PAEDIATRICS

PAEDIATRICS UG CURRICULUM

Goal

GOAL
The broad goal of the teaching of undergraduate students in Pediatrics is to acquire adequate knowledge and appropriate skills for optimally dealing with major health problems of children to ensure their optimal growth and development.

ii) SPECIFIC LEARNING OBJECTIVES

a. KNOWLEDGE

At the end of the course, the student should be able to:
(1)describe the normal growth and development during foetal life, neonatal period, childhood and adolescence and outline deviations thereof.
(2) describe the common paediatric disorders and emergencies in terms of epidemiology, etiopathogenesis, clinical manifestations, diagnosis, rational therapy and rehabilitation.
(3) state age related requirements of calories, nutrients, fluids, drugs etc. in health and disease.
(4) describe preventive strategies for common infectious disor
ders, malnutrition, genetic and metabolic disorders, poisonings, accidents and child abuse.
(5) outline national programmes relating to child health including immunisation programmes.
(6) Recognize a critically ill child based on the pediatric assessment triangle and effectively intervene to stabilize the child before transporting to a higher centre.

b. SKILLS

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

- Obtain a proper relevant history and perform a humane and thorough clinical examination of all organs/systems in children including neonates
- Arrive at a logical working diagnosis after clinical examination
- Order appropriate investigations keeping in mind their need,relevance and cost effectiveness
- Plan and institute a line of treatment which is need based,cost effective and appropriate for common ailments taking into consideration

a.Patient

b.Disease

c.Socio economic status

d.Instituitional / governmental guidelines

5. Recognize situations which call for urgent or early treatment at secondary and tertiary centres and make prompt referral of such patients after giving first aid or emergency treatment

6. Monitor growth and development of children and differentiate normal and abnormal

7..Manage diarrhea /dysentery: assess dehydration; prepare and administer oral rehydration therapy

8. Participate in research activities like ICMR/UNICEF

9. Detect and institute corrective measures for nutritional deficiency

10.Write a complete case record with all necessary details

11.Write a proper discharge summary with all relevant information

12.Write a proper referral note to secondary or tertiary centres or to other physicians with all necessary details

13.Organise and give training in first aid

14. Adopt universal precautions for self protection against HIV and hepatitis and counsel patients

15.Maintain cold chain for vaccines

16.Perform and read mantoux test

17.Start i.v line and infusion in children and neonates

18.Give intradermal/s.c/i.m/i.v injection

19.Pass a nasogastirc tube

20. Manage hyperpyrexia

21.Permom CPR and first aid in all new born and children

22..Demostarte empathy and humane approach towards patients,relatives and attendants

23.Develop a proper attitude towards patients,colleaguesand other staff

24.Maintain an ethical behavior in all aspects of medical practice

25.Organise antenatal,postnatal,newborn and other clinics

26 .Motivate colleagues,community and patients to effectively participate in national health programmes

27. Blood Grouping and typing

C. INTEGRATION

The training in pediatrics should prepare the student to deliver preventive, promotive, curative and rehabilitative services for care of children both in the community and at hospital as part of a team in an integrated form with other disciplines, e.g. Anatomy, Physiolog,y, Biochemistry, Microbiology, Pathology, Pharmacology, Forensic Medicine,

Community Medicine and Physical Medicine and Rehabilitation.

TEACHING HOURS -100

6th and 7th sem - 30 hours

8th and 9th sem - 70 hours (including integrated teaching 10 hours)

6th and 7th sem

Didactic Lecture – (1/3 of the schedule)	- 10 hours
Demonstration / case scenarios	- 10 hours
Seminars/ Symposium with pre and post Test questionnaires	- 5 hours
Group Discussion with floor participation and Faculty as moderators	- 5 hours
TOTAL	**30 hours**

One lecture Communication Skill is mandatory

8th and 9th sem

Didactic Lecture – (1/3 of the schedule)	- 20 hours
Demonstration / case scenarios/general clinics	- 20 hours

Seminars/ Symposium with pre and post	
Test questionnaires	- 10 hours
Group Discussion with floor participation and	
Faculty as moderators	- 10 hours
Integrated Teaching	- 10 hours

