

MD PAEDIATRICS

SYLLABUS

Syllabus gives an outline and summary of topics to be covered in the MD Paediatric Course.

In Competency Based Education, outcomes are required to be defined, taught, learnt, and assessed that determines competence at the end of the course. Defined Outcomes should focus on what is expected practically in the “real world” by the professional performing roles of the expert physician. This syllabus is focused on all age group of children from neonates to toddlers to children to adolescents as per existing practice. The syllabus thus stresses on “real world presentation of symptoms and signs” and is categorized under the following:

- A. Cognitive Domain
 - a. Basic Sciences
 - b. Approaches/Management of common symptoms/signs inclusive of analysis, interpretation, and application of investigations
 - c. Specific Topics classified as per traditional systems
- B. Psychomotor Domain
- C. Affective Domain
- D. Pedagogic and Research Skills

A) Predominant in Cognitive (Knowledge) Domain

a. Basic Sciences

- *Should be able to justify and apply in the practice of Paediatrics, an understanding of the fundamentals of basic sciences as listed below:*

1. Applied Anatomy

1.1. Embryogenesis of all organ systems

1.2. Central Nervous System

1.2.1. Structures, Functions, Clinical considerations

- 1.2.1.1. Cerebral Cortex
- 1.2.1.2. Corticospinal tracts
- 1.2.1.3. Extrapyramidal tracts
- 1.2.1.4. Cerebellar connections
- 1.2.1.5. Sensory tracts
- 1.2.1.6. Ventricles

1.3. Spinal Cord, Peripheral Nerves

1.3.1. Structures, Functions, Clinical considerations

- 1.3.1.1. Lower Motor Neuron

- 1.4. Bladder and Bowel control
- 1.5. Vascular supply – Principal arteries and veins
- 1.6. Extremities, Abdomen, Thorax, Head and Neck
- 1.7. Fetal circulation

2. Physiological basis and Pathophysiology in Health and Disease

- 2.1. Physical Growth
- 2.2. Temperature regulation
- 2.3. Acid Base Balance
- 2.4. Fluid Balance
- 2.5. Hematopoiesis
- 2.6. Hemostasis
- 2.7. Electrolyte balance
- 2.8. Bone mineralization: Calcium-Phosphate balance
- 2.9. Puberty
- 2.10. Renal function
- 2.11. Hepatic function
 - 2.11.1. Bilirubin
 - 2.11.2. Drug metabolism
- 2.12. Respiratory function
- 2.13. Cardiac function
- 2.14. Gastrointestinal
- 2.15. Endocrine functions
- 2.16. Developmental Milestones
- 2.17. Adolescence
- 2.18. Placenta functions
- 2.19. Fetal to Infant Transitions (Cardio-respiratory)
- 2.20. Nutrition
- 2.21. Allergy

3. Biochemical basis of health and disease

- 3.1. Cell biology
 - 3.1.1. Cell cycle
 - 3.1.2. Cell signaling
- 3.2. CHO metabolism
- 3.3. Lipid metabolism
- 3.4. Protein metabolism
- 3.5. TCA Cycle
- 3.6. Hemoglobin
- 3.7. Clinical Chemistry
 - 3.7.1. Vitamins
 - 3.7.2. Minerals
- 3.8. Plasma Proteins
- 3.9. Coagulation Pathway

4. Genetics and Molecular Medicine

- 4.1. Human Genome
- 4.2. Nucleic acids

- 4.2.1. Protein synthesis
- 4.3. Recombinant DNA Technology
 - 4.3.1. Basic techniques
 - 4.3.2. Applications
- 4.4. Chromosomal abnormalities
 - 4.4.1. Pedigree charting
- 4.5. Prenatal/Postnatal diagnosis
- 4.6. Immunogenetics
 - 4.6.1. HLA
- 5. Clinical Microbiology**
 - 5.1. Virology
 - 5.1.1. Classifications
 - 5.1.2. Diagnostics
 - 5.1.3. Therapeutics
 - 5.1.4. Resistance
 - 5.2. Bacteriology
 - 5.2.1. Classification
 - 5.2.2. Endo/Exotoxins
 - 5.2.3. Diagnostics
 - 5.2.4. Therapeutics
 - 5.2.5. Resistance
 - 5.2.6. Antibiotic Stewardship
 - 5.3. Mycology
 - 5.3.1. Classification
 - 5.3.2. Diagnostics
 - 5.3.3. Therapeutics
 - 5.3.4. Resistance
 - 5.4. Parasitology (Protozoology and Helminthology)
 - 5.4.1. Classification
 - 5.4.2. Diagnostics
 - 5.4.3. Therapeutics
 - 5.4.4. Resistance
 - 5.5. Waste disposal, sterilization, disinfection
 - 5.5.1. Infection Control
- 6. Immunology**
 - 6.1. Immune response system
 - 6.1.1. Innate, Adaptive
 - 6.1.2. Cellular
 - 6.1.3. Antibodies
 - 6.1.4. Cytokines
 - 6.1.5. Clinical considerations
 - 6.2. Immunoglobulins

- 6.2.1. Types
- 6.2.2. Clinical considerations
- 6.3. Complement
 - 6.3.1. Components
 - 6.3.2. Pathways
 - 6.3.3. Deficiencies
 - 6.3.4. Clinical considerations
- 6.4. Hypersensitivity reactions
- 6.5. Blood group Immunology
 - 6.5.1. ABO
 - 6.5.2. Rh
 - 6.5.3. Minor groups
- 6.6. Immunological assays
- 6.7. Science of Vaccinology
 - 6.7.1. Vaccines
 - 6.7.2. Classification
 - 6.7.3. Schedule
 - 6.7.4. Indications, contraindications
 - 6.7.5. Adverse effects
 - 6.7.6. Catch up doses
- 6.8. Immunodeficiency
 - 6.8.1. Primary
 - 6.8.2. Secondary
- 6.9. Autoimmune disease
 - 6.9.1. Basis
 - 6.9.2. Autoantibodies
 - 6.9.3. Clinical considerations
- 6.10. Transplant Immunology
 - 6.10.1. Stem cell
 - 6.10.2. GVH disease
 - 6.10.3. Solid organ transplant
- 6.11. Cancer Immunology
- 7. Pharmacology**
 - 7.1. Pharmacokinetics – common medications
 - 7.2. Antimicrobials
 - 7.3. Analgesia, sedation
 - 7.4. Drug interactions
 - 7.5. Adverse effects
 - 7.6. Antidotes for poisons
 - 7.7. Drug induced disease
- 8. Epidemiology**

- 8.1. Rates
- 8.2. Principles of study design
- 8.3. Measures of effects
- 8.4. Association and causation
- 8.5. Diagnostic tests

9. Statistics

- 9.1. Distribution of data
- 9.2. Measures of Central tendency
- 9.3. Measures of dispersion
- 9.4. Probability distributions
- 9.5. Sampling
- 9.6. Statistical significance

10. Professionalism and Ethics

- 10.1. Professionalism
 - 10.1.1. Clinical competencies
 - 10.1.2. Effective communication
 - 10.1.3. Understanding of Ethics
 - 10.1.4. Accountability
 - 10.1.5. Altruism
 - 10.1.6. Excellence
 - 10.1.7. Humanism
- 10.2. Ethics
 - 10.2.1. Code of ethics
 - 10.2.2. Principles of Ethics
 - 10.2.3. Ethical workup
 - 10.2.4. Doctor-Patient relationship
 - 10.2.5. Confidentiality and privacy
 - 10.2.6. Doctor-Doctor relationship
- 10.3. Medico-legal essentials
 - 10.3.1. POSCO
 - 10.3.2. Certifications
 - 10.3.3. Documentation
 - 10.3.4. Informed consent
 - 10.3.5. MLC formalities

11. Pedagogy

- 11.1. How adults learn
- 11.2. Competencies and Specific Learning Objectives
- 11.3. Teaching Learning Methodologies
- 11.4. T-L Media including Power Point Presentations
- 11.5. Assessments- Formative and Summative

12. Management

- 12.1. Time Management
- 12.2. Conflict Management
- 12.3. Communication especially Listening

- 12.4. How to study – Lectures? Wards? Journal club?
- 12.5. Fundamentals of Counselling
- 12.6. Stress Management
- 12.7. Teamwork
- 12.8. Leadership

b. Approaches/Management of common symptoms/signs inclusive of analysis, interpretation, and application of investigations (In every age group from newborn to adolescent)

- **Approaches** (Clinical and Investigation) of the following clinical symptoms/ signs
Management plans (Investigation, Treatment, Care, Counselling, Education, Follow Up, Rehabilitation Plans) of healthy children (section 1.1) and children with the following clinical symptoms/signs.

