rehabilitation, rights of the child, national policy of child health and population and school health programs

## **Biostatistics**

## **Biomedical Waste Management**



## **Approach to Important Clinical Problems**

### **Growth and development**

- Precocious and delayed puberty
- Short stature
- Developmental delay
- Impaired learning
- Intellectual Delay
- Child with common psychological problems (ASD, ADHD)

### **Neonatology**

- Normal newborn
- Low birth weight newborn
- Sick newborn
- Hypothermia
- Feeding in preterms
- Hyperbilirubinemia
- Respiratory Distress
- Severe Birth Asphyxia & Hypoxic Ischemic Encephalopathy
- Neonatal Seizures

### **Nutrition**

- Lactation management and complementary
- Protein energy malnutrition feeding (underweight, wasting, stunting)
- Failure to thrive and micronutrient deficiencies

### **Cardiovascular**

- Chest Pain
- Murmur
- Cyanosis
- Congestive heart failure
- Systemic hypertension
- Arrhythmia
- Shock

### **GIT and liver**

- Acute diarrhea
- Persistent and chronic diarrhea
- Abdominal pain and distension
- Ascites
- Vomiting
- Constipation and Encopresis
- Gastrointestinal bleeding
- Jaundice
- Hepatosplenomegaly
- Hepatic failure and encephalopathy

### **Respiratory**

- Cough/chronic cough
- Noisy breathing
- Wheezy child
- Respiratory distress
- Hemoptysis
- Chest Pain
- Recurrent LRTI

### **Infections**

- Acute onset pyrexia
- Prolonged pyrexia with and recurrent infections- Without localizing signs
- Nosocomial infections
- Pyrexia of Unknown Origin

### **Renal**

- Hematuria/dysuria
- Bladder/bowel incontinence
- Voiding dysfunctions
- Renal failure (acute and chronic)
- Enuresis

### **Hematoncology**

- Lymphadenopathy
- Anemia
- Bleeding
- TLS
- FEBRILE NEUTROPENIA

- MEDIASTINAL SYNDROME
- VENO-OCLUSSIVE SYNDROME

### **Neurology**

- Limping child
- Convulsions
- Abnormality of gait
- Paraplegia, quadriplegia
- Macrocephaly & microcephaly
- Floppy infant
- Acute flaccid paralysis
- Cerebral palsy and other
- Headache including migraine
- Neuromotor disability

### **Endocrine**

- Thyroid swelling
- Ambiguous genitalia
- Obesity
- Short stature and Tall stature
- Precocious & delayed puberty

### **Skin /ENT/Eye**

- Skin rash
- Pigmentary lesions
- Pain/discharge from ear
- Hearing loss
- Delayed speech
- Epistaxis
- Refractory errors
- Blindness
- Cataract
- Eye discharge
- Redness
- Squint
- Proptosis

### **Biostatistics, Research Methodology and Clinical Epidemiology**

## **Ethics**

**Medico legal aspects relevant to the discipline**

**Health Policy issues as may be applicable to the discipline**

## **Competencies**

### **History and Clinical examination**

History taking including psychosocial history; physical examination including newborn examination, including gestation fundus examination assessment; assessment of growth nutritional anthropometry and its assessment

Use of growth chart SMR rating developmental evaluation full systemic examination health functionaries and social communication with children parents support groups genetic counseling

### **Bedside procedures**

#### ***Investigative skills***

- Blood sampling; venous and arterial lumbar puncture ventricular tap; bone marrow aspiration and biopsy
- Peritoneal, pericardial and subdural tap
- Kidney biopsy
- Liver biopsy
- Muscle and nerve biopsy
- Collection of urine for culture, urethral catheterization suprapubic aspiration

#### ***Bedside investigations***

- Hemoglobin, TLC, ESR, peripheral smear staining
- Urine: routine and microscopic examination
- Stool microscopy including hanging drop
- Examination of CSF and other preparation body fluids
- Gram stain; ZN stain; shake test on gastric aspirate

### **Interpretation**

- Interpretation of X-rays of chest, abdomen, bone and skull
- ECG

- ABG findings
- Ultrasound and common EEG patterns
- CT scan, MRI, PET Scan, audiograms, Ultrasonographic abnormalities and isotope studies

## **Practical**

.

