AIIMS GUWAHATI

MD(PEDIATRICS) CURRICULUM

COURSE NAME

MD in Pediatrics

DURATION OF COURSE

3 years

ELIGIBILITY

MBBS

GOAL

The goal of MD course in Pediatrics is to produce a competent pediatrician who would provide high quality health care and advance the cause of science through research & training. A post graduate student after undergoing the required training should be able to deal effectively with the needs of the community and should be competent to handle the problems related to his specialty including recent advances. She/he should also acquire skills in teaching of medical/paramedical students

1. Objectives

The objectives of MD Course in Paediatrics are to produce a competent pediatrician who:

1. Recognizes the health needs of infants, children and adolescents and carries out professional obligations in keeping with principles of the 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 system.
3. Has acquired skills in effectively communicating with the child, family and the Community.
4. Is aware of contemporary advances and developments in medical sciences as related to child health.
5. Is oriented to principles of research methodology.
6. Has acquired skills in educating medical and paramedical professionals.
7. Is able to recognize mental conditions and collaborate with Psychiatrists/Child Psychologists for the treatment of such patients.
8. Develop skills as a self-directed learner. Recognize continuing educational needs; use appropriate learning resources and critically analyze published literature in order to practice evidence-based Paediatrics

2. *SUBJECT SPECIFIC COMPETENCIES*

2.1 (A)Cognitive domain

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

1. Recognize the key importance of child health in the context of the health priority of country

2. Practice the specialty of Paediatrics in keeping with the principles of professional ethics

3. Identify social, economic, environmental, biological and emotional determinants of child and adolescent health, and institute diagnostic, therapeutic, rehabilitative, preventive and promotive measures to provide holistic care to children

4. Recognize the importance of growth and development as the foundation of Paediatrics and help each child realize her/his optimal potential in this regard

5. Take detailed history; perform full physical examination including neurodevelopment and behavioral assessment and anthropometric measurements in the child and make clinical diagnosis

6. Perform relevant investigative and therapeutic procedures for the paediatric patient and interpret imaging and laboratory results.

8. Diagnose illness based on the analysis of history, physical examination and Investigations.

9. Plan and deliver comprehensive treatment for illness using principles of rational drug therapy

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

11. Plan rehabilitation of children with chronic illness and handicap and those with special needs

12. Manage childhood emergencies efficiently

13. Provide comprehensive care to normal, ‘at risk’ and sick neonates

14. Demonstrate skills in documentation of case details, and of morbidity and mortality data relevant to the assigned situation

15. Recognize the emotional and behavioural characteristics of children, and keep these fundamental attributes in focus while dealing with them

16. Demonstrate empathy and humane approach towards patients and their families and keep their sensibilities in high esteem

17. Demonstrate communication skills of a high order in explaining management and prognosis, providing counselling and giving health education messages to patients, families and communities

18. Demonstrate competence in basic concepts of research methodology and epidemiology

19. Facilitate learning of medical/nursing students, practicing physicians, paramedical health workers and other providers as a teacher-trainer

20. Organize and supervise the desired managerial and leadership skills.

2.2(B)Affective domain

1. Should be able to function as a part of a team, develop an attitude of cooperation with colleagues, and interact with the patient and the clinician or other colleagues to provide the best possible diagnosis or opinion.

2. Always adopt ethical principles and maintain proper etiquette in dealings with patients, relatives and other health personnel and to respect the rights of the patient including the right to information and second opinion.

3. Develop communication skills to convey reports and professional opinion as well as to interact with patients, relatives, peers and paramedical staff, and for effective teaching.

2.3(C)Psychomotor domain

2.3.1. History and Examination

The student must gain proficiency in eliciting, processing and systemically presenting Paediatrics history and examination with due emphasis of the important and minimization of less important facts. The following skills must be achieved:

i) Recognition and demonstration of physical findings

ii) Recording of height, weight, head circumference and mid arm circumference and interpretation of these parameters using growth reference standard assessment of nutritional status and growth

iii) Assessment of pubertal growth

iv)Complete development assessment by history and physical examination, and recognizing developmental disabilities, including autism

v) Systematic examination

vi) Neonatal examination including gestation assessment by physical neurological criteria

vii) Examination of the fundus and the ear-drum

viii) Skills related to IMNCI and IYCF

2.3.2. Monitoring Skills

Non-invasive monitoring of vital parameters including blood pressure, pulse and respiratory rates, capillary refill time (CRT) oxygen saturation (SpO_2), ECG etc. and their interpretation in different age groups

2.3.3. Investigative Procedures

a. Venous, capillary and arterial bloodsampling using appropriate precautions

b. Pleural, peritoneal, pericardial aspiration; subdural, ventricular and lumbar puncture
c. Tuberculin test
d. Biopsy of liver and kidney
e. Urethral catheterization and suprapubic tap
f. Gastric content aspiration

2.3.4. Therapeutic Skills

i) Breast feeding assessment and counselling; management of common problems

ii) Establishment of central and peripheral vascular access; CVP monitoring

iii) Administration of injections using safe injection practices

iv)Determination of volume and composition of intravenous fluids and their administration

v) Neonatal and Pediatric basic and advanced life support (ANRP,BLS,PALS)

vi) Oxygen administration, CPAP and nebulization therapy

vii) Blood and blood component therapy

viii) Intraosseous fluid administration

ix) Phototherapy, umbilical artery and venous catheterization and exchange transfusion

x) Nasogastric feeding

xi) Common dressings and abscess drainage; intercostal tube insertion

xii) Basic principles of rehabilitation

xiii) Peritoneal dialysis

xiv) Mechanical ventilation

xv) Intrathecal drug administration

2.3.5. **Bed side investigations, including**

a) Complete blood counts, micro ESR, peripheral smear
b) Urinalysis (routine & microscopy, specific gravity with refractometer, pH, dipstick etc)
c) Stool microscopy and hanging drop
d) Examination of CSF and other body fluids
e) Blood sugar
f) Shake test on gastric aspirate
g) Whole blood clotting time (WBCT)
h) Qualitative CRP
i) Gram stain and ZN stain

