

Curriculum

NBEMS Diploma



Paediatrics

- ◆ Goal
- ◆ Objectives
- ◆ Syllabus
- ◆ Teaching Program
- ◆ Recommended Books & Journals

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INDEX

S. No	Contents	Page No.
I	Goal	5
II	Objectives	5
III	Syllabus	10
IV	Teaching Program	28
V	Recommended Books & Journals	30

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I. GOAL

The goal of “DIPLOMA IN CHILD HEALTH [DCH (NBE)]” 2 years course in Pediatrics is to produce a competent pediatrician who:

1. Recognizes the health needs of infants, children and adolescents and carries out professional obligations in neonates keeping with principles of National Health Policy and professional ethics
2. Is specially oriented towards providing optimal child health services at the primary level and has acquired the competencies pertaining to pediatrics that are required to be practiced in the community and at non-teaching pediatric hospital settings.
3. Has acquired skills in effectively communicating with the child, family and the community
4. Is aware of contemporary advances and developments in medical sciences as related to child health
5. Has acquired skills in educating medical and paramedical professionals

II. OBJECTIVES

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

1. Cognitive Domain

- i. Recognize the key importance of child health in the context of the health priorities of the country
- ii. Practice the specialty of Pediatrics in keeping with the principles of professional ethics
- iii. Identify social, economic, environmental, biological and emotional determinants of fetal, neonatal child and adolescent health, rehabilitative, preventive and promotive measures to provide holistic care to children
- iv. Recognize the importance of growth and development as the foundation of Pediatrics and help each child realize her/his optimal potential in this regard
- v. Take detailed history; perform full physical examination including neurodevelopment and behavioral assessment and anthropometric measurements of the child and make clinical diagnosis.
- vi. Plan relevant, cost-effective investigative and therapeutic procedures in confirming the possible diagnosis and excluding the other differential diagnosis
- vii. Interpret important imaging and laboratory results

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- viii. Diagnose illness in children based on the analysis of history, physical examination and investigative work up
 - ix. Plan and deliver comprehensive treatment for illness in children using principles of rational drug therapy
 - x. Manage childhood emergencies efficiently
 - xi. Plan and advise measures for the prevention of childhood disease and disability
 - xii. Plan rehabilitation of children suffering from chronic illness and handicap, and those with special needs
 - xiii. Provide comprehensive care to normal, 'at risk' and sick neonates
 - xiv. Recognize the emotional and behavioral characteristics of children, and keep these fundamental attributes in focus while dealing with them
 - xv. Understands and demonstrate empathy and humane approach towards patients and their families and respect their sensibilities
 - xvi. Has knowledge about communications skills in explaining management and prognosis, providing counseling and giving health education messages to patients, families and communities
 - xvii. Understand the importance of 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
 - xviii. Play the assigned role in the implementation of national health programs, effectively and responsibly
 - xix. Organize and supervise the desired managerial and leadership skills
 - xx. Has requisite knowledge about medicolegal registration according to prevailing laws of the country/ state
 - xxi. Functions as a productive member of a team engaged in health care, especially in community pediatrics settings.
 - xxii. Understands and requisite knowledge about the importance of environmental health related to child health.
 - xxiii. 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
 - xxiv. Has requisite knowledge to investigate diagnose and manage emerging infections as per national guidelines(e.g. Covid-19)
 - xxv. Recall and follow appropriate infection control precautions relevant to the situation

2. Affective Domain:

- i. Should be able to function as a part of a team, develop an attitude of cooperation with colleagues, and interact with the patient and the clinician or other colleagues to provide the best possible diagnosis or opinion.
- ii. Always adopt ethical principles and maintain proper etiquette in dealings with patients, relatives and other health personnel and to respect the rights of the patient including the right to information and second opinion.
- iii. Develop communication skills to word reports and professional opinion as well as to interact with patients, relatives, peers and paramedical staff, and for effective teaching.

3. Psychomotor Domain:

The following skills must be achieved:

i. History and Examination

- a) Proficiency in eliciting, processing and systemically presenting pediatrics history and examination with due emphasis of the important facts.
- b) Recognition and demonstration of physical findings
- c) Recording of height, weight, head circumference and mid arm circumference and interpretation of these parameters using growth reference standard assessment of nutritional status and growth
- d) Assessment of pubertal growth(SMR)
- e) Complete development assessment by history and physical examination, and recognizing developmental disabilities, including autism
- f) Systematic examination
- g) Neonatal examination including gestation assessment by physical neurological Criteria
- h) Skills related to Integrated management of Neonatal and Childhood Illnesses (IMNCI) & Infant and Young Child Feeding (IYCF)
- i) Psychosocial assessment of adolescents (HEADSSS screening)
- j) Examination of the fundus and the ear (desirable)

ii. Monitoring Skills

- a) Non-invasive monitoring of blood pressure, pulse and respiratory rates, saturation and other case-based parameters (abdominal girth, input output charting etc.)

