



# MGM INSTITUTE OF HEALTH SCIENCES

(Deemed to be University u/s 3 of UGC Act, 1956)

**Grade 'A' Accredited by NAAC**

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## COMPETENCY BASED MEDICAL EDUCATION (CBME)

(with effect from 2019-2020 Batches)

# Curriculum for Third M.B.B.S – Part II Paediatrics

Approved as per AC-46/2023, Dated 28/04/202

## **Amended History**

1. Approved as per AC-42/2022, [Resolution No. 10.3], Dated 26/04/2022.
2. Amended upto AC-42/2022, [Resolution No. 3.41], [Resolution No.3.42], [Resolution No.3.43], [Resolution No. 3.45], Dated 16/09/2020 (incorporated at the end of syllabus).
3. Amended upto AC-46/2023, [Resolution No.5.28], dated 28/04/2023.

**Resolution No. 10.3 of Academic Council (AC-42/2022):** Resolved to approve:

UG CBME (MBBS-Paediatrics) curriculum to be implemented from batch admitted in academic year 2019-20 onwards & [ANNEXURE-71]

## UG Pediatrics Syllabus (Based on CBME)

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 counseling.

**OBJECTIVES** The broad goals of the teaching of undergraduate students in Pediatrics are to acquire knowledge and appropriate skills for optimally dealing with major health problems of children and to ensure their optimal growth and development.

### 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 pediatrics disorder and emergencies in terms of epidemiology, etio-pathogenesis, 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 programs relating to child health including immunization programs;

### SKILLS

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

- (a) Take a detailed pediatrics history, conduct an appropriate physical examination of children including neonates, make clinical diagnosis, conduct common bedside investigative procedures, interpret common laboratory investigations and plan and institute therapy;
- (b) Take anthropometric measurements, resuscitate newborn infants with bag and mask at birth, prepare oral rehydration solution, perform tuberculin test, administer vaccines available under current national programs, start an intravenous line and provide naso-gastric feeding, observe venesection and intraosseous infusion, if possible.
- (c) Conduct diagnostic procedures such as lumbar puncture, bone marrow aspiration, pleural tap and ascitic tap; observe liver and kidney biopsy.
- (d) Distinguish between normal newborn babies and those requiring special care and institute early care to all new born babies including care of pre-term and low birth weight babies, provide correct guidance and counseling in breast-feeding.
- (e) Provide ambulatory care to all sick children, identify indications for specialized/inpatient care and ensure timely referral of those who require hospitalization.

**INTEGRATION** (f) The training in pediatrics should be done in an integrated manner with other disciplines, such as Anatomy, Physiology, Forensic Medicine, Community Medicine, Obstetrics and

Physical Medicine, curative and rehabilitative services for care of children both in the community and at hospital as part of a team.

## **COURSE CONTENT**

### **VITAL STATISTICS**

- Definition and overview of Pediatrics with special reference to age-related disorders. Population structure, pattern of morbidity and mortality in children.
- Maternal, perinatal, neonatal, infant and preschool mortality rates. Definition, causes, present status and measures for attainment of goals.
- Current National programs such as ICDS, RCH, Vitamin A prophylaxis, UIP, Pulse polio, AFP, ARI, Diarrhea control programs etc., IMNCI/ FIMNCI, Other National Programs as part of National Health Mission.

### **GROWTH AND DEVELOPMENT**

- Normal growth from conception to maturity.
- Anthropometry – measurement and interpretation of weight, length/height, head circumference, midarm circumference. Use of weighing machines, infantometer, calipers, orchidometer.
- Interpretation of Growth Charts: Road to Health card and percentile growth curves (WHO/NCHS).
- Abnormal growth patterns – failure to thrive, short stature.
- Growth pattern of different organ systems such as lymphoid, brain and sex organs.
- Normal pattern of teeth eruption.
- Principles of normal development.
- Important milestones in infancy and early childhood in the areas of Gross Motor, Fine Motor, Language and Personal–Social development. 3-4 milestones in each of the developmental fields, age of normal appearance and the upper age of normal psychological and behavioral problems.
- Measurement and interpretation of sitting height, US: LS ratio and arm span.
- Age-independent anthropometric measurement-principles and application.