1.1. Healthy Children

- 1.1.1. Healthy neonate
- 1.1.2. Healthy infant
- 1.1.3. Healthy child
- 1.1.4. Healthy adolescent

1.2. Cardiovascular Symptoms/Signs

- 1.2.1. Murmurs
- 1.2.2. Cyanosis
- 1.2.3. Syncope
- 1.2.4. Dizziness
- 1.2.5. Breathlessness
- 1.2.6. Palpitations
- 1.2.7. Chest Pain

1.3. Development (and Behavioral) Symptoms/ Signs

- 1.3.1. Normal development
- 1.3.2. Delayed milestones
- 1.3.3. Regression of milestones
- 1.3.4. Unusual behaviors
- 1.3.5. Poor scholastic performance
- 1.3.6. Deviations in sexuality
- 1.3.7. Dysmorphic features
- 1.3.8. Suicide attempt
- 1.3.9. Behavioral issues -disinterest, isolation, poor social interaction
- 1.3.10. Substance abuse
- 1.3.11. Abnormal eating behavior
- 1.3.12. Sleep disturbance
- 1.3.13. Breath holding spells
- 1.3.14. Multiple unexplained unrelated complaints
- 1.3.15. Technology dependence
- 1.3.16. Speech abnormalities

1.4. Dermatology

- 1.4.1. Neonatal skin lesions
- 1.4.2. Infantile skin lesions
- 1.4.3. Acquired skin rashes in childhood
- 1.4.4. Urticaria
- 1.4.5. Neurocutaneous presentations

1.5. Emergencies

- 1.5.1. Dehydration
- 1.5.2. Respiratory distress
- 1.5.3. Hypoxia
- 1.5.4. Shock
- 1.5.5. Incessant crying
- 1.5.6. Sick looking
- 1.5.7. Status epilepticus
- 1.5.8. Acute Severe Asthma
- 1.5.9. Trauma
- 1.5.10. Animal/human bite
- 1.5.11. Abuse
- 1.5.12. Cardio-pulmonary failure
- 1.5.13. Oliguria/Anuria
- 1.5.14. Raised intracranial pressure
- 1.5.15. Coma
- 1.5.16. Traumatic Brain Injury
- 1.5.17. Acute poisoning
- 1.5.18. Envenomation
- 1.5.19. Medico-legal conditions

1.6. Endocrine Symptoms

- 1.6.1. Abnormal stature
- 1.6.2. Hypoglycemia
- 1.6.3. Delayed puberty
- 1.6.4. Precocious puberty
- 1.6.5. Goiter

1.7. Gastrointestinal (and Hepatic) Symptoms

- 1.7.1. Tongue tie
- 1.7.2. Vomiting and regurgitation
- 1.7.3. Diarrhea – Acute
- 1.7.4. Diarrhea – Chronic, persistent, recurrent
- 1.7.5. Abdominal pain – Acute
- 1.7.6. Abdominal Pain - Recurrent
- 1.7.7. Constipation
- 1.7.8. Jaundice
- 1.7.9. Gastrointestinal bleed
- 1.7.10. Hepatomegaly
- 1.7.11. Splenomegaly
- 1.7.12. Hepatosplenomegaly
- 1.7.13. Encopresis
- 1.7.14. Abdominal distention

1.7.15. Abnormal Liver Function tests

1.8. Genital Symptoms

- 1.8.1. Atypical or ambiguous genitalia
- 1.8.2. Menstrual abnormalities
- 1.8.3. Injuries to genitalia
- 1.8.4. Foreskin, penile problems
- 1.8.5. Labial adhesions

1.9. Growth (and Nutrition related) Symptoms

- 1.9.1. Normal growth
- 1.9.2. Normal diet
- 1.9.3. Poor feeding in Infancy
- 1.9.4. Undernutrition
- 1.9.5. Failure to thrive
- 1.9.6. Overweight and obesity

1.10. Hematological Symptoms

- 1.10.1. Pallor
- 1.10.2. Bleeding manifestations
- 1.10.3. Lymphadenopathy
- 1.10.4. Thrombotic manifestations
- 1.10.5. Abnormal Hematological parameters including Pancytopenia

1.11. Infectious (and Immunological) Symptoms

- 1.11.1. Fever with focus
- 1.11.2. Fever without focus
- 1.11.3. Fever - persistent or recurrent
- 1.11.4. Exanthematous Fever
- 1.11.5. Recurrent infections
- 1.11.6. Hospital acquired infection
- 1.11.7. Vaccination Issues– complete, incomplete

1.12. Metabolic Symptoms

- 1.12.1. Acidosis – metabolic, respiratory
- 1.12.2. Alkalosis – metabolic, respiratory
- 1.12.3. Mixed Acid-Base disturbance
- 1.12.4. Dyselectrolytemia – Hypo/Hypernatremia, Hypo/Hyperkalemia, Hypo/hypercalcemia
- 1.12.5. Hyperammoniaemia
- 1.12.6. Hypoglycemia

1.13. Musculoskeletal Symptoms

- 1.13.1. Joint pains with or without swelling
- 1.13.2. Low back pain
- 1.13.3. Deformities of bone growth
- 1.13.4. Scoliosis

1.13.5. Growing Pains involving lower limbs

1.14. Neonatology

- 1.14.1. Term gestation
- 1.14.2. Prematurity
- 1.14.3. Low birth weight
- 1.14.4. Neonatal Jaundice
- 1.14.5. Ill/Sick
- 1.14.6. Neonatal seizures
- 1.14.7. Neonatal respiratory distress
- 1.14.8. Neonatal Apnea
- 1.14.9. Neonatal Shock
- 1.14.10. Metabolic/electrolyte disturbances – Glucose, Sodium, Potassium, Calcium, Bicarbonate, Lactate, Ammonia
- 1.14.11. Feed Intolerance
- 1.14.12. Spinal/Cranial abnormalities
- 1.14.13. Post NICU follow up
- 1.14.14. HIV-HepB-Syphilis exposure/infection
- 1.14.15. Inadequate breast milk
- 1.14.16. Antenatal detected renal abnormalities

1.15. Neurological Symptoms

- 1.15.1. Seizures
- 1.15.2. Altered sensorium/Coma
- 1.15.3. Motor weakness
- 1.15.4. Incessant Irritability
- 1.15.5. Headache
- 1.15.6. Abnormal Head circumference
- 1.15.7. Sensory abnormalities
- 1.15.8. Abnormal gait
- 1.15.9. Ataxia
- 1.15.10. Facial weakness
- 1.15.11. Involuntary movements

1.16. Ophthalmological Symptoms

- 1.16.1. Red eye
- 1.16.2. Watering of eye
- 1.16.3. Discharge from eye
- 1.16.4. Poor vision
- 1.16.5. White reflex
- 1.16.6. Deviation of eyes

1.17. Otorhino-laryngology Symptoms

- 1.17.1. Nasal discharge, Nasal congestion, Sneezing
- 1.17.2. Sore Throat
- 1.17.3. Ear Pain/discharge
- 1.17.4. Tonsillar hypertrophy
- 1.17.5. Epistaxis
- 1.17.6. Impaired hearing

1.18. Renal and Urological Symptoms

- 1.18.1. Enuresis
- 1.18.2. Dysuria
- 1.18.3. Proteinuria
- 1.18.4. Hematuria
- 1.18.5. Edema
- 1.18.6. Hypertension
- 1.18.7. Dyselectrolytemia
- 1.18.8. Polyuria
- 1.18.9. Scrotal and Inguinal swelling
- 1.18.10. Oliguria/Anuria

1.19. Respiratory Symptoms

- 1.19.1. Cough
- 1.19.2. Breathlessness
- 1.19.3. Noisy breathing - snoring, stridor, wheeze
- 1.19.4. Hemoptysis

1.20. Community Situations

- 1.20.1. Vaccination camps
- 1.20.2. School Health Checkups
- 1.20.3. Outbreaks of childhood diseases

1.21 Analysis, interpretation, and application of Investigations

- 1.21.1. Radiology X-rays (Chest AP/PA/Lateral, abdomen, spine, extremities)
- 1.21.2. Contrast X-rays (Micturating cystourethrogram)
- 1.21.3. Ultrasound (Lung: Consolidation, Left Heart failure, effusion; Circulation: Intravascular Volume; Neonatal Brain: Hydrocephalus, Intracranial Collections; Central veins: Patency for US guided central lines; Lymphadenopathy: For US guided FNAC aspirations)
- 1.21.4. CT scan with/without contrast (Brain: Cerebral edema, Midline shift, Meningitis, Encephalitis, ADEM, Hemorrhage, Infarction, SOLS, Hydrocephalus)
- 1.21.5. MRI scan (Brain: Gross White vs Grey matter degeneration)
- 1.21.6. HIDA Scan

1.22. Microbiology

- 1.22.1. Grams stain of CSF, Pus, Peritoneal fluid
- 1.22.2. Ziehl Neilson Stain of Sputum, Pus
- 1.22.3. Hanging drop for motile cholera
- 1.22.4. PCR reports for infectious disease diagnosis
- 1.22.5. Culture and sensitivity reports of body fluids

1.23. Pathology

- 1.23.1. Pathology reports of human tissue

1.24. Routine labs

- 1.24.1. Hematology reports of Blood counts, peripheral smear, Bleeding and Coagulation parameters, basic immunology
- 1.24.2. Urine routine analysis
- 1.25. Biochemical
 - 1.25.1. Biochemical routine (Electrolytes, Calcium-Phosphate, Renal, Liver profiles, Arterial/venous Blood Gases)
 - 1.25.2. Inborn error of metabolism newborn screening reports
 - 1.25.3. Endocrine (Glucose related, Thyroid related, Hormonal assays, Lipid profiles)
- 1.26. Electrophysiological Studies
 - 1.26.1. Electrocardiogram
- 1.27. Lung Function Tests
 - 1.27.1. Spirometry
- A. ***Specific Topics***