2.3.6. **Patient Management Skills**

i) Proficiency in management of pediatric emergencies, including emergency triaging

ii) Formulating and executing patient management plan and long term follow up care

iii) Documenting patient records on day to day basis and problem oriented medical record

iv) Care of a normal and sick newborn, management of neonatal disorders hypothermia, sepsis, convulsions, jaundice, metabolic problems

v) Identifying need for timely referral to appropriate departments/health facility and pre-transport stabilization of the sick child

2.3.7. **Communication Skills; Attitudes; Professionalism**

i) Communicating with parents/child about nature of illness and management plan prognostication, breaking bad news

ii) Counselling parents on breast feeding, nutrition, immunization, disease prevention, promoting healthy life style

iii) Genetic counselling

iv) Communication and relationship with colleagues, nurses and paramedical workers

v) Appropriate relation with pharmaceutical industry

vi) Health economics

vii) Professional and research ethics

2.3.8. Interpretation of Investigations

i. Plain x-ray chest, abdomen, skeletal system

ii. Contrast radiological studies: Barium swallow, barium meal, barium enema, MCU

iii. Ultrasound cranium and abdomen

iv. Histopathological, biochemical and microbiological investigations

v. CT Scan and MRI (cranium, abdomen, chest)

vi. Electrocardiogram, electroencephalogram

vii. Arterial and venous blood gases

viii. **Desirable**: Interpretation of radio-isotope studies, audiogram, neurophysiological studies, (BERA, VER, Electromyography [EMG], Nerve Conduction Velocity[NCV]), lung function tests

2.3.9 Academic Skills

- Familiarity with basic research methodology, basic IT skills.
- Planning the protocol of the thesis, itsexecution and final report
- Review of literature
- Conducting clinical sessions for undergraduates medical students
- Desirable: writing and presenting a paper. Teaching sessions for nurses and medical

workers

3. Course content

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

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

3.1 Basic Sciences

a) Principles of inheritance, chromosomal disorders, single gene disorders,
b) Multifactorial / polygenic disorders, genetic diagnosis and prenatal diagnosis,
c) Pedigree drawing.
d) Embryogenesis of different organ systems especially heart, genitourinary system,
e) Gastro-intestinal tract. Applied anatomy and functions of different organ systems.
f) Physiology of micturition and defecation; placental physiology; fetal and neonatal
g) Circulation; regulation of temperature, blood pressure, acid base balance, fluid
h) Electrolyte balance and calcium metabolism.
i) Vitamins and their functions.
j) Hematopoiesis, Hemostasis, bilirubin metabolism.
k) Growth and development at different ages, growth charts; puberty and its regulation.
l) Nutrition: requirements and sources of various nutrients.
m) Pharmacokinetics of common drugs, microbial agents and their epidemiology.
n) Basic immunology, biostatistics, clinical epidemiology, ethical and medico-legal issues.
o) Teaching methodology and managerial skills.

3.2 Principles of growth and development

a) Normal growth and development,
b) Normal growth and development
c) Sexual maturation and its disturbances
d) Failure to thrive and short stature

3.3 Neonatology

a) Perinatal care and high risk newborn
b) Low birth weight
c) Care in the labor room and resuscitation
d) Gastrointestinal disorders
e) Thermoregulation and its disorders
f) Hypoxic ischemic encephalopathy (hie)
g) Renal disorders
h) Jaundice (physiological & pathological)
i) Neurologic disorders
j) Apnea of prematurity
k) Infections in a newborn
l) Newborn feeding
m) Respiratory distress (including hmd, ttnb)
n) Low birth weight
o) Common transient phenomena
p) Prematurity
q) Retinopathy of prematurity (rop)
r) Anemia and bleeding disorders
s) Congenital malformations
t) Newborn screening

3.4 Nutrition:

a) Maternal nutritional disorders; impact on fetal outcome
b) Infant feeding
c) Protein energy malnutrition (including marasmus, kwashiorkor
d) Complementary feeding
e) Nutrition for the low birth weight babies
f) Adolescent nutrition
g) Breast feeding
h) Nutritional management of systemic illness (celiac disease, hepatobiliary disorders, CKD, Heart disease etc.)
i) Parenteral and enteral nutrition in neonates and children
j) Balanced diet
k) Obesity
l) Vitamin and mineral deficiencies

3.5 Cardiovascular:

a) Congenital heart diseases (cyanotic and acyanotic) recognition and management
b) Infective endocarditis
c) Kawasaki disease
d) Systemic hypertension
e) Disease of myocardium (cardiomyopathy, myocarditis)

f) Rheumatic fever and rheumatic heart disease
g) Arrhythmias
h) Diseases of pericardium