### **NUTRITION**

- Normal requirements of protein, carbohydrates, fats, minerals and vitamins for newborn, children and pregnant and lactating mother. Common food sources.
- Breast feeding, physiology and lactation, composition of breast milk, Colostrum, Initiation and technique of feeding. Exclusive breast milk. Hazards and demerits of pre-lacteal feed, top milk and bottle-feeding. Feeding of LBW babies.
- Infant feeding/weaning foods, method of weaning.
- Assessment of nutritional status of a child based on history and physical examination.
- Protein energy malnutrition-Definition, classification according to IAP/Welcome Trust, acute versus chronic malnutrition. Clinical features of Marasmus & kwashiorkor. Causes and management of PEM including that of complications planning a diet for PEM.
- Vitamins-Recognition of vitamin deficiencies (A, D, K, C, B Complex). Etiopathogenesis, clinical feature, biochemical and radiological findings, differential diagnosis and management of nutritional rickets & scurvy. Hypervitaminosis A and D.

- Characteristics of transitional and mature milk (foremilk & hind milk). Prevention and management of lactation failure and feeding problems.
- Definition, causes and management of obesity.

## **IMMUNIZATION**

- National Immunization Program.
- Principles of Immunization. Vaccine preservation and cold-chain.
- Types, contents, efficacy storage, dose, site, route, contra-indications and adverse reactions of vaccines – BCG, DPT, OPV, Measles, MMR and Typhoid: Rationale and methodology of Pulse Polio Immunization.
- Investigation and reporting of vaccine preventable diseases. AFP (Acute Flaccid Paralysis) surveillance.
- Special vaccines like Hepatitis B, H influenza B, Pneumococcal, Hepatitis A, Chicken pox, Meningococcal, and Rabies.

## **INFECTIOUS DISEASES**

- Epidemiology, basic pathology, natural history, symptoms, signs, complications, investigations, differential diagnosis, management and prevention of common bacterial, viral and parasitic infections in the region, with special reference to vaccine-preventable disease: Diarrhea, LRTI, Tuberculosis, Poliomyelitis, Meningitis, Diphtheria, Whooping cough, Tetanus including neonatal tetanus, Measles, Mumps, Rubella, Typhoid, Viral Hepatitis, Cholera, Chickenpox, Giardiasis, Amoebiasis, Intestinal helminthiasis, Malaria, Dengue fever, AIDS.
- Kala-Azar, Leprosy, Chlamydia infection

## **HEMATOLOGY**

- Causes of anemia in childhood. Classification based on etiology and morphology.
- Epidemiology, recognition, diagnosis, management and prevention of nutritional anemia-iron deficiency, megaloblastic.
- Clinical approach to a child with anemia with lymphadenopathy and/or hepato- splenomegaly.
- Epidemiology, clinical features, investigations and management of Thalassemia.
- Approach to a bleeding child.
- Diagnosis of acute lymphoblastic leukemia and principles of treatment.
- Clinical features and management of hemophilia, ITP.
- Diagnosis and principles of management of lymphomas.
- Types, clinical features and management of acute hemolytic anemia.
- Non-thrombocytopenic purpura (Henoch-Schonlein purpura)

## **RESPIRATORY SYSTEM**

- Clinical approach to a child with cyanosis, respiratory distress, wheezing. Significance of recession, retraction.
- Etiopathogenesis, clinical features, complications, investigations, differential diagnosis and management of acute upper respiratory infections, pneumonia with emphasis on bronchopneumonia, bronchiolitis, bronchitis. Acute and chronic otitis media.
- Etiopathogenesis, clinical features, diagnosis, classification and management of bronchial asthma. Treatment of acute severe asthma.
- Pulmonary tuberculosis-tuberculous infection versus tuberculous disease, difference between primary and post-primary tuberculosis. Etiopathogenesis, diagnostic criteria in children versus

adults. Diagnostic aids-technique and interpretation of Mantoux test and BCG test. Radiological patterns, Chemoprophylaxis and treatment.