iii. Investigative Procedures

- a) Venous, capillary and arterial blood sampling using appropriate precautions including arterial and venous blood gases

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- b) Pleural, peritoneal, and lumbar puncture
 - c) Tuberculin test
 - d) Bone marrow aspiration and biopsy
 - e) Urethral catheterization and suprapubic tap
 - f) Gastric content aspiration
 - g) Pericardial aspiration; subdural, ventricular, Biopsy of liver and kidney (desirable and under supervision)

iv. Therapeutic Skills

- a) Breast feeding assessment and counselling; management of common problems
- b) IYCF counselling
- c) Establishment of peripheral vascular access
- d) Putting central line and CVP monitoring (desirable and under supervision if facilities available)
- e) Administration of injections using safe injection practices
- f) Determination of fluid requirement and composition of intravenous fluids and their administration
- g) Inserting NG /feeding tube and give feeding and fluid resuscitation in emergency
- h) Neonatal (NRP) and Pediatric basic and advanced life support (mandatory certification from the recognized bodies)
- i) Oxygen administration, CPAP and nebulization therapy
- j) Blood and blood component therapy
- k) Intra-osseous fluid administration
- l) Phototherapy, umbilical artery and venous catheterization and exchange transfusion
- m) Common dressings and abscess drainage
- n) Basic principles of rehabilitation
- o) Peritoneal dialysis (desirable and under supervision if facilities available)
- p) Mechanical ventilation (desirable if facilities available)

v. Bedside investigations, including

- a) Complete blood counts, micro ESR, peripheral smear
- b) Urinalysis
- c) Stool microscopy and hanging drop
- d) Blood sugar
- e) Examination of CSF and other body fluids (desirable)

vi. Patient Management Skills

- a) Proficiency in management of pediatric emergencies, including emergency triaging

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- b) Drawing and executing patient management plan and long-term care
 - c) Documenting patient records on day to day basis and problem oriented medical record
 - d) Care of a normal and sick newborn, management of neonatal disorders: hypothermia, sepsis, convulsions, jaundice, metabolic problems
 - e) Prescribing rational antibiotics and other drugs
 - f) Recognize the need for medico-legal registration and take appropriate action
 - g) Identifying need for timely referral to appropriate departments/health facility & pre-transport stabilization of the sick child
 - h) Filling of discharge diagnosis and cause of death as per latest WHO-ICD coding (presently ICD10)

vii. **Communication Skills; Attitudes; Professionalism**

- a) Communicating with parents/child about nature of illness and management plan prognostication, breaking bad news
- b) Counselling parents on IYCF including breastfeeding, Nutrition in older children and adolescents, immunization, disease prevention, promoting healthy lifestyle
- c) Counselling adolescents on the common health concerns and issues prevalent in this age group
- d) Communication and relationship with colleagues, nurses and paramedical workers
- e) Appropriate relation with pharmaceutical industry
- f) Professional and research ethics

viii. **Interpretation of Investigations**

- a) Electrocardiogram
- b) Arterial and venous blood gases
- c) Plain x-ray chest, abdomen, skeletal system
- d) Contrast radiological studies: Barium swallow, barium meal, barium enema,
- e) MCU
- f) Ultrasound skull and abdomen
- g) Histopathological, biochemical and microbiological investigations
- h) CT Scan and MRI – Brain, abdomen, chest (desirable)

Desirable: Electroencephalogram, Interpretation of radio-isotope studies, audiogram, neurophysiological studies, (BERA, VER, EMG, NCV), lung function tests.

ix. **Academic Skills**

- a) Demonstrate skills in documentation of case details, and of morbidity and mortality data relevant to the assigned situation and in place of work
- b) Familiarity with basic IT skills.
- c) Familiarity with evidence-based medicine

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- d) Interpret research paper; and present at least one paper (original research, research brief, case series or case reports) in a National conference or state conference of repute (oral / poster)
 - e) Facilitate learning of medical/nursing students and paramedical health workers and other providers as a teacher-trainer
 - f) Attend other programs: Antimicrobial stewardship and current modules of IAP and IMA (desirable)
 - g) Attending e-module courses: SAM management, IYCF practices(desirable)

III. SYLLABUS

1. Theory

i. Basic and applied Sciences

- a) 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.
- b) Physiology of micturition and defecation, placental physiology, fetal and neonatal circulation, regulation of temperature (especially newborn), blood pressure, acid base balance, fluid electrolyte balance, metabolic pathways, calcium metabolism, vitamins and their functions, hematopoiesis, hemostasis, bilirubin metabolism.
- c) Growth and development at different ages, puberty and its regulation, nutrition, normal requirements of various nutrients
- d) Basic immunology
- e) Pharmacokinetics of commonly used drugs
- f) Microbes and their epidemiology
- g) Basics of Genetics
- h) Inborn Errors of Metabolism of Protein and amino acids, carbohydrate, Lipids, etc.