3.6 Respiratory:

a) Congenital and acquired disorders of upper airway, nose,tonsils and adenoids
b) Congenital anomalies of lower respiratory tract
c) Bronchiolitis & Bronchitis
d) Pulmonary air leaks
e) Mediastinal mass
f) Pleural effusion
g) Bronchiectasis
h) Bronchial asthma
i) Lung cysts and other congenital malformations of the lung
j) Recurrent and Persistent pneumonia
k) Gastro-esophageal reflux disease (GERD)
l) Chronic lung disease/ BPD
m) Allergic rhinitis and sinusitis
n) Acute inflammatory upper airway obstruction
o) Acute pneumonia
p) Obstructive sleep apnea
q) Infections of the upper respiratory tract
r) Foreign body in the airways
s) Pulmonary edema
t) Neoplasm of larynx and trachea
u) Suppurative lung diseases
v) Interstitial lung disease, GER
w) Aspiration pneumonia
x) Emphysema and hyper- inflation
y) Cystic fibrosis

3.7 Gastrointestinal disorders

a) Diseases of mouth (oral cavity & tongue)
b) Acute and chronic pancreatitis
c) Inflammatory bowel disease (Ulcerative colitis & Crohn's disease)
d) Intestinal obstruction
e) Peptic ulcer disease
f) Cirrhosis and portal hypertension
g) Chronic liver disease and liver transplantation
h) Acute/subacute/ chronic hepatitis
i) Irritable bowel syndrome
j) Malabsorption syndrome including Celiac disease
k) Wilson's disease

l) Cholestasis in infancy
m) Disorders of deglutition and Esophagus
n) Acute liver failure
o) Anorectal malformations
p) Acute and persistent/ chronic diarrhoea
q) GI Bleeding (Upper and Lower)
r) Recurrent pain abdomen including cyclic vomiting
s) Budd-Chiari syndrome
t) Constipation
u) Hirschsprung's disease
v) Congenital hypertrophic pyloric stenosis
w) Metabolic diseases of liver
x) Foreign body ingestion

3.8 Neurologic disorders:

a) Seizure and non- seizure paroxysmal events
b) Epilepsy and epileptic syndromes of childhood
c) Meningitis
d) Coma
e) Brain abscess
f) AIDP including Guillain- Barre syndrome
g) Acute encephalitis and febrile encephalopathies
h) Floppy infant
i) Neuro-cysticercosis and other chronic Neuro-infestations
j) Cerebral palsy
k) SSPE
l) Neurodegenerative disorders
m) Neurometabolic disorders
n) Mental retardation
o) Neuromuscular disorders
p) Autoimmune encephalitis
q) Learning disabilities
r) Muscular dystrophies
s) Acute flaccid paralysis and AFP surveillance
t) Occupational therapy
u) Movement disorders of childhood
v) CNS tumors
w) CNS Malformations
x) Stroke
y) Peripheral neuropathy
z) Hydrocephalus

3.9 Nephrologic & Urologic disorders:

a) Acute and chronic glomerulonephritis

b) Nephritic syndrome
c) Hemolytic uremic syndrome
d) Urinary tract infection
e) Vesico-ureteric reflux (VUR) and renal scarring
f) Renal involvement in systemic disease
g) Congenital anomalies of the kidney and urinary tract (CAKUT)
h) Renal and bladder stones
i) Posterior urethral valves
j) Voiding dysfunction
k) Undescended testis
l) Wilm's tumor
m) Antenatal hydronephrosis
n) Nephrotic syndrome
o) Renal tubular acidosis and other tubulopathies
p) Polyuria, oliguria and hematuria

3.10 Hematology & Oncology:

a) Deficiency anemia
b) Hemolytic anemia
c) Aplastic anemia
d) Pancytopenia, disorders of hemostasis
e) Thrombocytopenia (immune & non- immune)
f) Transfusion related infections
g) Blood component therapy
h) Acute and chronic leukemia
i) Bone marrow transplant/ stem cell transplant
j) Hodgkin and Non- Hodgkin lymphoma
k) Myelodysplastic syndrome
l) Neuroblastoma
m) Disorders of coagulation & Hypercoagulable states
n) Oncological emergencies
o)

3.11 Endocrinology:

a) Hypopituitarism / Hyperpituitarism
b) Diabetes insipidus
c) Pubertal disorders
d) Hypo- and hyperthyroidism
e) Adrenal insufficiency
f) Cushing's syndrome
g) Pheochromocytoma
h) Diabetes mellitus
i) Recurrent / persistent Hypoglycemia
j) Short stature and Tall stature

k) Ambiguous genitalia
l) Obesity
m) Hypocalcemia/ parathyroid disorders
n) Congenital adrenal hyperplasia (CAH)

3.12 Infections:

a) Bacterial
b) Viral
c) Fungal
d) Parasitic
e) Rickettsia
f) Mycoplasma
g) Vaccines
h) Tuberculosis
i) Lab diagnosis of infections
j) Nosocomial infections
k) HIV
l) Monitoring for nosocomial infections
m) Control of epidemics and infection prevention
n) Safe disposal of infective material
o) Fever without focus
p) Febrile neutropenia

3.13 Emergency & Critical care:

a) Identification & Emergency care of different types of shock
b) Cardio-respiratory arrest
c) Respiratory distress and failure
d) Oxygen delivery devices
e) Status epilepticus
f) Acute severe asthma
g) Fluid and electrolyte disturbances and their management
h) Acid-base disturbances
i) Poisoning and Envenomation (Scorpion and snake bites)
j) Accidents and Trauma
k) Emergency triage
l) Pediatric advanced life support
m) Recognition and management of raised intracranial pressure
n) Non- invasive ventilation and Heated Humidified High flow nasal cannula (HHHFNC)