- Diagnosis and management of foreign body aspiration. Differential diagnosis of stridor.
- Pathogenesis, clinical features and management of pneumothorax, pleural effusion and empyema.
- Multidrug resistant tuberculosis, Bronchiectasis, pulmonary cysts

## **GASTRO INTESTINAL TRACT**

- Clinical approach to a child with jaundice, vomiting, abdominal pain, upper and lower GI bleeding, hepato-splenomegaly.
- Acute diarrheal disease-Etiopathogenesis, Clinical differentiation of watery and invasive diarrhea, complications of diarrheal illness. Assessment of dehydration, treatment at home and in hospital. Fluid and electrolyte management. Oral rehydration, composition of ORS.
- Persistent and chronic diarrhea
- Clinical features and management of acute viral hepatitis and acute liver failure, causes & diagnosis of Chronic Liver Disease.
- Neonatal cholestasis, portal hypertension
- Common causes of constipation.
- Abdominal tuberculosis.
- Causes, clinical features and management of Portal hypertension, Reye's syndrome, Celiac disease.
- Drug induced hepatitis

## **CENTRAL NERVOUS SYSTEM**

- Evaluation of milestones and developmental age
- Localization of neurological deficit
- Clinical approach to a child with coma, mental retardation
- Common causes and approach to convulsion
- Clinical diagnosis, investigations and treatment of acute pyogenic meningitis, encephalitis & Tubercular Meningitis, Cerebral Malaria
- Seizure Disorder-Causes and types of convulsions at different ages. Diagnosis categorization & management of Epilepsy (Broad outline). Febrile convulsions-definition, types Management of seizures and status epilepticus.
- Causes, diagnosis and management of cerebral palsy.
- Acute flaccid paralysis – Differentiation between Polio and Guillain – Barre syndrome.
- Microcephaly, Hydrocephalus, chorea
- Counseling parents for inherited neurological diseases
- Infantile tremor syndrome, infantile hemiplegia.

## **CARDIOVASCULAR SYSTEM**

- Clinical features, diagnosis, investigation, treatment and prevention of acute rheumatic fever. Common forms of rheumatic heart disease in childhood. Differentiation between rheumatic and rheumatoid arthritis.
- Recognition of congenital acyanotic and cyanotic heart disease. Hemodynamics, clinical features and management of VSD, PDA, ASD and Fallot's tetralogy (Cyanotic spells).
- Recognition of congestive cardiac failure in children.
- Hypertension in children-recognition and referral.
- Diagnosis and management of bacterial endocarditis, pericardial effusion, myocarditis.

## **GENITO-URINARY SYSTEM**

- Basic etiopathogenesis, clinical features, diagnosis, complications and management of acute poststreptococcal glomerulo-nephritis and nephrotic syndrome.
- Etiology, clinical feature, diagnosis and management of urinary tract infection – acute and recurrent.
- Etiology, diagnosis and principles of management of acute failure.
- Causes and diagnosis of obstructive uropathy in children.
- Diagnosis and principles of management of chronic renal failure.
- Causes and diagnosis of hematuria.
- Renal and bladder stones
- Hemolytic-uremic syndrome

## **ENDOCRINOLOGY**

- Etiology clinical features & diagnosis of diabetes and hypothyroidism, hyperthyroidism and goiter in children.
- Delayed and precocious puberty