ii. Growth and development

- a) Principles of growth and development
- b) Normal growth and development (Fetal, Infant, Preschool, Early school, School, Adolescence)
- c) Assessment of Growth and Development
- d) Sexual maturation and its disturbances (Delayed puberty, Precocious puberty)
- e) Failure to thrive and short stature

iii. Behavioral and Developmental disorders

- a) Vegetative Disorders – rumination, pica, enuresis, encopresis, sleep disorders and habit disorders
- b) Anxiety Disorders
- c) ADHD
- d) ASD
- e) Poor Scholastic Performance
- f) Psychosomatic illness
- g) Mood Disorders
- h) Autism
- i) Violence including suicide

iv. Perinatology and Neonatology

- a) Perinatal care
- b) Normal newborn
- c) High risk pregnancy and high-risk neonates
- d) Care in the labor room and resuscitation
- e) Dymorphology
- f) Preterm and low birth weight newborn, Other high risk and sick newborn states
- g) Neonatal diseases including antenatal, prenatal problems and disturbances
- h) Newborn feeding
- i) Common transient phenomena
- j) Respiratory distress (TTNB, Pneumonia)
- k) Cyanosis
- l) Apnea, prenatal, perinatal and postnatal infections
- m) Infections
- n) Jaundice, anemia and bleeding disorders
- o) Neurologic disorders
- p) Gastrointestinal disorders
- q) Renal disorders
- r) Thermoregulation and its disorders
- s) Neonatal emergencies
- t) TPN
- u) Anemia and bleeding
- v) Cardiac disorders
- w) Measure to reduce morbidity and mortality in the newborn
- x) Understanding of perinatal medicine and pharmacology
- y) Ventilation (Invasive and Non-Invasive), CPAP

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- z) Method of delivering oxygen their advantages and disadvantages
 - aa) Developmentally Supportive Care

v. **Adolescent Health**

- a) Epidemiology
- b) Sexual development and SMR stages
- c) Deliveries of health care
- d) Health issues
- e) Vaccinations
- f) STDs
- g) Menstrual problem
- h) Anorexia nervosa /Bulimia
- i) Depression
- j) Substance Abuse
- k) Suicide
- l) Sleep Disorders
- m) NCDs including Injuries
- n) Adolescent with chronic disorders

vi. **Nutrition**

- a) Normal Nutritional Requirements- Water, energy, Protein, CHO, Fats, Minerals, Vitamins in various age groups
- b) Maternal nutritional disorders
- c) Nutrition for the low birth weight and impact on fetal outcome
- d) Breastfeeding, Breast milk feeding, Human Lactation Management, BFHI, IYCF -Infant and child feeding
- e) Micronutrients including vitamin and mineral deficiencies
- f) Severe Acute malnutrition (SAM)
- g) Obesity
- h) Adolescent nutrition
- i) Parenteral and enteral nutrition
- j) Vitamin deficiency and excess states
- k) Nutritional management of systemic illness in neonates and children
- l) Dietary counseling
- m) JUNCS foods: Unhealthy choices

vii. **Immunological System**

- a) Approach to immunodeficiency (Primary and secondary immunodeficiency)

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- b) Immune deficiency disorders classification and common disorders (Complement and phagocytic diseases, neutrophil abnormalities, adhesion disorders)
 - c) HIV
 - d) Bone marrow transplantation

viii. Allergic Disorders

- a) Basics of allergy and immunologic association
- b) Principles of diagnosis and therapy
- c) Allergic Rhinitis
- d) Asthma
- e) Atopic Dermatitis
- f) Urticaria
- g) Angioedema
- h) Anaphylaxis
- i) Serum Sickness
- j) Adverse Drug Reactions
- k) Insect and Ocular allergy
- l) Adverse Food Reaction and food allergy

ix. Cardiovascular

- a) Physiology and Pathophysiology of Transitional Circulation and embryology of heart
- b) Congenital heart diseases (cyanotic and acyanotic disorders)
- c) Rheumatic fever and rheumatic heart diseases
- d) Infective endocarditis
- e) Arrhythmia
- f) Disease of myocardium
- g) Diseases of pericardium
- h) Cardiomyopathy
- i) Systemic hypertension
- j) Hyperlipidemia in children
- k) Heart failure

x. Respiratory

- a) Congenital and acquired disorders of nose
- b) Sub glottic stenosis (acute and Chronic)
- c) Development and Function of lung
- d) Infections of upper and Lower respiratory tract
- e) Obstructive sleep apnea
- f) Congenital anomalies of respiratory tract