3.14 Immunology & Rheumatology:

a) Arthritis (acute and chronic)
b) Connective tissue disorders
c) Evaluation of a child with suspected immunodeficiency

d) Primary Immunodeficiency Disorders
e) Kawasaki disease

3.15 ENT:

a) Acute and chronic otitis media
b) Conductive / sensorineural hearing loss
c) Foreign body in ear and nose
d) Epistaxis
e) Stridor in infants
f) Hearing assessment in infants and children

3.16 Skin Diseases:

a) Fever with exanthem
b) Vascular lesions
c) Pigment disorders
d) Vesicobullous disorders
e) Bacterial infections of skin
f) Fungal and parasitic skin and hair infections/ infestations
g) Steven- Johnson syndrome
h) Eczema and other skin allergy
i) Seborrheic dermatitis
j) Drug rash
k) Urticaria
l) Alopecia
m) Ichthyosis
n) Neurocutaneous markers
o) Diaper rash
p) Skin manifestations of systemic illness

3.17 Eye problems:

a) Disorders of Refraction and accommodation
b) Congenital cataract
c) Night blindness
d) Chorioretinitis
e) Strabismus
f) Conjunctival and corneal disorders
g) Congenital malformations of the eye
h) Retinoblastoma
i) Optic atrophy
j) Papilledema
k)

3.18 Behavioural & Developmental disorders:

a) Rumination
b) Pica

c) Enuresis
d) Encopresis
e) Sleep disorders
f) Habit disorders
g) Breath holding spells
h) Anxiety disorders
i) Mood disorders
j) Temper tantrums
k) Attention deficit hyperactivity disorders (ADHD)
l) Autism spectrum disorders
m) Play therapy
n) Specific learning disorders
o) Behavioral therapy
p) IQ assessment
q) Somatic symptom disorders
r) Conduct disorders

3.19 Community and social pediatrics:

a) National health programs related to child health (including IMNCI, INAP, IYCF, INAP, RBSK)
b) Child abuse and neglect
c) Child labor
d) Adoption
e) Disability and rehabilitation
f) Rights of the child
g) National policy of child health and population
h) Juvenile delinquency
i) Investigation of adverse events following immunization in the community
j) Nutrition screening of the community
k) Government and non- government support services for children
l) Investigation of an outbreak in a community
m)Prevention of sexually transmitted infection
n) Contraception

3.20 Genetics:

a) Principles of inheritance
b) Pedigree drawing
c) Chromosomal disorders
d) Single gene disorders
e) Multifactorial/ polygenic disorders
f) Genetic counselling
g) Prenatal diagnosis
h) Screening
i) New diagnostic methods
j) Gene therapy

3.21 Orthopedics

a) Major congenital orthopedic deformities
b) Bone and joint infections: pyogenic
c) Tubercular infections
d) Common bone tumors
e) Skeletal dysplasia
f) Pulled elbow

4. CLINICAL CASE APPROACH

4.1 Growth & development

- Normal growth & development
- Developmental delay
- Impaired learning
- Cerebral palsy

4.2 Neonatology:

- Normal newborn
- Low birth weight newborn
- Sick newborn
- Prematurity

4.3 Nutrition

- Lactation management and complementary feeding
- Protein energy malnutrition (underweight, wasting, stunting) and micronutrients deficiencies
- Failure to thrive
- Obesity

4.4 Cardiovascular:

- Murmur
- Cyanosis
- Congestive heart failure
- Systemic hypertension
- Arrhythmia
- Pulmonary arterial hypertension

4.5 GIT and liver:

- Acute diarrhoea
- Persistent and chronic diarrhoea
- Abdominal pain and distension
- Ascites
- Vomiting
- Constipation
- Gastrointestinal bleeding

- Jaundice
- Hepatosplenomegaly
- Hepatic failure and encephalopathy

4.6 Respiratory

- Acute and Chronic cough
- Noisy breathing
- Wheezy child
- Respiratory distress
- Hemoptysis
- Persistent and recurrent pneumonia

4.7 Infections

- Acute onset pyrexia
- Pyrexia of unknown origin (PUO)
- Recurrent infections
- Nosocomial infections

4.8 Renal

- Hematuria/ Dysuria / Proteinuria
- Recurrent UTI
- Voiding dysfunctions
- Acute kidney injury (AKI) and chronic kidney disease (CKD)

4.9 Hemato-oncology:

- Lymphadenopathy
- Anemia
- Recurrent bleeding
- Hepato-splenomegaly
- Childhood solid tumors
- Lymphoreticular malignancies

4.10. Neurology:

- Limping child
- Convulsions
- Abnormality of gait
- Paraplegia, quadriplegia
- Macrocephaly & microcephaly
- Floppy infant
- Acute flaccid paralysis
- Headache
- Cerebral palsy and other neuromotor disability

4.11. Endocrine:

- Thyroid swelling

- Ambiguous genitalia
- Obesity
- Short stature
- Precocious & delayed puberty
- Persistent hypoglycemia/ hyperglycemia

4.12. Skin/ Eye/ ENT:

- Skin rash
- Pigmentary lesions
- Pain/ discharge from ear
- Hearing loss
- Epistaxis
- Refractory errors
- Blindness
- Cataract
- Eye discharge
- Redness
- Squint
- Proptosis

4.13. Rheumatology :

- Arthralgia and Arthritis
- Vasculitis
- SLE , JDM

4.14. Miscellaneous:

- Sexual abuse
- Multiple congenital anomalies
- Non-accidental injury / Child abuse

5. TEACHING AND LEARNING METHODS

5.1 General principles

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

5.2 Teaching methodology

This should include regular bedside case presentations and demonstrations, didactic lectures, seminars, journal clubs, clinical meetings, and combined conferences with allied departments. The post graduate student should be given the responsibility of managing and caring for patients in a gradual manner under supervision. Department should encourage e-learning activities.