## **Bedside procedures**

Monitoring skills: Temperature recording, capillary blood sampling, arterial blood sampling

Therapeutic skills: Hydrotherapy, nasogastric feeding, endotracheal intubation, cardiopulmonary resuscitation (pediatric and neonatal), administration of oxygen, venepuncture and establishment of vascular access, administration of fluids, blood, blood components, parenteral nutrition, intraosseous fluid administration, intrathecal administration of drugs, common dressings, abscess drainage and basic principles of rehabilitation

Investigative skills: Lumbar puncture, ventricular tap, bone marrow aspiration and biopsy, pleural, peritoneal, pericardial and subdural tap biopsy of liver and kidney, collection of urine for culture, urethral catheterization, suprapubic aspiration

## THESIS PROTOCOL & THESIS

The candidates are required to submit a thesis at the end of three years of training as per the rules and regulations of NBE.

### **Guidelines for Submission of Thesis Protocol & Thesis by candidates**

Research shall form an integral part of the education programme of all candidates registered for DNB degrees of NBE. The Basic aim of requiring the candidates to write a thesis protocol & thesis/dissertation is to familiarize him/her with research methodology. The members of the faculty guiding the thesis/dissertation work for the candidate shall ensure that the subject matter selected for the thesis/dissertation is **feasible, economical and original**.

### **Guidelines for Thesis Protocol**

The protocol for a research proposal (including thesis) is a study plan, designed to describe the background, research question, aim and objectives, and detailed methodology of the study. In other words, the protocol is the 'operating manual' to refer to while conducting a particular study.

The candidate should refer to the NBE Guidelines for preparation and submission of Thesis Protocol before the writing phase commences. The minimum writing requirements are that the language should be clear, concise, precise and consistent without excessive adjectives or adverbs and long sentences. There should not be any redundancy in the presentation.

The development or preparation of the Thesis Protocol by the candidate will help her/him in understanding the ongoing activities in the proposed area of research. Further it helps in creating practical exposure to research and hence it bridges the connectivity between clinical practice and biomedical research. Such research exposure will be helpful in improving problem solving capacity, getting updated with ongoing research and implementing these findings in clinical practice.

Research Ethics: Ethical conduct during the conduct and publication of research is an essential requirement for all candidates and guides, with the primary responsibility of ensuring such conduct being on the thesis guide. Issues like Plagiarism, not maintaining the confidentiality of data, or any other distortion of the research process will be viewed seriously. The readers may refer to standard documents for the purpose.

The NBE reserves the right to check the submitted protocol for plagiarism, and will reject those having substantial duplication with published literature.

## PROTOCOL REQUIREMENTS

1. All of the following will have to be entered in the online template. The thesis protocol should be restricted to the following word limits.
  - Title : 120 characters (with spacing) page
  - Synopsis [structured] : 250-300
  - Introduction : 300-500
  - Review of literature : 800-1000
  - Aim and Objectives : Up to 200
  - Material and Methods : 1200-1600
  - 10-25 References [ICMJE style]
2. It is mandatory to have ethics committee approval before initiation of the research work. The researcher should submit an appropriate application to the ethics committee in the prescribed format of the ethics committee concerned.

## Guidelines for Thesis

1. The proposed study must be approved by the institutional ethics committee and the protocol of thesis should have been approved by NBE.
2. The thesis should be restricted to the size of 80 pages (maximum). This includes the text, figures, references, annexures, and certificates etc. It should be printed on both sides of the paper; and every page has to be numbered. Do not leave any page blank. To achieve this, following points may be kept in view:
  - a. The thesis should be typed in 1.5 space using Times New Roman/Arial/ Garamond size 12 font, 1” margins should be left on all four sides. Major sections viz., Introduction, Review of Literature, Aim & Objectives, Material and Methods, Results, Discussion, References, and Appendices should start from a new page. Study proforma (Case record form), informed consent form, and patient information sheet may be printed in single space.
  - b. Only contemporary and relevant literature may be reviewed. Restrict the introduction to 2 pages, Review of literature to 10-12 pages, and Discussion to 8-10 pages.
  - c. The techniques may not be described in detail unless any modification/innovations of the standard techniques are used and reference(s) may be given.
  - d. Illustrative material may be restricted. It should be printed on paper only. There is no need to paste photographs separately.