## **NEONATOLOGY**

- Definition – live birth, neonatal period, classification according to weight and gestation, mortality rates.
- Delivery room management including neonatal resuscitation and temperature control
- Etiology, clinical features, principles of management and prevention of birth asphyxia.
- Birth injuries – causes and their recognition.
- Care of the normal newborn in the first week of life. Normal variations and clinical signs in the neonate.
- Breast feeding-physiology and its clinical management
- Identification of congenital anomalies at birth with special reference to anorectal anomalies, tracheoesophageal fistula, diaphragmatic hernias, neural tube defects.
- Neonatal Jaundice: causes, diagnosis and principles of management.
- Neonatal infection– etiology, diagnosis, principles of management. Superficial infections, sepsis.
- Low birth weight babies-causes of prematurity and small-for-date baby, clinical features and differentiation. Principles of feeding and temperature regulation. Problems of low birth weight babies.
- Identification of sick newborn (i.e. detection of abnormal signs – cyanosis, jaundice, respiratory distress, bleeding, seizures, refusal to feed, abdominal distension, failure to pass meconium and urine).
- Recognition and management of specific neonatal problems-hypoglycemia, hypocalcemia, anemia, seizures, necrotizing enterocolitis, hemorrhage
- Common intra-uterine infections
- Transportation of a sick neonate.

## **PEDIATRICS EMERGENCIES**

- Status epilepticus
- Status asthmaticus/Acute Severe Asthma
- Shock and anaphylaxis. · Burns · Hypertensive emergencies.
- Gastrointestinal bleed.
- Comatose child

- Congestive cardiac failure
- Acute renal failure

## **FLUID-ELECTROLYTE**

- Principles of fluid and electrolyte therapy in children
- Pathophysiology of acid-base imbalance and principle of management

## **GENETICS**

- Principles of inheritance and diagnosis of genetic disorders
- Down's syndrome and common genetic disorders

## **BEHAVIORAL PROBLEMS**

- Breath holding spells, nocturnal enuresis, temper tantrums, pica

## **PEDIATRICS SURGICAL PROBLEMS**

- Diagnosis and timing of surgery of Cleft lip/palate, hypospadias, undescended testis, tracheoesophageal fistula, hydrocephalus, CTEV, Umbilical and inguinal hernia, malformations, hypertrophic pyloric stenosis.

## **THERAPEUTICS**

- Pediatric doses, drug combinations, drug interactions, age specific choice of antibiotics.

## **TEACHING AND LEARNING ACTIVITIES**

Teaching in the department will include didactic/interactive lectures and practical training.

## **DIDACTIC/ INTERACTIVE/INTEGRATED LECTURES TOPICS**

1. Introduction to child health and age related influences on child health
2. Growth: Principles, Normal pattern, clinical indices and use of growth charts
3. Growth: Abnormal, etiology and approach to management
4. Development: Principles and normal milestones
5. Abnormal development: etiology and management
6. Protein energy malnutrition: Etiology, classification, clinical features, management
7. Clinical aspects of fluid and electrolyte balance in children
8. Common vaccines: doses, schedule, contraindications and side effects
9. Approach to a child with shock
10. Approach to a child with acute fever
11. Deficiency disorders of vitamins and micro-nutrients
12. Approach to a child with acute diarrhea, dehydration and ORS
13. Persistent diarrhea: etiology, clinical features and management. Dietary therapy in chronic diarrhea
14. Approach to management of common abdominal symptoms -pain, vomiting, constipation, rectal bleeding etc
15. Approach to a child with upper respiratory tract infection (LTB, epiglottitis, otitis media, cough and cold)
16. Approach to a child with lower respiratory infection (pneumonia, bronchiolitis)
17. Approach to a child with wheezing including asthma
18. Introduction to newborn care, and classification of neonates.
19. Care of normal newborn
20. Breast feeding , weaning diets and lactation failure



21. Approach to a newborn with respiratory distress
22. Approach to jaundice in the newborn
23. Infections in the newborn
24. Perinatal asphyxia: etiology, clinical features and management
25. Approach to a child with bleeding & coagulation disorders
26. Approach to a child with malignancy
27. Approach to a child with congestive cardiac failure
28. Rheumatic fever: clinical features, management and prophylaxis
29. Approach to a child with congenital heart disease
30. Approach to a child with urinary tract infection including recurrent UTI
31. Approach to a child in coma
32. Approach to a child with acute flaccid paralysis
33. Neonatal seizures and febrile convulsions diagnosis and management
34. Approach to common genetic disorders including Down's Syndrome
35. Short stature, hypothyroidism: etiology and management
36. Adolescent growth, sexual maturation and disorders of Puberty.

