

# **Clinical Pediatrics for Undergraduates**



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### **Physician's Prayer**

Dear Lord, Thou great physician, I kneel before thee,  
since every good and perfect gift must come from thee, I pray.  
Give skill to my hands, clear vision to my mind, kindness and sympathy to my heart,  
Give singleness of purpose, strength to lift at least a part of the burden  
of my fellow men and a true realization of the privilege that is mine.  
Take from my heart all guile and worldliness, that  
with simple faith of a child, I may rely on thee.

### **A Prayer for You— My Child**

When I bring to you colored toys, my child, I understand  
why there is such a play of colors on clouds, on water and  
why flowers are painted in tints.  
When I sing to make you dance, I truly know  
why there is music in leaves and  
why waves send their chorus of voices to the heart of the listening earth.  
When I bring sweet things to you, I know  
why there is honey in the cup of the flower and  
why fruits are secretly filled with sweet juice.  
When I kiss your face to make you smile, my darling, I surely understand  
what the pleasure is that streams from the sky in the morning light and  
what delight that is which the summer breeze brings to my body.

*Rabindranath Tagore*



# PREFACE

Those who care for children do care for the future citizens of the nation. All doctors will have to care for children, either in their own houses, society or during their professional career, sometime or the other. Even, super specialists in other disciplines cannot shy away from taking up this task.

Since 1997, Pediatrics is a separate subject for Undergraduate (UG) postings and exams. The available textbooks, though packed with information, do not fully meet the need and expectations of the UG student.

*Clinical Pediatrics for Undergraduates* covers the basics of Pediatrics like growth and development, immunization, nutrition and neonatology. The various common diseases are discussed as case studies arranged in a system-wise manner in the different chapters. The sections on community pediatrics, pediatric emergencies and drug dosages are designed to empower the young graduates to master and impart quality health care. Highlights on syllabus, instruments and procedures, OSCE, Viva and X-rays are additional attractions from the exam point of view.

Mahatma Gandhi remarked, **‘Satisfaction lies in the effort, not in the attainment. Full effort is full victory’**. Hence with a great feeling of satisfaction, I present this book to the young budding doctors for a complete success. I look forward to receiving your suggestions and feedback.

I thank God, The Almighty, for giving me the strength and courage to fulfill this task. I also place on record my sincere gratitude to my teachers, colleagues and ‘child patients’.

I thank my family members, Dr George Jacob, Er. Anooja Mary Jacob, Er. Manoj Mathen Philip and Miss Ann Mary Jacob (medico) for the great sacrifices they offered to me in this endeavor.

**Elizabeth KE**





# CONTENTS

## *Syllabus and Case Recording Format*

1. History Taking and Physical Examination .....	1
2. Growth and Development .....	22
3. Neonatology .....	58
4. Immunization.....	85
5. Community Pediatrics and National Programs .....	95
6. Nutrition .....	128
7. Infections and Immunity .....	162
8. Cardiovascular System .....	179
9. Respiratory System .....	192
10. Gastrointestinal System .....	201
11. Genitourinary System .....	213
12. Hemato-Oncology .....	219
13. Endocrine and Chromosomal Conditions .....	231
14. Central Nervous System .....	238
15. Pediatric Emergencies .....	248
16. Instruments and Procedures .....	288
17. OSCE, Viva and X-rays .....	300
18. Drugs and Dosages .....	311
<i>Appendix</i> .....	331
ELIZ Health Paths .....	331
WHO Growth Charts .....	335
Fluid Therapy .....	338
Glasgow Coma Scale.....	340
Millennium Development Goals .....	341
Trivandrum Developmental Screening Chart .....	342
<i>Index</i> .....	343



# SYLLABUS

## PEDIATRICS (Including Neonatology)

### I. SYLLABUS

The course includes systematic instructions in growth and development, nutritional needs of a child, immunization schedules and management of common diseases of infancy and childhood, scope of social pediatrics and counselling.