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- g) Foreign body in larynx, trachea & bronchus
 - h) Pneumonia, Bronchiolitis
 - i) Bronchial asthma
 - j) Aspiration pneumonia
 - k) GER
 - l) Recurrent pneumonia
 - m) Suppurative lung diseases
 - n) Atelectasis
 - o) Lung cysts
 - p) Emphysema and hyper-inflation
 - q) Pulmonary edema
 - r) Pleural effusion
 - s) Pulmonary leaks
 - t) Cystic fibrosis
 - u) Neuromuscular skeletal Disorders
 - v) Mediastinal mass
 - w) Interstitial pneumonia
 - x) Cystic fibrosis

xi. **GIT, Liver and Pancreas**

- a) Embryology, Malformation, Functions
- b) Disease of oral cavity
- c) Disorders of deglutition and esophagus
- d) Peptic ulcer disease
- e) H. pylori infection
- f) Foreign body
- g) Congenital pyloric stenosis
- h) Intestinal obstruction
- i) Malabsorption syndrome
- j) Acute and chronic diarrhea
- k) Celiac disease
- l) Irritable bowel syndrome
- m) Ulcerative colitis
- n) Hirschsprung disease
- o) Anorectal malformations
- p) Hepatitis & hepatic failure
- q) Chronic liver disease
- r) Auto immune Hepatitis
- s) Wilsons disease
- t) Budd-Chiari syndrome
- u) Metabolic diseases of liver

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- v) Cirrhosis and portal hypertension
 - w) Acute, chronic and recurrent pancreatitis
 - x) GI Function Tests
 - y) Surgical conditions of GI tract, liver and pancreas in children including liver abscess
 - z) Constipation
 - aa) Recurrent abdominal pain

xii. Nephrologic and Urologic disorders

- a) Embryology, functions, evaluation including Structure and Function of Kidney
- b) Renal Function Tests
- c) Hematuria-Acute and chronic glomerulonephritis
- d) Proteinuria-Nephrotic syndrome
- e) Hemolytic uremic syndrome
- f) Urinary tract infection
- g) VUR and renal scarring
- h) Renal involvement in systemic diseases
- i) Renal tubular disorders (RTA, DI)
- j) Interstitial Nephritis
- k) Cortical Necrosis
- l) Renal Failure
- m) RRT
- n) Congenital and hereditary renal disorders
- o) Renal and bladder stones
- p) Posterior urethral valves
- q) Hydronephrosis, voiding dysfunction
- r) Undescended testis
- s) Genitourinary Trauma
- t) Neurogenic Bladder
- u) Wilms tumor
- v) Fluid and Electrolyte disturbances

xiii. Gynecological Problems

- a) Examination of genital system of child
- b) Vulvovaginitis, Congenital Anomalies

xiv. Neurological disorders: Neuromuscular system

- a) Seizure and non-seizure paroxysmal events
- b) Epilepsy and epileptic syndromes

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- c) Febrile seizures
 - d) Meningitis of childhood
 - e) Brain abscess
 - f) Coma
 - g) Acute encephalitis and febrile encephalopathies
 - h) Autoimmune Encephalitis
 - i) Guillain-Barre syndrome
 - j) Neurocysticercosis
 - k) HIV encephalopathy
 - l) SSPE
 - m) Cerebral palsy
 - n) Neurometabolic disorders
 - o) Neurodegenerative disorders
 - p) Neuromuscular disorders
 - q) Intellectual Disability
 - r) Learning disabilities
 - s) Muscular dystrophies
 - t) Acute flaccid paralysis and AFP surveillance
 - u) Ataxias
 - v) Movement disorders of childhood
 - w) CNS tumors
 - x) Malformations and Neuronal Migration Disorders
 - y) Brain Death
 - z) Bell's Palsy
 - aa) Newer antiepileptics
 - bb) CNS tuberculosis

xv. **Hematology & Oncology**

- a) Deficiency anemias
- b) Hemolytic anemias
- c) Aplastic anemias
- d) Thrombocytopenia
- e) Hemostasis
- f) Hemorrhagic disorders (acquired and congenital; coagulation and bleeding)
- g) Hypercoagulable states
- h) Blood component therapy; transfusion related infections
- i) Bone marrow transplant/stem cell transplant
- j) General Neoplasms: Includes importance of childhood malignancies, neoplastic and paraneoplastic disorders

