Dr. M.G.R. EDUCATIONAL AND RESEARCH INSTITUTE
Deemed to be University

Maduravoyal, Chennai – 600 095, Tamilnadu, India
(An ISO 2001:2018 Certified Institution)

University with Graded Autonomy Status

SYLLABUS & CURRICULUM
for
M.D. PAEDIATRICS

2020 onwards

Sponsored by
Dr. M.G.R. EDUCATIONAL AND RESEARCH INSTITUTE TRUST

M.D PAEDIATRICS

1. GOALS

The goals of postgraduate training in Paediatrics would be to train a basic medical graduate (MBBS)

- To practice as a Child Health specialist equipped with appropriate knowledge and skills necessary to care for the normal and sick child.
- To practice Child Health in the community (urban or rural) and to perform professionally at all levels of the existing health care system.
- To practice with empathy and the highest ethical standards of the profession.
- To continue to strive for excellence by continuing medical education throughout his or her professional career.
- To teach by sharing knowledge and skills with colleagues
- To research and find solutions to challenges in healthcare.

2. OBJECTIVES

The objectives to be fulfilled at the completion of the course are as follows: At the end of the program, the student should be able to:

KNOWLEDGE

- Describe, identify and monitor normal patterns of growth and development of children.
- Describe etio-pathogenesis, principles of clinical diagnosis, investigations and treatment of diseases of childhood.
- Demonstrate an understanding of Basic (Pre and Para-clinical) Sciences and its application to the normal and abnormal processes.
- Analyze clinical and investigation data approach and manage a health-related problem.
- Identify and understand socio-economic-environmental-cultural factors in health care.

- ❖ Recognize problems outside his or her abilities and appropriately refer.
- ❖ Update one's knowledge and skills by self directed learning and by participating in continued medical education programs utilizing media – spoken, written, Print and electronic.
- ❖ Teach and share knowledge and skills with colleagues.
- ❖ Audit and analyze work, assist in research and publish scientific articles in peer review journals.

SKILLS

- ❖ Elicit an appropriate clinical history.
- ❖ Demonstrate appropriate clinical physical examination skills on children.
- ❖ Plan, decide upon and interpret appropriate cost effective investigations.
- ❖ Perform essential procedures both diagnostic and therapeutic.
- ❖ Manage, resuscitate and stabilize children in Pediatric or Neonatal emergencies.

COMMUNICATION AND ATTITUDES

- ❖ Communicate appropriately with guardians and children, assisting in their health care decision making.
- ❖ Practice child health care at the highest ethical level, protecting the child at all costs.
- ❖ Respect Patient's (and their guardian's) rights and professional relationships (Doctor-Doctor, Doctor-Nurse, Doctor-Patient, Doctor-Society).
- ❖ Apply the highest level of ethics in Research, Publication, References and Practice of Paediatrics.

3. COMPONENTS OF THE PGCURRICULUM

The major components of the PG curriculum shall be:

- ❖ Theoretical knowledge
- ❖ Practical/clinical Skills
- ❖ Training in Thesis.

All students will have to carry out a research program and bring out a dissertation(thesis) Students are encouraged to attend CME's, publish research papers and present posters, or platform presentations at State, National and International conferences.

- ❖ Attitudes, including communication.
- ❖ Training in research methodology, medical ethics/bioethics and medico legal aspects
- ❖ Students should compulsorily attend the research Methodology workshop conducted by the University within first six months of the M.D course.
- ❖ Students are encouraged to attend workshops/CME's on Bioethics conducted by the University and other reputed Institutions.
- ❖ Medical ethics, bioethics, moral and legal issues are part and parcel of the curriculum and syllabus.
- ❖ Students have to undergo PALS (Pediatric advanced life support) and NRP(Neonatal resuscitation Program) During 1st 6 months of course.
- ❖ IYCF training programme (7days TOT module).
- ❖ Bayley's (BSID)assessment training programme
- ❖ The PG student shall under go basic course in bio-medical research (BCBR), online course by ICMR-NIE during the first 6 months.

4. THEORY SYLLABUS

COURSE CONTENTS

1. The Field of Paediatrics
    i. Evaluating Medical Literature
    ii. Critical appraisal of Journal articles
    iii. History of Paediatrics
    iv. Overview of Child Health
    v. Traditions and Cultural Issues pertaining to Child Care
    vi. The Normal Child
    vii. Preventive and Social Paediatrics
    viii. Epidemiology, Statistics and Research Methodology including Dissertation
    ix. Ethical Issues in Paediatric

2. Growth and Development
    i. Biopsychological Models of Development
    ii. IQ assessment
    iii. Fetal growth and development
    iv. The newborn G/D
    v. Infant, Preschool, Early school, Adolescence G/D
    vi. Assessment of Growth
    vii. Development Assessment
    viii. Standards/Normograms (including Indian)
    ix. Approach to short stature
    x. Approach to Obesity
    xi. Approach to Under nutrition
    xii. Developmental Delay Screening and surveillance
    xiii. Tools of developmental assessment

3. Psychological Disorders

   i. Assessment and Interviewing
   ii. Psychiatric considerations of CNS injury
   iii. Vegetative Disorders-Rumination, Pica, Enuresis, Encopresis, Sleep disorders
   iv. Habit Disorders
   v. Mood Disorders
   vi. Anxiety Disorders
   vii. Disruptive Behavioral disorders
   viii. Suicide
   ix. Sexual behavior variations
   x. ADHD
   xi. Psychosis
   xii. Autism
   xiii. Psychological treatment
   xiv. Poor Scholastic performance
   xv. Neurodevelopment dysfunction in school age child
   xvi. Psychosomatic Illness
   xvii. Learning Disorders
   xviii. Stereotypic movement disorder