3. Since most of the difficulties faced by the residents relate to the work in clinical subject or clinically-oriented laboratory subjects, the following steps are suggested:
  - a. The number of cases should be such that adequate material, judged from the hospital attendance/records, will be available and the candidate will be able to collect case material within the period of data collection, i.e., around 6-12 months so that he/she is in a position to complete the work within the stipulated time.
  - b. The aim and objectives of the study should be well defined.
  - c. As far as possible, only clinical/laboratory data of investigations of patients or such other material easily accessible in the existing facilities should be used for the study.
  - d. Technical assistance, wherever necessary, may be provided by the department concerned. The resident of one specialty taking up some problem related to some other specialty should have some basic knowledge about the subject and he/she should be able to perform the investigations independently, wherever some specialized laboratory investigations are required a co-guide may be co-opted from the concerned investigative department, the quantum of laboratory work to be carried out by the candidate should be decided by the guide & co-guide by mutual consultation.
4. The clinical residents are not ordinarily expected to undertake experimental work or clinical work involving new techniques, not hitherto perfected OR the use of chemicals or radioisotopes not readily available. They should; however, be free to enlarge the scope of their studies or undertake experimental work on their own initiative but all such studies should be feasible within the existing facilities.
5. The DNB residents should be able to freely use the surgical pathology/autopsy data if it is restricted to diagnosis only, if however, detailed historic data are required the resident will have to study the cases himself with the help of the guide/co-guide. The same will apply in case of clinical data.
6. Statistical methods used for analysis should be described specifically for each objective, and name of the statistical program used mentioned.

#### **General Layout of a DNB Thesis:**

- **Title-** A good title should be brief, clear, and focus on the central theme of the topic; it should avoid abbreviations. The Title should effectively summarize the proposed research and should contain the PICO elements.



- **Introduction-** It should be focused on the research question and should be directly relevant to the objectives of your study.
- **Review of Literature** - The Review should include a description of the most relevant and recent studies published on the subject.
- **Aim and Objectives** - The 'Aim' refers to what would be broadly achieved by this study or how this study would address a bigger question / issue. The 'Objectives' of the research stem from the research question formulated and should at least include participants, intervention, evaluation, design.
- **Material and Methods-** This section should include the following 10 elements: Study setting (area), Study duration; Study design (descriptive, case-control, cohort, diagnostic accuracy, experimental (randomized/non-randomized)); Study sample (inclusion/exclusion criteria, method of selection), Intervention, if any, Data collection, Outcome measures (primary and secondary), Sample size, Data management and Statistical analysis, and Ethical issues (Ethical clearance, Informed consent, trial registration).
- **Results-** Results should be organized in readily identifiable sections having correct analysis of data and presented in appropriate charts, tables, graphs and diagram etc.
- **Discussion**—It should start by summarizing the results for primary and secondary objectives in text form (without giving data). This should be followed by a comparison of your results on the outcome variables (both primary and secondary) with those of earlier research studies.
- **Summary and Conclusion-** This should be a précis of the findings of the thesis, arranged in four paragraphs: (a) background and objectives; (b) methods; (c) results; and (d) conclusions. The conclusions should strictly pertain to the findings of the thesis and not outside its domain.
- **References-** Relevant References should be cited in the text of the protocol (in superscripts).
- **Appendices** -The tools used for data collection such as questionnaire, interview schedules, observation checklists, informed consent form (ICF), and participant information sheet (PIS) should be attached as appendices. Do not attach the master chart.