TOTAL	**70 hours**

One lecture on communication skill is mandatory

TEACHING METHODOLOGY

- Didactic lectures
- Clinical Demonstrations,
- Seminars
- Case presentations
- General Clinics
- Group discussions
- Ward rounds
- Communicative Skill assessment – OSCE/VIVA
- Health Informatics
- Self assessment
- Observation of immunization procedures
- Observation of the management of critically ill children in Emergency / Pediatrics department
- Integrated Teaching

THEORY SYLLABUS

- **Growth and Development**

Must know

- Normal growth and it's assessment
- Normal development
- Growth charts
- Changes during adolescence(Tanner's staging)
- Overview of Intellectual disability (Mental retardation)
- Behavioural disorders (breath holding spells, nocturnal enuresis, temper tantrums,PICA)

Desirable to know

- Failure to thrive
- Learning disabilities
- ADHD, Autism

Nice to know

- Developmental assessment tools & tests
- **Fluid and electrolyte disturbances**

Must know:

- Composition of body fluids
- Clinical assessment of dehydration
- Deficit therapy
- Normal maintenance requirements
- Sodium disturbances
- Potassium disturbances

Desirable to know

- Calcium disturbances
- Magnesium disturbances
- Acid base balance

Nice to know

- Perioperative fluid therapy

III) Nutrition

Must know

- Breast feeding, Weaning, complementary feeding
- Recommended dietary allowances
- Nutritive value of common foods
- Diet chart
- Classifications - IAP, Welcome, WHO
- Obesity
- Malnutrition/SAM – Recognition and management
- Vitamins- function and deficiencies
- Minerals : iron, zinc, iodine

Desirable to know

- National nutrition programs
- Prevention of malnutrition
- Hypervitaminosis
- Refeeding syndrome

Nice to know

- Nutrition Rehabilitation center
- Management of problems related to lactation failure

IV) Immunisation

Must know

- National immunisation schedule
- Vaccines and vaccine preventable diseases
- Principles of immunisation
- Cold chain
- AFP surveillance
- Pulse polio program

- Adverse events following immunization
- Passive immunization
- Rabies vaccination
- MMR,typhoid

Desirable to know

- Immunization in special circumstances
- Newer vaccines- pneumococcal,meningococcal,varicella,Hepatitis A, Rubella, influenza vaccine
- International –Polio vaccine switch
- Catch up vaccine

Nice to know

- IAP immunization schedule
- Rota virus, human papilloma virus
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V) Newborn

Must know

- Identification of antenatal,intrapartum and immediate postnatal risk factors
- Identification and classification of high risk neonate, gestational age assessment
- Neonatal Resuscitation
- Normal newborn care
- Birth asphyxia, HIE
- Care of the preterm /Low birth weight, prevention of complications and management
- Neonatal jaundice and anemia
- Infection
- Danger signs in newborn
- Thermo regulation in newborn

- Metabolic problems like hypoglycemia, hypocalcemia
- Respiratory distress syndrome
- Physiological changes in a newborn

Desirable to know

- Baby friendly hospital initiative
- Human milk bank
- Common surgical problems in newborn
- Approach to a bleeding neonate
- Meconium aspiration syndrome & Persistent pulmonary hypertension.
- Neonatal seizure
- Transport of a sick new born

Nice to know

- Infant of diabetic mother
- Hemorrhagic disease of newborn
- Necrotizing enterocolitis

VI) Infections

Must know

- Natural history, clinical features, investigations, management and prevention of common bacterial viral and parasitic infections with special reference to vaccine preventable diseases
- Fever –definition, pathogenesis, PUO
- UTI
- Tuberculosis
- Enteric fever
- Viral hepatitis
- Dengue
- Pediatric HIV
- Malaria

- Leptospirosis
- Scrub typhus
- Amoebiasis, Giardiasis
- Pin worm, Ascariasis, Hookworm

Desirable to know

- Fungal infections
- Current epidemics and pandemics- ex:H1N1
- Zika virus
- Scabies
- Principles of anti bacterial therapy
- Scarlet fever

Nice to know

- Infections in immunocompromised children
- Health care associated infection
- Ka;a azar,Infectious mononucleosis

