Curriculum for Postgraduate Training in Pediatrics (MD)

MD Pediatric Program

General principles:

i) Postgraduate Medical Education shall be of three years duration in the case of degree course
ii) Postgraduate curriculum shall be competency based.
iii) Learning in postgraduate programme shall be essentially autonomous and self directed.
iv) A combination of both formative and summative assessment is vital for the successful completion of the PG programme.
v) A modular approach to the course curriculum is essential for achieving a systematic exposure to the various areas concerned with the disciplines.
vi) The training of PG students shall involve learning experience 'derived from' or targeted to' the needs of the community. It shall, therefore, be necessary to expose the students to community based activities.

General Competency statement:

Patient care: Residents must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health. Residents are expected to:

- Communicate effectively and demonstrate caring and respectful behaviours when interaction with patient and their families.
- Gather essential and accurate information about their patients.
- Make informed decisions about diagnostic and therapeutic interventions based on patient information & preferences, up-to-date scientific evidence and clinical judgment.
- Develop and carry out management plan.
- Counsel & educate patient and their families.
- Use information technology to support patient care decision and patient education.
- Perform competently all medical and invasive procedures considered essential for the care of patient
- Provide health care services aimed at preventing health problems or maintaining health.
- Work with heath care professionals, including those from other disciplines to provide patient focussed care.

1. **Medical knowledge:** Residents must demonstrate knowledge about established and evolving biomedical, clinical & cognate (eg. epidemiologic & social behaviour) science and the application of this knowledge to patient care. Residents are expected to:
   - Demonstrate an investigatory and analytic thinking approach to clinical situations.

- Know & apply the basic and clinically supportive science that is appropriate to their discipline.

2. **Practice based learning and improvement:** Resident must be able to investigate and evaluate their patient care practices and appraise & assimilate scientific evidence and improve their patient care practice. Residents are expected to:
   - Analyse, practice, experience and perform practice based improvement activities using a systematic methodology.
   - Locate, appraise & assimilate evidence from scientific studies related to their patient / health problem.
   - Obtain & use information about their own population from which their patients are drawn.
   - Apply knowledge of study designs and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness.
   - Use information technology to manage information, access online medical information and support their own education.
   - Facilitate the learning of students and other health care professionals.
3. **Interpersonal and communication skills:** Residents must be able to demonstrate interpersonal and communication skills that result in effective information exchange & teaming with patients, their parents and families, and professional associates. Residents are expected to:
   - Create and sustain a therapeutic and ethically sound relationship with patients.
   - Use effective listening skills & elicit & provide information using effective non-verbal, explanatory, questioning and writing skills.
   - Work effectively with others as a member or leader of a health care team or other professional group
4. **Professionalism:** Residents must demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles and sensitivity to a diverse patient population. Residents are expected to:
   - Demonstrate respect, compassion, and integrity; a responsiveness to the needs of the patients & society that supersedes self-interest; accountability to patients & society, and profession; and a commitment to excellence and ongoing professional development.
   - Demonstrate a commitment to ethical principle pertaining to provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices.
   - Demonstrate sensitivity and responsiveness to patient's culture, age, gender and disabilities.
5. **System based practice:** Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care & the ability to effectively call on system resource to provide care that is of optimal value. Residents are expected to:
   - Understand how their patient care and other professional practices affect other health care professionals, the health care organisation, and larger society & how these elements of the system affect their own practice.

- Know how types of medical practice & delivery systems differ from one another, including method of controlling health care costs and allocating resources.
- Practice cost effective health care and resource allocation that does not compromise quality of care.
- Advocate for quality patient care and assist patients in dealing with system complexities.
- Know how to partner with health care managers and health care providers to assess, co-ordinate & improve health care and know how these activities can affect system performance.