4. Social Issues

   i. Adoption
   ii. Effects of a mobile society
   iii. Street Child
   iv. Impact of Violence
   v. Child Care
   vi. Single parent child
   vii. Separation, death

viii. Foster care
ix. Abuse and Neglect
x. Child Labor
xi. Media (TV, Movies) and its effect on the child

5. Children with Special Needs

i. Failure To Thrive – Problems, Approach and Evaluation Children in Poverty
ii. Developmental disabilities, Chronic Illness
iii. Homeless children
iv. Intellectual Disability– Problems, Approach and Evaluation
v. Foster Children
vi. Care of Child with fatal illness
vii. Runaway Children

6. Nutrition

i. Nutritional Requirements- Water, energy, proteins, CHO, Fats, Minerals, Vitamins,
ii. Diet/Nutrition Evaluation
iii. Athletic Diet
iv. Diet for later childhood and Adolescent
v. Infant and Child Feeding
vi. Breast Milk Feeding, Human Lactation Management, BFHI, Human milk bank Comprehensive lactation management centers.
vii. Nutrition Values of Indian Foods, Recipes
viii. Complimentary foods
ix. Feeding through 1 and 2ndyears
x. Nutritional Disorders Including Obesity
xi. Protein Energy Malnutrition
xii. Vitamin Deficiencies and Excess

xiii. Micro-nutrient Malnutrition

xiv. Nutrition in Special situations–LBW, Premature, IEM, Chronic illness, Surgery, Critically ill child

xv. TPN

xvi. Role of junk food in child nutrition.

Patho-physiology of Body Fluids and Fluid therapy (Approach and Management)

i. Physiology of Fluids, Electrolytes and Acid Bases

ii. Dehydration and fluid management

iii. Dyselectrolytemia

iv. Acid Base Disorders

v. Special Situations - Pyloric stenosis, CNS disorders, Burns, Peri-operative, Endocrine disorders, Renal Failure.

7. Acutely Ill child

i. Evaluation in Emergency

ii. Pediatric Anesthesia

iii. Injury Control

iv. Emergency Medical Services

v. Organization of a PICU/NICU

vi. Pediatric Critical Care

vii. Equipment for Intensive care Respiratory Failure, Ventilation Circulatory Failure and Shock(all types)

viii. Acute Neurological Dysfunction- approach to a child with altered sensorium Resuscitation – Basic and Advanced, NALS/PALS, Post Resuscitation stabilization Cold/Heat Injury

ix. Transportation of Sick Child/neonate

x. Post-operative supportive care

8. Emergencies/ Critical Care Paediatrics
    i. Fluid abnormalities
    ii. Electrolyte abnormalities
    iii. Thermo regulation problems
    iv. Acute Renal failure
    v. Hypertensive crisis
    vi. Congestive Cardiac failure
    vii. Shock and its management
    viii. Pericardial tamponade
    ix. Cyanotic spells
    x. Unstable and stable Arrythmias
    xi. Vomiting and Diarrhea
    xii. Recognition of critical illness
    xiii. Stridor
    xiv. Pulmonary edema-cardiogenic and noncardiogenic
    xv. Traumatic braininjury
    xvi. Polytrauma
    xvii. Diabeticketoacidosis
    xviii. GI Bleeds - Hematemesis, Melena, Hematochezia
    xix. Rapid Sequenceintubation
    xx. Adrenal Crisis
    xxi. Metabolic problems – hyperammonemia, lactic acidosis, acid base abnormalities, Hypoglycemia
    xxii. Pneumothorax, empyema, pleural effusion
    xxiii. Severe Anemia, Bleeding child, Neutropenia
    xxiv. Pain management, Drug therapy
    xxv. ARDS
    xxvi. Respiratory Failure
    xxvii. Burns/electrocution

xxviii. Animal Bites
xxix. Preanesthetic check up PAC
xxx. Sickle cell crisis, severe complicated malaria
xxxi. Acute severe asthma, Bronchiolitis
xxxii. Status epilepticus
xxxiii. Febrile seizure
xxxiv. Coma, Increased intra-cranial pressure
xxxv. Cardiopulmonary resuscitation
xxxvi. Upper airway obstruction
xxxvii. Near drowning
xxxviii. Poisoning
xxxix. Snakebite
xl. Scorpion sting
xli. Physical abuse
xlii. Sexual abuse

9. Human Genetics
   i. Molecular Basis of Disorders
   ii. Molecular Diagnosis
   iii. Human Genome Project
   iv. Inheritance Patterns
   v. Chromosomal/genetic clinical Abnormalities
   vi. Mitochondrial disorders
   vii. Genetic testing and Counseling
   viii. Dysmorphism
   ix. Genetherapy
10. Metabolic Disorders
   i. Approach to IEM
   ii. Purine and pyrimidine metabolism defects

iii. Amino acid Metabolic defects - Common
iv. Porphyria
v. Amino acid Metabolic Defects –Rare
vi. Lipid Metabolism -Common
vii. Lipid Metabolism -Rare
viii. CHO Metabolism –Common
ix. CHO Metabolism –Rare
x. Mucopolysaccharidosis
xi. Mucolipidosis
xii. Hypoglycemia