VII) <u>Gastrointestinal system & liver</u>

Must know

- Acute diarrhea
- Persistent diarrhea and chronic diarrhea
- Acute hepatic failure
- Constipation
- Gastroesophageal reflex
- Cirrhosis, portal hypertension, chronic liver disease
- Differential diagnosis of hepatosplenomegaly

Desirable to know

- GI bleed
- Wilson’s disease

- Malabsorption syndroms
- Acute abdomen including surgical causes like intussusceptions, malrotation, Hirschsprung's disease

Nice to know

- Biliary atresia
- Neonatal cholestasis

VIII) Hematology

Must know

- Nutritional anemias
- Hemolytic anemias- thalassemia, hereditary spherocytosis and others.
- Hemophilia
- ITP
- Approach to a bleeding child
- Leukemias and lymphomas

Desirable to know

- Hemopoietic stem cell transplantation
- Blood components transfusion
- DIC

Nice to know

- Thrombotic disorders

IX) Respiratory system

Must know

- Upper respiratory infections
- Bronchiolitis
- Community acquired Pneumonia
- Pleural effusion/pneumothorax/empyema
- Bronchial asthma
- ARI program

- Suppurative lung diseases
- Pulmonary tuberculosis
- Diagnosis and appropriate management of foreign body aspiration

Desirable to know

- Stridor/ALTB/ Laryngomalacia
- Epiglotitis
- Aerosol therapy
- Recurrent pneumonia

Nice to know

- Cystic fibrosis
- ARDS

X) Cardiovascular system

Must know

- Congestive cardiac failure-diagnosis and management
- Acute rheumatic fever
- Rheumatic heart disease
- Acyanotic congenital heart diseases-VSD, PDA, ASD, coarcation
- Cyanotic congenital heart diseases- TOF, management of cyanotic spell
- Infective endocarditis

Desirable to know

- Other congenital heart diseases
- Pericarditis,Myocarditis
- Hypertension

Nice to know

- Cardiomyopathy
- Arrythmias

XI) Renal system

Must know

- Acute glomerulonephritis
- Nephrotic syndrome
- Urinary tract infection
- Acute kidney injury

Desirable to know

- HenochSchonlein Purpura
- Hemolytic uremic syndrome

Nice to know

- Evaluation of proteinuria, hematuria
- Renal transplatation

XII) ENDOCRINOLOGY

Must know

- Hypothyroidism and goiter
- Short stature

Desirable to know

- Diabetes mellitus & DKA

Nice to know

Disordersof sex development (Ambiguous genitalia)

XIII) Central Nervous System

Must know

- Febrile seizures
- Seizure disorder and treatment
- Acute bacterial meningitis & Tuberculous meningitis
- Encephalitis
- Cerebral palsy

- Hydrocephalus
- Microcephaly
- Chorea
- Infantile hemiplegia
- Stroke in children

Desirable to know

- Acute flaccid paralysis
- Duchenne muscular dystrophy
- Post meningitic and encephalitic sequelae
- Neural tube defects

Nice to know

- Neurodegenerative disorders
- Floppy infant

XIV) RHEUMATOLOGY

Must know

- **When to suspect collagen vascular disorders**

Desirable to know

- JRA,SLE

Nice to know

- Kawasaki disease

XV) GENETICS

Must know

- Downs syndrome
- Genetic counseling

Desirable to know

- Turner syndrome
- Karyotyping

Nice to know

- Dermatoglyphics
- Prenatal diagnosis

XVI) INBORN ERRORS OF METABOLISM(IEM)

Must know

When to suspect IEM

Newborn metabolic screening

Desirable to know

- Phenylketonuria

Nice to know

- Lysosomal disorders- Hurlers and Hunters disease

XVII) SKIN

Must know

- Impetigo
- Urticaria
- Pediculosis
- Scabies

Desirable to know

- Steven Johnson syndrome
- Capillary hemangiomas

Nice to know

- Staphylococcal scalded skin syndrome

XVIII) POISONING AND ENVENOMATION

Must know

- When to suspect a poison

- Principles of management of poisoning
- Snake bite
- Scorpion sting

Desirable to know

- Hydrocarbon poisoning
- Organophosphorus poisoning

Nice to know

- Toxidromes

XIX) PEDIATRIC EMERGENCIES AND CRITICAL CARE

Must know

- How to recognize a sick child and identify the physiologic status
- Pediatric assessment triangle
- Shock- recognition and management of hypovolemic, cardiogenic, septic and anaphylactic shock.
- Status epilepticus
- Status asthmaticus
- Stridor
- Hypertensive emergencies
- Acute pulmonary edema
- Pediatric basic life support