5.3 DEPARTMENTAL TRAINING SCHEDULE AND POSTING OF RESIDENTS

Formal teaching sessions

In addition to bedside teaching rounds, at least 5-hr of formal teaching per week are necessary. Following sessions may be selected:

Activity*	**Frequency**	**Preceptor**	**Evaluator**
1. Journal club	Once a week	SR & Faculty	Other faculties
2. Case discussion Bedside	Morning / Evening	Faculty /Unit SR	Faculty Unit SR
3. Other Specialties			
(a)Hematology/Psychiatry	Once in 4 weeks	Hematology/psychiatry faculty	Hematology faculty
(b)Pediatric cardiology/Drug therapy rounds(pharmacology)	Once in 4 weeks	Cardiology faculty/pharmacology	Cardiology faculty
(c)Pediatrics Radio-conference	Once in 2 weeks	SR & Faculty	Radiology faculty
(d) Biostatistics	Once in 6 months	Biostatics faculty	
4. Mortality audit	Once in 2 weeks	SR & Faculty	Other faculties
5. Statistics IPD	Once in month	SR & Faculty	Other faculties
6.Interesting/ difficult case Discussion	Once a month	SR	Other faculties
7. PG Seminar	Once a week	SR & Faculty	Other faculties
8.Faculty Teaching (Clinical Grand rounds)	Thrice a week	All Residents & All Faculty of Pediatrics & Neonatology	All Faculty of Pediatrics & Neonatology
9 . Communication			
(a) Skills	1 in each semester		
(b) Ethical & Legal Issues	1 in each year		
(c) Departmental Symposium	1 in each semester	Resident & Faculty	Other faculties
10 .Simulation training	1 each month(during NICU, PICU, Pediatric emergency posting)	Resident & Faculty	Faculty

*Additional activities include: attending accredited scientific meetings (CME, symposia, and conferences), once a fortnight telemedicine conference with other INI, additional sessions on resuscitation, basic sciences, teaching methodology, hospital waste management, health

economics, lecture by guest faculty once a year, participation in the teaching and training program of undergraduate students and interns.

5.31 -A postgraduate student of MD Pediatrics would be required to present one poster presentation, to read one paper at a national/state conference and to present one research paper which should be published/accepted for publication/sent for publication during the period of his postgraduate studies so as to make him eligible to appear at the postgraduate degree examination

5.32- Log book

A log book is a comprehensive record of all academic events during the 3 years course. Work done by student in the department should be entered in the log book regularly. The log book shall be checked by the faculties at regular intervals. The logbook will be reviewed 6 monthly by the departmental faculty

During the training period, the post graduate student should maintain a Log Book indicating the duration of the postings/work done in Pediatric wards, OPDs, ICU's, and Casualty. This should indicate the procedures assisted and performed, and the teaching sessions attended. The log book shall be used to aid the internal evaluation of the student. The log book shall be reviewed at the time of viva-voce at the time of final examination.

The purpose of the Log Book is to:

a) Help maintain a record of the work done/procedures/skills learnt during training,

b) Enable Consultants to have direct information about the work; intervene if necessary,

c) Use it to assess the experience gained periodically.

d) It should include performance in student presentations graded by at least three Faculty members attending the session. These include Seminar /Symposium, Journal review etc. attended and presented by the candidate.

e) Procedure / skills – minor and major

f) Simulation sessions participated and their specific learning points.

5.33 Rotations

Postgraduate students must rotate through all clinical units of the department every 6 months. This is especially important for him to get pediatric sub-specialty training. Besides this, the student has to undergo posting in other specialties in the following manner:

5.33.1 Neonatology, perinatology- 6 months

5.33.2 Pediatric Intensive care, Pediatric emergency-3 months

5.33.3 Posting in Out Patient Services of the following specialties is recommended

Skin	7 days
Pediatric Surgery	7 days
Physical Medicine and Rehabilitation	7 days
Community posting	7 days
Cardiology	14 days
Child psychiatry	14 days

- **Objectives for skin rotation**: The student should be well versed with the diagnosis and management of common pediatric skin conditions like exanthematous illnesses, vascular lesions, pigment disorders, vesicobullous disorders, infections: pyogenic, fungal and parasitic; Steven-Johnson syndrome, eczema, seborrheic dermatitis, drug rash, urticaria, alopecia, icthyosis etc.

- **Objectives for Pediatric surgery rotation:** The student should be well versed with the diagnosis and management of common pediatric and neonatal surgical conditions like intestinal obstruction, Hirsch- sprung's disease, anorectal mal-formations, renal and bladder stones, posterior urethral valves, hydronephrosis, undescended testis, Wilm's tumor etc.

- **Objectives for Physical Medicine and Rehabilitation rotation:** The student should be well versed with the physical medicine and rehabilitation techniques for common pediatric neurological and developmental problems like cerebral palsy, neurometabolic disorders, mental retardation, learning disabilities, muscular dystrophies, global developmental delay etc.

- **Objectives for Community rotation:** The student should be well versed with the preventive and social community pediatrics issues national health programs related to child health and nutrition, nutrition screening of community, prevention of blindness, school health programs, prevention of sexually transmitted diseases, contraception,

health legislation, national policy on children, adolescence, adoption, child labor, child abuse and neglect, juvenile delinquency, government and non-government support services for children, disability and rehabilitation, rights of the child, national policy of child health and population, investigation of adverse events following immunization in the community, general principles of prevention and control of infections including food borne, waterborne, soil borne and vector borne diseases, investigation of an outbreak in a community.

