Post Graduate (M.D. Paed):

1. Aims and Objectives:

The aims and objectives of M.D course in Paediatrics is to produce a competent paediatrician who:

(1) 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;

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

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

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

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

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

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

(8) Practice the specialty of Paediatrics in keeping with the principles of professional ethics;

(9) Identify social, economic, environmental, biological and emotional determinants of child and adolescent health, rehabilitative, preventive and promotive measures to provide holistic care to children;

(10) Recognize the importance of growth and development as the foundation of Paediatrics; and help each child realize her/his optimal potential in this regard;

(11) Take detailed history; perform full physical examination including neuro-development and behavioural assessment and anthropometric measurements of the child and make clinical diagnosis;

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

(13) Interpret important imaging and laboratory results;
Curriculum

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

(1) Diagnose illness in children based on the analysis of history, physical examination and investigative work up;

(2) Plan and deliver comprehensive treatment for illness in children using principles of rational drug therapy;

(3) Plan and advise measures for the prevention of childhood disease and disability;

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

(5) Manage childhood emergencies efficiently;

(6) Provide comprehensive care to normal, ‘at risk’ and sick neonates;

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

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

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

(10) Develop skills as a self-directed learner, recognize continuing educational needs; use appropriate learning resources, and critically analyse relevant published literature in order to practice evidence based paediatrics;

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

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

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

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

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

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.

1 Topic:
1.1 Growth and development:
- principles of growth and development, normal growth and development,
- sexual maturation and its disturbances
- failure to thrive and short stature.

1.2 Neonatology:
- perinatal care
- low birth weight
- care in the labor room and resuscitation
- prematurity
- respiratory distress
- common transient phenomena, apnea
- infections, anemia and bleeding disorders
- jaundice, gastrointestinal disorders
- neurologic disorders
- renal disorders
- understanding of perinatal medicine
- thermoregulation and its disorders

1.3 Nutrition:
- maternal nutritional disorders
- nutrition for the low birth weight
- impact on fetal outcome
- breast feeding
- infant feeding including vitamin and mineral deficiencies
- complementary feeding
- protein energy malnutrition, obesity
- adolescent nutrition
- parenteral and enteral nutrition in nutritional management of systemic neonates and children illness (celiac disease, hepatobiliary disorders, nephrotic syndrome)

1.4 Cardiovascular:
- congenital heart diseases
- rheumatic fever and rheumatic heart (cyanotic and acyanotic) disease
- infective endocarditis, arrhythmia
- disease of myocardium, diseases of pericardium (cardiomyopathy, myocarditis)
- systemic hypertension
- hyperlipidemia in children

1.5 Respiratory:
- congenital and acquired disorders of nose, infections of upper respiratory tract, tonsils and adenoids, obstructive sleep apnea
• congenital anomalies of lower respiratory tract, acute inflammatory upper airway, foreign body in larynx trachea & bronchus obstruction
• trauma to larynx, subglottic stenosis (acute and neoplasm of larynx and trachea chronic)
• bronchitis, bronchiolitis
• aspiration pneumonia
• acute pneumonia, recurrent and interstitial suppurative lung disease pneumonia
• atelectasis, lung cysts
• emphysema and hyper-inflation, bronchial asthma, pulmonary edema, bronchiectasis
• pleural effusion, pulmonary leaks
• mediastinal mass

1.6 Gastrointestinal and liver disease:
• disease of mouth, oral cavity and tongue
• disorders of deglutition and esophagus, peptic ulcer disease
• H. pylori infection, foreign body
• congenital pyloric stenosis, intestinal obstruction
• malabsorption syndrome, acute and chronic diarrhea
• irritable bowel syndrome, ulcerative colitis
• hirschsprung’s disease, anorectal malformations
• hepatitis, hepatic failure
• chronic liver disease, Wilson’s disease
• Budd-Chiari syndrome, metabolic diseases of liver
• cirrhosis and portal hypertension

1.7 Nephrologic & Urologic disorders:
• acute and chronic glomerulonephritis, nephrotic syndrome
• hemolytic uremic syndrome, urinary tract infection
• VUR and renal scarring
• renal involvement in systemic renal tubular disorders diseases
• congenital and hereditary renal disorders, renal and bladder stones
• posterior urethral valves, hydronephrosis, voiding dysfunction
• undescended testis
• Wilm’s tumor