Desirable to know

- Nosocomial infections
- Oxygen delivery devices
- Positive pressure ventilation
- Head injury and Polytrauma

Nice to know

- Indication and principles of mechanical ventilation
- Inotropes

XX) PROCEDURES

Must know

- Injection techniques-intramuscular, intravenous, subcutaneous
- Bag and mask ventilation
- Lumbar puncture
- Bone marrow aspiration

Desirable to know

- Naso-gastric feeding,
- Paracentesis

Nice to know

- Intraosseous access

XXI) Pediatric surgery:

Must know

- Tracheo- esophageal fistula,
- Diaphragmatic hernia,
- Umbilical hernia,
- Hypertrophic pyloric stenosis.
- Intusussception
- Appendicitis

Desirable to know

- Diagnosis and timing of surgery of cleft lip/palate, phimosis
- Anorectal malformation
- Malrotation
- Hirschsprung disease
- Undescended testes

Nice to know

- Cystic hygroma
- Tortion testes

XXII) Dosages of common drugs (Must know)

XXIII) IMNCI (Must know)

XXIV Radiology (Must know)

Common Pediatric X-ray interpretation

- Pneumonia & Consolidation
- Miliary tuberculosis
- Pleural effusion
- Pneumothorax
- Rickets
- Scurvy
- Diaphragmatic hernia
- Tracheoesophageal fistula
- Congenital heart disease with increased or decreased blood flow

XXV) VITAL STATISTICS/NATIONAL HEALTH PROGRAMMES

Must know

- ICDS
- RCH,
- Vitamin A prophylaxis
- ARI
- Diarrhea control programme

Desirable to know

- Maternal, perinatal, neonatal, infant and preschool mortality rates. Definition, causes, present status

Nice to know

- FIMNCI
- CEMONC
- BEMONC

PRACTICAL SYLLABUS

II M.B.B.S PART -I

Introductory Batch (2 weeks)

Must Know

1. History taking :General and system wise .

2.General examination

3. Examination of all systems

4.Anthropometry:Measurement and interpretation of height, weight, head circumference, chest circumference, mid arm circumference

5.Measurement of vital signs in pediatrics

6.Writing a pediatric case sheet

7.Over view of difference between child and adult

Desirable to know:

1.Nutrition –normal protein, calorie, fat requirements

2. Formulation of diet chart to one year old child

3. Immunisation schedule

4. History taking in newborn

Nice to know:

1.Understanding normal growth and development

2. Evaluation and management of common OPD conditions

UG CURRICULAM (4 WEEKS)- (III M.B.B.S – Part I)

Must Know:

1.Taking a detailed Pediatric history

2.Conducting physical examination of children

3. Normal growth and development

4.Performing anthropometry and its interpretation

5.Developmental assessment of a child

6.Assessment of calorie/ protein intake and advise regarding feeding practice

7.Immunization schedule

8.Evaluation and management of common OPD conditions like diarrhea, common cold, upper and lower respiratory infections, asthma.

11.Approach to a child with acute fever (evaluation and management of common febrile conditions

including viral fever, enteric fever, malaria, UTI)

12.Approach to a child with prolonged / persistent fever (evaluation and management of pulmonary tuberculosis

13. Approach to respiratory distress

14. IMNCI

Desirable to know

1.Care of normal newborn at birth and in postnatal ward

2.Counseling for breast feeding/ infant feeding

3.All about normal newborn

4. Evaluation and management of common infectious diseases(viral hepatitis, malaria, typhoid)

5. Evaluation and management of acute gastroenteritis, persistent diarrhea

6. Evaluation and management of cardiovascular problems like congenital acyanotic and cyanotic heart diseases and rheumatic heart disease