11. Fetus and Newborn
i. Mortality and morbidity
ii. Newborn – history, examination, routine delivery care, nursery care, bonding
iii. High risk pregnancies
iv. Dysmorphology
v. Fetus
Growth/Development
Fetal distress
Maternal diseases
Maternal medications
Detection, treatment, prevention of fetal disease
Antenatal diagnosis
Fetal therapy
Antenatal therapy
Counseling
Teratogens, radiation

vi. High risk infant

- Multiple pregnancies
- Prematurity
- Postdated
- IUGR/LBW
- LFD

vii. Congenital anomalies/malformations

viii. Birth injuries

ix. Hypoxia - ischemia, asphyxia and therapeutic cooling

x. Neonatal seizures

xi. Organization and levels of new born care

xii. Normal Newborn

xiii. Common problems in a normal newborn

xiv. Delivery room emergencies

xv. Respiratory disorders

xvi. Oxygen therapy, toxicity

xvii. Ventilation

xviii. GI disturbances including NEC

xix. Hyperbilirubinemia

xx. Cardiac problems

xxi. PPHN

xxii. Blood disorders

- Polycythemia
- Anemia
- Hemorrhagic disease of newborn
- Hemolytic disease of newborn
- Thrombocytopenia

xxiii. Genitourinary disturbances

xxiv. Metabolic disorders

xxv. Endocrine disorders- IDM,CAH, CH

xxvi. Ambiguousgenitalia

xxvii. Fluid and electrolytes in New born care

xxviii. Nutrition and feeding the newborn – term/preterm, LBW, IUGR

xxix. Neonatal transport

xxx. Surgical problems

TEF
Anorectal malformations
Diaphragmatic Hernia/Eventration
Hirschsprung
Urogenital anomalies NEC
Congenital Lobar Emphysema
Volvulus
Neural tube defects

xxxi. Thermoregulation

xxxii. Neonatal follow-up

xxxiii. Follow up of high risk infant

xxxiv. ROP

xxxv. Hearing assessment

11. Neonatal Infections

i. Epidemiology
ii. Intrauterine infections
iii. Viral Infections
iv. Neonatalsepsis/meningitis
v. Pneumonia
vi. UTI
vii. Fungal infection
viii. Nosocomial
ix. Universal precautions
x. Prevention of infections
xi. Therapy- antimicrobials, adjuvants

12. Adolescent Health

i. Epidemiology
ii. Growth issues : short stature, thinness, overweight and obesity
iii. Developmental issues : pubertal disorder, Sexuality and issues, SMR stages and poor scholastic performance
iv. Psychological issue : body image issue, mental health disorders
v. Social issues : teen marriage, teen pregnancy, Substance abuse
vi. Deliveries of healthcare
vii. Contraception
viii. STD
ix. Menstrual problems
x. Anorexia nervosa, bulimia
xi. Sleep disorders
xii. Skin/Orthopedics
xiii. Adolescent Immunization.
xiv. Adolescent friendly health services

13. Immunological system

i. Basics of Immunology
ii. Approach to immuno deficiency
iii. HIV
iv. Bone marrow transplantation
v. Primary B cell diseases
vi. Primary T cell diseases
vii. Complement and phagocytic diseases
viii. Chronic granulomatous disease
ix. hediak Higashi Disease
x. Neutrophilabnormalities
xi. Adhesion disorders

14. Allergic disorders

i. Allergy and Immunological basis
ii. Insectallergy
iii. Diagnosis
iv. Ocularallergy
v. Therapy –principles
vi. Adverse food reaction
vii. Allergic Rhinitis
viii. Asthma
ix. Atopic dermatitis
x. Urticaria, Angioedema
xi. Anaphylaxis
xii. Serum sickness
xiii. Adverse drug reactions

15. Rheumatology

i. Autoimmunity
ii. Ankylosis spondylosis
iii. Laboratory evaluation
iv. Neonatal Lupus
v. JRA
vi. Scleroderma
vii. SLE
viii. Mixed connective Tissue Disease
ix. Vasculitis
x. Dermatomyositis
xi. Erythema Nodosum
xii. Behcet syndrome
xiii. Sjogren syndrome

xiv. Nonrheumatic conditions

xv. Pain syndromes, panniculitis,

xvi. Polychondritis, amyloidosis

16. Infectious diseases

i. Fever

ii. Clinical use of Micro Lab

iii. Fever without a focus

iv. Sepsis and Shock

v. CNS Infections

vi. Pneumonia

vii. Gastroenteritis

viii. Osteomyelitis, Septicarthritis

ix. Compromised host infections

x. Bacterial Infections

xi. Mycobacterial Infections

xii. Anaerobic infections

xiii. Viral Infections

xiv. Mycotic infections

- Candidiasis
- Aspergillosis

xv. Parasitic infections

- Helminthiasis

xvi. Protozoal

- Malaria
- Kalazar
- Leishmania
- Giardia
- Amoeba

xvii. Emerging infections

xviii. Antiparasitic drugs

xix. Antimicrobials

xx. Antivirals drugs, interferon

xxi. Preventive measures

Health advice for travelling

Infection control

xxii. Immunization

Principles

Schedules

Controversies

Standard and Optional Vaccines

Recent advances in Vaccines

AEFI

xxiii. Emerging viral Infections like bird flu, corona, ebola, nipah, zika etc.

17. Digestive system

i. Normal tract – Physiology, Anatomy, Development 1. Food allergy

ii. Clinical features of Disorders

iii. Disorders of Esophagus

iv. Disorders of Stomach

v. Disorders of Intestines except Food allergy

vi. Disorders of Pancreas

vii. Disorders of Liver and biliary system

Acute Hepatitis, Chronic Hepatitis, Cirrhosis, Metabolic Liver Diseases, Cholestatic liver disease, of Liver Disease – Portal Hypertension, Encephalopathy, Coagulopathy

viii. Disorders of Peritoneum

ix. GI function tests

x. Approach to Malabsorption

18. Respiratory system

i. Development and function
ii. Congenital disorders of nose
iii. Disorders of Upper Respiratory tract
iv. Disorders of Lower respiratory tract
v. Hypoventilation
vi. Pleural disorders
vii. Chronic Respiratory Disease Interstitial fibrosis, ILD, empyema, lung abscess, bronchiectasis
viii. Hypostatic pneumonia
ix. Kyphoscoliosis
x. Recurrent Respiratory Disease
xi. Ventilation
xii. Central hyperventilation
xiii. Pulmonary Function tests
xiv. Obesity
xv. Cystic Fibrosis
xvi. Obstructive sleepapnea
xvii. Pulmonary Hemosiderosis
xviii. Neuromuscular skeletal disorders
xix. Cough Syncope
xx. Bronchial Asthma