#### A. GOAL

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

#### B. OBJECTIVES

##### 1. Knowledge

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

- a. Describe the normal growth and development during fetal life, neonatal period, childhood and adolescence and outline deviations thereof;
- b. Describe the common pediatric disorders and emergencies in terms of epidemiology, etiopathogenesis, clinical manifestations, diagnosis, rational therapy and rehabilitation.
- c. State age related requirements of calories, nutrients, fluids, drugs etc. in health and disease.
- d. Describe preventive strategies for common infectious disorders, malnutrition, genetic and metabolic disorders, poisonings, accidents and child abuse.
- e. Outline national programmes relating to child health including immunization programmes.

##### 2. Skills

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

- a. Take a detailed pediatric history, conduct an appropriate physical examination of children including neonates, make clinical diagnosis, conduct common bedside investigative procedures, interpret common laboratory investigation results and plan and institute therapy.
- b. Take anthropometric measurements, resuscitate newborn infants at birth, prepare oral dehydration solution, perform tuberculin test, administer vaccines available under current national programs; perform venesection, start an intravenous saline and provide nasogastric feeding;

- c. Observe and assist in procedures such as lumbar puncture, liver and kidney biopsy, bone marrow aspirations, pleural tap and ascitic tap and intraosseous transfusion and nebulization
  - d. Distinguish between normal newborn babies and those requiring special care and institute early care to all newborn babies, provide correct guidance and counseling in breastfeeding.
  - e. Provide ambulatory care to all sick children, identify indications for specialized/inpatient care, ensure timely referral of those who require hospitalization.
3. 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, Physiology, Pathology, Community Medicine and Physical Medicine and Rehabilitation.

## DETAILED SYLLABUS

### Details of the Course

Duration of the course	: 3 semesters – IV, V, VI, VII, VIII, IX
Total number of hours	: 300
Lecturers	: 100
Practicals	: 100
Innovative sessions	: 100

(Project work, Seminars, Structured discussion, Integrated teaching, Formative evaluation, Revision).

### DETAILS OF LECTURES

	60hrs.
Infectious Diseases	6 hrs.
Poliomyelitis, Measles, Diphtheria, Tetanus, Malaria, Leptospira, Hemorrhagic fevers	6 hrs.
Childhood Tuberculosis, Typhoid Fever, HIV Infection	
GIT	
Gastrointestinal tract and Liver disorder	4 hrs.
Malabsorption syndromes, Hepatitis and hepatic failure Cirrhosis liver and portal hypertension, Helminthic infestations	
CVS	4 hrs.
Congenital heart disease, Rheumatic fever and RHD CCF hypertension	
Respiratory system	4 hrs.
Childhood asthma, Acute bronchiolitis, Pneumonias in children Suppurative lung disease	

CNS	
Cerebral palsy, Mental retardation, Febrile fit	6 hrs.
Meningitis and Encephalitis, Epilepsy and status epilepticus	
Abnormal skull and intrauterine infections, Floppy infant	
Neurological manifestations of systematic illness, Therapeutics – treatment of epilepsy	
Hemopoietic system	4 hrs.
Anemia in children, Bleeding disorders	
Disorders of kidney	4 hrs.
Acute Nephritis, Nephrotic syndrome, Renal failure, Urinary tract infection	
Endocrine disorders	2 hrs.
Diabetes mellitus, Thyroid and adrenal disorders, Short stature	
Connective tissue disorders	2 hrs.
JRA, Other vasculitis syndromes, Kawasaki disease	
Malignancies in children	2 hrs.
Leukemia, Lymphomas, Neuroblastoma, Solid tumor	
Newborn	6 hrs.
Respiratory distress in newborn, Perinatal diagnosis and treatment, Sepsis in NB, assessment and management of Asphyxia, Thermoregulation in NB Feeding and BFHI, Congenital malformations, Neonatal jaundice, Neonatal seizures	
Behavioral problems in children and adolescents	2 hrs.
Enuresis, Thumb sucking, Breath holding, Counselling	
Common orthopedic problems	2 hrs.
Common poisoning and accidents in children	2 hrs.
Kerosene, Dhatura, Snake bite, Organophosphorus	
National Programs	2 hrs.
ARI, BFHI, AFP, ICDS, Vitamin A prophylaxis, Iodine-deficiency-Management RCH, NRHM, NUHM, PPTCT, Iron and folic acid supplementation, IMNCI, IDSP (Integrated Disease Surveillance Project, Infant and Young Child Feeding Practices (IYCF), Immunization program	
Common chromosomal disorders and genetic counseling	4 hrs.
Down's syndrome, Turner's syndrome etc	
Nutrition	4 hrs.