## **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)

### **Clinical Methods**

1. "Hutchison's Clinical Methods" by M Swash (latest edition)
2. "Pediatrics Clinical Methods" by Meharban Singh (latest edition)
3. Undergraduate manual of clinical cases –Harish Pemde

### *Assessment:*

#### **Formative & internal assessment:**

Formative assessment is an assessment conducted during the instruction with the primary purpose of providing feedback for improving learning. The feedback is central to formative assessment and is linked to deep learning, seeking to explore the educational literature and its pedagogical lessons for healthcare educational practice.

An end of posting, clinical assessment will be conducted for each clinical posting in each professional year. Prior to University examinations, departments will conduct additional tests as and when required with the purpose of providing formative feedback to the students.

## **Components of IA**

- (i) Theory IA will include: Written tests, should have essay questions, short notes and creative writing experiences.

- (ii) Practical / Clinical IA will include: practical / clinical tests, Objective Structured Clinical Examination (OSCE) / Objective Structured Practical Examination (OSPE), Directly Observed Procedural Skills (DOPS), Mini Clinical Evaluation Exercise (mini-CEX), records maintenance and attitudinal assessment.
- (iii) Assessment of Log-book. Log book will record all activities like seminar, symposia, quizzes and other academic activities. Achievement of certifiable competencies should also be recorded in logbooks.

It should be assessed regularly and submitted to the department.

**Feedback in IA:** Feedback will be provided to students throughout the course so that they are aware of their performance and remedial action can be initiated well in time. The feedbacks need to be structured and the faculty and students must be sensitized to giving and receiving feedback. The results of IA will be displayed on notice board within two weeks of the test and an opportunity provided to the students to discuss the results and get feedback on making their performance better.

**Resolution No. 3.41 of Academic Council (AC-42/2022):** Resolved to approve the Pediatric internal assessment format as per CBME guidelines for UG (MBBS Phase 2, 3, and 4). [ANNEXURE-29]

**REVISED ASSESSMENT FORMAT – CBME PEDIATRICS BATCH 2019 ONWARDS**

**ANNEXURE 29:** As per discussion in Academic council meeting suggestion was given to have a consensus. The matter was discussed in both department and following changes are done .

**EXPLANATION:** The changes are necessary so as to align with other clinical departments, who are not holding practical exam at end of term and in timetable submitted to NMC also doesnot mention it.

<b>Internal Examination Format – Paediatrics</b>			
<b>Sr. No</b>	<b>Particular</b>	<b>Theory</b>	<b>Practical</b>
<b>Phase II</b>			
1	Post Ending Examination	*Formative assessment	*Formative assessment
<b>Phase III</b>			
2	Post ending Examination(EOP)	10	40
3	Phase III - Semester Ending examination	40	NA
	Log book	NA	10
	Total	50	50
<b>Phase IV</b>			
4	Post ending Examination	10	40
5	Phase IV - Semester Ending examination	40	NA
	Log book	NA	10

	Total	50	50
<b>6</b>	Phase IV - Prelim examination	100	100
	<b>Total Internal Examination Marks</b>	<b>200</b>	<b>200</b>
<b>Internal Assessment Calculation</b>			
<b>Sr. No</b>	<b>Particular</b>	<b>Theory</b>	<b>Practical</b>
	<b>Total Internal Assessment Marks</b>	<b>100</b>	<b>100</b>
<b>200</b> Theory Internal Examination marks reduced to <b>100 marks</b>		<b>200</b> Practical Internal Examination marks reduced to <b>100 marks</b>	

**\*In phase II, students are posted for clinical teaching.no theory classes are in Pediatrics, hence only formative assessment will be done which will not be included in calculation.**