19. Cardiovascular System

i. Investigations –Lab, ECG, CXR, ECHO,Cardiac catheterization
ii. Physiology and Pathophysiology of Transitional Circulation Embryology
iii. Sick Sinus

iv. Congenital Heart Disease

Epidemiology

Approach

Cyanotic

Acyanotic

v. Tumors of Heart

vi. Heart Lung and Heart Transplants

vii. Aneurysms and fistulae

viii. Cardiac Arrhythmia

ix. Acquired heart disease

Infective Endocarditis

Rheumatic Heart Disease

x. Diseases of the Myocardium –Myocarditis, Cardiomyopathy

xi. Cardiac Therapeutics

20. Blood

i. Development of Hematopoietic system

ii. Elliptocytosis

iii. Anemias

Inadequate production

Nutrition – Iron, Folate, B12

Bone Marrow failure

Hemolytic

Congenital and Acquired

iv. Stomatocytosis

v. Other membrane defects

vi. Constitutional pancytopenia

vii. 4.Polycythemia

viii. Granulocyte transfusions

ix. Pancytopenia

x. Blood and component transfusions
xi. Thrombotic disorders
xii. Hemorrhagic disorders – acquired and congenital Physiology
xiii. Bleeding disorders Coagulation disorders
xiv. Hypersplenism, trauma, splenectomy
xv. Physiology and Disorders of the Spleen
xvi. Lymphatic vessel disorders
xvii. Lymphatics

21. Neoplasms

i. Principles ofdiagnosis
ii. Epidemiology
iii. Principles oftreatment
iv. Molecularpathogenesis
v. Leukemia
vi. Soft tissuesarcomas
vii. Lymphomas
viii. Gonadal, germ celltumours
ix. Neuroblastoma
x. Liverneoplasm
xi. Kidney tumors
xii. GIneoplasm
xiii. BoneNeoplasms
xiv. Carcinomas
xv. Retinoblastoma
xvi. SkinCancer
xvii. Benigntumours

22. **Nephrology**

i. Structure and function of kidney
ii. Hematuria and conditions
iii. Membranous GN
iv. HUS
v. Lupus nephritis-Evaluation
vi. Membrano ProlifGN
vii. Proteinuria
viii. Chronic infectious GN
ix. Nephrotic syndrome
x. Good pasture
xi. Acute Glomerulonephritis
xii. Tubular disorders
xiii. Function
xiv. RTA
xv. DI
xvi. Renal Failure
xvii. RPGN
xviii. Renal Replacement therapy
xix. Bartter syndrome-Investigations
xx. Interstitial nephritis
xxi. Toxic nephropathy
xxii. Cortical necrosis

23. **Urological disorders**

i. UTI
ii. Congenital anomalies, dysgenesis kidney
iii. Vesico-ureteral reflux
iv. Bladder anomalies
v. Obstructions

vi. Penis, urethra anomalies
vii. Voiding dysfunction
viii. Scrotal anomalies
ix. Genitourinary trauma
x. Urolithiasis
xi. Investigations – imaging, renal function tests
xii. Neurogenic bladder

24. Gynecological problems

i. Menstrual Problems
ii. Neoplasms
iii. Vulvovaginitis
iv. Breast Disorders
v. Developmental anomalies
vi. Hirsuitism, polycystic ovaries
vii. A child with special Gynec needs
viii. Gynec imaging
ix. Athletic problems

25. Endocrine

i. Hypothalamus and pituitary
Hyperpitutarism
Hypopitutarism, Growth hormone
DI
ADH
Physiology of Puberty
Disorders of puberty
Precious Puberty
Delayed puberty

ii. Thyroid

Thyroid studies

Hypothyroidism

Thyroiditis

Goitre

Hyperthyroidism

iii. Parathyroid and disorders

iv. Carcinoma of thyroid

v. Tumours of testis/ovary

vi. Multiple Endocrine Disorders

vii. Diabetes mellitus

viii. Adrenal Disorders

CAH

Cushing

Addisons

Excess mineralocorticoids

Feminizing adrenal tumours

Pheochromocytoma

26. CNS

i. Examination, Localization of lesions

ii. Movement disorders

iii. Congenital anomalies

iv. Seizures

v. Headaches

vi. Neurocutaneous disorders

vii. Coma

viii. Brain death

ix. Head Injury

x. Neurodegenerative disorders- Approach, Grey/white mater disroders

xi. Acute Stroke
xii. Brain abscess
xiii. Tumors
xiv. Spinal cord disorders
xv. Investigations
xvi. Antiepileptic drugs
xvii. SSPE
xviii. Rabies Vaccine Encephalomyelitis,
xix. Acute Demyelinating Encephalomyelitis
xx. Approach, Investigations of UMN,LMN, Extra pyramidal, Cerebellar lesions
xxi. Cerebral Palsy
xxii. Neuro infections
xxiii. Encephalopathies

27. Neuromuscular

i. Evaluation, investigations
ii. Development disorders of muscle
iii. Muscular Dystrophies, Congenital Myopathy, Myositis
iv. Endocrine Disorders
v. Neuromuscular transmission and motor neuron Abnormalities
vi. Metabolic Disorders
vii. GB syndrome
viii. Motor sensoryneuropathy
ix. Bell's Palsy
x. Autonomic Disorders
xi. Floppy Infant
xii. Myasthenia Gravis