1. GOAL:

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

(i) Recognizes the health needs of infants, children and adolescents and carries out professional obligations in keeping with principles of National Health Policy and professional ethics;

(ii) Has acquired the competencies pertaining to pediatrics that are required to be practiced in the community and at all levels of health care system;

(iii) Has acquired skills in effectively communicating with the child, family and the community;

(iv) Is aware of the contemporary advances and developments in medical sciences as related to child health;

(v) Is oriented to principles of research methodology; and

(vi) Has acquired skills in educating medical and paramedical professionals.

2. Objectives

At the end of the MD course in Pediatrics, the student should be able to

(i) Recognize the key importance of child health in the context of the health priority of the country;

(ii) Practice the specialty of Pediatrics in keeping with the principles of professional ethics;

(iii) Identify social, economic, environ-mental, biological and emotional determinants of child and adolescent health, and institute diagnostic, therapeutic, 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 neuro-development and behavioral assessment and anthropometric measurements of the child and make clinical diagnosis;

(vi) Perform relevant investigative and therapeutic procedures for the pediatric patient;

(vii) Interpret important imaging and laboratory results;

(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) Plan and advice measures for the prevention of childhood disease and disability.

(xi) Plan rehabilitation of children suffering from chronic illness and handicap, and those with special needs;

(xii) Manage childhood emergencies efficiently;

(xiii) Provide comprehensive care to normal, 'at risk' and sick neonates;

(xiv) Demonstrate skills in documentation of case details, and of morbidity and mortality data relevant to the assigned situation;

(xv) Recognize the emotional and behavioral characteristics of children, and keep these fundamental attributes in focus while dealing with them;

(xvi) Demonstrate empathy and humane approach towards patients and their families and respect their sensibilities;

(xvii) Demonstrate communication skills of a high order in explaining management and prognosis, providing counseling and giving health education messages to patients, families and communities;

(xviii) Develop skills as a self-directed learner, recognize continuing educational needs; use appropriate learning resources, and critically analyze relevant published literature in order to

practice evidence-based pediatrics;

(xix) Demonstrate competence in basic concepts of research methodology and epidemiology;

(xx) Facilitate learning of medical/nursing students, practicing physicians, para-medical health workers and other providers as a teacher-trainer;

(xxi) Play the assigned role in the implementation of national health programs, effectively and responsibly;

(xxii) Organize and supervise the desired managerial and leadership skills;

(xxiii) Function as a productive member of a team engaged in health care, research and education.

Syllabus/ Content	Must Know	Should Know	May Know

3. Curriculum:

The major components of the post-graduate curriculum shall be:

- Theoretical knowledge
- Practical and clinical skills
- Writing thesis/ research articles
- Attitude including communication skills
- Training in research methodology, medical ethics & medicolegal aspects.

General Guidelines. During the training period effort must always be made that adequate time is spent in discussing child health problems of public health importance in the country or a particular region.

Syllabus:

3.1. Disorders/ Diseases

Basic Sciences: **Embryology, anatomy, physiology, pathophysiolgy, pharmacokinetics:** Physiology of micturation and defecation, fetal and neonatal circulation, regulation of temperature (especially newborn), , acid base balance, fluid electrolyte balance, calcium metabolism, vitamins and their functions, hematopoiesis, hemostasis, bilirubin metabolism, CSF formation, circulation & absorption. Functions of kidney, liver, lungs, heart and endocrinal glands, placental physiology, regulation of blood pressure, pace maker activity, conduction of cardiac impuse, Embryogenesis of different organ systems especially heart, genitourinary system, gastro-intestinal tract; Applied anatomy of different organs; pharmacokinetics, pharmacovigilance, pharmacogenetics, pharmacogenomics, pharmacoproteomics.	√	√	√
Nutrition. Maternal nutritional disorders: impact on fetal outcome. Nutrition for the low birth weight, breast feeding, infant feeding including complementary feeding, protein energy malnutrition, vitamins and minerals- normal requirement, sources, its role & deficiencies, trace elements of nutritional importance, enteral nutrition, , nutritional management in diarrhea, IYCF guidelines, NRC, Human milk banking, Parenteral nutrition in neonates and children, obesity, adolescent nutrition. Nutritional management of systemic illnesses (celiac disease, hepatobiliary disorders, nephrotic syndrome, IEM).	√	√	√
Infectious diseases. Bacterial, viral, fungal, para-sitic, rickettssial, mycoplasma, Pneumo-cystis carinii infections, chlamydia, protozoal and parasitic, tuberculosis, HIV- transmission, universal precaution, post-exposure prophylaxis , prevention of infection. Nosocomial infections, VAP, infection prevention, HIV- PPTCT, feeding recommendations, EID, WHO staging, management of HIV exposed infant, ART Hospital waste disposal, Control of epidemics, infection surveillance.	√	√	√
Research and recent advances including EBM: Bio-statistics, clinical epidemiology, literature search, framing research question, hypothesis, types of research design, types of variables, measurements, data display, ethical and medicolegal issues, communication skills Statistical tests, attributes of diagnostic test, sample size estimation, standard format of reporting studies, critical appraisal, Translational medicine, EBM, teaching methodology and managerial skills, qualitative research.	√	√	√
Genetics. Terminology and symbols used in genetics, Chromosomal disorders, single gene disorders, multifactorial/polygenic disorders, pedigree analysis Cytogenetics, Genetic diagnosis and prenatal diagnosis, genetic counseling. Human genome, Gene therapy	√	√	√
Neonatology. Perinatal care, normal newborn, care in the labor room and resuscitation, essential newborn care, high risk neonates, low birth weight, pre-maturity, newborn feeding, common transient phenomena, respiratory disorders- respiratory distress, RDS, MAS, apnea; infections, Cardiac disorders- CHF, cyanosis, shock; hematological- anemia and bleeding disorders; neurologic disorders- encephalopathy, HIE, seizure, intracranial hemorrhage; gastrointestinal disorders- meconium, NEC, jaundice, renal disorders, malformations, thermoregulation and its disorders, neonatal surgical emergencies,	√		

Understanding of perinatal medicine, fetus, fetal monitoring, high risk pregnancies, dysmorphism, monitoring of sick neonate, CPAP, Mechanical ventilation, refractory/ persistent hypoglycemia, refractory seizure, surfactant therapy, follow-up of NICU graduates		√	
FBNC, SNCU, Cardiac stabilization, functional echocardiography, High frequency ventilation, ECMO, IEM presenting in neonates,			√
Growth and development. Growth and development at different ages, puberty and its regulation. Principles of growth and development, normal growth and development in infancy, childhood and adolescence, deviations in growth and development, sexual maturation and its disturbances,	√		
Failure to thrive, Growth charts.		√	
Behavioral and psychological disorders. Rumination, pica, enuresis, encopresis, sleep disorders, habit disorders, breath holding spells, anxiety disorders, mood disorders, temper tantrums, attention deficit hyperactivity disorder, Autism spectrum disorder.	√		
Childhood psychosis, suicide		√	
Psychological treatment			√
Community & Social Pediatrics: National health programs, nutrition screening of community, prevention of blindness, school health programs, , adolescent health, adoption, child labor, juvenile delinquency, investigation of adverse events following immunization in the community	√		
Government and non-government support services for children, , 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.		√	
Prevention of sexually transmitted diseases, contraception, health legislation, national policy on children			√
Respiratory. Congenital and acquired disorders of nose, infections of upper respiratory tract, tonsils and adenoids, obstructive sleep apnea, congenital anomalies of lower respiratory tract, bronchomalacia, tracheomalacia, acute inflammatory upper airway obstruction, foreign body in larynx, trachea and bronchi, subglottic stenosis (acute and chronic), trauma to larynx, bronchitis, bronchiolitis, aspiration pneumonia, GER, acute pneumonia, recurrent and interstitial pneumonia, suppurative lung disease, atelectasis, , bronchial asthma, pulmonary edema, bronchiectasis, pleural effusion, hemothorax, chylothorax, pulmonary leaks, mediastinal mass.	√		
Congenital disorders of lung, lung cysts, emphysema and hyper-inflation, neoplasm of larynx trachea, bronchi and lung, aspiration syndromes, immune and inflammatory lung diseases, cystic fibrosis, alpha-1 antitrypsin deficiency, PFT		√	
Hemosiderosis, diffuse lung diseases, skeletal diseases influencing pulmonary function, extrapulmonary diseases with pulmonary manifestation, chronic respiratory insufficiency, pulmonary embolism, hemorrhage			√
Cardiovascular. Evaluation of CVS, Congenital heart diseases (cyanotic and acyanotic), rheumatic fever and rheumatic heart disease, infective endocarditis,	√		