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- k) Acute and chronic leukemia
 - l) Myelodysplastic syndrome
 - m) Hodgkin disease
 - n) Non-Hodgkin lymphoma
 - o) Neuroblastoma
 - p) Retinoblastoma
 - q) Bone Neoplasm
 - r) Soft tissue sarcoma
 - s) Childhood Histiocytosis
 - t) Oncological Emergencies
 - u) HLH
 - v) Pain and Palliative Care

xvi. **Lymphoreticular system**

- a) Tonsils, adenoids, lymphadenopathy, splenic disorders including hypersplenism, hyposplenism and histiocytosis

xvii. **Endocrinology**

- a) Hypopituitarism/hyperpituitarism
- b) Diabetes insipidus
- c) Pubertal disorders
- d) Hypo- and hyperthyroidism
- e) Adrenal insufficiency and crisis
- f) Cushing syndrome
- g) Adrenogenital syndromes
- h) Diabetes mellitus
- i) Hypoglycemia
- j) Short stature
- k) Gonadal dysfunction and intersexuality
- l) Obesity

xviii. **Infections**

- a) Fever
- b) Fever without focus
- c) Sepsis and shock
- d) Osteomyelitis, septic arthritis
- e) Common infections: Bacterial; Mycobacterial; Viral; Fungal; Parasitic; Rickettsial; Mycoplasma; Protozoal; Nosocomial
- f) Control of epidemics and infection prevention
- g) Safe disposal of infective material and Safe Injection Practices

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- h) Health advice for travelling
 - i) Immunization- Principles, Schedules, Controversies, Standard and Optional vaccines, Recent advances in Vaccines
 - j) AEFI
 - k) Antibiotic stewardship
 - l) Newer and Emerging infections (Covid 19 etc)
 - m) Childhood and adolescent immunizations, prevention of communicable diseases

xix. **Acutely ill child**

- a) Evaluation in emergency
- b) Triage
- c) Emergency Medical Services
- d) Emergency care of shock & cardio-respiratory arrest
- e) NALS/NRP
- f) PALS
- g) BLS
- h) Transportation of sick Children / Neonate
- i) Post-Operative supportive care
- j) Pediatric Sedation and drugs
- k) Equipment and Organization of PICU / NICU

xx. **Emergency & Critical care**

- a) Fluid and electrolyte disturbances and its therapy
- b) Acid-base disturbances
- c) Thermoregulation problems
- d) Hypertensive crisis
- e) CCF
- f) Respiratory failure
- g) Emerging office procedures
- h) Acute renal failure
- i) Status epilepticus
- j) Acute severe asthma
- k) Poisoning
- l) Accidents
- m) Scorpion and snake bites
- n) Endocrine emergencies (DKA, Adrenal Crisis)
- o) Febrile Seizure
- p) Status asthmaticus and foreign body aspirations
- q) Pneumothorax

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- r) Hydrothorax
 - s) Empyema
 - t) Ascites
 - u) Animal Bites
 - v) Near Drowning
 - w) Burns/ Electrocutation
 - x) Cardiac Tamponade
 - y) Severe Anemia, Bleeding Child, Neutropenia
 - z) Pain management and drugs
 - aa) Sickle Cell Crisis
 - bb) Severe Complicated Malaria
 - cc) GI Bleeds – Hematemesis, Melena, Hematochezia
 - dd) Metabolic Problems – Hyperammonemia, Lactic acidosis, Acid base abnormalities, Hypoglycemia
 - ee) Physical abuse
 - ff) Sexual Abuse

xxi. Rheumatology

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

xxii. ENT

- a) Otitis Externa
- b) Acute and chronic otitis media
- c) Deafness/ Hearing Loss
- d) Acute/chronic tonsillitis/adenoids
- e) Allergic rhinitis/sinusitis
- f) Foreign body
- g) Trauma
- h) Newborn hearing screening

xxiii. Skin Diseases

- a) Exanthematous illnesses
- b) Vascular lesions

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- c) Pigment disorders
 - d) Vesicobullous disorders
 - e) Infections: pyogenic, viral, fungal and parasitic
 - f) Stevens-Johnson syndrome
 - g) Eczema
 - h) Seborrheic dermatitis
 - i) Drug rash
 - j) Urticaria
 - k) Alopecia
 - l) Ichthyosis

xxiv. Eye diseases

- a) Refraction and accommodation
- b) Evaluation techniques for Vision in infants and children
- c) Partial/total loss of vision
- d) Cataract
- e) Night blindness-Vitamin A Deficiency
- f) Chorioretinitis
- g) Strabismus
- h) Conjunctival and corneal disorders
- i) Retinopathy of prematurity
- j) Retinoblastoma
- k) Optic atrophy
- l) Papilledema
- m) VER
- n) Trauma

xxv. Orthopedics

- a) Major congenital orthopedic deformities
- b) Bone and joint infections
- c) Common bone tumors

xxvi. Miscellaneous

- a) Arthralgia
- b) Arthritis
- c) Multiple congenital anomalies
- d) SIDS
- e) POISONING (Pb, OP, Kerosene, Phenobarbitone, Iron, Hg)
- f) Progeria
- g) Radiation
- h) Chronic Fatigue Syndrome