28. **Eye**

i. Examination of eye
ii. Refraction, accommodation
iii. Diseases of Eye movement and alignment disorders
iv. Vision
v. Diseases of Conjunctiva -Conjunctivitis
vi. Pupils and iris
vii. Diseases of Lens - Cataracts
viii. Lids
ix. Diseases of Optic nerve – Papillitis, Neuritis,
x. Papilledema
xi. Diseases of Cornea -Clouding
xii. Uvealtract
xiii. Vitamin A deficiency
xiv. Retina and vitreous
xv. Lacrimal problems - Dacrocystitis
xvi. Glaucoma
xvii. Retinopathy of Prematurity
xviii. Orbital abnormalities
xix. VER
xx. Injuries to eye

29. **Ear**

i. Clinical manifestations
ii. Congenital malformations
iii. Hearing loss
iv. Inner ear discharge
v. External Otitis
vi. Trauma
vii. Otitis media

viii. Tumors

ix. Baer

30. Skin

i. Morphology

ii. Cutaneous defects

iii. Evaluation

iv. Hypersensitivity

v. Principles of therapy

vi. Epidermis disorder

vii. Diseases of the neonate

viii. Keratinization disorder

ix. Ectodermal dysplasias

x. Dermis disorder

xi. Vascular disorders

xii. Subcutn disorder

xiii. Cutaneousnevi

xiv. Sweat glands

xv. Pigment Disorders

xvi. Hyper pigmentation

xvii. Hair

xviii. Hypo pigmentation

xix. Nails

xx. Vesiculobullous disease

xxi. Mucous membranes

xxii. Eczema

xxiii. Tumors

xxiv. Cutaneous Infections – Bacterial, Viral, Fungal

xxv. Arthropod bites, infestations

xxvi. Acne

xxvii. Nutritional diseases

xxviii. Drug Reactions

31. Bone/Joint

i. Evaluation

ii. Sports medicine

iii. Diseases of Foot, toes

iv. Pseudoachondroplasia

v. Torsional, angular deformities

vi. Diagnosis, assessment of genetic skeletal disorders

vii. Leglength discrepancy diastrophic,

viii. Dysplasias - Thantophoric, camptomelic

ix. Diseases of Knee

x. Ellis van Creveld

xi. Diseases of Hip

xii. Osteochondrodysplasia

xiii. Diseases of Spine

xiv. Inherited osteoporosis

xv. Diseases of Neck

xvi. Upper limb

xvii. Hypophosphatasia

xviii. Arthrogryposis

xix. Primary Chondrodystrophy

xx. Common Fractures

xxi. Idiopathichypercalcemia

xxii. Arthritis – approach, investigations, Management

xxiii. Hyperphosphatasia

xxiv. Congenital Dislocation of Hip

xxv. Osteomyelitis

xxvi. Septic Arthritis

xxvii. Rickets – Nutritional and nonnutritional

32. Genetic skeletal disorders

i. Lethal and nonlethal bone dysplasias
ii. Achondroplasia
iii. Osteopetrosis
iv. Marfans

33. Metabolic Bonedisease

i. Bone and vitaminD
ii. Familial Hypophosphatemia
iii. Rickets – Nutritional and nonnutritional

34. Unclassified disease

i. SIDS
ii. Sarcoidosis
iii. Histiocytosis
iv. Progeria
v. Cystic fibrosis
vi. Chronic fatigue syndrome

35. Environmental

i. Radiation
ii. Lead poisoning
iii. Chemical pollutants
iv. Envenomation
v. Mercury
vi. Mammalian bites
vii. Non bacterial poisoning
viii. Common Poisonings – OP, Kerosene, Phenobarbitone, Iron, etc

HEALTH STATISTICS, NATIONAL PROGRAMS

Organization of Office Practice

Equipment, Documentation, Records, Space and functioning

34. **Recent Advances in Paediatrics – Allied subjects**
35. **Anatomy**

    Applied Embryology, Development of major organ systems
36. **Physiology**

    Applied Physiology with regard to major organ systems
37. **Biochemistry**

    Biochemical basis or diseases in children – Nutritional and metabolic
38. **Pathology**

    Pathophysiology of diseases in children, Pathogenesis, Basic Histopathology
39. **Microbiology**

    Clinical Microbiology applied to investigations for diseases in childhood, serology, staining, cultures
40. **Pharmacology**

    Clinical Pharmacology, Therapeutics of childhood diseases, drug interactions, Rational drug therapy, Adverse Drug Reactions
41. **Community Medicine**

    Health Care Delivery Systems – structure and function, Health Statistics, National Programs, preventive pediatrics
42. **Pediatric Surgery**

    Recognition and referral of surgical conditions in Paediatrics
43. **Radiology**

    Clinical Indications and interpretations of Xray, Ultrasound, CT, MRI
44. **Legal and Ethical Medicine**

    Rights and protection of children, Consumer Protection Act, Basic Principles of Ethics

45. Telemedicine

MEDICAL ETHICS

Doctors and health professionals are confronted with many ethical problems. It is, therefore necessary to be prepared to deal with these problems. To accomplish this ***ethical sensitisation*** should be achieved by lectures or discussion on ethical issues, clinical case discussion of cases with an important ethical component and by including ethical aspects in discussion in all case presentation, bedside rounds and academic postgraduate programmes.