cardiac arrhythmias, diseases of myocardium (cardio-myopathy, myocarditis), diseases of pericardium, systemic hypertension. Treatment of congenital heart diseases, cardiac therapeutics, cardioversion, defibrillation, pulmonary hypertension, interpretation of ECG, Echocardiography. Diseases of peripheral vascular system, tumors of heart, hyperlipidemia in children, heart and heart –lung transplantation		√	√
Gastrointestinal and liver diseases. Diseases of mouth, oral cavity and tongue, disorders of deglutition and esophagus, peptic ulcer disease, H. pylori infection, foreign body, pyloric stenosis, intestinal obstruction, peritonitis, ascitis, , acute and chronic diarrhea, , constipation, chronic abdominal pain, , Liver disorders: manifestations of liver disease, hepatitis, cholestatsis, hepatic failure, chronic liver disease, Wilson's disease, cirrhosis and portal hypertension Motility disorders of oesophagus, intestine, colon; Hirsch-sprung's disease, foreign bodies/ bezors, anorectal mal-formations, surgical conditions of anus and rectum, hernia, malabsorption syndrome, celiac disease, CMPA, IBS, drug and toxin induced liver disease, biliary tract diseases, Eosinophilic gastroenteritis, appendisitis, intestinal transplantation, Budd-Chiari syn-drome, metabolic diseases of liver, liver diseases associated with systemic disorders, liver transplantation, pancreatic disorders.	√	√	√
Renal disorders. Acute and chronic glomerulonephritis, proteinuria, nephrotic syndrome, hematuria, hemolytic uremic syndrome, urinary tract infection, VUR and renal scarring, , renal and bladder stones, posterior urethral valves, hydronephrosis, voiding dysfunction, enuresis, undescended testis. Congenital and hereditary renal disorders, Acute kidney injury, chronic kidney disease, renal tubular disorders, renal tubular acidosis, Diabetes incipidus, obstructive uropathy, neurogenic bladder, RFT, MCU, Renal involvement in systemic diseases, Renal replacement therapy, renal transplantation, trauma to genitourinary tract, Renal scan, Gynaecologic problems of childhood.	√	√	√
Emergency and critical care. Emergency care of shock, cardio-respiratory arrest, respiratory failure, congestive cardiac failure, acute renal failure, status epilepticus, fluid and electrolyte disturbances and its therapy, acid-base disturbances, poisoning, accidents, scorpion and snake bites. Choice of Ionotrops, BLS, PALS, CVP monitoring ARDS, Mechanical ventilation, ECMO	√	√	√
Skin diseases. Exanthematous illnesses, vascular lesions, infections & infestations: pyogenic, fungal and parasitic;, eczema, seborrheic dermatitis, drug rash, urticaria, vesicobullous disorders, Steven-Johnson syndrome,. Nutritional dermatosis, pigment disorders, alopecia, icthyosis, Viral infections. Ectodermal dysplasia, Diseases of epidermis, lipodystrophy, disorders of hairs. ***ENT.*** Acute and chronic otitis media, conductive/sensorineural hearing loss, post-diphtheritic palatal palsy, sinusitis, epistaxis, acute/chronic tonsillitis/adenoids, allergic rhinitis/sinusitis, foreign body. Hearing assessment, audiometry, BERA	√ √	√	√ √