1.8 Neurologic disorders:
• seizure and non-seizure paroxysmal events, epilepsy and epileptic syndromes
• meningitis of childhood
• brain abscess, coma
• acute encephalitis and febrile encephalopathies, Guillain-Barre syndrome
• neurocysticercosis and other neuroinfestations, HIV encephalopathy
• SSPE, cerebral palsy
• neurometabolic disorders, neurodegenerative disorders
• neuromuscular disorders, mental retardation
• learning disabilities, muscular dystrophies
• acute flaccid paralysis and AFP surveillance, ataxia
• movement disorders of childhood, CNS tumors
• malformations

1.9 Haematology & Oncology:
• deficiency anemias, hemolytic anemias
- aplastic anemia, pancytopenia, disorders of thrombocytopenia, hemostasis
- blood component therapy, transfusion related infections
- bone marrow transplant/stem cell transplant, acute and chronic leukemia
- myelodysplastic syndrome, Hodgkin disease
- non-Hodgkin’s lymphoma, neuroblastoma
- hypercoagulable states

1.10 Endocrinology:
- hypopituitarism/hyperpituitarism, diabetes insipidus
- pubertal disorders, hypo- and hyper-thyroidism
- adrenal insufficiency, Cushing’s syndrome
- adrenogenital syndromes, diabetes mellitus
- hypoglycemia, short stature
- gonadal dysfunction and intersexuality, obesity

1.11 Infections:
- bacterial, viral
- fungal, parasitic
- rickettsial, mycoplasma
- protozoal infection, tuberculosis
- protozoal and parasitic, nosocomial infections
- HIV, monitory for nosocomial infections
- control of epidemics and infection prevention, safe disposal of infective material

1.12 Emergency & Critical care:
- emergency care of shock, cardio-respiratory arrest
- respiratory failure, acute renal failure
- status epilepticus, acute severe asthma
- fluid and electrolyte disturbances and its therapy, acid-base disturbances
- poisoning, accidents
- scorpion and snake bites

1.13 Immunology & Rheumatology:
- arthritis (acute and chronic), connective tissue disorders
- T and B cell disorders, immuno-deficiency syndromes

3.1.14 ENT:
- acute and chronic otitis media, conductive/sensorineural hearing
- post-diphtheritic palatal palsy loss
- acute/chronic tonsillitis/adenoids, allergic rhinitis/sinusitis
- foreign body

1.15 Skin Diseases:
- exanthematous illnesses, vascular lesions
- pigment disorders, vesicobullous disorders
- infections: pyogenic, fungal and parasitic
- Steven-Johnson syndrome, eczema
- seborrheic dermatitis, drug rash
- urticaria, alopecia
- ichthyosis
1.16 Eye problems:
- refraction and accommodation, partial/total loss of vision, cataract
- night blindness, chorioretinitis
- strabismus, conjunctival and corneal disorders
- retinopathy of prematurity, retinoblastoma
- optic atrophy, papilledema

1.17 Behavioural & Developmental disorders:
- rumination, pica
- enuresis, encopresis
- sleep disorders, habit disorders
- breath holding spells, anxiety disorders
- mood disorders, temper tantrums
- attention deficit hyperactivity disorders, autism

1.18 Social paediatrics:
- national health programs related to child health, child abuse and neglect
- child labor, adoption
- disability and rehabilitation, rights of the child
- national policy of child health and population, juvenile delinquency

1.19 Genetics:
- principles of inheritance, pedigree drawing
- chromosomal disorders, single gene disorders
- multifactorial/polygenic disorders, genetic diagnosis
- prenatal diagnosis

1.20 Orthopaedics:
- major congenital orthopedic deformities, bone and joint infections: pyogenic, tubercular
- common bone tumors

2. Approaches to Important Clinical Problems
2.1 Growth and development:
- precocious and delayed puberty, developmental delay
- impaired learning

2.2 Neonatology:
- normal newborn, low birth weight newborn
- sick newborn

2.3 Nutrition:
- lactation management and complementary, protein energy malnutrition feeding (underweight, wasting, stunting)
- failure to thrive and micronutrient deficiencies