7. Evaluation and management of common CNS conditions febrile seizures, epilepsy, cerebral palsy, developmental delay, microcephaly, hydrocephalus

III M.B.B.S. PART –II PEDIATRICS (4 weeks)

MUST TO KNOW

- Diagnose and appropriately treat common pediatric and neonatal illness.
- Identify pediatric and neonatal illnesses and problems that
- require secondary and tertiary care and refer them appropriately.
- Provide emergency cardiopulmonary resuscitation to newborns and older children.
- Recognize a critically ill child based on the pediatric assessment triangle and effectively intervene to stabilize the child before transporting to a higher centre.
- Ask for only relevant investigations and interpret it appropriately.
- Perform routine investigations and therapeutic procedures in a child.
- Administer vaccines.
- Manage and refer children and neonates based on IMNCI
- Counsel the parents and relatives of the patient regarding the illness, possible

complications and the prognosis.

- Participate in National programmes effectively.
- Manage patients with empathy, respect and ethically.

Nice to know

1.Adolescent Pediatrics

2.Pediatric emergencies –status epilepticus, status asthmaticus, recognition of critically ill child

3. Medical conduct during patient examination(empathy,privacy, Communication skill etc)

Recommended reading books

Textbooks for Pediatrics

1. "Essentials of Pediatrics" by OP Ghai, Vinod K Paul and Piyush Gupta (latest edition)

2. "Care of the Newborn" by Meharban Singh (latest edition)

Reference Books 1. "Nelson Textbook of Pediatrics" by Richard E. Behrman, Robert M. Kliegman, Waldo E. Nelson and Victor C. Vaughan (latest edition)

2. "Rudolph's Pediatrics" by Abraham M. Rudolph, Julien IE Hoffman, Colin D. Rudolph and Paul Sagan (latest edition)

3.IAP Text book of Pediatrics (latest edition)

Clinical Methods

1. "Hutchison's Clinical Methods" by M Swash (latest edition)

2. "Pediatrics Clinical Methods" by Meharban Singh (latest edition

3. "Pediatric Clinical Examination" by Dr. A. Santhosh Kumar (latest edition)

THEORY EXAMINATIONS

Question		Marks	
1	Essay	1 x 10 marks =	10 marks
2	Brief Answers	5 x 4 marks =	20 marks

3	Short Notes	5 x 2 marks	=	10 marks
	Total			40 marks

PRACTICAL EXAMINATIONS

Clincial Examination

	Case	Duration	Maximum
Long Case	1	35 minutes	13 marks

(5 marks for history, clinical examination and eliciting signs; 3marks for discussion on differential diagnosis; 5 marks for management)

Short case	2 (2x3marks)	20 minutes	6 marks
Spotters	2 (2x3 marks)	20 minutes	6 marks
Total			25 marks

OSCE

5 stations x I mark each 5 marks

(demonstration of clinical signs-observed station, Case scenario , IMNCI, counseling, recent advances)

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30 marks

VIVA 10 marks (4 stations- drug and vaccines, radiology, instruments, nutrition 2.5 marks each)

One Short case may be assigned as per the IMNCI (Integrated Management of Neonatal and Childhood illness) approach.

Eg. New born

Anemia

Malnutrition

Pneumonia

Jaundice

Diarrhea

Severe bacterial infection .

Formative Assessment

At the end of every clinical posting a practical evaluation should be conducted

and assessment marks with attendance to be submitted to the university at end of everyclinical posting – both hard and soft copy

Theory test should be conducted periodically at end of three / four chapters during theory classes.

Internal Assessment (20 marks)

The final Internal assessment marks will be the average of all tests conducted from II MBBS part I to III MBBS part I – Theory 10, Practical -10.

For III MBBS part II Theory 10,Practicals 5 and Record 5

Medical ethics

- Human values
- Conflicts
- Informed consent
- Confidentiality
- Conflicts of interest
- Cultural concerns
- Importance of communication
- A theory class on medical ethics is allotted each year.

Integrated teaching

Theory classes should include integrated teaching.