- **Objectives for Cardiology rotation:** The student should be well versed with the diagnosis and management of common cardiological conditions like Congenital heart disease; Acquired heart diseases like Rheumatic fever, Rheumatic heart disease, Myocarditis, Pericardial effusion, Kawasaki disease; Infective endocarditis; Hypertension; Cardiomyopathy; CCF; and interpretation of various diagnostic modalities ECG, ECHO, Cath lab procedures, Pericardiocentesis etc.
- **Objectives for child psychology/psychiatry rotation:** Student will learn common childhood psychiatric diagnoses and their management such as autism, ADHD, dealing with child sexual abuse victims, assessment of other behavioural issues and their management. They will be familiarised with therapeutic principles of CBT, ABA and allied therapies.

PG students should also attend sub-specialty clinics during their respective unit postings (Neurology, nephrology *etc.*) depending on facilities available

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

6. THESIS

A candidate registered for MD Pediatrics has to submit a thesis. This will be a pre-requisite forappearing for the MD examination. The thesis will be done under the guidance and full satisfaction ofthe post-graduate teacher/guide.

6.1 Objectives

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

1. Identify a relevant research question;
2. Conduct a critical review of literature;
3. Formulate a hypothesis;
4. Determine the most suitable study design;
5. State the objectives of the study;
6. Prepare a study protocol;
7. Analyze and interpret research data, and drawconclusion,
8. Write a research paper.

6.2 Guidelines

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

1. The scope of study should be limited so that it is possible to conduct it within the resources and time available to the student;
2. The emphasis should be on the process of conducting research rather than the results
3. The protocol, interim progress as well as final presentation must be made formally to the entire department;
4. Students will be assigned to teacher/thesis guide in accordance with Institutional policy of AIIMS, Guwahati after approval of academic council.
5. Periodic department review of the thesis work as per following schedule:

• End of second semester	- Submission of protocol
• End of third semester	- Mid-term thesis progress report
• 6 months prior to MD final examination	- Final presentation and submission

6.3 Timing of six monthly progress report submission to Academic Section

Report	July Session		January session	
	Period	To be submitted	Period	To be submitted
First	July to December	7th January	January to June	7th July
Second	January to June	7th July	July to December	7th January
Third	July to December	7th January	January to June	7th July
Fourth	January to June	7th July	July to December	7th January
Fifth	July to December	7th January	January to June	7th July
Sixth	January to June	10th June	July to December	10th December

Note: The first five reports will be taken into consideration to decide the eligibility of the student to appear for the Professional Examination.

6.4 Process to be completed within six months of admission to MS / MD program:

Activity	July admission	January admission
Selection of topic in consultation with PG Guide	**September / October**	**March / April**
Approval by Department PG Committee		
Institute Scientific Committee approval	**November / December**	**May / June**
Institute Ethics Committee approval		
Final approval letter by Academics Section	**31st December**	**30th June**

The Dissertation will be submitted to Academic Section at least six months prior to the scheduled examination, i.e. by 31st December for June examination and by 30th June for December examination

7. *ASSESSMENT*

7.1 General Principles

a) The assessment should be valid, objective, and reliable.
b) It must cover cognitive, psychomotor and affective domains.
c) Formative, and summative assessment should be conducted in theory as well as practical/ clinical. In addition, thesis should be assessed separately.

7.2 Examination on Research methodology & Biostatistics:

Examination on Research Methodology & Biostatistics will be conducted by Research Cell of AIIMS Guwahati

a) This examination will be considered as an internal examination but no marks will be added to the final/summative examination.
b) Students have to pass (obtaining >50% marks) this examination as an eligibility criterion to appear in the Final examination.
c) If someone secures <50%, he/she will appear in the next examination. The examination will be conducted by Examination Cell in the month of June & December every year.

7.3 Internal assessment/formative assessment

a) The internal assessment should be continuous as well as end-of-term. The former should be based on the feedback from the senior residents and the unit faculty concerned.

b) A total of 4 internal examinations will be conducted at end of the 3rd, 4th and 5th semester, and pre-final (2 month before final examination).

c) Marks distribution: Theory 100 marks, and Practical with viva and logbook (Practical = 70, viva = 20, logbook = 10) 100 marks. **The marks of the internal examinations will be averaged to 100 each for theory and practical**.

7.31. **Tentative Internal assessment/examination pattern**

7.32. Theory: Semester-wise internal assessment (100 marks in each semester)

Semester	**Topics & Areas**
3rd Semester (1st Internal exam)	Nutrition, Growth and Development, Immunization, Fluid & Electrolytes, Infections disease, Research Methodology, and Neonatology

4th Semester(24th month) (2nd Internal exam)	Gastroenterology, Hemato-oncology, Respiratory, Cardio- vascular, Renal, Pediatric emergencies & critical care, ENT, Ophthalmology,Dermatology
5th Semester(30th month) (3rd Internal exam)	Rheumatology & Immunology, Endocrine, CNS, Genetics, Inborn error of metabolism, Adolescent & behavioral sciences
Pre-professional (2 month before final exam) (4th Internal exam)	Complete syllabus

7.33. **Tentative Practical Examination pattern Semester-wise internal assessment**

Long case (1)	40
Short case (1)	20
OSCE/OSPE stations (10): Imaging, slides, charts, therapeutics, communication skills, etc.	10
Viva	20
Log book	10
Total	**100**

Candidate should secure a minimum of 50% marks in Theory and Practical separately, in order to be eligible to appear for Professional Examination

7.4 Summative Assessment

7.41 General principles

a) Ratio of marks in theory and practical's will be equal.
b) The student has to secure 50% marks in the internal examination to be eligible to appear for the final examination.
c) In the final theory examination, a student should secure minimum 40% marks in each paper and aggregate of 50% i.e. 200 out of 400 in order to be declared pass.
d) In the final practical examination, a student has to secure 50% marks (200 out of 400) overall.