Understanding the definition, epidemiology, etiopathogenesis, clinical presentation, investigations, complications, differential diagnosis, treatment, prognosis, prevention, follow up and rehabilitation, if required, of the following, but not limited to:

 - 1. Overview
 - 1.1. History of Paediatrics
 - 1.2. State of Health of Children – Global, Regional and India
 - 1.3. Evidence-based Care in Pediatrics
 - 1.4. WHO's Sustainable Development Goals
 - 1.5. National Programs relevant to Child Health
 - 1.6. Ethics in the Care of Children
 - 1.7. Medico-legal aspects relevant to Paediatrics including: Documentation (Initial History/Examination/Differential Sheet, Progress (SOAP, Problem Oriented), Death and other Certification, Informed Consent, Wound Certificates, POSCO, Financial Receipts, Outpatient/In Patient Registers)
 - 2. Genetics
 - 2.1. Inheritance Patterns
 - 2.2. Genetic Counseling
 - 2.3. Prevention of Genetic Disorders
Management of Genetic Disorders
 - 3. Metabolic Disorders
 - 3.1. Approach to Inborn Errors of Metabolism
 - 3.2. Approach to Hypoglycemia
 - 3.3. Defects of Amino Acid Metabolism
 - 3.3.1. Phenylalanine
 - 3.3.2. Urea Cycle Disorders
 - 3.4. Defects of Lipid Metabolism

- 3.4.1. Organic Acidemias
 - 3.4.2. Fatty Acid Oxidation
 - 3.4.3. Mitochondrial Disorders
 - 3.4.4. Peroxisomal Disorders
 - 3.4.5. Lysosomal Storage Disorders
 - 3.4.6. Gaucher Disease
 - 3.4.7. Niemann-Pick Disease
- 3.5. Defects of Carbohydrate Metabolism
 - 3.5.1. Glycogen Storage Disease
- 3.6. GM1 and GM2 Gangliosidosis
- 3.7. Mucopolysaccharidoses
- 3.8. Porphyrrias
- 3.9. Newborn Screening
- 4. Immunology
 - 4.1. Laboratory Diagnosis of Immune-mediated Diseases
 - 4.2. Primary Immunodeficiency Disorders
 - 4.2.1. Antibodies
 - 4.2.2. Cellular
 - 4.2.3. Multiple types
 - 4.2.3.1. SCID (Severe combined immunodeficiency)
 - 4.3. Phagocytic system
 - 4.3.1. Neutrophils
 - 4.3.2. Leukopenia
 - 4.3.3. Leucocytosis
 - 4.4. Complement pathway
 - 4.4.1. Complement deficiencies
 - 4.5. Intravenous Immunoglobulin
 - 4.6. Multisystem Inflammatory Syndrome of Childhood
- 5. Allergy
 - 5.1. Basis of Allergy
 - 5.2. Allergic rhinitis
 - 5.3. Atopic dermatitis
 - 5.4. Urticaria, Angioedema
 - 5.5. Anaphylaxis
 - 5.6. Asthma
 - 5.7. Serum sickness
 - 5.8. Drug allergies
 - 5.9. Food allergies
- 6. Fluid and Electrolytes
 - 6.1. Body Fluids – Composition, Osmolality

- 6.2. Fluid Therapy - Maintenance, Replacement
- 6.3. Sodium
- 6.4. Potassium
- 6.5. Calcium
- 6.6. Magnesium
- 6.7. Phosphorus
- 6.8. Acid-base Abnormalities
- 7. Therapeutics
 - 7.1. Principles of Drug Therapy
 - 7.2. Administration of Medications
 - 7.3. Pre-anesthesia Checkup
 - 7.4. Procedural sedation
 - 7.5. Analgesia
- 8. Acutely Ill
 - 8.1. Assessment and Triage
 - 8.2. Cardiopulmonary Resuscitation
 - 8.2.1. Basic Life Support
 - 8.2.2. Pediatric Advanced Life Support
 - 8.3. Minor Injuries – Abrasions, Lacerations
- 9. Pediatric Intensive Care
 - 9.1. Shock
 - 9.2. Respiratory Failure
 - 9.3. Pediatric Acute Respiratory Distress Syndrome
 - 9.4. Ventilation – Non-Invasive and Invasive
 - 9.5. Sedation, Analgesia and Paralysis
 - 9.6. Nutrition in Intensive Care
 - 9.7. ECMO
 - 9.8. Concepts of Futility, Do not Resuscitate, Withdrawal of Care
 - 9.9. Palliative Care
 - 9.10. Death
- 10. Toxins
 - 10.1. Clinical Approach to a Poisoned Child
 - 10.2. Poisonings by Common Drugs
 - 10.3. Hydrocarbon Poisoning
 - 10.4. Poisoning in the Household
 - 10.5. Corrosive Poisoning
 - 10.6. Snakebite
 - 10.7. Insect Stings including Bee, Wasp, Scorpion Sting
- 11. Injuries
 - 11.1. Poly Trauma: Stabilization, Triage, and Transport
 - 11.2. Drowning/Submersion Injuries
 - 11.3. Animal-related Injuries

- 11.4. Burn Injuries
- 11.5. Cold Injuries
- 12. Neonatology
 - 12.1. Neonatal Mortality and Morbidities
 - 12.2. Fetal Physiology and Growth
 - 12.3. Maternal Influences on Fetus
 - 12.4. Transition of the Fetus to Newborn
 - 12.5. Intrauterine diagnosis and management of Fetal disease
 - 12.6. Organization of Neonatal Care
- 13. Normal Newborn
 - 13.1. Delivery Room Care of the Newborn
 - 13.2. Newborn Resuscitation
 - 13.3. Assessment of the Newborn
 - 13.4. Care of the Normal Newborn
 - 13.5. Maintenance of Temperature
 - 13.6. Breastfeeding and Lactation Management
- 14. Disorders of Weight and Gestation in Neonates
 - 14.1. Low Birthweight
 - 14.1.1. Feeding of Low-birth weight
 - 14.1.2. Intrauterine Growth Restriction
 - 14.2. Prematurity
 - 14.3. Post term
 - 14.4. Large for Gestational Age
- 15. High-risk Newborn
 - 15.1. Recognition of High-risk neonate
 - 15.2. Multiple-gestational pregnancies
 - 15.3. Birth Injuries
 - 15.4. Perinatal Asphyxia
 - 15.5. Jaundice in the newborn
 - 15.6. Infant of Diabetic Mother
 - 15.7. Neonatal Hypoglycemia
 - 15.8. Anemia and Polycythemia
 - 15.9. The Bleeding Neonate
 - 15.10. Hemorrhagic Disease of the
 - 15.11. Thrombocytopenia in the Newborn
 - 15.12. Cyanosis in the Newborn
 - 15.13. Necrotizing Enterocolitis
 - 15.14. Retinopathy of Prematurity
 - 15.15. Dyselectrolytemia, Hypocalcemia, Hypermagnesemia
 - 15.16. Neonatal Transport
 - 15.17. Follow-up of the High-risk Neonate
- 16. Neonatal Infections

- 16.1. Neonatal Sepsis – Early and Late
- 16.2. Superficial Infections in Neonates
- 16.3. Neonatal Meningitis
- 16.4. Deep-seated Infections in Neonates
- 16.5. Neonatal Tetanus
- 16.6. Intrauterine Infections
- 17. Neonatal Neurological Problems
 - 17.1. Seizures in the Neonates
 - 17.2. Hypoxic Ischemic Encephalopathy
 - 17.3. Intra-cranial/ventricular Hemorrhage
 - 17.4. Peripheral nerve injuries
- 18. Neonatal Respiratory Problems
 - 18.1. Approach to a Neonate with Respiratory Distress
 - 18.2. Neonatal Apnea Neonatal Ventilation
 - 18.3. Hyaline Membrane Disease
 - 18.4. Transient Tachypnea of the Newborn
 - 18.5. Meconium Aspiration Syndrome
 - 18.6. Pulmonary Air Leaks in the Newborn
 - 18.7. Persistent Pulmonary Hypertension (PPHN)
 - 18.8. Pulmonary Hemorrhage
 - 18.9. Bronchopulmonary Dysplasia
 - 18.10. Extra pulmonary air leaks
- 19. Neonatal Cardiac Problems
 - 19.1. Neonate with a murmur
 - 19.2. Patent ductus arteriosus
 - 19.3. Ductus dependent shunts
- 20. Hematological disorders in Neonates
 - 20.1. Anemia in Neonate
 - 20.2. Hemolytic Disease
 - 20.3. Polycythemia
 - 20.4. Hemorrhagic Disease
- 21. Congenital Malformations
 - 21.1. Esophageal Atresia and Tracheoesophageal Fistula
 - 21.2. Diaphragmatic Hernia and Eventration
 - 21.3. Gastrointestinal and Abdominal Malformation
 - 21.4. Genitourinary Malformations
 - 21.5. CNS Malformations
 - 21.6. Single Umbilical Artery, Polydactyly, Skin Tags
- 22. Growth: Normal and Abnormal
 - 22.1. Normal Growth
 - 22.2. Factors Affecting Growth