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- i) Chemical and Environmental Pollutants
 - j) Adult onset diseases and environmental problems like lead poisoning fluorosis, endemic goiters etc.

xxvii. Pediatric Pharmacology

- a) Principles of essential and rational drug therapy
- b) Pharmacokinetics
- c) Pharmacogenomics and Pharmacoepidemiology

xxviii. Preventive and Social Paediatrics including Primary Health Care and other levels of health care

- a) Principles of medical ethics and its application to Pediatrics'
- b) Children with Special Needs: Development Disabilities; Intellectual Disabilities- Problems, Approach and Evaluation
- c) Community and Social Pediatrics:
 - Adoption
 - Street children
 - Childcare
 - Separation, death
 - Abuse and neglect
 - Child Labor
 - Media and its effect on the Children, Internet addiction, Concept of screen time
 - Foster care
 - POCSO Act
 - Nutrition screening of community
 - Prevention of blindness
 - School health programs
 - Prevention of sexually transmitted diseases
 - Contraception
 - Health legislation
 - National policy on children
 - 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 borne and vector borne diseases
 - Investigation of an outbreak in a Community

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- National health programs related to health of neonates, Children and adolescents: IMNCI, FIMNCI, POSHAN
 - Reproductive child health Program: RMNCH plus A
 - Disability and rehabilitation, rights of the child, national policy of child health and population and school health programs

xxix. Environmental Health

- a) Climate Change and its impact on Health
- b) Air Pollution and its impact on Health
- c) Heat Wave and its impact on Health
- d) Biomedical Waste Management

2. Approach to Important Clinical Problems

i. Growth and development

- a) Precocious and delayed puberty
- b) Short stature
- c) Developmental delay
- d) Impaired learning
- e) Intellectual Delay
- f) Child with common psychological problems (ASD, ADHD)
- g) Growth chart and monitoring

ii. Neonatology

- a) Normal newborn
- b) Low birth weight newborn
- c) Sick newborn
- d) Hypothermia
- e) Feeding in preterm
- f) Hyperbilirubinemia
- g) Respiratory Distress
- h) Cyanosis
- i) Severe Birth Asphyxia & Hypoxic Ischemic Encephalopathy
- j) Neonatal Seizures

iii. Nutrition

- a) Lactation management and complementary
- b) Malnourished child (underweight, wasting, stunting) and SAM
- c) Failure to thrive and micronutrient deficiencies
- d) Obesity

iv. **Cardiovascular**

- a) Chest Pain
- b) Murmur
- c) Cyanosis
- d) Congestive heart failure
- e) Systemic hypertension
- f) Arrhythmia
- g) Shock

v. **GIT and liver**

- a) Acute diarrhea
- b) Persistent and chronic diarrhea
- c) Abdominal pain and distension
- d) Ascites
- e) Vomiting
- f) Constipation and Encopresis
- g) Gastrointestinal bleeding
- h) Jaundice
- i) Hepatosplenomegaly
- j) Hepatic failure and encephalopathy

vi. **Respiratory**

- a) Cough/chronic cough
- b) Noisy breathing
- c) Wheezy child
- d) Respiratory distress
- e) Hemoptysis
- f) Chest Pain
- g) Recurrent LRTI

vii. **Infections**

- a) Acute onset pyrexia
- b) Fever with rashes
- c) Prolonged pyrexia with and recurrent infections- Without localizing signs
- d) Nosocomial infections
- e) Pyrexia of Unknown Origin
- f) Vaccinology – Basics of Vaccinology, Immunization Schedule, UIP, ACVIP, AEFI, Safe Injection Practice, Cold Chain

viii. Renal

- a) Hematuria/dysuria
- b) Bladder/bowel incontinence
- c) Voiding dysfunctions
- d) Renal failure (acute and chronic)
- e) Enuresis

ix. Hemato-oncology

- a) Lymphadenopathy
- b) Anemia
- c) Bleeding
- d) TLS
- e) Febrile neutropenia
- f) Mediastinal syndrome
- g) Veno-occlusive syndrome

x. Neurology

- a) Hemiplegia, Paraplegia, quadriplegia and localization of lesion
- b) Limping child
- c) Convulsions
- d) Abnormality of gait
- e) Macrocephaly & microcephaly
- f) Floppy infant
- g) Acute flaccid paralysis
- h) Cerebral palsy and other
- i) Headache including migraine
- j) Neuromotor disability
- k) Acute febrile encephalitis
- l) Altered sensorium

xi. Endocrine

- a) Thyroid swelling
- b) Ambiguous genitalia
- c) Obesity
- d) Short stature
- e) Precocious & delayed puberty

xii. Skin /ENT/Eye

- a) Skin rash- description and approach
- b) Hypo and Hyperpigmented lesions

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- c) Pain/discharge from ear
 - d) Hearing loss
 - e) Delayed speech
 - f) Epistaxis
 - g) Refractory errors
 - h) Blindness
 - i) Cataract
 - j) Eye discharge
 - k) Redness
 - l) Squint
 - m) Proptosis