**TUTORIAL TOPICS****Total = 40 hrs.****Introduction to Pediatrics**

Growth and development, Nutrition

Immunization

Newborn, Resuscitation of NB, LBW babies, Convulsions in NB, Jaundice

Assessment of gestation, Examination of NB, Normal variations in NB  
Approach to a child with cardiac problems, Cardiac failure  
Approach to a child with heart diseases, Congenital and acquired  
Acute diarrheal disorders  
Approach to a child with anemia  
Bleeding disorders  
Edema in children  
Wheezing and stridor in children  
P.U.O  
Failure to thrive  
Convulsions in children, Coma in children  
Approach to a child with jaundice  
Acute flaccid paralysis in children  
Shock in children  
Disabled child  
Child with rash  
Pediatric surgery classes  
Instruments and procedures

## **DETAILS OF PRACTICALS – CLINICAL POSTINGS**

8.00 – 9.00 am : Symposia/group discussions: (Basic science topics in non-clinical and paraclinical subjects)  
9.00 – 10.30 am : Case demonstration/out patients department  
10.30 – 12 N : Clinical discussions (upto 1 pm from 2009 Batch)  
Separate clinical record book should be kept and at least ten cases to be included

## **II. TEXTBOOKS RECOMMENDED**

### **Prescribed Books**

1. Textbooks of Pediatrics by O.P. Ghai
2. Practical Pediatrics by Meharban Singh
3. Newborn care by Meharban Singh

### **Reference Books**

1. Textbooks of Pediatrics by Nelson, WB Saunders Co.
2. IAP Textbook of Pediatrics; 3rd Edition, Jaypee
3. Nutrition and Child Development by Elizabeth K.E.
4. S Sushama Bai Clinical Evaluation of Newborns, Infants and children, 2nd edition, Jaypee.

### III. EVALUATION/ EXAMINATION

Theory Pediatrics including Neonatology

One paper of two hours having 40 marks

MCI (Till 2008 Batch)	MCI Pediatrics (2009 Batch Onward)
<b>Section A</b>	<b>Total Marks</b> <b>100</b>
MCQ	<b>Theory Examination</b> <b>50 marks</b>
Single response = 4 marks	Theory paper 40 marks
Match the following = 4 marks	Long answer question 10 marks
Draw and Label = 2 marks	Short answer question 30 marks
SAQ (1 × 4) = 4 marks	Internal Assessment 10 marks
SAQ (2 × 3) = 6 marks	<b>Practical Examination</b> <b>50 marks</b>
<b>Section B</b>	Structured case
Essay (Problem solving) = 10 marks	2 cases of 10 marks each 20 marks
SAQ (1 × 4) = 4 marks	OSCE*
SAQ (3 × 2) = 6 marks	Each station of 4 marks
Total = 40 marks	Total 5 stations 20 marks
<b>Theory marks</b> = <b>40 marks</b>	Internal Assessment 10 marks
Internal assessment = 10 marks	OSCE* these stations should preferably evaluate
Viva Voce = 10 marks	1. Communication skills
Total for theory = 60 marks	2. Problem solving
<b>Practical marks</b> = <b>30 marks</b>	3. Performance skill
Internal Assessment = 10 marks	4. Interpretation of radiology or laboratory data
Total for Practical = 40 marks	5. Structured viva
<b>Total for the subject</b> = <b>100 marks</b>	
University Exam	
Theory one paper 40 marks	
Practical: Clinical Short cases (2) 20 marks	
OSCE 10 marks	
Total 30 marks	
Viva = 10 marks	
Oral Exam Topics to be divided and all examiners to examine each student.	
X-rays, Instruments, drugs, vaccines, food items etc.	