A Theory- 4 Papers each of 100 Marks = 400 Marks
B Practical- = 400 Marks

7.42 **Theory syllabus**

Paper 1:	Basic sciences as applied to pediatrics	100 marks
Paper 2:	Neonatology and community pediatrics.	100 marks
Paper 3:	General pediatrics including advances in pediatrics relating to Cluster-I specialities*	100 marks
Paper 4:	General pediatrics including advances in pediatrics relating to Cluster-II specialities**	100 marks

* **Cluster-I** - Nutrition, growth and development, immunization, infectious disease, genetics, immunology, rheumatology, psychiatry and behavioural sciences, skin, eye, ENT, adolescent health, critical care, accidents and poisoning.

** **Cluster-II** - Neurology and disabilities, nephrology, hematology, oncology, endocrinology, gastroenterology and hepatology, respiratory and cardiovascular disorders.

7.43 In each paper there should be 10 short essay questions (SEQ).

7.44 **Practicals**

- Practical examination: Total marks 500(Practical and viva in the final examination-400 marks & average of internal assessments-100 marks)
- The format of the practical examination (400 marks) for final examination

- **Two external and two internal examiners should conduct the examinations.**

Part	Components	Marks allotted	Marks Allotted
Part A 300 marks	Case 1*(Long Case)	**150**	**300**
	Case 2 (newborn)	75	
	Case 3 (Short case)	75	
Part B 100 marks	Main viva	**40**	**100**
	Thesis presentation and evaluation	10	
	Log Book	10	
	Table Viva on defined areas a) Instruments b) Drugs and emergencies c) Imaging d) Social pediatrics/others	**40** 10 10 10 10	

- * Long Case will be evaluated by all Four (4) Examiners.

7.45 Summary of final assessment

	1st Internal examination	2nd Internal examination	3rd Internal examination	4th Internal examination	Total Internal marks (average of 4 examinations)	Final examination	Total marks
Time frame	End of 3rd semester	End of 4th semester	End of 5th semester	2 month before final			
Theory	100	100	100	100	100	400	500
Practical	100	100	100	100	100	400	500

8. Recommended books

8.1 Reference books

1. Behrman RE, Kliegman RM, Jenson HB. Nelson Textbook of Pediatrics.
2. Rudolph AM, Hoffman JIE, Rudolph CD. Rudolph's Pediatrics. Appleton and Lange.
3. Ghai OP, Gupta P, Paul VK. Essential Pediatrics. .
4. Singh M. Pediatrics Clinical Methods.
5. Singh M, Deorari AK. Drug Doses in Children. Sagar Publications.
6. Hospital JH, Kahl L, Hughes HK, Molloy M, McDaniel L, Kleinman K, et al. The Harriet Lane Handbook E-Book: Elsevier Health Sciences; 2017
7. Gupta P, Menon P, Ramji S, Lodha R. PG Textbook of Pediatrics: Three Volume Set: Jaypee Brothers,Medical Publishers Pvt. Limited; 2018

8.2 Growth and Development

1.Illingworth RS. The development of the infant and young child. Normal and abnormal. Churchill Livingstone.

8.3 Nutrition

1. Alleyne GAO, Hay RW, Picou DI, Stanford JP, Whitehead RG. Protein energy malnutrition. Jaypee Brothers
2. Management of severe malnutrition: a manual for physicians and other senior health workers. WHO, Geneva.
3. Elizabeth KE. Nutrition and Child Development: Paras Medical Publisher; 2004

8.4 Infectious diseases

1. Feigin RD, Cherry ID. Textbook of Pediatric Infectious Diseases. W. B. Saunders.
2. Seth V, Kabra SK. Essentials of tuberculosis in children. Jaypee Brothers.

8.5 Intensive care

1. Singh M. Medical emergencies in children. Sagar Publications.
2. Rogers MC, Nichols DG. Textbook of Pediatric intensive care. Williams & Wilkins.

8.6 Neonatology

1. Singh M. Care of the Newborn, Sagar Publication.
2. Avery GB, Fletcher MA, MacDonald MG. Neonatology-Pathophysiology and Management of the Newborn. Lippincott William and Wilkins.
3. Cloherty JP, Stark AR. Manual of Neonatal Care. Lippincott- Raven Publishers.
4. Textbook of neonatal resuscitation. American Heart Association and American Academy of Pediatrics,

5. Goldsmith JP, Karotkin E. Assisted Ventilation of the Neonate: Elsevier Health Sciences; 2016

8.7 Neurology

1. Swaiman B, Kenneth F, Ashwal S. Pediatric Neurology: Principles and Practice. St. Louis Mosby,

8.8 Cardiology

1. Allen HO, Clark FB, Gutgesell HP, Driscoll DJ. Moss and Adam's Heart Disease in Infants, Children and Adolescents. Lippincott Williams and Wilkins.
2. Park MK. Pediatric cardiology for practitioners. Mosby.

8.9 Gastroenterology

1. Suchy FI, Sokol RJ, Balistreri WF. Liver disease in children. Lippincott Williams and Wilkins.
2. Bhan MK, Bhatnagar S. Guidelines for management of diarrhea in children. Ministry of Health, GOI and WHO/SEARO.