- 22.3. Assessment of Physical Growth
- 22.4. Disorders of Growth (Failure to Thrive, Overweight and Obesity)
- 22.5. Abnormalities of Stature
- 23. Development and Developmental Delay
 - 23.1. Theories of Development and Behaviour
 - 23.2. Laws of Development
 - 23.3. Factors Affecting Development
 - 23.4. Normal Development
 - 23.5. Screening of Development and Behaviour
 - 23.6. Approach to Diagnosis of Developmental Delay: Developmental Screening and Surveillance
 - 23.7. Global Developmental Delay
 - 23.8. Specific Developmental Delays
 - 23.9. Cerebral Palsy
 - 23.10. Intellectual Disability
 - 23.11. Learning disabilities
 - 23.12. Hearing Impairment
 - 23.13. Mental Retardation
- 24. Behavior and Learning
 - 24.1. Evaluation of Mental Well-Being
 - 24.2. Psychosocial assessments
 - 24.3. Technology Dependence
 - 24.4. Bullying
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- 25.7. Pathophysiology of Undernutrition
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 - 26.6. BCG Vaccine
 - 26.7. Poliovirus Vaccines
 - 26.8. Diphtheria, Tetanus, and Pertussis Vaccines
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 - 26.10. Haemophilus Influenzae Type B (HIB) Vaccines
 - 26.11. Measles Vaccine
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 - 26.14. Typhoid Fever Vaccines
 - 26.15. Japanese Encephalitis Vaccine
 - 26.16. Rabies Vaccines
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 - 26.18. Rotavirus Vaccines
 - 26.19. Cholera Vaccines
 - 26.20. Varicella Vaccine
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 - 26.23. Seasonal and Pandemic Influenza Vaccines
 - 26.24. Human Papillomavirus Vaccines
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 - 30.3. Microbiome and Child Health
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- 33.2. Diagnostic Tools for Tuberculosis in Children
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- 38.8. Hiatal Hernia
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- 41.22. Aspiration Syndromes
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- 47.11. Hyperlipidemia
- 47.12. Endocrine Consequences of Thalassemia Major
- 47.13. Endocrine Effects of Radiation and Cancer Chemotherapy
- 47.14. Adult Consequences of IUGR and Preterm Birth
- 48. Malignancies in Children
 - 48.1. Epidemiology and Biology of Cancers
 - 48.2. Principles of Diagnosis and Therapy of Cancer
 - 48.3. Leukemias
 - 48.3.1. Acute Lymphoblastic Leukemia
 - 48.3.2. Acute Myelogenous Leukemia
 - 48.3.3. Chronic Myelogenous Leukemia
 - 48.3.4. Infantile Leukemia
 - 48.4. Lymphoma
 - 48.4.1. Hodgkin Lymphoma
 - 48.4.2. Non-Hodgkin Lymphoma
 - 48.5. Brain Tumors
 - 48.6. Neuroblastoma
 - 48.7. Wilms Tumor
 - 48.8. Soft Tissue Tumors
 - 48.9. Bone Tumors
 - 48.10. Retinoblastoma
 - 48.11. Gonadal, Germ cell neoplasms
 - 48.12. Hemangioma
 - 48.13. Lymphangiomas, Cystic Hygromas
 - 48.14. Thyroid Tumours
 - 48.15. Nasopharyngeal Carcinoma
 - 48.16. Adrenal Tumours
 - 48.17. Histiocytosis
 - 48.17.1. LCH
 - 48.17.2. Hemophagocytic Lymphohistiocytosis
 - 48.18. Oncological Emergencies and Supportive Care
 - 48.19. Hematopoietic Stem Cell Transplant
- 49. Rheumatological Disorders

- 49.1. Approach to a Child with Rheumatological Disorder
- 49.2. Laboratory Investigations for Rheumatological Disorders
- 49.3. Drugs and Principles of Management for Rheumatic Disorders
- 49.4. Juvenile Idiopathic Arthritis
- 49.5. Reactive, Post-Infectious Arthritis
- 49.6. Systemic Lupus Erythematosus: Clinical Features and Diagnostic Criteria
- 49.7. Management of Systemic Lupus Erythematosus
- 49.8. Juvenile Dermatomyositis
- 49.9. Large Vessel Vasculitis: Takayasu Arteritis
- 49.10. Medium Vessel Vasculitis: Kawasaki Disease and Polyarteritis Nodosa
- 49.11. Small Vessel Vasculitis: Henoch-Schönlein Purpura and ANCA Associated Vasculitis
- 49.12. Juvenile Scleroderma
- 49.13. Antiphospholipid Syndrome
- 49.14. Growing Pains
- 50. Common Eye Abnormalities
 - 50.1. Common Visual Problems
 - 50.2. Congenital Anomalies
 - 50.3. Refractive Errors
 - 50.4. Cornea and Conjunctiva
 - 50.5. Uveitis
 - 50.6. Cataract and Lens
 - 50.7. Glaucoma
 - 50.8. Optic Nerve and Pupil
 - 50.9. Strabismus and Motility Disorders
 - 50.10. Eyelid, Orbit, and Lacrimal Sac
 - 50.11. Ocular Injuries
 - 50.12. Orbital Infections
 - 50.13. Ocular Manifestations of Systemic Disorders
- 51. Common ENT Problems
 - 51.1. Hearing Loss
 - 51.2. Congenital malformations of Ear
 - 51.3. External Otitis
 - 51.4. Otitis Media
 - 51.5. Mastoiditis
 - 51.6. Inner Ear
- 52. Common Skin Problems
 - 52.1. Skin of the Newborn: Physiological and Pathological Changes
 - 52.2. Care of Skin in the Newborn
 - 52.3. Infections and Infestations
 - 52.4. Congenital Cutaneous Malformations
 - 52.5. Vitiligo and Other Hypopigmentary Diseases
 - 52.6. Atopic Dermatitis
 - 52.7. Contact Dermatitis

- 52.8. Urticaria and Mastocytosis
- 52.9. Psoriasis, Gianotti-Crosti Syndrome
- 52.10. Acanthosis Nigra
- 52.11. Cutaneous Drug Reactions
- 52.12. Cutaneous Manifestations of Nutritional Deficiency
- 52.13. Cutaneous Manifestations of Collagen Vascular Diseases
- 52.14. Neurocutaneous Syndromes
- 52.15. Vesiculobullous Disorders
- 52.16. Papulosquamous Disorders
- 52.17. Ichthyosis
- 52.18. Genetic Cutaneous Disorders
- 52.19. Hair Disorders
- 52.20. Nail Disorders
- 52.21. Infections of Skin
 - 52.21.1. Impetigo
 - 52.21.2. Subcutaneous Infections
 - 52.21.3. Staphylococcal Scalded Skin Syndrome
 - 52.21.4. Ecthyma
 - 52.21.5. Fungal Infections
 - 52.21.6. Viral Infections
 - 52.21.7. Arthropod bites
 - 52.21.8. Scabies
 - 52.21.9. Pediculosis
 - 52.21.10. Acne

53. Disorders of Bones and Joints

- 53.1. Assessment of the Locomotor System
- 53.2. Deformities of Foot and Toes
 - 53.2.1. Congenital Talipes Equinovarus
- 53.3. Torsional deformities of Limb
- 53.4. Leg Length discrepancies
- 53.5. Transient Monoarticular synovitis
- 53.6. Legg-Calvé-Perthes Disease
- 53.7. Neck Problems
 - 53.7.1. Torticollis
 - 53.7.2. Cervical anomalies
- 53.8. Scoliosis and Kyphosis
- 53.9. Developmental Dysplasia of the Hip (DDH)
- 53.10. Osteomyelitis
- 53.11. Septic Arthritis
- 53.12. Osgood-Schlatter Disease
- 53.13. Arthrogryposis
- 53.14. Injuries to Bones/Joints
- 53.15. Skeletal Dysplasia
- 53.16. Osteogenesis imperfecta
- 53.17. Marfan Syndrome
- 53.18. Metabolic Bone Disease

- 53.18.1. Hypo/Hyperphosphatemia
 - 53.18.2. Osteoporosis
- 54. Vulnerable Children
 - 54.1. Street Children
 - 54.2. Child Labor
 - 54.3. Child Abuse and Neglect
 - 54.4. Adoption: Medical and Legal Issues
 - 54.5. Rights of the Child
- 55. Environmental Health
 - 55.1. Climate Change and its impact on Health
 - 55.2. Air Pollution and its impact on Health
 - 55.3. Biomedical Waste Management
- 56. Community Pediatrics
 - 56.1. Indicators of Child Health
 - 56.2. Environment and Child Health
 - 56.3. Lead Poisoning
 - 56.4. Adoption
 - 56.5. Travel Medicine
 - 56.6. Protection of Children from Sexual Offences ACT 2012
 - 56.7. Rights of People With Disability Act 2016
 - 56.8. National Programs for Child Health as relevant to National Health Mission including RBSK.
 - 56.9. Integrated Management of Neonatal and Childhood Illness-Facility (IMNCI-F)
 - 56.10. Investigation of an Outbreak
- 57. Quality Assessment and Improvement
 - 57.1.1. Point of Care Quality Improvement