Course content should include *definition of Medical Ethics*, difference between medical ethics and bio-ethics, major Principles of Medical Ethics ,the Hippocratic oath, the Declaration of Helsinki, the WHO Declaration of Geneva, International code of Medical Ethics (1993),Medical Council of India Code of Ethics, *Profession Ethics*(Code of conduct, Contract and confidentiality, Malpractice and Negligence) prolongation of life and euthanasia

Postgraduate skills

Please note code:

PI: Perform Independently PA: Perform with assistance

46. List of PI Skills

Clinical History and Physical examination

Human Lactation management (counseling and practical skills)

Neonatal resuscitation

Pediatric resuscitation

Teaching encounters

Intravenous injections

Intravenous cannulation

Arterial cannulation

Lumbar puncture

Test dose Infusions

Blood transfusions

Neonatal Exchange transfusions

ABG

Central line,PICC line, CVP

Intraosseous

Bone marrow aspiration, trephine biopsy

Pleural tap

Paracentesis – diagnostic and therapeutic

Mantoux test

BCG, DPT, OPV, Measles

vaccination Sampling for Fluid

cultures

ORS and ORT

Restraining a child for a procedure

Liver biopsy

Neonatal, Pediatric Partial exchange

Respiratory management (All PI)

Nebulization

Inhaler therapy

Oxygen delivery

Critically Ill child (All PI)

Monitoring a sick child

Pulse oximetry

Infant feeding tube/ Ryles tube, stomach wash

Urinary catheterization

Procedural sedation and analgesia

Laboratory- Diagnostic (All PI)

Urine Protein, sugar, microscopy

Peripheral bloods smear

Malarialsmear

Ziehl Nielson smear – sputum, gastric aspirate

Grams smear – CSF, pus

Stool pH, reducing substances, microscopy

KOH smear

Clinical Assessment skills (All PI)

Clinical History and Physical examination

Anthropometry

Dietary recall, calorie and protein estimation

Nutritional advice

Gestational assessment

Neurological examination of newborn Primitive reflexes

Fundoscopy

Otoscopy

Examination of external genitalia – male and female Tanner's SMR scales

DST or Baroda scales,TDS Amiel Telson's angles

Per rectal examination

Interpretation (All PI)

Clinical History and Physical examination

Blood, Urine, CSF and Fluid investigations – hematology, biochemistry

Chest Xray ECG

ABG interpretation

Abdominal Xray

Bone and joint Xray

CT scan Brain

Barium studies

IVP, VUR studies

Ultrasound abdomen

Neurosonogram

Care and maintenance of instruments

Sterilization and Disinfection

Communication skills

All PI:

- ❖ Clinical History and Physical examination
- ❖ Communicating health, disease
- ❖ Communicating about a seriously ill or mentally abnormal child
- ❖ Communicating death
- ❖ Informed consent
- ❖ Empathy with a family
- ❖ Referral letters, Replies
- ❖ Discharge summaries
- ❖ Death Certificates
- ❖ Pre-counseling for HIV
- ❖ Post counseling for HIV
- ❖ Basic Pedagogy sessions– teaching students, adults Lectures, bedside clinics, discussions
- ❖ Medline search, internet, Computer usage

List of Observations

Genetic counseling

Classification of diseases

List of PA skills

Sedation

Analgesia

Brain death

Intercostal tube placement with underwater seal

List of PA skills

Peritoneal dialysis

Subdural, Ventricular tap

5. TEACHING LEARNING ACTIVITIES

Methods suggested for Pediatric Postgraduate Training Programs:

DIDACTIC LECTURES : (Faculty lectures)

Objective: To introduce a broad-based concept in an important area of learning to orient the postgraduate student.

Examples: Potential introductory topics to Paediatrics like Fluid and Electrolytes, Early recognition of Shock and Respiratory Failure, DTTU management, Recent advances, Basic Science/ Concepts and ARI program.

Frequency: Three times a week during the introductory orientation phase of the first one-two months of the new postgraduates joining the course.

SEMINARS

Objective: To enable a student to study in depth an important area of learning important to the training of the student.

Examples: Examples of potential seminar topics would be Protein Energy Malnutrition, Pediatric Tuberculosis, Pediatric HIV, Bronchial Asthma, Chronic Liver Disease and its complications.

Frequency: Once a week. Topic to be shared among students and to be equally distributed depending upon the number of postgraduate students in the department.

JOURNAL CLUB

Objective: To appreciate and enable the critical analysis of scientific literature published in peer reviewed journals – studies, reviews.

Examples: Articles like the study on prophylactic Zidovudine to HIV positive pregnant women in prevention of vertical transmission to the fetus, Digoxin versus Captopril in VSD in CCF, etc.

Frequency: Ideally, once in 1-2 times per month.

UNDERGRADUATE TEACHING CLINICS

Objective: To teach effectively undergraduate and colleagues utilizing simple educational methods.

Methodology: During the third year of MD course, postgraduate students should be given opportunities to teach undergraduates.

Examples: Bedside Clinic, Didactic lecture, skill workshop (e.g. NALS, PALS)

Frequency: During undergraduate postings in the department each postgraduate should have a minimum of 2 opportunities per year after the first year of the postgraduate course is completed.

BEDSIDE CLINICS

Objective: To learn bedside techniques - interview, physical examination, analysis,

Diagnostic decision making, investigation decisions, treatment and communication.

Examples: Child with hemiplegia, hepatosplenomegaly, anemia, jaundice, etc.

Frequency: Once in a week is the minimum as it forms the basis of good clinical training activities.

MORTALITY REVIEW MEETING

Objective: To analyze, discuss and learn from mortalities.

Frequency: Once in a month preferably in the first week to allow the previous months mortality to be presented for discussion.

GRAND ROUNDS

Objective: To improve on bedside techniques – interview, physical examination, analysis, diagnostic decision making, investigation decisions, treatment, communication.

Examples: The child with pyrexia of unknown origin, undiagnosed hepato-splenomegaly, multi-systemic disease.

Frequency: Once in a week

INTER-DEPARTMENTAL MEETINGS

Objective: To experience inter-departmental cooperation and develop a healthy professional respect for each other's opinions in addition to the subject learning experience.

Methodology: Case discussions or students present investigations to members of all faculty. The discussion is a learning experience and improves communications between departments.

Examples: Chest X-rays of a complicated bronchopneumonia progressing to an empyema, CT scans of intra-cranial pathology, Tracheo-esophageal fistulae and supportive care.