Eye problems: Cataract, night blindness,, conjunctival and corneal disorders. Retinopathy of pre-maturity, retinoblastoma, optic atrophy, papilledema. Refraction and accommodation, partial/total loss of vision, chorio-retinitis, strabismus.	√	√	√
Neurologic disorders. Congenital anomalies of CNS, Seizure and non seizure paroxysmal events, epilepsy and epileptic syndromes of childhood, Headache, stroke, meningitis, brain abscess, coma, acute encephalitis and febrile encephalopathies, Guillain-Barre syndrome, neurocysticercosis and other neuro-infestations, HIV encephalopathy, SSPE, cerebral palsy, mental retardation, learning disabilities, muscular dystrophies, acute flaccid paralysis and AFP surveillance, ataxia,. Developmental assessment scales, neurodegenerative/ neurometabolic disorders, Demyelinating disorders, neurocutaneous syndromes, movement disorders of childhood, Myasthenia gravis, SMA. Developmental disorders of muscle, metabolic myopathies, HMSN, Toxic and autonomic neuropathy, EMG, NCV, EEG, Neuroimaging.	√	√	√
Hematology and oncology. Anemia of inadequate production: deficiency anemia, , aplastic anemia,; hemolytic anemia, pancytopenia disorders of hemostasis, thrombocytopenia, blood component therapy, transfusion related events and infections, , acute and chronic leukemia, , Hodgkin disease, non-Hodgkin's lymphoma. Polycythemia, Sarcomas, bone tumors, brain tumors, neuroblastoma, Wilm's tumor, nephroblastoma, Retinoblastoma, Gonadal & germ cell tumors, spleen disorders, Molecular and cellular biology of cancer. Principles of cancer treatment, regimens for common cancers, oncologic emergencies. Hyper-coagulable states, thrombotic diseases, myelodysplastic syndrome, histiocytosis syndromes, lymphatic system disorders, bone marrow transplant/ stem cell transplant. Rare tumors: thyroid tumors, melanoma, nasopharyngeal carcinoma, adenocarcinoma colon rectum, desmoplastic small round cell tumors.	√	√	√
Endocrinology, Metabolic disorders. Hypopituitarism/ hyperpituitarism, Diabetes insipidus, pubertal disorders, hypo- and hyper-thyroidism, hypo- and hyperparathyroidism, adrenal insufficiency, Cushing's syndrome, adrenogenital syndromes, diabetes mellitus, hypoglycemia, short stature, gonadal dysfunction and intersexuality, pubertal changes and gynecological disorders. Defect in metabolism of Amino acids, Lipids, Carbohydrates, MPS, Nucleic acids. Porphyrias, Progeria, Hypoglycemia	√	√	√
Immunology and rheumatology. Immune system, disorders of immunoglobulins, T and B cell disorders, immunodeficiency syndromes. Allergic disorders. Arthritis (acute and chronic), connective tissue disorders. Phagocytic system, complement system, vasculitis syndromes, approach to	√	√	

immune disorder			√
Musculoskeletal pain syndrome, Immunotherapy	√		
Pediatric Orthopedics. Major congenital and developmental bone and joint disorders, bone and joint infections: pyogenic, tubercular.		√	
Skeletal dysplasias, Metabolic bone disease.			√
Sport medicine, Rehabilitation medicine			

3.2. Approach to Important Clinical Problems:

3.2.1. ***Growth and development.*** Short stature, obesity, precocious and delayed puberty, developmental delay, impaired learning.

3.2.2. ***Neonatology.*** Normal newborn, low birth weight newborn, sick newborn.

3.2.3. ***Nutrition.*** Lactation management and complementary feeding, protein energy malnutrition (underweight, wasting, stunting) and micronutrient deficiencies, failure to thrive.

3.2.4. ***Cardiovascular.*** Murmur, cyanosis, congestive heart failure, systemic hypertension, arrhythmia, shock.

3.2.5. ***GIT and liver.*** Acute, persistent and chronic diarrhea, abdominal pain and distension, ascitis, vomiting, constipation, gastrointestinal bleeding, jaundice, hepatosplenomegaly and chronic liver disease, hepatic failure and encephalopathy.