8.10 Endocrinology

1. Sharma S, Singhal T, Bajpai A. Management protocols in pediatric endocrinology.
2. Desai MP, Bhatia B, Menon PSN. Pediatric Endocrine Disorders. Orient Longman.
3. Jain V, Menon R. Case Based Reviews in Pediatric Endocrinology: Jaypee Brothers,Medical Publishers Pvt. Limited; 2014.
4. Jameson JL, De Groot LJ. Endocrinology: Adult and Pediatric: Elsevier Health Sciences; 2015

8.11 Nephrology

1. Barratt TM, Avner ED, Harmon WE. Pediatric nephrology. Baltimose Williams and Wilkins.
2. Srivastava RN, Bagga A Pediatric Nephrology.

8.12 Hematology & Oncology

1. Nathan DG, Orkin SH. Nathan and Oski's Hematology of Infancy and Childhood. W. B. Saunders.

8.13 Rheumatology

1. Cassidy JT, Petty RE. Textbook of Pediatric Rheumatology. W. B. Saunders.

8.14 Respiratory Medicine

1. Chernick V, Boat TF. Kendig's Disorders of the Respiratory Tract in Children. WB Saunders.
2. Kabra SK, Jat KR, Lodha R, Sankar J. Case Based Reviews in Pediatric Pulmonology: Jaypee Brothers,Medical Publishers Pvt. Limited; 2017

9. Reference Journals

1. Indian Pediatrics
2. Indian Journal of Pediatrics
3. Indian Journal of Practical Pediatrics
4. Neo Reviews
5. Pediatrics
6. Journal of Pediatrics
7. Pediatric Clinics of North America
8. Journal of Perinatology
9. Pediatric Critical Care Medicine
10. BMJ Pediatrics

MODEL SAMPLE QUESTION PAPERS

PAPER 1

BASIC MEDICAL SCIENCES

Max. Marks:100Time: 3 hrs

Answer all questions

Illustrate your answer with suitable diagrams

1. Discuss the mechanisms of regulation of intracranial pressure.

   Describe the causes and managementof non-traumatic coma in children.(20 marks)

2. Write short notes on the following.(8 x 10 = 80 marks)

   a. Discuss in detail the study design to evaluate a bronchodilator for treating bronchial asthma inchildren.

   b. Discuss factor affecting calcium and phosphorous metabolism and

      enumerate the causes of hypocalcaemia across various ages in children.

   c. Briefly describe the development of the reproductive system &

      Discuss the abnormalities ofdevelopment of the reproductive system and external genitalia.

   d. Discuss the pathogenesis of hemolytic uremic syndrome.

   e. Enumerate different modalities of prenatal diagnosis of fetal disease.

   f. Discuss the pathogenesis of septic shock.

   g. Discuss the biochemical mechanism of bacterial resistance.

   h. Describe the role of immunonutrition in critically ill children.

PAPER 2

NEONATOLOGY & COMMUNITY PEDIATRICS

Max. Marks:100Time: 3 hrs

Answer all questions
Illustrate your answer with suitable diagrams

1. Discuss approach to evaluation and management of

   Newborn with apnoeic episodes (20 marks)
2. Write short notes on the following.(8 x 10 = 80 marks)
   a. Discuss in brief about Human breast milk banking.
   b. Discuss the clinical feature and complications in a neonate born to a mother with diabetes mellitus.
   c. Discuss in brief about Integrated Management of Neonatal and Childhood Illness (IMNCI).
   d. Describe causes and management of anemia in newborn.
   e. Write a note on Infant and Young Child Feeding (IYCF).
   f. Write a note on India Newborn Action Plan (INAP).
   g. Discuss the newborn and child health services under the National Health Mission (NHM)
   h. Write a note on Mission Kishore Uday (MKU).

PAPER 3

GENERAL PEDIATRICS & CLUSTER I SPECIALITIES

Max. Marks:100 Time: 3 hrs

Answer all questions

Illustrate your answer with suitable diagrams

1. Discuss the diagnostic investigations for pulmonary tuberculosis.

   Outline the case definition, categorization and treatment of cases as per

   Revised National Tuberculosis Control Programme (RNTCP).(20 marks)

2. Write short notes on the following.(8 x 10 = 80 marks)

   a. Diagnostic approach to pyrexia of unknown origin (PUO) in an 8-year-old child
   b. Pathogenesis, diagnosis, and treatment of 1-year old child with cow milk allergy
   c. Discuss the management of Scorpion bite
   d. Discuss survival sepsis campaign guideline with reference to children
   e. Write a note on Mission Indradhanush.
   f. Discuss different methods to prevent suicide in adolescents.
   g. What is nutritional recovery syndrome? Discuss about its management.
   h. How to approach to a child with short stature?

PAPER 4

RECENT ADVANCES & CLUSTER II SUBSPECIALITY

Max. Marks:100Time: 3 hrs

Answer all questions

Illustrate your answer with suitable diagrams

1.Enumerate the causes, evaluation and management of systemic hypertension in children

(20 marks)

2.Write short notes on the following. (8 x 10 = 80 marks)

a. How to approach to refractory seizure in a 5-year-old child?
b. Discuss about dietary management of persistent diarrhea.
c. Discuss about clinical presentation and management of Idiopathic thrombocytopenic purpura.
d. Outline the recent advances in management of Kawasaki disease.
e. Outline the diagnostic approach to refractory rickets.
f. Discuss about pathophysiology and clinical manifestations of Primary cilliary dyskinesia.
g. Write a brief note on autistic spectrum disorder.
h. Outline the dietary management of a child with Type I Diabetes mellitus