Frequency: Once or twice in a month and rotated between departments – Radiology, Pediatric Surgery, Cardiology, Nephrology, Neurology, Clinical Hematology, etc.

CLINICAL PATHOLOGICAL CONFERENCE CPC

Objective: To analyze clinical material to reach a differential diagnosis and correlate with the pathological biopsy findings.

Frequency: Once in two months. All are encouraged to participate.

RECORDS ROUND

Objective: To appreciate the importance of documentation of facts and record keeping.

Methodology: Faculty in the presence of the team scrutinizes random case records. History sheets, doctor order sheets, progress sheets and discharge summaries are discussed.

Frequency: Once a week with the entire team present at the session.

6. STRUCTURED TRAINING PROGRAM

I Year Postings

Paediatric Medical ward	-	7 Months
OPD/ Immunisation	-	1 month
NICU	-	2 Month
Pediatric Intensive care Unit	-	1Month
PHC / PPC/School Health	**-**	**15Days**
Basic Pediatrics	-	15Days

II Year Postings

NICU	-	3Months
Paediatric Ward	-	5Months
Intensive care unit	**-**	**2month**

Recommended Special postings

Hemato-oncology (kidwai)	-	15 days
Neurodevelopmental clinic (Spastic Soceity)	-	15days
Cardiology	-	10 days
Nephrology	-	10 days
Pediatric surgery	-	10days

III Year Postings

NICU	-	2Months
Endocrine	-	1 month
Pediatric Intensive Care Unit	-	2 month
Paediatric Medical Ward	-	6months
Pediatric Neurology	-	1Month

M.D. Paediatrics 2 Years Course

I Year Postings

Paediatric Medical Ward	-	6Months
Emergency Medicine Department	-	1Month
Intensive Care Unit	-	1Month
Medical Newborn	-	2Months
Pulmonology	-	15Days
PHC /PPC /School Health	-	15Days
Dermatology	-	15days
Child Psychiatry	-	15days

II Year Postings

Medical Newborn	-	2Month
Emergency Medicine	-	1month
Pediatric Intensive Care Unit	-	1month
HIV Clinic(ART)Centre	-	15Days
Paediatrics surgery	-	15Days
General Paediatrics	-	3Months

If any speciality is not available in the parent institution the postgraduate may be posted in the general pediatric ward during that period.

During IInd year, the Students are encouraged to undergo special postings for learning new advanced techniques / procedure / skills in institutions of higher repute where the requisite facilities are available without affecting the duties of the parent department.

ASSESSMENT

7. Formative assessment (assessment to improve learning)

Evaluation of the candidates in both theory and practical aspects will help the candidate in improvement of his/her knowledge, skills and attitude.

Theory Exams and Practical exams will have to be conducted once in 6 months

8. COMPETENCY ASSESSMENT

1 OVERALL

a) Communication / commitment / Contribution /
Compassion towards patients and Innovation
b) Implementation of newly learnt techniques /Skills } 5 Marks

2 Number of cases presented in Clinical Meetings /Journal clubs/seminars - 5marks

3 Number of Posters/Papers presented in Conferences/Publications and Research Projects - 5marks

4 No. of Medals / Certificates won in the conference/ Quiz competitions and other academic meetings with details. - 5marks

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Total 20 Marks

ASSESSMENT SCHEDULE IS AS FOLLOWS

Year of study	Period				Total Max.20 marks
I year	Upto Dec	10 marks	Upto June	10 marks	20 Marks
II year	Upto Dec	10 marks	Upto June	10 marks	20 Marks
III year	Upto Oct	10 marks	Upto Feb	10 marks	20 Marks
	AVERAGE				20 Marks

9. DISSERTATION

The topic for the dissertation should be registered and sent to the University after Ethics Committee approval before 31st of December of the first Post Graduate Year. Only one change of topic with proper justification from the Head of the Department is permitted before 31st March of the first Post Graduate Year. The change of dissertation title will not be permitted after 31st March of the First Post Graduate Year.

As per MCI Clause 14 (4)(a), thesis shall be submitted atleast 6 Months before the Theory and Clinical/Practical Examination.

A candidate shall be allowed to appear for the Theory and Practical/Clinical Examination only after the acceptance of the Thesis by the Examiners.

The periodical evaluation of dissertation/log book should be done by the guide / HOD once in every six months. The HOD should ensure about the submission of dissertation within the stipulated time.

The post graduate has to publish one research article in a journal and one oral and poster presentation in a state or national conference

10. Theory Examination (summative assessment : assessment at the end of training)

There shall be four theory papers, each of three hours duration. Each paper consist of 10 short essays each carry 10 marks. Total marks for each paper will be 100.

Paper I	= 100 Marks
Paper II	= 100 Marks
Paper III	= 100 Marks
Paper IV	= 100 Marks
Total	**400 Marks**

Details of distribution of topics for each paper will be as follows:

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

11. Clinical Examination Total : 300 Marks

CLINICALS	
Long case - (1 X 45 MIN) - (1 X 80 marks)	80 Marks
Short Case - (2 X 20 MIN each) - (2 X 35 marks)	70 Marks
Ward Rounds (10MIN each) (2cases X 15 marks)	30 Marks
OSCE (Drugs, Lab Data, Emergency, IMNCI 4 stations X 5 Marks	20 Marks
Total	200 Marks (A)
Viva Voce (4 X 5 MIN) (Nutrition, Imaging, Counselling, Procedures, Instruments, Recent Advances, Adolescence)	80 Marks (B)
PEDAGOGY	20 Marks (C)
Aggregate (Clinical + Viva) Total	300 Marks (A+B+C)
Minimum Required For Pass (50%)	150 Marks
DISSERTATION	APPROVED / NOT APPROVED

12. Log book

The post graduate students shall maintain a record (log)book of the work carried out by them and the training program undergone during the period of training.