A. Psychomotor Domain

- *Should be able to perform independently in the practice of Paediatrics, the following diagnostic and therapeutic interventions as listed below:*

1. Physical Examination

- 1.1. Measurement of Vitals
- 1.2. Measurement of Anthropometry
- 1.3. General physical examination
- 1.4. Physical Examination of Systems
- 1.5. Development (Screening) Assessment
- 1.6. Behavioral (Screening) Assessment
- 1.7. Sexual Maturity Assessment
- 1.8. Newborn Assessment including gestational assessments
- 1.9. Breastfeeding Assessment of Position and Attachment
- 1.10. Motor Disability Assessment

- 1.11. Autism Spectrum Disorder Screening
- 1.12. Fundus examination
- 1.13. Middle ear examination
- 1.14. Throat examination
- 1.15. Triage - Rapid assessment of Airway, Breathing and Circulation
- 1.16. Hand hygiene
- 1.17. Biomedical Waste disposal guidelines

2. Non-Invasive Monitoring

- 2.1. Pulse oximetry
- 2.2. Electrocardiogram
- 2.3. Vital Data Monitor

3. Procedures – Diagnostic

- 3.1. Informed Consent
- 3.2. Aseptic measures for all invasive procedures
- 3.3. Sampling
 - 3.3.1. Venous blood
 - 3.3.2. Arterial blood
 - 3.3.3. Capillary blood
- 3.4. Vascular Access and cannulation
 - 3.4.1. Intravenous – Peripheral
 - 3.4.2. Intravenous - Central
 - 3.4.3. Intraosseous
 - 3.4.4. Intraarterial
 - 3.4.5. Umbilical Vein
- 3.5. Diagnostic Taps
 - 3.5.1. Pleural
 - 3.5.2. Peritoneal
 - 3.5.3. CSF
 - 3.5.4. Pericardial
 - 3.5.5. Joint fluid
 - 3.5.6. Subdural
 - 3.5.7. Ventricular
- 3.6. Urinary Catheterization
- 3.7. Urine collection
 - 3.7.1. Mid-stream sampling
 - 3.7.2. Catheter sampling
 - 3.7.3. Suprapubic puncture
- 3.8. Tuberculin Skin Test
- 3.9. Antibiotic Test Dose
- 3.10. Feeding/Ryles Tube
 - 3.10.1. Insertion

- 3.10.2. Gastric Aspiration
- 3.10.3. Feeds
- 3.10.4. Stomach wash
- 3.11. Respiratory
 - 3.11.1. Naso, Pharyngeal and Nasopharyngeal swab collection
- 3.12. Suppository insertion
- 3.13. Per rectal exam
- 3.14. Inspection of Vulva/Vagina
- 3.15. Aspiration/Biopsy
 - 3.15.1. Bone marrow
 - 3.15.2. Liver
 - 3.15.3. Kidney
 - 3.15.4. FNAC Lymph node
- 3.16. Ultrasound – Lung (B line, Effusion), Circulation (IVC Volume), Vascular access (Central venous), Soft Tissue (Pus)
- 3.17. Blood Group/Type
- 3.18. Smears
 - 3.18.1. Malaria Parasite Smear/Rapid Antigen Test
 - 3.18.2. Peripheral Blood Smear
 - 3.18.3. CSF/Pus Grams Stain
 - 3.18.4. Sputum Ziehl Neilson Smear
- 3.19. Urine dipstick
- 3.20. Stool Hanging drop
- 3.21. Glucometer Blood Sugar
- 3.22. Shake test (Newborn gastric aspirate)
- 3.23. Electrocardiogram
- 3.24. Specific Screening/Assessment Tools
 - 3.24.1. Gestation Assessments
 - 3.24.2. Anthropometric measurements and Growth charting
 - 3.24.3. Peak Flow Meter Measurement
 - 3.24.4. HEADSS screening (Adolescence)
 - 3.24.5. DDST screening (Development Assessment)
 - 3.24.6. Assessment of Sexual Maturity using Tanner's
 - 3.24.7. M-CHAT-R screening (Autism Assessment)
 - 3.24.8. GMSCF Assessment of Motor Disability (Cerebral Palsy)
 - 3.24.9. Pain assessment

4. Procedures – Therapeutic

- 4.1. Informed Consent
- 4.2. Prescriptions/Medication Orders
- 4.3. Neonatal Resuscitation Program including intubation
- 4.4. Basic Life Support
- 4.5. Advanced Paediatric Life Support including intubation

Milestones to be achieved on Psychomotor Skills through Year 1 to 3.

O-Observe

PS-Perform under supervision

PI-Perform independently

Milestones	1st Year	2nd Year	3rd Year
1. Physical Examination			
1.1. Measurement of Vitals	PI		
1.2. Measurement of Anthropometry	PI		
1.3. General physical examination	PI		
1.4. Physical Examination of Systems	PI		
1.5. Development (Screening) Assessment	O, PS	PI	
1.6. Behavioral (Screening) Assessment	O	PS	PI
1.7. Sexual Maturity Assessment	O, PS	PI	
1.8. Newborn Assessment including gestational assessments	PI		
1.9. Breastfeeding Assessment	PI		
1.10. Motor Disability Assessment	O	PS	PI
1.11. Autism Spectrum Disorder Screening	O	PS	PI
1.12. Fundus examination	PI		
1.13. Middle ear examination	PI		
1.14. Throat examination	PI		
1.15. Triage - Rapid assessment of ABC	PI		
1.16. Hand hygiene	PI		
1.17. Biomedical Waste disposal guidelines	PI		
2. Non-Invasive Monitoring			
2.1. Pulse oximetry	PI		
2.2. Electrocardiogram	PI		
2.3. Vital Data Monitor	PI		
3. Procedures – Diagnostic			
3.1. Informed Consent	PI		
3.2. Aseptic measures for all procedures	PI		
3.3. Sampling			
3.3.1. Venous blood	PI		
3.3.2. Arterial blood	PI		

- 4.6. Heimlich, Foreign Body Removal
- 4.7. Exchange Transfusion
- 4.8. Stomach wash
- 4.9. Injections
 - 4.9.1. Intravenous
 - 4.9.2. Intramuscular
 - 4.9.3. Subcutaneous
 - 4.9.4. Intradermal
- 4.10. Infusions
 - 4.10.1. IV bolus
 - 4.10.2. Intravenous
 - 4.10.3. Intraosseous
 - 4.10.4. Blood Component Transfusion
- 4.11. Respiratory
 - 4.11.1. Meter dose inhalation with or without Spacer/Mask
 - 4.11.2. Nebulization
 - 4.11.3. Airway Insertion – Nasopharyngeal,
Oropharyngeal
 - 4.11.4. Needle Cricothyroidotomy
 - 4.11.5. Oxygen delivery methods
 - 4.11.6. HFNC/CPAP/Non-Invasive Ventilation
 - 4.11.7. Ventilation – Conventional
 - 4.11.8. Intercostal drainage
 - 4.11.9. Surfactant Administration (INSURE)
- 4.12. Spinal infusion/injection
- 4.13. Therapeutic Ascitic Tap
- 4.14. Peritoneal dialysis
- 4.15. Phototherapy
- 4.16. Incision and Drainage
- 4.17. Dressings
- 4.18. Sling
- 4.19. Transport onto and off stretcher
- 4.20. Neonatal Temperature Warm Chain Measures
 - 4.20.1. Wrapping up Newborn
 - 4.20.2. Kangaroo Mother Care
- 4.21. Immunization Cold Chain Measures
 - 4.21.1. Refrigerator
 - 4.21.2. Vaccine carrier
- 4.22. Restraining a child
- 4.23. Transporting a child
- 4.24. Early Interventional Therapy
- 4.25. Chest Physiotherapy

Milestones to be achieved on Psychomotor Skills through Year 1 to 3.