Phase 3, 50 marks for theory and practical each (1/4 rd of IA)

Phase 4, 150 marks for theory and practical each (including prelims) (3/4<sup>rd</sup> of IA)

Logbook has 20 marks out of 200 in practical (10% of total IA marks)

**Resolution No. 3.42 of Academic Council (AC-42/2022):** Resolved to approve the proposed pattern of Theory examination for Paediatric (UG), which is as per CBME:

<b>Section : A</b>				
	<b>No. of Questions</b>	<b>Marks</b>	<b>Total</b>	<b>Time</b>
<b>MCQ</b>	20 Questions	1 Marks (each)	20	$\frac{1}{2}$ Hrs
<b>Section B</b>				
<b>LAQ</b>	2 Questions	15 Marks (each)	30	<b>2 <math>\frac{1}{2}</math> Hrs</b>
<b>SAQ*</b>	5 Questions out of 7	8 Marks (each)	40	
<b>BAQ</b>	5 Questions	2 Marks (each)	10	
<b>Total Marks</b>			<b>100</b>	

**\* Resolution No. 5.28 of Academic Council (AC-46/2023):** Resolved to approve one SAQ related to AETCOM in Pediatric theory paper with effect from the batch admitted in 2019 onwards [ANNEXURE-33].

**Resolution No. 3.43 of Academic Council (AC-42/2022):** Resolved to approve the proposed pattern of Paediatric practical UG examination as per CBME Curriculum:

	<b>Time for Case Taking</b>	<b>Time for Assessment</b>	<b>Total Marks</b>
Long Case (1)	30 Minutes	10 Minutes	50 Marks
Short Case (1)	20 Minutes	5 Minutes	25 Marks
Table Viva	5 Components (10 minutes for assessment)		
	<ul style="list-style-type: none"> <li>• Nutrition</li> <li>• Vaccines</li> <li>• Drugs +Emergencies</li> <li>• Instruments- procedure</li> <li>• X-rays</li> </ul>		25 Marks
<b>Total Marks</b>			<b>100</b>

**Resolution No. 3.45 of Academic Council (AC-42/2022):** Resolved to approve the list of books and journals (Paediatric UG):

SN	TITLE	AUTHOR	EDITION YEAR	PUBLISHERS
1	Manual of Neonatal Care (SAE)	Cloherly and Starks	2020	WALTER Kluwer India Pvt. Ltd
2	NELSON TEXTBOOK OF PEDIATRICS	KLIEGMAN R.M.	21ED VOL 2 Books SET (IE) (HB 2019)	ELSEVIER IE
3	Essential Pediatrics	Ghai PAUL V K	9Ed (Hb 2019)	CBS
4	Scott's Pedia-Tricks	Julius Scott	4 TH ED 2019	Paras Medical Books Pvt Ltd

5	IAP Specialty Series On Rational Antimicrobial Practice	<a href="#">Tanu Singhal</a>	Third edition (1 January 2019)	Jaypee Brothers Medical Publishers
6	MCQ's in Pediatrics	Ravi Bhatia	28 February 2021	Himanshu Publications
7	Pediatric & Neonatal Mechanical Ventilation	Pravin khilnani	3rd editio2020	Jaypee Brothers Medical Publishers
8	IAP Textbook On Pediatric Endocrinology	Vaman khadilkar	2 <sup>nd</sup> edition 2019	Jaypee Brothers Medical Publishers
8	Pediatric Cardiology	Park	7th EDITION 2020	Elsevier
9	Textbook of Pediatric Infectious Diseases	<a href="#">A Parthasarathy</a>	2019	Jaypee Brothers Medical Publishers
10	Common MDR Infections in Children Typhoid Tuberculosis	NUPOOR MITTAL	2021	CBS Publishers & Distributors

**JOURNALS TO BE SUBSCRIBED: Indian Journal**

1. Indian Pediatrics
2. Indian Journal OF Pediatrics

**International Journal**

1. Pediatrics
2. Journal of Pediatrics



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