Periodic review of Log book and Dissertation have to be done in the Department by guide/HOD once in every 6 months.

13. Viva including competency assessment (log book)

VIVA including Competency Assessment - **80 Marks**

Case reports, charts, gross specimens, pathology slides, instruments, X- rays, ultrasound, CT scan images, for interpretation. It includes discussion on dissertation also.

14. OSCE/OSPE

- Drugs,
- LAB Data,
- Emergency,
- IMNCI
- Clinical Sign Demonstration (Manned Station) /Counseling

Maximum marks for M.D. Paediatrics	**Theory**	**Practical & Viva**	**Grand Total**
	400	300 (Practical – 200 & Viva – 100)	700

MARKS QUALIFYING FOR A PASS

Obtaining a minimum of 40% marks in each theory paper and not less than 50% cumulatively in all the four papers for degree examination. Obtaining of 50% marks in Practical examination shall be mandatory for passing the examination as a whole in the degree examination.

15. Recommended Books and Journals

Texts :

Essential

1. Nelson’s Textbook of Paediatrics, Kliegman et al (editors)
2. Cloherty’s Manual of Neonatal Care
3. Meharban Singh’s Care of the New born
4. Harriat Lane
5. Manual of Pediatric Therapeutics, Little Brown’s Children’s Hospital, Boston.
6. O.P. Ghai’s Textbook of Paediatrics
7. PG textbook of pediatrics, IAP P Gupta et al
8. Clinical methods in perdiatrics P Gupta

Reference

1. Rudolf's Paediatrics, Appelton and Lange
2. Forfar and Arneil's Textbook of Paediatrics, ELBS
3. Frank Oski's Principles and Practice of Paediatrics
4. Avery's Disease of the Newborn
5. Roberton's Textbook of Neonatology
6. Illingworth's The normal child
7. Guha's Textbook of Neonatology
8. Nadas' Pediatric Cardiology, kaene
9. Perloff's Approach to Congenital Heart Disease
10. Moss and Adam's Heart Disease in Infants, children and Adolescent
11. Miller's Blood Diseases of Infancy and Childhood
12. DeGruchy's Clinical Hematology in Medical Practice
13. Barret and Holiday's Pediatric Nephrology
14. Caffey's Pediatric X-Ray diagnosis
15. Alleyne's Protein Energy Malnutrition
16. Miller, Tuberculosis
17. Vimlesh Seth, Tuberculosis
18. Swanson's Pediatric Surgery
19. Cherry and Feigen's Pediatric Infectious Diseases
20. Fenichel's Pediatric Neurology
21. Kendig's Respiratory Diseases in Paediatrics
22. Alex Mowat's Liver Disease in Children
23. Roger's Pediatric Critical Care
24. H.P.S. Sachdev's Principles of Pediatric and Neonatology Emergencies
25. Smith's Recognition patterns of Human Malformations

16. Indexed Journals

1. Indian Paediatrics
2. Indian Journal of Paediatrics
3. Pediatric Clinics of North America
4. New England Journal of Medicine
5. Lancet
6. British Medical Journal
7. Journal of Paediatrics
8. Archives Disease of Childhood and Adolescence
9. Paediatrics
10. Perinatal Clinics of North America
11. Indian Journal of Practical Paediatrics

Reference Series

1. Suraj Gupta's Recent Advances in Paediatrics
2. David's Recent Advances in Paediatrics
3. Advances in Paediatrics
4. Year Book of Paediatrics

ADDITIONAL READING

1. Indian Council of Medical Research, "Ethical Guidelines for Biomedical Research on Human Subjects", I.C.M.R, New Delhi, 2000.
2. Code of Medical Ethics framed under section 33 of the Indian Medical Council Act, 1956. Medical Council of India, Kotla Road, New Delhi.
3. Francis C M, Medical Ethics, J P Publications, Bangalore,1993.
4. Indian National Science Academy, Guidelines for care and use of animals in Scientific Research, New Delhi,1994.
5. Internal National Committee of Medical Journal Editors, Uniform requirements for manuscripts submitted to biomedical journals, N Engl J Med 1991;424-8

6. Kirkwood B R, Essentials of Medical Statistics , 1st Ed., Oxford: Blackwell Scientific Publications 1988.
7. Mahajan B K, Methods in Bio statistics for medical students, 5th Ed. New Delhi, Jaypee Brothers Medical Publishers,1989.
8. Compendium of recommendations of various committees on Health and Development (1943-1975). DGHS, 1985 Central Bureau of Health Intelligence, Directorate General of Health Services, min. of Health and Family Welfare, Govt. of India, Nirman Bhawan, New Delhi. P -335.
9. National Health Policy, Min. of Health & Family Welfare, Nirman Bhawan, New Delhi, 1983
10. Srinivasa D K etal, Medical Education Principles and Practice, 1995. National Teacher Training Centre, JIPMER, Pondicherry

****Note: The editions are as applicable and the latest editions shall be the part of the syllabi.**

LOG BOOK

Table 1 : ACADEMIC ACTIVITIES ATTENDED

Name: Admission Year:

College:

Date	Type of Activity Specify Seminar, Journal Club, Presentation, UG teaching	Particulars

LOG BOOK

Table 2 : ACADEMIC PRESENTATIONS MADE BY THE STUDENT

Name: Admission Year:

College:

Date	Topic	Type of Presentation Specify Seminar, Journal Club, Presentation, UG teaching etc.

LOG BOOK

Table 3 : DIAGNOSTIC AND THERAPEUTIC PROCEDURES PERFORMED

Name: Admission Year:

College:

Date	Name	ID No.	Diagnostic and Therapeutic Procedure	Category O, A, PA, PI*

***Key:** O - Washed up and observed

A - Assisted a more senior faculty

PA - Performed procedure under the direct supervision of a senior faculty

PI - performed independently

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