## TEACHING PROGRAM

## General Principles

- Acquisition of practical competencies being the keystone of postgraduate medical education, postgraduate training should be skills oriented
- Learning in postgraduate program should be essentially self-directed and primarily emanating from clinical and academic work. The formal sessions are merely meant to supplement this core effort

## Formal Teaching Sessions / Teaching Schedule

In addition to bedside teaching rounds in the department, there should be daily hourly sessions of formal teaching. The suggested teaching schedule is as follows:

Journal club/Seminar alternate week	Once a fortnight
Seminar	Once a fortnight
Bed side case discussion	Once a week
Statistics and mortality meet (detailed discussion of all the deaths occurring in previous week)	Once a week
Statistics (including OPD, ward, nursery and PICU)	Once a month
Thesis meet/ Intradepartment meet to monitor progress by PG residents for administrative training	Once a month
Interdepartmental meet (cardiology, neurology, radiology, pharmacology, microbiology, statistics etc)	Once a month
Perinatology meet with department of Obstetrics and Gynae including statistics discussing any neonatal death/topic	Once a month
Mock exam (bed side case is allotted 1 hour prior to presentation) on the pattern of University examination	Once a week
Central session (CPC, guest lectures, integrated student seminars, grand round, sessions on basic sciences, biostatistics, research methodology, teaching methodology, health economics, medical ethics and legal issues)	Once a week

Journal Club	Once a week
Other Specialties Hematology	Once in 3 weeks Hematology Faculty
Mortality audit	Thrice a month Senior Resident & Faculty
Statistics PICU	Once in three month PICU Faculty

Statistics NICU	Once a year SR NICU Faculty
Interesting/difficult cases	Once a month Faculty Pediatrics
Radiology	Once a week SR & Faculty
Seminar	Once a week
Faculty Lectures / Pediatrics	Once a month Faculty Other specialties
Pediatric Surgery	2 in each semester Pediatric Surgery Faculty
Biostatistics	2 in each year Biostatistics Faculty
Communication Skills	1 in each semester
Ethical & Legal Issues	1 in each year
Departmental Symposium	1 in each semester Resident & Faculty other than preceptor

### **Rotations**

Postgraduate student must rotate through all clinical units of the department. This is especially important for him to get Pediatric subspecialty training.

Neonatology (NICU)	3 months every year
Intensive Care (PICU)	2 months every year
General Pediatrics and all super specialties	Rest of the period

(All Units also provide general pediatric care in addition to subspecialty)

PGs should also attend subspecialty clinics during their respective Unit postings

### **Thesis Protocol Submission to NBE**

1. DNB candidates are required to submit their thesis protocol within 90 days of their joining DNB training.
2. Enclosures to be submitted along with protocol submission form:
  - a) Form for Thesis Protocol Submission properly filled.
  - b) Thesis Protocol duly signed.

- c) Approval letter of institutional Ethical committee. (*Mandatory, non receivable of any one is liable for rejection*)

### **Thesis Submission to NBE**

1. As per NBE norms, writing a thesis is essential for all DNB candidates towards partial fulfillment of eligibility for award of DNB degree.
2. DNB candidates are required to submit the thesis before the cut-off date which shall be 30th June of the same year for candidates appearing for their scheduled December final theory examination. Similarly, candidates who are appearing in their scheduled June DNB final examination shall be required to submit their thesis by 31st December of preceding year.
3. Candidates who fail to submit their thesis by the prescribed cutoff date shall NOT be allowed to appear in DNB final examination.
4. Fee to be submitted for assessment (In INR): 3500/-
5. Fee can be deposited ONLY through pay-in-slip/challan at any of the Indian bank branch across India. The challan can be downloaded from NBE website [www.natboard.edu.in](http://www.natboard.edu.in)
6. Thesis should be bound and the front cover page should be printed in the standard format. A bound thesis should be accompanied with:
  - a. A Synopsis of thesis.
  - b. Form for submission of thesis, duly completed
  - c. NBE copy of challan (in original) towards payment of fee as may be applicable.
  - d. Soft copy of thesis in a CD duly labeled.
  - e. Copy of letter of registration with NBE.
7. A declaration of thesis work being bonafide in nature and done by the candidate himself/herself at the institute of DNB training need to be submitted bound with thesis. It must be signed by the candidate himself/herself, the thesis guide and head of the institution, failing which thesis shall not be considered.