O-Observe

PS-Perform under supervision

PI-Perform independently

Milestones	1st Year	2nd Year	3rd Year
1. Physical Examination			
1.1. Measurement of Vitals	PI		
1.2. Measurement of Anthropometry	PI		
1.3. General physical examination	PI		
1.4. Physical Examination of Systems	PI		
1.5. Development (Screening) Assessment	O, PS	PI	
1.6. Behavioral (Screening) Assessment	O	PS	PI
1.7. Sexual Maturity Assessment	O, PS	PI	
1.8. Newborn Assessment including gestational assessments	PI		
1.9. Breastfeeding Assessment	PI		
1.10. Motor Disability Assessment	O	PS	PI
1.11. Autism Spectrum Disorder Screening	O	PS	PI
1.12. Fundus examination	PI		
1.13. Middle ear examination	PI		
1.14. Throat examination	PI		
1.15. Triage - Rapid assessment of ABC	PI		
1.16. Hand hygiene	PI		
1.17. Biomedical Waste disposal guidelines	PI		
2. Non-Invasive Monitoring			
2.1. Pulse oximetry	PI		
2.2. Electrocardiogram	PI		
2.3. Vital Data Monitor	PI		
3. Procedures – Diagnostic			
3.1. Informed Consent	PI		
3.2. Aseptic measures for all procedures	PI		
3.3. Sampling			
3.3.1. Venous blood	PI		
3.3.2. Arterial blood	PI		

3.3.3. Capillary blood	PI		
3.4. Vascular Access and cannulation			
3.4.1. Intravenous – Peripheral	PI		
3.4.2. Intravenous - Central	O	PS	PI
3.4.3. Intraosseous	PI		
3.4.4. Intraarterial	O	PS	PI
3.4.5. Umbilical Vein	PI		
3.5. Diagnostic Taps			
3.5.1. Pleural	PS	PI	
3.5.2. Peritoneal	PI		
3.5.3. CSF	PI		
3.5.4. Pericardial	O	PS	PI
3.5.5. Joint fluid	O	PS	PI
3.5.6. Subdural	O, PS	PI	
3.5.7. Ventricular	O	PS	PI
3.6. Urinary Catheterization	PI		
3.7. Urine collection			
3.7.1. Mid-stream sampling	PI		
3.7.2. Catheter sampling	PI		
3.7.3. Suprapubic puncture	PI		
3.8. Tuberculin Skin Test	PI		
3.9. Antibiotic Test Dose	PI		
3.10. Feeding/Ryles Tube			
3.10.1. Insertion	PI		
3.10.2. Gastric Aspiration	PI		
3.10.3. Feeds	PI		
3.10.4. Stomach wash	PI		
3.11. Respiratory			
3.11.1. Naso, Pharyngeal, NP swab collection	PI		
3.12. Suppository insertion	PI		
3.13. Per rectal exam	O	PS	PI

3.14. Inspection of Vulva/Vagina	PI		
3.15. Aspiration/Biopsy			
3.15.1. Bone marrow	O, PS	PI	
3.15.2. Liver	O	PS	PI
3.15.3. Kidney	O	PS	PI
3.15.4. FNAC Lymph node	O	PS	PI
3.16. Ultrasound – Lung (B line, Effusion), Circulation (IVC Volume), Vascular access (Central venous), Soft Tissue (Pus)	O	O, PS	PS
3.17. Blood Group/Type	O, PS	PI	
3.18. Smears			
3.18.1. Malaria Parasite Smear/Rapid Antigen Test	O, PS	PI	
3.18.2. Peripheral Blood Smear	O, PS	PI	
3.18.3. CSF/Pus Grams Stain	O, PS	PI	
3.18.4. Sputum Ziehl Neilson Smear	O, PS	PI	
3.19. Urine dipstick	PI		
3.20. Stool Hanging drop	O, PS	PI	
3.21. Glucometer Blood Sugar	PI		
3.22. Shake test (Neon gastric aspirate)	PI		
3.23. Electrocardiogram	PI		
3.24. Specific Screening/Assessment Tools			
3.24.1. Gestation Assessments	PI		
3.24.2. Anthropometric measurements and Growth charting	PI		
3.24.3. Peak Flow Meter Measurement	PI		
3.24.4. HEADSS screening (Adolescence)	O, PS	PI	
3.24.5. DDST screening (Development Assessment)	O, PS	PI	
3.24.6. Assessment of Sexual Maturity using Tanner's	O, PS	PI	
3.24.7. M-CHAT-R screening (Autism Assessment)	O	PS	PI
3.24.8. GMSCF Assessment of Motor Disability (Cerebral Palsy)	O	PS	PI

3.24.9. Pain assessment	PI		
4. Procedures – Therapeutic			
4.1. Informed Consent	PI		
4.2. Prescriptions/Medication Orders	PI		
4.3. Neonatal Resuscitation Program including ET	PI (BVM)	PI (ET)	
4.4. Basic Life Support	PI		
4.5. Advanced Paediatric Life Support including ET	PI (BVM)	PI (ET)	
4.6. Heimlich, Foreign Body Removal	PI		
4.7. Exchange Transfusion	O	PS	PI
4.8. Stomach wash	PI		
4.9. Injections			
4.9.1. Intravenous	PI		
4.9.2. Intramuscular	PI		
4.9.3. Subcutaneous	PI		
4.9.4. Intradermal	PI		
4.10. Infusions			
4.10.1. IV bolus	PI		
4.10.2. Intravenous	PI		
4.10.3. Intraosseous	PI		
4.10.4. Blood Component Transfusion	PI		
4.11. Respiratory			
4.11.1. Meter dose inhalation with or without Spacer/Mask	PI		
4.11.2. Nebulization	PI		
4.11.3. Airway Insertion – Nasophy, Orophy	PI		
4.11.4. Needle Cricothyroidotomy	O	PS	PI
4.11.5. Oxygen delivery methods	PI		
4.11.6. HFNC/CPAP/Non-Invasive Ventilation	O, PS	PI	
4.11.7. Ventilation – Conventional, High Freq (HFV)	O	PS	PI (Not HFV)
4.11.8. Intercostal drainage	O, PS	PI	
4.11.9. Surfactant Administration	O, PS	PI	

	(INSURE)			
4.12.	Spinal infusion/injection	O	PS	PI
4.13.	Therapeutic Ascitic Tap	O, PS	PI	
4.14.	Peritoneal dialysis	O	PS	PI
4.15.	Phototherapy	PI		
4.16.	Incision and Drainage	O	PS	PI
4.17.	Dressings	PI		
4.18.	Sling	PI		
4.19.	Transport onto and off stretcher	PI		
4.20.	Neonatal Temperature Warm Chain	PI		
4.20.1.	Wrapping up Newborn	PI		
4.20.2.	Kangaroo Mother Care	PI		
4.21.	Immunization Cold Chain Measures			
4.21.1.	Refrigerator	PI		
4.21.2.	Vaccine carrier	PI		
4.22.	Restraining a child	O, PS	PI	
4.23.	Transporting a child	O, PS	PI	
4.24.	Early Interventional Therapy	O	PS	PI
4.25.	Chest Physiotherapy	O, PS	PI	

B. Predominant in Affective Domain

Should be able to effectively and empathetically.....

1. Communication – Child/Attender/Guardian

- 1.1. Elicit a relevant and appropriate history from an attender/child including family and support systems
- 1.2. Engage and explain in appropriate language the plan (diagnostic and management including economics of plans) to an attender/child
- 1.3. Explain the prognosis of the child's condition
- 1.4. Educate a Parent, an attendant/guardian/child with regards disease/, cultural, and spiritual understanding associated with health care delivery complication prevention, health promotion, and management keeping illustrating ethical ---?
- 1.5. Counsel towards an Informed Consent/Assent
- 1.6. Communicate disturbing/bad news including death

- 1.7. Demonstrates communication skills to appropriately word reports, professional opinions, patient education and counseling with regards
 - 1.7.1. Health and Disease condition with management plan
 - 1.7.2. Nutrition - Breastfeeding, complimentary feeding and nutrition using a Growth chart
 - 1.7.3. Immunization – On schedule, catch up including costs and advantages/disadvantages
 - 1.7.4. Lifestyle
 - 1.7.4.1. Dietary
 - 1.7.4.2. Habits
 - 1.7.5. Genetic risks of relevant inherited conditions
 - 1.7.6. Options for management and future approach in care with advantages and disadvantages
 - 1.7.7. Rights and responsibilities
- 1.8. Demonstrates knowledge or applies an understanding of psychological, social, and economic factors which are pertinent to the delivery of health care.
- 1.9. Demonstrates and effectively engages the patient and / or family in all communication.
- 1.10. Demonstrates ability to provide patient, family and community education through written material especially simple patient information leaflets

Should be able to effectively and respectfully.....

2. Communication – Health Team members

- 2.1. Communicate with all members of the health care team
- 2.2. Communicate with other members of the profession
- 2.3. Communicate with allied professionals associated with Health care

Should be able to

3. Professionalism and Ethical Behaviour

- 3.1. Demonstrates Professional Conduct in patient care and research
 - 3.1.1. Demonstrate respect for the Doctor-Patient relationship
 - 3.1.2. Demonstrate respect for the Doctor-Health Care Team Member relationship
 - 3.1.3. Demonstrate adherence to confidentiality and patient privacy in all communications in and outside the place of work.

- 3.1.4. Demonstrate respect of a patient's rights and decisions including the right to information and second opinion.
- 3.1.5. Demonstrate behaviour aligned with MCI/NMC code of ethics in all related dealings
- 3.1.6. Demonstrates personal and social responsibility/accountability in the provision of health care at an individual, community and population level
- 3.1.7. Demonstrate an awareness of economic costs of health care in all dealings with patients.
- 3.1.8. Demonstrate adherence to research ethics guidelines in the conduct of patient related research.
- 3.1.9. Demonstrates work ethics while working in a health care team.
- 3.1.10. Demonstrates truthfulness, honesty and integrity in all interactions.
- 3.1.11. Provides care that surpasses personal beliefs and prejudices
- 3.1.12. Demonstrates appropriate etiquette in dealings with patients, relatives and other health personnel
- 3.2. Demonstrates behavior that is Ethical and bound by the Law of the land
 - 3.2.1. Recognizes Ethical conflicts and dilemmas seeking solutions to reduce conflicts and do the right thing.
 - 3.2.2. Complies with legal requirements while dealing with child health and includes issues dealing with the Industry Conflict, MTP Act, PCPNDT act, Child Abuse, Child labour, Legal adoption, Consent and Assent.