Vertical integration with involvement of Anatomy, Physiology, Biochemistry, Microbiology, Pathology, Pharmacology

Horizontal integration with involvement of General Medicine, Surgery, Orthopediatrics, Community Medicine , Physical Medicine and Rehabilitation.

Vertical integration-	Horizontal Integration
1.Rheumatic heart disease 2,Bronchiectasis 3.Rickets 4.Portal hypertension 5.Anemia 6.Thalassemia 7.Infective endocarditis 8.Urinary tract infection 9.Diarrheal diseases 10.Pneumonia 11. Immunization Schedule	1. Cerebral Palsy 2. Nephritic/nephritic syndrome 3. Downs syndrome 4. Immunization in children 5. Pediatric HIV 6. Acute CNS infections 7. Hypothyroidism/short stature 8. .Cyanotic heart diseases 9. Chronic liver disease 10. Stroke in children 11. Common Poisoning in children

Record/ Log book

Record should be submitted at the end of the postings during the internal assessment practical test.

The record should contain a detailed case sheet of ten cases admitted in the ward along with the investigations done for those patients and treatment given.

The cases should include atleast one newborn, one emergency, and one from IMNCI.

LOG BOOK:

Log Book should be followed as recommended by the University.

CRRI orientation in Pediatrics

Skills

1. Diagnose and appropriately treat common pediatric and neonatal illness.
2. Should know to write a pediatric and newborn case sheet.
3. Identify pediatric and neonatal illnesses and problems that require secondary and tertiary care and refer them appropriately.
4. Provide emergency cardiopulmonary resuscitation to newborns and older children.
5. Recognize a critically ill child based on the pediatric assessment triangle and effectively intervene to stabilize the child before transporting to a higher centre.
6. Do only relevant investigations and interpret it appropriately.
7. Administer all vaccines in national immunization schedule
8. Manage and refer children and neonates based on IMNCI
9. Counsel the parents and relatives of the patient regarding the illness, possible complications and the prognosis.
10. Participate in National programmes effectively.
11. Manage patients with empathy, respect and ethically.
12. Should know to manage the following Pediatric emergencies – status epilepticus, status asthmaticus, stridor, various types of shock, snake bite, scorpion sting.
13. Should know to identify manage the following neonatal emergencies- neonatal seizures, Hypoglycemia, hypocalcemia, sepsis,life threatening surgical emergencies
14. Should identify a child with poisoning and manage appropriately.
15. Should know basics of fluid therapy in children including preparation and dose of ORS.
16. Should know about oxygen delivery devices.
17. Should have knowledge of the drug dosage in relation to body weight (commonly used drugs)

Therapeutic and diagnostic procedures

1. Start an intra venous line
2. Lumbar puncture
3. Bone marrow aspiration
4. Pleural tap
5. Ascitic tap
6. Urinary catheterization
7. Collection of blood sample for investigations
8. Intramuscular injections
9. Bag mask ventilation

Should have completed PEMC module for CRRI and BLS

Assessment

A test will be conducted at the end of the posting.

Log book should be maintained

UNIT TEST I

1.Normal growth and its disorders

2.Development

3. Adolescent health and development

4.Fluid and electrolyte disorders

Unit TEST II

1.Nutrition

2.Micronutrients in health and disease

3 Newborn infants

UNIT TEST III

1.Infections and infestations

2.Immunization and Immunodeficiency

UNIT TEST IV

1.Diseases of gastrointestinal system and liver

2.Haematological disorder

3.Otolaryngology

UNIT TEST V

1.Disorders of respiratory system

2.Disorders of cardiovascular system

3.Disorders of kidney and urinary tract

UNIT TEST VI

1.Endocrine and metabolic disorders

2.Central nervous system

3.Neuromuscular disorders

UNIT TEST VII

1.Childhood malignancies

2.Rheumatological disorders

3.Genetic disorders

UNIT TEST VIII

1.Inborn errors of metabolism

2.Eye disorders

3.Skin disorders

UNIT TEST IX

1.Poisoning ,injuries and accidents

2.Paediatric critical care

UNIT TEST X

1.Rational drug therapy

2.Integrated management of neonatal and childhood illness

3.Rights of children

Mock clinical exam / Theory test will be conducted unit-wise and evaluated accordingly for Internal Assessment.