### ***The detailed guidelines and forms for submission of Thesis***

***Protocol & Thesis are available at***

***[www.natboard.edu.in.thesis.php](http://www.natboard.edu.in.thesis.php)***

## **LOG BOOK**

A candidate shall maintain a log book of operations (assisted / performed) during the training period, certified by the concerned post graduate teacher / Head of the department / senior consultant.

This log book shall be made available to the board of examiners for their perusal at the time of the final examination.

The log book should show evidence that the before mentioned subjects were covered (with dates and the name of teacher(s)) The candidate will maintain the record of all academic activities undertaken by him/her in log book .

1. Personal profile of the candidate
2. Educational qualification/Professional data
3. Record of case histories
4. Procedures learnt
5. Record of case Demonstration/Presentations
6. Every candidate, at the time of practical examination, will be required to produce performance record (log book) containing details of the work done by him/her during the entire period of training as per requirements of the log book. It should be duly certified by the supervisor as work done by the candidate and countersigned by the administrative Head of the Institution.
7. In the absence of production of log book, the result will not be declared.

## Leave Rules

1. DNB Trainees are entitled to leave during the course of DNB training as per the Leave Rules prescribed by NBE.
2. A DNB candidate can avail a maximum of 20 days of leave in a year excluding regular duty off/ Gazetted holidays as per hospital/institute calendar/policy.
3. MATERNITYLEAVE:
  - a. A female candidate is permitted a maternity leave of 90 days once during the entire duration of DNB course.
  - b. The expected date of delivery (EDD) should fall within the duration of maternity leave.
  - c. Extension of maternity leave is permissible only for genuine medical reasons and after prior approval of NBE. The supporting medical documents have to be certified by the Head of the Institute/hospital where the candidate is undergoing DNB training. NBE reserves its rights to take a final decision in such matters.
  - d. The training of the candidate shall be extended accordingly in case of any extension of maternity leave being granted to the candidate.
  - e. Candidate shall be paid stipend during the period of maternity leave. No stipend shall be paid for the period of extension of leave.
4. Male DNB candidates are entitled for paternity leave of maximum of one week during the entire period of DNB training.
5. No kind of study leave is permissible to DNB candidates. However, candidates may be allowed an academic leave as under across the entire duration of training program to attend the conferences/CMEs/Academic programs/Examination purposes.

<b>DNB COURSE</b>	<b>NO. OF ACADEMIC LEAVE</b>
DNB 3 years Course (Broad & Super Specialty)	14 Days
DNB 2 years Course (Post Diploma)	10 Days
DNB Direct 6 years Course	28 days

6. Under normal circumstances leave of one year should not be carried forward to the next year. However, in exceptional cases such as prolonged illness the leave across the DNB training program may be clubbed together with prior approval of NBE.
7. Any other leave which is beyond the above stated leave is not permissible and shall lead to extension/cancellation of DNB course.
8. Any extension of DNB training for more than 2 months beyond the scheduled completion date of training is permissible only under extraordinary circumstances with prior approval of NBE. Such extension is neither automatic nor shall be granted as a matter of routine. NBE shall consider such requests on merit provided the seat is not carried over and compromise with training of existing trainees in the Department.
9. Unauthorized absence from DNB training for more than 7 days may lead to cancellation of registration and discontinuation of the DNB training and rejoining shall not be permitted.

#### 10. Medical Leave

- a. Leave on medical grounds is permissible only for genuine medical reasons and NBE should be informed by the concerned institute/hospital about the same immediately after the candidate proceeds on leave on medical grounds.
- b. The supporting medical documents have to be certified by the Head of the Institute/hospital where the candidate is undergoing DNB training and have to be sent to NBE.
- c. The medical treatment should be taken from the institute/ hospital where the candidate is undergoing DNB training. Any deviation from this shall be supported with valid grounds and documentation.
- d. In case of medical treatment being sought from some other institute/hospital, the medical documents have to be certified by the Head of the institute/hospital where the candidate is undergoing DNB training.