2.4 Cardiovascular:
- murmur, cyanosis
- congestive heart failure, systemic hypertension
• arrhythmia, shock

2.5 GIT and liver:
• Acute diarrhea, persistent and chronic diarrhea
• abdominal pain and distension, ascites
• vomiting, constipation
• gastrointestinal bleeding, jaundice
• hepatosplenomegaly, hepatic failure and encephalopathy

2.6 Respiratory:
• Cough/chronic cough, noisy breathing
• wheezy child, respiratory distress
• hemoptysis

2.7 Infections:
• acute onset pyrexia, prolonged pyrexia with and
• recurrent infections, without localizing signs
• nosocomial infections

2.8 Renal:
• Hematuria/dysuria, bladder/bowel incontinence
• voiding dysfunctions, renal failure (acute and chronic)

2.9 Hematocology:
• lymphadenopathy, anemia
• bleeding

2.10 Neurology:
• limping child, convulsions
• abnormality of gait, paraplegia, quadriplegia
• macrocephaly & microcephaly, floppy infant
• acute flaccid paralysis, cerebral palsy and other
• headache neuromotor disability

2.11 Endocrine:
• thyroid swelling, ambiguous genitalia
• obesity, short stature
• precocious & delayed puberty

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

2.13 Miscellaneous:
• habit disorders, hyperactivity and attention deficit
• arthralgia syndrome  
• arthritis, multiple congenital anomalies

3. Skills
3.1 History and examination:
• history taking including psychosocial history, physical examination including 
• newborn examination, including gestation fundus examination  
• assessment of growth  
• nutritional anthropometry and its assessment, use of growth chart  
• SMR rating, developmental evaluation  
• full systemic examination, health functionaries and social  
• communication with children parents support groups  
• genetic counseling

3.2 Bedside procedures:
Therapeutic skills:
• nasogastric feeding  
• endotracheal intubation, cardiopulmonary resuscitation  
• administration of oxygen (pediatric and neonatal)  
• venepuncture and establishment of vascular, administration of fluids, blood  
• access blood components  
• parenteral nutrition, intraosseous fluid administration

Investigative skills:
• blood sampling, venous and arterial, lumbar puncture  
• ventricular tap, bone marrow aspiration and biopsy  
• peritoneal, pericardial and subdural tap, kidney biopsy  
• liver biopsy  
• collection of urine for culture, urethral  
• catheterization suprapubic aspiration

Bedside investigations:
• hemoglobin, TLC, ESR, peripheral smear staining and  
• urine: routine and microscopic examination examination  
• stool microscopy including hanging drop, examination of CSF and other  
• preparation body fluids  
• Gram stain, ZN stain

3.3 Interpretation:
• interpretation of X-rays of chest, abdomen, bone and skull  
• ECG, ABG findings, ultrasound and  
• common EEG patterns, CT scan  
• audiograms, ultrasonographic abnormalities and isotope studies

3.4 Understanding of Basic Sciences:
• embryogenesis of different organ systems especially heart, genitourinary system, gastrointestinal tract  
• applied anatomy of different organs functions of kidney, liver, lungs  
• Physiology of micturition and defecation heart and endocrine glands  
• placental physiology, fetal and neonatal circulation
• regulation of temperature (especially newborn), blood pressure acid base balance, fluid-electrolyte balance
• calcium metabolism, vitamins and their functions
• hematopoiesis, hemostasis, bilirubin metabolism
• growth and development at puberty and its regulation
• normal requirements of various nutrients teaching methodology and principles of basic immunology, bio-statistics clinical epidemiology
• managerial skills, microbial agents and their pharmacokinetics of commonly used drugs epidemiology
• basics of genetics and molecular biology

3.5 Community and Social Paediatrics
• national health nutrition programs, nutrition screening of community
• prevention of blindness, school health programs
• prevention of sexually transmitted diseases, contraception
• health legislation, national policy on children
• adoption, child labor
• juvenile delinquency, government and non-government
• investigation of adverse events following support services for children
• immunization in the community
• general principles of prevention and control of infections including food borne, waterborne, soil born and vector born diseases, investigation of an outbreak in a community