3.2.6. ***Respiratory.*** Cough/chronic cough, noisy breathing, wheezy child, respiratory distress, hemoptysis.

3.2.7. ***Infections.*** Acute onset pyrexia, prolonged pyrexia with and without localizing sign, recurrent infections, nosocomial infections.

3.2.8. ***Renal.*** Hematuria/dysuria, bladder/bowel incontinence, voiding dysfunctions, inguinoscrotal swelling, renal failure (acute and chronic).

3.2.9. ***Hematooncology.*** Lymphadenopathy, anemia, bleeding.

3.2.10. ***Neurology.*** Limping child, convulsions, abnormality of gait, intracranial space occupying lesion, paraplegia, quadriplegia, large head, small head, floppy infant, acute flaccid paralysis, cerebral palsy and other neuromotor disability, headache.

3.2.11. ***Endocrine.*** Thyroid swelling, ambiguous genitalia, obesity, short stature.

3.2.12. ***Skin/Eye/ENT.*** Skin rash, pigmentary lesions, pain/discharge from ear, hearing loss, epistaxis, refractory errors, blindness, cataract, eye discharge, redness, squint, proptosis.

3.2.13. ***Miscellaneous.*** Habit disorders, hyperactivity and attention deficit syndrome, arthralgia, arthritis, multiple congenital anomalies.

3.3. Skills

3.3.1. ***History and examination.*** History taking including psychosocial history, physical examination including fundus examination, newborn examination, including gestation assessment; thermal protection of young infants, nutritional anthropometry and its assessment, assessment of growth, use of growth chart, SMR rating, develop-mental evaluation, communication with children, parents, health functionaries and social support groups; and genetic counseling.

3.3.2. ***Bedside procedures***

(a) **Monitoring skills: Must know:** Temperature recording, capillary blood sampling, monitoring on multipara monitor, arterial blood sampling, and hand wash, wearing gloves.

Should know: CVP monitoring, brain function monitoring

(b) **Therapeutic skills: Must know:** Hydrotherapy, gastric lavage nasogastric feeding, endotracheal intubation, cardiopulmonary resuscitation (pediatric and neonatal), providing respiratory support: CPAP & mechanical ventilation, exchange transfusion, administration of oxygen, aerosol therapy, venepuncture and establishment of vascular access, umbilical venous cannulation, administration of fluids, blood, blood components, parenteral nutrition, intraosseous fluid administration, intrathecal administration of drugs, common dressings, abscess drainage and basic principles of rehabilitation. **Should know:** umbilical arterial access, peripheral arterial line, central vascular access, peritoneal dialysis, ventricular tap.

(c) **Investigative skills: Must know:** Lumbar puncture, bone marrow aspiration, pleural, peritoneal, and subdural tap, biopsy of liver and kidney, collection of urine for culture, urethral catheterization, supra-pubic aspiration. **Should know:** ventricular tap, pericardial tap.

3.3.3. ***Bedside investigations.*** Hemoglobin, TLC, ESR, peripheral smear staining, sepsis screen and examination, urine: routine and microscopic examination, stool microscopy including hanging drop preparation, examination of CSF and other body fluids. **Should know:** Gram stain, ZN stain, shake test on gastric aspirate.

3.3.4. ***Interpretation of*** X-rays of chest, abdomen, bone and head; ECG; ABG findings; PFT, Echocardiography, CT scan & MRI scan **(must know).**

3.3.5. ***Understanding*** *of common* EEG patterns, audiograms, ultrasonographic abnormalities and isotope studies **(Should know).**

4.0 TEACHING PROGRAM:

4.1. General Principles

Acquisition of practical competencies being the keystone of postgraduate medical education, postgraduate training should be skills oriented.

Learning in postgraduate program should be essentially self-directed and primarily emanating from clinical and academic work. The formal sessions are merely meant to supplement this core effort.