- e. NBE reserves its rights to verify the authenticity of the documents furnished by the candidate and the institute/hospital regarding Medical illness of the candidate and to take a final decision in such matters.

11.

- a. Total leave period which can be availed by DNB candidates is  $120+28 = 148$  days for 6 years course,  $60+14=74$  days for 3 years course and  $40+10 = 50$  days for 2 years course. This includes all kinds of eligible leave including academic leave. Maternity / Paternity leave can be availed separately by eligible candidates. Any kind of leave including medical leave exceeding the aforementioned limit shall lead to extension of DNB training. It is clarified that prior approval of NBE is necessary for availing any such leave.
- b. The eligibility for DNB Final Examination shall be determined strictly in accordance with the criteria prescribed in the respective information bulletin.



# EXAMINATION

## FORMATIVE ASSESSMENT

Formative assessment includes various formal and informal assessment procedures by which evaluation of student's learning, comprehension, and academic progress is done by the teachers/ faculty to improve student attainment. Formative assessment test (FAT) is called as "Formative" as it informs the in process teaching and learning modifications. FAT is an integral part of the effective teaching. The goal of the FAT is to collect information which can be used to improve the student learning process.

Formative assessment is essentially positive in intent, directed towards promoting learning; it is therefore part of teaching. Validity and usefulness are paramount in formative assessment and should take precedence over concerns for reliability. The assessment scheme consists of Three Parts which has to be essentially completed by the candidates.

The scheme includes:-

Part I:- Conduction of theory examination

Part-II :- Feedback session on the theory performance

Part-III :- Work place based clinical assessment

### Scheme of Formative assessment

<b>PART – I</b>	<b>CONDUCT OF THEORY EXAMINATION</b>	Candidate has to appear for Theory Exam and it will be held for One day.
<b>PART – II</b>	<b>FEEDBACK SESSION ON THE THEORY PERFORMANCE</b>	Candidate has to appear for his/her Theory Exam Assessment Workshop.
<b>PART – III</b>	<b>WORK PLACE BASED CLINICAL ASSESSMENT</b>	After Theory Examination, Candidate has to appear for Clinical Assessment.

The performance of the resident during the training period should be monitored throughout the course and duly recorded in the log books as evidence of the ability and daily work of the student

#### 1. Personal attributes:

- **Behavior and Emotional Stability:** Dependable, disciplined, dedicated, stable in emergency situations, shows positive approach.
- **Motivation and Initiative:** Takes on responsibility, innovative, enterprising, does not shirk duties or leave any work pending.

- **Honesty and Integrity:** Truthful, admits mistakes, does not cook up information, has ethical conduct, exhibits good moral values, loyal to the institution.
- **Interpersonal Skills and Leadership Quality:** Has compassionate attitude towards patients and attendants, gets on well with colleagues and paramedical staff, is respectful to seniors, has good communication skills.

## 2. Clinical Work:

- **Availability:** Punctual, available continuously on duty, responds promptly on calls and takes proper permission for leave.
- **Diligence:** Dedicated, hardworking, does not shirk duties, leaves no work pending, does not sit idle, competent in clinical case work up and management.
- **Academic ability:** Intelligent, shows sound knowledge and skills, participates adequately in academic activities, and performs well in oral presentation and departmental tests.
- **Clinical Performance:** Proficient in clinical presentations and case discussion during rounds and OPD work up. Preparing Documents of the case history/examination and progress notes in the file (daily notes, round discussion, investigations and management) Skill of performing bed side procedures and handling emergencies.

**3. Academic Activity:** Performance during presentation at Journal club/ Seminar/ Case discussion/Stat meeting and other academic sessions. Proficiency in skills as mentioned in job responsibilities.

## FINAL EXAMINATION

The summative assessment of competence will be done in the form of DNB Final Examination leading to the award of the degree of Diplomate of National Board in Pediatrics. The DNB final is a two-stage examination comprising the theory and practical part. An eligible candidate who has qualified the theory exam is permitted to appear in the practical examination.