C. Pedagogic and Research Skills

Should be able to effectively

1. Pedagogic Skills

- 1.1. Conduct a small group learning session (Theory and Practical) using appropriate tools
- 1.2. Create and use an effective Powerpoint Presentation
- 1.3. Present to a large group

Should be able to effectively

2. Research Skills

- 2.1. Search scientific literature and critically appraise the evidence using standard study design checklists enabling application to clinical care.

- 2.2. Justify the application of the findings of a research study in clinical practice
(Diagnostic and Therapeutic Studies)
- 2.3. Develop a research hypothesis supported by scientific literature review,
design an appropriate study, implement the methodology, generate results by
analyzing data, and draw appropriate conclusions.
- 2.4. Should be able to present or/and publish a paper based on the conducted
research.

TEACHING AND LEARNING METHODS

General principles

Acquisition of competencies being the keystone of doctoral medical education, such training should be skills oriented. Learning in the program, essentially autonomous and self-directed, and emanating from academic and clinical work, shall also include assisted learning. The formal sessions are meant to supplement this core effort.

All students joining the postgraduate (PG) courses shall work as full-time (junior) residents during the period of training, attending not less than 80% of the training activity during the calendar year, and participating in all assignments and facets of the educational process. They shall maintain a logbook for recording the training they have undergone, and details of the procedures done during laboratory and clinical postings in real time.

Teaching-Learning methods

This should include a judicious mix of demonstrations, symposia, journal clubs, clinical meetings, seminars, small group discussion, bed-side teaching, case-based learning, simulation-based teaching, self-directed learning, integrated learning, interdepartmental meetings and any other collaborative activity with the allied departments. Methods with exposure to the applied aspects of the subject relevant to basic/clinical sciences should also be used. **The suggested examples of teaching-learning methods are given below but are not limited to these.**

A. Lectures: Didactic lectures should be used sparingly. A maximum of 10 lectures per year in the concerned PG department is suggested. All postgraduate trainees are encouraged to attend such lectures. Lectures can cover topics such as:

1. Subject-related important topics as per Paediatric requirements

2. Recent advances
3. Research methodology and biostatistics
4. Undergraduate/Postgraduate medical curriculum
5. Teaching and assessment methodology.

Topic numbers 3, 4, 5 can be done during research methodology/biostatistics and medical education workshops in the institute.

B. Journal club: Minimum of once in 1- 2 weeks is suggested.

Topics will include presentation and critical appraisal of original research papers published in peer reviewed indexed journals. The presenter(s) shall be assessed by faculty and grades recorded in the logbook.

C. Student Seminar: Minimum of once in 1-2 weeks is suggested.

Important topics should be selected as per subject requirements and allotted for in-depth study by a postgraduate student. A teacher should be allocated for each seminar as faculty moderator to help the student prepare the topic well. It should aim at comprehensive complete evidence-based review of the topic. The student should be graded by the faculty and peers. Symposium, Colloquium and Seminars may overlap to enhance involvement and active participation of postgraduates.

D. Student Symposium: Minimum of once every 3 months.

A broad topic of significance should be selected, and each part shall be dealt by one postgraduate student. A teacher moderator should be allocated for each symposium and moderator should track the growth of students. The symposium should aim at an evidence-based exhaustive review of the topic. All participating postgraduates should be graded by the faculty and peers. Symposium, Colloquium and Seminars may overlap to enhance involvement and active participation of postgraduates.

E. Bedside clinics: Minimum - once a week.

Clinics/bedside teaching should be coordinated and guided by faculty from the department. Various methods like DOAP (Demonstrate, Observe, Assist, Perform), simulations in skill lab, and case-based discussions etc. are to be used. Faculty from the department should participate in moderating the teaching-learning sessions during clinical rounds.

F. Interdepartmental colloquium

Faculty and students must attend monthly meetings between the main Department and other department/s on topics of current/common interest or clinical cases. Symposium, Colloquium and Seminars may overlap to enhance involvement and active participation of postgraduates.

G. a. Rotational clinical / community / institutional postings

Final decision that determines “external” postings outside the primary department will differ according to department needs, feasibility, sub-speciality availability and accessibility. Apart for mandatory postings, ‘external’ postings listed below are highly recommended (desirable) to expose postgraduates to allied Pediatric sub-specialities given existing trends in practice. Specific Learning Outcomes need to be defined for each of these postings even assessed keeping in mind the Competency based curriculum and their future professional roles as Pediatricians.

Rotations are listed below:

Mandatory Postings

- Paediatric emergency (minimum 1 month a year)
- Neonatology (NICU) (minimum 3 months a year)
- Intensive Care (PICU) (minimum 2 months a year)
- District Residency Programme with participation in Community Outreach Child Health Programs (at least 3 months over the entire course; 3rd or 4th or 5th semester; See Section G-b below).

Desirable postings based on need, availability, accessibility, and feasibility and may be innovatively integrated into schedule of posting to optimize learning experiences.

- Subspecialities Outpatient Clinics / observing- assisting in emergency
 - Clinical
 - Child Psychiatry
 - Pediatric Surgery
 - Developmental Pediatrics
 - Pediatric Nephrology
 - Pediatric Hemato-oncology
 - Pediatric Cardiology
 - Pediatric Gastroenterology
 - Pediatric Rheumatology/Immunology/Allergy
 - Genetic
 - Pediatric Pulmonology
 - Pediatric Dermatology
 - Pediatric Endocrinology
 - Adolescent Health

- DOTS, PPTCT, ART center with pediatric exposure
- Microbiology diagnostic Lab
- Radiology including CT/MRI
- Forensic Medicine especially Child related
- Neuro-rehabilitation (PMR, Physiotherapy, Occupational Therapy)

G b. Posting under “District Residency Programme” (DRP):

All postgraduate students pursuing MD/MS in broad specialities in all Medical Colleges/Institutions shall undergo a compulsory rotation of three months in District Hospitals/District Health System as a part of the course curriculum, as per the Postgraduate Medical Education (Amendment) Regulations (2020). Such rotation shall take place in the 3rd or 4th or 5th semester of the Postgraduate programme and the rotation shall be termed as “District Residency Programme” and the PG medical student undergoing training shall be termed as “District Resident”.

Every posting should have its defined learning objectives. It is recommended that the departments draw up objectives and guidelines for every posting offered in conjunction with the collaborating department/s or unit/s. This will ensure that students acquire expected competencies and are not considered as an additional helping hand for the department / unit in which they are posted. The PG student must be tagged along with those of other relevant departments for bedside case discussion/basic science exercises as needed, under the guidance of an assigned faculty.

H. Teaching research skills

Writing a thesis should be used for inculcating research knowledge and skills. All postgraduate students shall conduct a research project of sufficient depth to be presented to the University as a postgraduate thesis under the supervision of an eligible faculty member of the department as guide and one or more co-guides who may be from the same or other departments.

In addition to the thesis project, every postgraduate trainee shall participate in at least one additional research project that may be started or already ongoing in the department. It is preferable that this project will be in an area different from the thesis work. For instance, if a clinical research project is taken up as thesis work, the additional project may deal with community/field/laboratory work. Diversity of knowledge and skills can thereby be

reinforced. There should be periodic department review of the thesis work, as per following schedule:

- | | |
|---------------------------------|--------------------------------|
| • End of 6 months | Submission of protocol |
| • During 2nd year | Mid-term presentation |
| • 6 months prior to examination | Final presentation; submission |

I. Training in teaching skills

MEU/DOME should train PG students in education methodologies and assessment techniques. The PG students shall conduct UG classes in various courses and a faculty shall observe and provide feedback on the teaching skills of the student.

J. Log book

During the training period, the postgraduate student should maintain a Log Book indicating the duration of the postings/work done in Wards, OPDs, Casualty and other areas of posting. This should indicate the procedures assisted and performed and the teaching sessions attended. The logbook entries must be done in real time. The logbook is thus a record of various activities by the student like: (1) Overall participation & performance, (2) attendance, (3) participation in sessions, (4) record of completion of pre-determined activities, and (5) acquisition of selected competencies.

- The purpose of the Log book is to:
 - a) help maintain a record of the work done during training,
 - b) enable Faculty/Consultants to have direct information about the work done and intervene, if necessary,
 - c) provide feedback and assess the progress of learning with experience gained periodically.

The Logbook should be used in the internal assessment of the student, should be checked and assessed periodically by the faculty members imparting the training. The PG students will be required to produce completed logbook in original at the time of final practical examination. It should be signed by the Head of the Department. A proficiency certificate from the Head of Department regarding the clinical competence and skillful performance of procedures by the student will be submitted by the PG student at the time of the examination.

The PG students shall be trained to reflect and record their reflections in logbook particularly of the critical incidents. Components of good teaching practices must be assessed in all academic activity conducted by the PG student and at least two sessions dedicated for assessment of teaching skills must be conducted every year of the PG program. The teaching faculty are referred to the MCI Logbook Guidelines uploaded on the Website.