3. PRACTICAL

i. 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 functionalities and social communication with children parents support groups genetic counseling

ii. Procedures

a) Investigative skills

- Blood sampling; venous and arterial.
- Otoscopy and fundus examination
- Collection of urine for culture, urethral catheterization
- Lumbar puncture ventricular tap
- Bone marrow aspiration and biopsy
- Peritoneal, Pleural tap

b) Bedside investigations

- Hemoglobin, TLC, ESR, peripheral smear staining
- Urine: routine and microscopic examination
- Stool microscopy
- Examination of CSF and other preparation body fluids (desirable)
- Point of Care Tests for Malaria, Dengue etc

c) Interpretation

- Interpretation of X-rays of chest, abdomen, bone and skull
- ECG
- ABG findings
- Ultrasound and common EEG patterns, CT scan, MRI (desirables)

d) Therapeutic skills

Hydrotherapy, nasogastric feeding, endotracheal intubation, cardiopulmonary resuscitation (pediatric and neonatal), administration of oxygen, venipuncture 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, prescription writing

Monitoring skills: Temperature recording, capillary blood sampling, arterial blood sampling, Pulse Oximetry, BP in different ages

Therapeutic Procedures – Safe Injection Practices, vaccination practices, Minor procedures like IV/Intranasal drug administration, wound management

Biomedical Waste Management and Appropriate use of PPE

iii. Job Responsibilities

a) OPD and Follow up Clinics:

- History and work up of all cases and presentation to the consultants
- Documentation OPD card and register completion and maintenance

b) Emergency/ SNCU/HDU

- Initial Triage
- Evaluation
- Management

c) Ward

- History and work up of all cases
- Starting initial management – Oxygen, IV antibiotics, fluids
- Transport of sick patients
- Preparation of weekly, monthly & annual stat Sending AFP reports.
- Performing procedures: I/V cannulation
- Lumbar puncture

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- Bone marrow examination
 - Pleural tap, peritoneal tap, central line insertion
 - Examination of all patients and documentation in the files
 - Completion of files
 - Preparation of typed discharge summary

iv. Personal Attributes

- a) Behavior and Emotional Stability: Dependable, disciplined, dedicated, stable in emergency situations, shows positive approach.
- b) 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.
- c) 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.

v. Clinical Work

- a) Availability: Punctual, available continuously on duty, responds promptly on calls and takes proper permission for leave.
- b) Diligence: Dedicated, hardworking, does not shirk duties, leaves no work pending, does not sit idle, competent in clinical case work up and management
- c) Academic ability: Intelligent, shows sound knowledge and skills, participates adequately in academic activities, and performs well in oral presentation and departmental tests.
- d) 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.

vi. Log Book

During the training period, the post graduate student should maintain a Logbook/portfolio indicating the duration of the postings/work done in Pediatric Wards, OPDs, Emergency, SNCU, HDU. This should indicate the procedures assisted and performed, and the teaching sessions attended. The purpose of the logbook is to:

- a) Help maintain a record of the work done during training,
- b) Enable Consultants to have direct information about the work; intervene if necessary,
- c) Use it to assess the experience gained periodically.

- d) Self-reflection and appraisal
- e) The logbook shall be used to aid the internal evaluation of the student.
- f) The Logbooks shall be checked and assessed periodically by the faculty members imparting the training.

IV. TEACHING PROGRAM

1. General Principles

- i. Acquisition of practical competencies being the keystone of postgraduate medical education, postgraduate training should be skills oriented
- ii. The student should be trained to serve as a community pediatrician in institutional settings particularly in non-teaching hospitals.
- iii. Learning in postgraduate program should be essentially self-directed and primarily emanating from clinical work. The formal sessions are merely meant to supplement this core effort

2. 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:

Seminar	Twice a month
Bed side case discussion	Once a week
Mortality meet Audit (detailed discussion of all the deaths occurring in previous week)	Once a month
Statistics (including OPD, ward, nursery and PICU)	Once a month
Perinatology meet with department of Obstetrics and Gynae	Once in two months
Mock exam (bed side case is allotted 1 hour 45 minutes prior to presentation) on the pattern of University examination	Biannually
Central session (CPC, guest lectures, integrated student seminars, grand round, sessions on basic sciences, public health programs medical ethics and legal issues)	Once a month
Interesting/difficult cases	Once a month
Radiology	Once in two months

Faculty Lectures / Pediatrics	Once a month with Faculty from Other specialties
Pediatric Surgery	2 in each semester
Communication Skills	1 in each semester
Ethical & Legal Issues	1 in each year
Departmental Symposium	1 in each semester
Pediatric Surgery	Once in 4 months
Vaccinology	Once in 3 months
Community Health Programs	Once in 3 months
Infection Control	Once in 3 months
Environmental Health	Once in 6 months