4.2. Formal Teaching Sessions

In addition to bedside teaching rounds and practical training on diagnostic & therapeutic procedures, at least 5 hours of formal teaching per week are a must. The departments may select a mix of the following sessions:

Journal Club	Once a month
Case conference	Once a week
Medical & Perinatal audit	Once a month
Seminar/lecture	Once a week
Case discussion	Four a week
Interdepartmental case/seminar	Once a week
Grand round	Once a week

Additional sessions on basic sciences, biostatistics, and research methodology, teaching methodology, health economics, medical ethics, medicolegal issues, effective communication, behaviour, interpersonal relation and team work culture related to Pediatric practice to be held.

Note: These additional sessions may be organized as a departmental or institutional activity for all postgraduates.

4.3. Rotations

The postgraduate student should rotate through all the clinical units in the department. In addition, following special rotations should be undertaken:

Must

Neonatology
(including perinatology) - 6 months [maximum 9 months]

· Intensive Care/Emergency - 3 months

- Emergency paediatrics

Posting in Outpatient Services of the following specialties is desirable for the duration indicated below:

- Skin 12 hours (e.g., 3 hours/day for 4 days or 2 hours/day for 6 days)

• Pediatric surgery	12 hours (e.g., 3 hours/day for 4 days)
• Physical Medicine and Rehabilitation	12 hours (e.g., 3 hours/day for 4 days)
• Community	12 hours (e.g., 3 hours/day for 4 days)

Note: In addition the candidates may be posted to allied specialities such as cardiology, neurology, etc. (depending on facilities available locally) for appropriate training.

5.0 Thesis:

5.1. Objectives

By carrying out a research project and presenting his work in the form of thesis, the student will be able to:

(i) Identify a relevant research question; (ii) conduct a critical review of literature; (iii) formulate a hypothesis; (iv) determine the most suitable study design; (v) state the objectives of the study; (vi) prepare a study protocol; (vii) undertake a study according to the protocol; (viii) analyze and interpret research data, and draw conclusions; (ix) write a research paper.

5.2. Guidelines

While selecting thesis topics, following should be kept in mind:

(i) The scope of study should be limited so that it is possible to conduct it within the resources and time available to the student; (ii) the emphasis should be on the process of research rather than the results; (iii) the research study must be ethically appropriate; (iv) the protocol, interim progress as well as final presentation must be made formally to the entire department; (v) only one student per teacher/thesis guide; (vi) there should be periodic departmental review of the thesis work as per following schedule:

• End of 1st year	Submission of protocol
• During 2nd year	Mid-term presentation
• 6 months prior to examination	Final presentation and submission

5.3. General observations

- There should be a training program on research methodology for existing Faculty to build their capacity to guide research.
- Within 2 months of thesis submission the candidate should be communicated the acceptance/rejection of the thesis.
- The thesis should be sent to at least 2 or 3 reviewers and rejected if majority reject it.

6.0 Assessment:

It is strongly recommended that all those involved in teaching and examinations attend workshop on "Educational Science Technology for Medical Teachers" conducted by several medical institutions in the country.

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.

Quarterly assessment during the MD training should be based on:

1. Journal based / recent advances learning

2. Patient based /Laboratory or Skill based learning

3. Self directed learning and teaching

4. Departmental and interdepartmental learning activity

5. External and Outreach Activities / CMEs

The student to be assessed periodically as per categories listed in postgraduate student appraisal form (Annexure I).

SUMMATIVE ASSESSMENT, ie., assessment at the end of training

The summative examination would be carried out as per the Rules given in

POSTGRADUATE MEDICAL EDUCATION REGULATIONS, 2000.

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 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 on the basis of '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. Obtaining a minimum of 50% marks in 'Theory' as well as 'Practical' separately shall be mandatory for passing examination as a whole. The examination for M.D./ MS shall be held at the end of 3rd academic year. An academic term shall mean six month's training period.

There shall be four theory papers. Each paper should have 10 short essay questions (SEQ).