K. Course in Research Methodology: All postgraduate students shall complete an NMC recognized course in Research Methodology within six months of the commencement of the batch and generate the online certificate on successful completion of the course.

Other aspects

- The Postgraduate trainees must participate in the teaching and training program of undergraduate students and interns attending the department.
- Trainees shall attend accredited scientific meetings (CME, symposia, and conferences) at least once a year.
- Department shall encourage e-learning activities.
- The Postgraduate trainees should undergo training in Basic Cardiac Life Support (BCLS), Neonatal Resuscitation, Advanced Pediatric Life Support and Adult Advanced Cardiac Life Support (ACLS).
- The Postgraduate trainees must undergo training in information technology and use of computers.

During the training program, patient safety is of paramount importance; therefore, relevant clinical skills are to be learnt initially on the models, later to be performed under supervision followed by independent performance. For this purpose, provision of skills laboratories in medical colleges is mandatory.

5. ASSESSMENT

FORMATIVE ASSESSMENT ie., assessment to improve learning

Formative assessment should be continual and should assess medical knowledge, patient care, procedural & academic skills, interpersonal skills, professionalism, self-directed learning and ability to practice in the system.

General Principles

Internal Assessment should be frequent, cover all domains of learning and used to provide feedback to improve learning; it should also cover professionalism and communication skills.

The Internal Assessment should be conducted in theory and practical/clinical examination, should be frequent, cover all domains of learning and used to provide feedback to improve learning; it should also cover professionalism and communication skills.

Quarterly assessment during the MD training should be based on:

- Case presentation, case work up,
case handling/management : once a week
- Laboratory performance : twice a week
- Journal club : once a week
- Seminar : once a fortnight
- Case discussions : once a fortnight/month
- Interdepartmental case or seminar : once a month

Note: These sessions may be organized and recorded as an institutional activity for all postgraduates.

- Attendance at Scientific meetings, CME programmes (at least 02 each)

***For Knowledge Assessments,** Patient case scenario presentations and discussions including interdepartmental sessions remain the cornerstone of Paediatric learning focused on critical thinking and clinical reasoning. This is also ideally achieved during teaching at the bedsides on rounds and in ambulatory settings such as outpatient clinics if not emergency. Clinical Pathologic Case discussions, Mortality-Morbidity discussions and Prescription-Medication Order Audits are of great value and are encouraged to improve quality of care as well teaching-learning preferably scheduled every month to routine educational program.*

***For Psychomotor and Affective/Communication Assessments,** consider the use of OSCEs, DOPs and even mini-CEX that one may strengthen Formative Feedback/Assessments.*

The student to be assessed periodically as per categories listed in appropriate (non-clinical/clinical) postgraduate student appraisal form (Annexure I).

SUMMATIVE ASSESSMENT ie., assessment at the end of training

Essential pre-requisites for appearing for examination include:

1. **Log book** of work done during the training period including rotation postings, departmental presentations, and internal assessment reports should be submitted.
2. At least one if not two presentation(s) at national/state level conference. If not presented at national level, alternatively, one research paper should be published / accepted in an indexed journal. (It is suggested that the local or University Review committee assess the work sent for publication).

The summative examination would be carried out as per the Rules given in the latest POSTGRADUATE MEDICAL EDUCATION REGULATIONS. The theory examination shall be held in advance before the Clinical and Practical examination, so that the answer books can be assessed and evaluated before the commencement of the clinical/Practical and Oral examination.

The postgraduate examination shall be in three parts:

1. **Thesis**

Thesis shall be submitted at least six months before the Theory and Clinical / Practical examination. The thesis shall be examined by a minimum of three examiners; one internal and two external examiners, who shall not be the examiners for Theory and Clinical examination. A post graduate student in broad specialty shall be allowed to appear for the Theory and Practical/Clinical examination only after the acceptance of the Thesis by the examiners.

2. **Theory examination**

The examinations shall be organized based on 'Grading' or 'Marking system' to evaluate and to certify post graduate student's level of knowledge, skill and competence at the end of the training, as given in the latest POSTGRADUATE MEDICAL EDUCATION REGULATIONS. Obtaining a minimum of 50% marks in 'Theory' as well as 'Practical' separately shall be mandatory for passing examination. The examination for M.D./ M.S shall be held at the end of 3rd academic year.

There shall be 4 theory papers (as per PG Regulations).

Paper I: Basic Sciences as related to the subject

Paper II: General Paediatrics

Paper III: Systemic Paediatrics

Paper IV: Recent Advances

3. Practical/clinical and Oral/viva voce examination

Practical examination

Practical examination should be as per concerned university regulation.

Oral/Viva voce examination shall be comprehensive enough to test the post graduate student's overall knowledge of the subject focusing on psychomotor and affective domain.

The final clinical examination in broad specialty clinical subjects should include:

- Cases pertaining to major systems (eg. one long case and three short cases)
- OSCE Stations to cover clinical, procedural and communication skills
- Logbook Records and reports of day-to-day observation during the training
- It is emphasized that Oral/viva voce examination shall be comprehensive enough to test the post graduate student's overall knowledge of the subject.

RECOMMENDED READING:

Books (latest edition)

1. Nelson Textbook of Pediatrics, Ed: Kliegman RM, St. Geme J. Elsevier.
2. PG Textbook of Pediatrics, Ed: Gupta P, Menon PSN, Ramji S, Lodha R. Jaypee
3. Rudolph's Pediatrics, Ed: Kline MW, McGraw Hill.
4. Textbook of Clinical Neonatology (IAP/NNF), Ed: Pejavar RK, Thakre R. Paras.
5. Cloherty and Stark's Manual of Neonatal Care. Ed: Eichenwald EC, Hansen AR, Martin CR, Stark AR. Wolters Kluwer.
6. Principles of Pediatric & Neonatal Emergencies (IAP). Ed: Gupta P, Bagga A, Ramji S, Chugh K, Lodha R, Dewan P, Kaushik JS, Shah D. Shah. Jaypee.
7. Clinical Methods in Pediatrics. Gupta P. CBS Publisher.
8. The Harriet Lane Handbook. Hughes HK, Kahl LK, Elsevier.
9. Nutrition and Child Development. Elizabeth KE. Paras Medical Publisher.
10. Illingworth's Development of The Infant and The Young Child. Au: Illingworth RS; Elsevier Health.

11. Fenichel's Clinical Pediatric Neurology. Au: Piña-Garza JE, James KC. Elsevier.
12. Park's Pediatric Cardiology for Practitioners. Myung Park M, Salamat M. Elsevier.
13. Lanzkowsky's Manual of Pediatric Hematology and Oncology. Fish J, Lipton J, Lanzkowsky P. Elsevier.
14. Essential Paediatric Pulmonology. Lodha R, Kabra SK. Jaypee.
15. Textbook of Pediatric Rheumatology. Petty RE, Laxer R, Lindsley C, Wedderburn L, Fuhlbrigge RC, Mellins ED. Elsevier.

Journals

03-05 international Journals and 02 national (all indexed) journals.

Online Resources

- a. IAP <https://www.iapindia.org/https://diapindia.org/>
- b. GOI MOHFW and IIPS. <http://rchiips.org/nfhs/>
- c. Pubmed. <https://pubmed.ncbi.nlm.nih.gov/>
- d. Google Scholar. <https://scholar.google.co.in/>
- e. Cochrane. <https://www.cochranelibrary.com/>
- f. Uptodate. <https://www.uptodate.com/login>
- g. Clinical Key. <https://www.clinicalkey.com/#!/login>
- h. Medscape. <https://www.medscape.com/>
- i. JM Rey's IACAPAP e-Textbook of Child and Adolescent Mental Health.
Rey JM, Martin A. International Association for Child and Adolescent Psychiatry and Allied Professions. ISBN 9780646574400 Free on <https://iacapap.org/english/>

Student appraisal form for MD in Pediatrics											
	Elements	Less than Satisfactory			Satisfactory			More than satisfactory			Comments
		1	2	3	4	5	6	7	8	9	
1	Scholastic Aptitude and Learning										
1.1	Has Knowledge appropriate for level of training										
1.2	Participation and contribution to learning activity (e.g., Journal Club, Seminars, CME etc)										
1.3	Conduct of research and other scholarly activity assigned (e.g. Posters, publications etc.)										
1.4	Documentation of acquisition of competence (eg Log book)										
1.5	Performance in work based assessments										
1.6	Self- directed Learning										
2	Care of the patient										
2.1	Ability to provide patient care appropriate to level of training										
2.2	Ability to work with other members of the health care team										
2.3	Ability to communicate appropriately and empathetically with patients families and care givers										
2.4	Ability to do procedures appropriate for the level of training and assigned role										
2.5	Ability to record and document work accurately and appropriate for level of										

	training										
2.6	Participation and contribution to health care quality improvement										
3	Professional attributes										
3.1	Responsibility and accountability										
3.2	Contribution to growth of learning of the team										
3.3	Conduct that is ethically appropriate and respectful at all times										
4	Space for additional comments										
5	Disposition										
	Has this assessment been discussed with the trainee?	Y es	N o								
	If not explain										
	Name and Signature of the assessee										
	Name and Signature of the assessor										
	Date										