### Theory Examination

1. The theory examination comprises of **Three/ Four** papers, maximum marks 100 each.
2. There are 10 short notes of 10 marks each, in each of the papers. The number of short notes and their respective marks weightage may vary in some subjects/some papers.
3. Maximum time permitted is 3 hours.
4. Candidate must score at least 50% in the aggregate of **Three/ Four** papers to qualify the theory examination.

5. Candidates who have qualified the theory examination are permitted to take up the practical examination.
6. The paper wise distribution of the Theory Examination shall be as follows:

**Paper I:**

- Basic sciences as applied to pediatrics
- Community Pediatrics
- Research Methodology

**Paper II:**

- Neonatology ,
- General pediatrics including advances in pediatrics related to :
  - i) Nutrition
  - ii) Growth and development and Immunization
  - iii) Neurology and disabilities
  - iv) Nephrology
  - v) Hematology
  - vi) Oncology

**Paper III:**

- General pediatrics including advances in pediatrics relating to:
  - i) Infectious diseases
  - ii) Genetics , Immunology , Rheumatology , Psychiatry and behavioral sciences
  - iii) Skin , Eye, ENT
  - iv) Adolescent health , Critical care , Accidents and poisoning
  - v) Endocrinology, Gastroenterology , Hepatology , Respiratory and Cardiovascular disorders

**Paper IV:**

- Applied Pediatric medicine
- Applied Basic Sciences
- Recent advances

**a) Practical Examination:**

1. Maximum Marks: 300.
2. Comprises of Clinical Examination and Viva.
3. Candidate must obtain a minimum of 50% marks in the Clinical Examination (including Viva) to qualify for the Practical Examination.

4. There are a maximum of three attempts that can be availed by a candidate for Practical Examination.
5. First attempt is the practical examination following immediately after the declaration of theory results.
6. Second and Third attempt in practical examination shall be permitted out of the next three sessions of practical examinations placed alongwith the next three successive theory examination sessions; after payment of full examination fees as may be prescribed by NBE.
7. Absentation from Practical Examination is counted as an attempt.
8. Appearance in first practical examination is compulsory;
9. Requests for Change in center of examination are not entertained, as the same is not permissible.
10. Candidates are required not to canvass with NBE for above.

### **Declaration of DNB Final Results**

1. DNB final is a qualifying examination.
2. Results of DNB final examinations (theory & practical) are declared as PASS/FAIL.
3. DNB degree is awarded to a DNB trainee in the convocation of NBE.

## **RECOMMENDED TEXT BOOKS AND JOURNALS**

The Latest Edition of the following Books:

1. Nelson Text Book of Pediatrics Vol.1 and 2.
2. Forfar & Arneil's Text Book of Pediatrics – Campbell, Mc.Intosh
3. IAP Text Book of Pediatrics – A. Parthasarathy.
4. Medical Emergencies in Pediatrics – Meharban Singh/
5. Manual of Neonatal Care – John P. Cloherty.
6. The Development of Infant and Young Child – (Normal and Abnormal) - Illingworth.
7. Drug Dosage in Children – Meharban Singh.
8. Nutrition and Child Development – K.E. Elizabeth.
9. Practical Approach to Pediatric Intensive Care – Praveen Kilnani.
10. Current Pediatric Diagnosis and Treatment – Hay, Hayward, Levin.
11. Pediatric Clinical Examination – Santhosh Kumar.

### **LIST OF JOURNALS**

1. Indian Journal of Paediatrics
2. Indian Journal of Practical Paediatrics
3. Indian Paediatrics
4. Paediatrics
5. Paediatrics Clinics of North America
6. Archives of diseases of Childhood
7. Journal of Tropical Paediatrics

### **SUGGESTED BOOKS**

- □ Behrman RE, Kliegman RM, Jenson HB. Nelson Textbook of Pediatrics. Harcourt Asia
- □ Rudolph AM, Hoffman JIE, Rudolph CD. Rudolph's Pediatrics. Appleton and Lange
- Campbell AGM, McIntosh N. Forfar and Arneil's Textbook of Pediatrics. ELBS
- □ Ghai OP, Gupta P, Paul VK. Essential Pediatrics. Interprint, New Delhi
- □ Singh M. Pediatrics Clinical Methods. Sagar Publications