- ✓ These sessions may be organized as an institutional activity for all postgraduates preferably when they join the Residency Program.
- ✓ Additional sessions on resuscitation, basic sciences, teaching methodology, hospital waste management, health economics, medical ethics and legal issues related to pediatric practice are suggested.
- ✓ At the onset of session, the module of FIMNCI (MOH and FW, GOI) may be introduced in lecture or interactive format
- ✓ Students be encouraged to attend accredited scientific meetings (CME, symposia, and conferences).
- ✓ The postgraduate students shall be required to participate in the teaching and training programme of undergraduate students and interns.
- ✓ *Department should encourage e-learning activities.*

Rotations of MNB Trainee(s) in Pediatrics

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

Department/Area of Rotation	Tentative schedule
SNCU	2 months per year
HDU	1 month per year
Community setting	15 days per year

} Mandatory

3. Specialty Training:

The Specialist Board has suggested the training of one month per year outside the hospital, for any area deficit in the accredited institute. This includes training in an infectious disease hospital (covid, for example). The Rotation shall only be permitted in institutes which are accredited for MD /DNB training.

V. RECOMMENDED BOOKS & JOURNALS

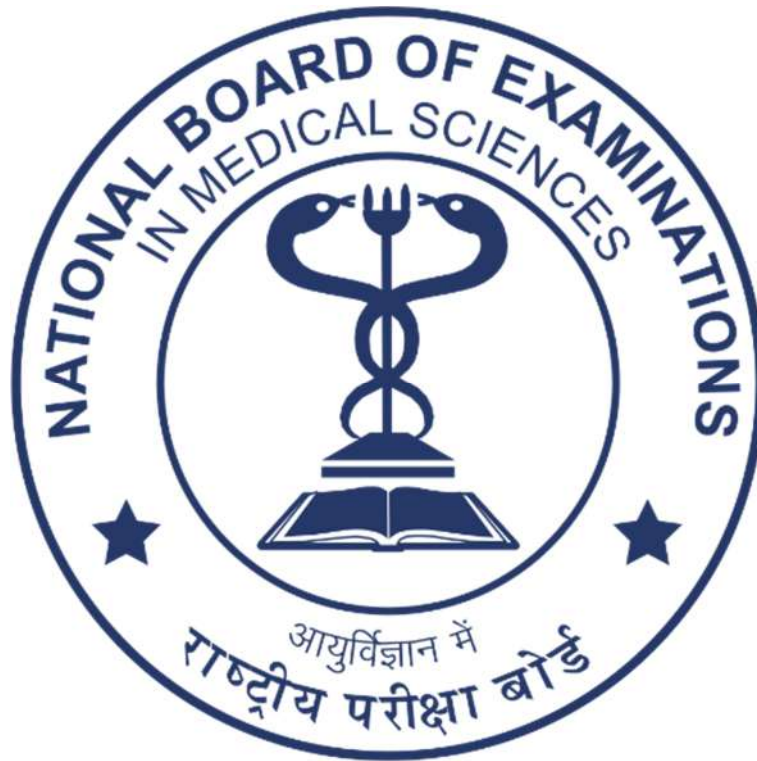
The Latest Edition of the following Books:

1. Nelson Textbook of Pediatrics Vol.1 and 2.
2. Piyush Gupta's PG Textbook of Pediatrics (Vol1-3)
3. Cloherty and Stark's Manual of Neonatal Care
4. Indian Pediatrics "Principles of Pediatric and Neonatal Emergencies"
5. Forfar & Arneil's Textbook of Pediatrics
6. Harriet Lane Manual
7. Nutrition and Child Development – K.E. Elizabeth.
8. Clinical Methods in Pediatrics – Piyush Gupta
9. Manual of Neonatal Care – Meharban Singh
10. Current Pediatric Diagnosis and Treatment – Hay, Hayward, Levin.
11. Textbook of Community Medicine – Park
12. UP to Date Pediatrics(Online purchasable)

LIST OF JOURNALS

1. Indian Pediatrics
2. Indian Journal of Paediatrics

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3. Indian Journal of Practical Paediatrics
 4. JAMA Pediatrics
 5. Archives of Diseases of Childhood



आयुर्विज्ञान में राष्ट्रीय परीक्षा बोर्ड
स्वास्थ्य एवं परिवार कल्याण मंत्रालय, भारत सरकार
मेडिकल एन्क्लेव, अंसारी नगर, नई दिल्ली – 110029

NATIONAL BOARD OF EXAMINATIONS IN MEDICAL SCIENCES
Ministry of Health & Family Welfare, Govt. of India
Medical Enclave, Ansari Nagar, New Delhi- 110029