Paper I: Basic sciences as applied to Paediatrics

Paper II: Neonatology and community Paediatrics

Paper III: General Paediatrics including advances in Paediatrics relating to Cluster I specialties

Paper IV: Paediatric Medicine including advances in Paediatrics relating to Cluster II specialties

Cluster I: Nutrition, Growth and Development, Immunization, Infectious disease, Genetics, Immunology, Rheumatology, Psychiatry and Behavioral Sciences, Skin, Eye, ENT, Adolescent Health, Critical Care, Accidents and Poisoning

Cluster II: Neurology and Disabilities, Nephrology, Hematology and Oncology, Endocrinology, Gastroenterology and Hematology, Respiratory and Cardiovascular disorders

3. Practical/clinical and Oral/viva voce examination

Practical examination

Case I

Case II (Newborn)

Case III

OSCE may be used.

Oral/Viva voce examination on defined areas by each examiner separately. Oral examination shall be comprehensive enough to test the post graduate student's overall knowledge of the subject.

* **Personal attributes**

- Availability: Punctual, available continuously on duty, responds promptly to calls, and takes proper permission for leave.

- Sincerity and motivation: Dependable, honest, admits mistakes, does not falsify information, exhibits good moral values, loyal to institution, has initiative, takes on responsibilities, goes beyond routine work, exhibits keen desire to learn.

- Diligence and performance: Dedicated, hardworking, does not shirk duties, leaves no work pending, does not sit idle, competent in clinical case work up and management (where applicable), skilled in procedures, proficient in record keeping and file work.

- Academic ability: Intelligent, shows sound knowledge and skills, participates adequately in academic activities, and performs well in oral presentation and departmental tests.

- Inter-personal skills: Has compassionate attitude towards patients, gets on well with colleagues and paramedical staff, respectful to seniors.

Job Responsibilities:

- **OPD** : History and work up of all cases and presentation to the consultants
- This includes all the special clinics also
- Documentation. OPD card and register completion and maintenance

- **Indoors :**
- **PICU/NSCU & NICU/Emergency /Ward :**
- History, examination and work up of all cases.
- Sending investigations and filling investigation forms
- 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
- Bone marrow examination
- Plural tap, peritoneal tap, pericardial tap, central line insertion, renal biopsy, liver biopsy
- Examination of all patients and documentation in the files.
- Completion of files
- Preparation of typed discharge summary.

Orientation sessions for PG students joining MD in Paediatrics

This could be spread over 4-5 sessions once or twice a week depending on departmental routine and feasibility.

Orientation to the Hospital: Various Departments and facilities available

• Communication skills: Patients and colleagues
• Literature search
• Basic research methodology
• Protocol writing and thesis

Introduction to Residency in Paediatrics

• Universal precautions and appropriate disposal of hospital waste
• Management of shock
• Congestive cardiac failure
• Normal fluid and electrolyte requirement and their disorders
• Interpretation and management of disorders of acid-base balance
• Evaluation of a sick newborn
• Management of seizures, hypothermia and hypoglycemia in the newborn
• Management of seizures and status epilepticus
• Management of comatose patients
• Hospital management of severe PEM
• Acute kidney injury
• Fulminant hepatic failure
• Management of respiratory distress
• Management of acute diarrhea
• Approach to a bleeding child and its management

• Rational antibiotic therapy

Suggested Reading:

1. Core Books & Reference Books

- Nelson Text book of Pediatrics
- Avery Text book of Neonatology
- Care of Newborn Meharban Singh
- Cloherty – Mannual of Neonatal Care
- Assisted ventilation of neonates
- IAP Text book of Pediatrics

2. Subspeciality Books:

- IAP subspeciality books
- Menkes Pediatric neurology
- Swaiman's Pediatric Neurology
- Pediatric cardiology by Park
- Rogers Pediatric intensive care

3. Journals

- Indian J Pediatrics
- Indian Pediatrics
- Journal of Pediatrics
- Pediatric Clinics of North America
- Seminar in Neonatology
- Seminar in Perinatology
- Archives of Diseases of Childhood