- □ Siberry GK, Iannone R. The Harriet Lane Handbook. Mosby & Harcourt India
- □ Singh M, Deorari AK. Drug Doses in Children. Sagar Publications

### **Growth and Development**

- □ Illingworth RS. The development of the infant and young child. Normal and abnormal. Churchill Livingstone

### **Nutrition**

- Alleyne GAO, Hay RW, Picou DI, Stanford JP, Whitehead RG. Protein energy malnutrition. Jaypee Brothers
- □ Management of severe malnutrition: a manual for physicians and other senior health workers.
- WHO, Geneva
- Suskind RM, Lewinter-Suskind C. The malnourished child. Nestle Nutrition Workshop Series

### **Infectious diseases**

- □ Feigin RD, Cherry ID. Textbook of Pediatric Infectious Diseases. W. B. Saunders
- □ Remington JS, Klein JO. Infectious Diseases of the Fetus and Newborn Infant. W. B. Saunders
- □ Weatherall DJ, Ledingham JGG, Warrell DA. Oxford Textbook of Medicine; Volume I. Oxford University Press
- □ Cook G. Manson's tropical diseases. ELBS and W. B. Saunders Co.
- □ Seth V, Kabra SK. Essentials of tuberculosis in children. Jaypee Brothers
- □ Pizzo PA, Wilfert CM. Pediatric AIDS. Lippincott Williams & Wilkins

### **Intensive care**

- Singh M. Medical emergencies in children. Sagar Publications

- Rogers MC, Nichols DG. Textbook of Pediatric intensive care. Williams & Wilkins

## **Neonatology**

- Singh M. Care of the Newborn, Sagar Publication
- □Avery GB, Fletcher MA, MacDonald MG. Neonatology- Pathophysiology and Management of the Newborn. Lippincott William and Wilkins
- □Cloherty JP, Stark AR. Manual of Neonatal Care. Lippincott- Raven Publishers
- □Kattwinkel I. Textbook of neonatal resuscitation. American Heart Association and American
- Academy of Pediatrics
- Care of Newborn Meharban Singh Cloherty – Mannual of Neonatal Care IAP

## **Neurology**

- □Swaiman B, Kenneth F, Ashwal S. Pediatric Neurology: Principles and Practice. St. Louis Mosby
- □Brett EM. Pediatric Neurology . Churchill Livingstone
- □Menkes JH. Textbook of Childhood Neurology. Lea and Febiger

## **Cardiology**

- □Allen HO, Clark FB, Gutgesell HP, Driscoll DJ. Moss and Adam's Heart Disease in Infants, Children and Adolescents. Lippincott Williams and Wilkins
- □Park MK. Pediatric cardiology for practitioners. Mosby- YearBook, Inc

## **Gastroenterology**

- Suchy FI, Sokol RJ, Balistreri WF. Liver disease in children. Lippincott Williams and Wilkins

- □Bhan MK, Bhatnagar S. Guidelines for management of diarrhea in children. Ministry of Health, GOI and WHO/SEARO

### **Endocrinology**

- Lifshitz F. Pediatric Endocrinology. Marcel Dekker, Inc
- Sharma S, Singhal T, Bajpai A. Management protocols in pediatric endocrinology
- □Desai MP, Bhatia B, Menon PSN. Pediatric Endocrine Disorders. Orient Longman

### **Nephrology**

- Barratt TM, Avner ED, Harmon WE. Pediatric nephrology. Baltimore Williams and Wilkins
- Srivastava RN, Bagga A Pediatric Nephrology, 3rd edition, Jaypee, New Delhi

### **Hematology & Oncology**

- □Nathan DG, Orkin SH. Nathan and Oski's Hematology of Infancy and Childhood. W. B. Saunders

### **Rheumatology**

- □Cassidy JT, Petty RE. Textbook of Pediatric Rheumatology. W. B. Saunders

### **Respiratory Medicine**

- □Chernick V, Boat TF. Kendig's Disorders of the Respiratory Tract in Children. WB Saunders

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