## IV. CASE RECORDING FORMAT

### A. HISTORY

1. Socio-demographic/personal data  
Name, age (date of birth when relevant), gender, address, informant and reliability of the history.
2. Presenting complaints  
List in chronological order
3. History of present illness  
Mode of onset, duration, progression, associated symptoms, aggravating and relieving factors, points relevant in etiology and complications, negatives points, treatment history, course of the illness, etc.
4. History of past illness  
Similar illness, episodes of common childhood illnesses like ARI, ADD, VPDs, febrile fit, previous hospitalizations, etc.
5. Antenatal history  
Antenatal care, exposure to exanthematous fevers, drugs, radiation etc., addictions, and systemic diseases, pregnancy related illnesses etc.
6. Natal history  
Gestational age, mode and place of delivery, birth weight, birth cry, initiation of breastfeeding, resuscitation, etc.
7. Neonatal history  
Hospital stay, special care, jaundice, cyanosis, fits, feeding practices.
8. Developmental history  
Gross motor, fine motor adaptive, language, personal social milestone, vision, hearing etc.
9. Dietary history  
Breastfeeding history, complementary feeding, family pot feeding, cooking practices, diet during illness, any exclusion diet, food fads, adequacy of calories, protein and micronutrients, supplementary feeding.
10. Immunization status  
Vitamin A prophylaxis, other on demand vaccines, whether fully immunized for age as per UIP, IAP schedule. Primary and booster doses, BCG Scar, last vaccine taken, next vaccine due etc.
11. Family and socioeconomic history  
Consanguinity, pedigree in genetic disorders, age and health of parents, details of siblings, unexplained deaths in the family, contact with TB, history of diabetes, allergic disorders, similar illness in the family, education, occupation and income of parents, socio-economic status, whether APL/BPL family, housing conditions, sanitary facilities, source of drinking water, etc.



**B. PHYSICAL EXAMINATION**

1. General examination
  - (a) General comment
  - (b) Vital signs – Temperature, pulse, respiration, BP, Capillary filling Time (CFT)
  - (c) Hand to Head to Foot examination including pallor, icterus, cyanosis, clubbing, lymphadenopathy, edema (PICCLE), congenital anomalies, etc. start with examination of the hands. Tooth also should be examined and counted.
  - (d) Assessment of growth: Anthropometry, comparison with reference standards or normal range and interpretation of anthropometry, whether normal/grade of PEM, stunting, wasting, microcephaly.
  - (e) Assessment of development: Gross motor, fine motor adaptive, language, personal social development, developmental age, DQ, school performance, intelligence, etc.
2. Systemic examination
  - (a) Central nervous system  
Higher functions, cranial nerves, motor system, sensory system, superficial and deep reflexes, primitive/neonatal reflexes, coordination, gait, skull and spine, involuntary movements, signs of meningeal irritation, peripheral nerves, autonomic dysfunction.
  - (b) Cardiovascular system: Pulse, BP, JVP, inspection, palpation, percussion and auscultation.
3. Respiratory system: Respiratory rate, work of breathing, retractions, accessory muscles, upper airways, nose, throat, paranasal sinuses, trachea, inspection of chest, palpation, percussion, auscultation.
4. Gastrointestinal system: Upper GIT, inspection of abdomen, palpation of abdominal organs/mass, percussion, auscultation, hernial orifices, PR examination when indicated.
5. Musculoskeletal system: Examination of joints, bones.

**C. Summary**

**D. Diagnosis and differential diagnosis**

**E. Investigations**

**F. Treatment and prevention.**