

Paper II: Technical Subject

1 Basic Sciences

- 1.1. Basic genetics
- 1.2. Fetal and neonatal immunology
- 1.3. Applied anatomy and embryology
- 1.4. Feto-placental physiology
- 1.5. Neonatal adaptation
- 1.6. Development and maturation of lungs, respiratory control, lung functions, ventilation, gas exchange, ventilation perfusion.
- 1.7. Physiology and development of cardiovascular system, developmental defects, physiology and hemodynamics of congenital heart disease.
- 1.8. Fetal and intrauterine growth.
- 1.9. Development and maturation of nervous system, cerebral blood flow, bloodbrain barrier, CSF circulation.
- 1.10. Fetal and neonatal endocrine physiology
- 1.11. Developmental pharmacology
- 1.12. Developmental hematology, bilirubin metabolism
- 1.13. Renal physiology
- 1.14. Physiology of gastrointestinal tract, digestion, absorption.
- 1.15. Electrolyte balance
- 1.16. Metabolic pathways pertaining to glucose, calcium and magnesium
- 1.17. Biochemical basis of inborn errors of metabolism

2 Perinatology

- 2.1. Perinatal and neonatal mortality, morbidity, epidemiology.
- 2.2. High risk pregnancy: detection, monitoring and management.
- 2.3. Fetal monitoring, clinical, electronic; invasive, and non-invasive
- 2.4. Intrapartum monitoring and procedures
- 2.5. Assessment of fetal risk, and decision for termination of pregnancy
- 2.6. Diagnosis and management of fetal diseases
- 2.7. Medical diseases affecting pregnancy and fetus, psychological and ethical considerations
- 2.8. Fetal interventions.
- 2.9. Fetal origin of adult disease

3 Neonatal Resuscitation

4 Neonatal Ventilation

5 Blood Gas and Acid Base Disorders

6 Neonatal Assessment and Follow Up

- 6.1. Assessment of gestation, neonatal behavior, neonatal reflexes
- 6.2. Developmental assessment, and follow up detection of neuromotor delay, stimulation techniques

7 Body Systems

7.1. Respiratory System

- 7.1.1. Neonatal airways: physiology, pathology; management
- 7.1.2. Pulmonary diseases: Hyaline membrane disease, transient tachypnea, aspiration pneumonia, pulmonary air leak syndromes, pulmonary hemorrhage, developmental defects
- 7.1.3. Oxygen therapy and its monitoring
- 7.1.4. Pulmonary infections
- 7.1.5. Miscellaneous pulmonary disorders

7.2. Cardiovascular system

- 7.2.1. Fetal circulation, transition from fetal to neonatal physiology
- 7.2.2. Examination and interpretation of cardiovascular signs and symptoms
- 7.2.3. Special tests and procedures (Echocardiography, angiography)
- 7.2.4. Diagnosis and management of congenital heart diseases
- 7.2.5. Rhythm disturbances
- 7.2.6. Hypertension in neonates / Persistent Pulmonary Hypertension (PPHN)
- 7.2.7. Shock: pathophysiology, monitoring, management.

7.3. Gastrointestinal system

- 7.3.1. Disorders of liver and biliary system.
- 7.3.2. Bilirubin metabolism
- 7.3.3. Neonatal jaundice: diagnosis, monitoring, management, phototherapy, exchange transfusion.
- 7.3.4. Prolonged hyperbilirubinemia
- 7.3.5. Kernicterus
- 7.3.6. Congenital malformations
- 7.3.7. Necrotising enterocolitis

7.4. Renal system

- 7.4.1. Developmental disorders
- 7.4.2. Renal functions
- 7.4.3. Fluid and electrolyte management
- 7.4.4. Acute renal failure (diagnosis, monitoring, management).

7.5. Endocrine and metabolism

- 7.5.1. Glucose metabolism, hypoglycemia, hyperglycemia
- 7.5.2. Calcium disorders
- 7.5.3. Magnesium disorders
- 7.5.4. Thyroid disorders
- 7.5.5. Adrenal disorders
- 7.5.6. Ambiguous genitalia
- 7.5.7. Inborn errors of metabolism

7.6. Hematology

- 7.6.1. Physiology
- 7.6.2. Anemia
- 7.6.3. Polycythemia
- 7.6.4. Bleeding and coagulation disorders
- 7.6.5. Rh hemolytic disease

8 Surgery and orthopedics

- 8.1. Neonatal surgical conditions
- 8.2. Pre and post operative care
- 8.3. Neonatal anesthesia
- 8.4. Metabolic changes during anesthesia and surgery
- 8.5. Orthopedic problems

9 Neonatal Imaging: X-rays, ultrasound, MRI, CT Scan, etc.

10 Transport of neonates

11 Growth and Development:

- 11.1. Normal Growth and Development
- 11.2. Disorders of Growth and Development

12 Nutrition:

- 12.1. Normal nutrition in infancy and childhood - nutritional needs in health and disease state
- 12.2. Common nutritional disorders in childhood - Malnutrition
- 12.3. Nutrition supplementation -TPN

13 Concept of Preventive pediatrics

14 Genetics:

- 14.1. Genetic and chromosomal disorders
- 14.2. Inborn errors of metabolism
- 14.3. Genetic counseling including antenatal diagnosis

15 Neonatology:

- 15.1. Diagnosis, management and follow up of congenital disorders including foetal disorders
- 15.2. Diagnosis, management, prevention and follow up of acquired neonatal surgical disorders
- 15.3. Organization of neonatal medical and surgical care service in health institution up to tertiary level care
- 15.4. Long term functional outcome of quality of life related to neonatal condition

16 Infectious diseases: Diagnosis, management and follow up of common infectious diseases in the pediatric age group including HIV infection.

17 Pediatric surgical emergencies:

- 17.1. Diagnosis and management of common pediatric surgical emergencies including trauma
- 17.2. Pediatric anesthesia, ventilatory support, cardio-pulmonary support and stabilization
- 17.3. Disaster: Planning and Management

18 Neoplastic disorders and tumors:

- 18.1. Epidemiology of neoplastic diseases and solid tumours
- 18.2. Principles of management of neoplastic diseases and solid tumours

19 Child psychiatry: Stress related to medical problems

20 Diagnostic procedures:

- 20.1. Investigation techniques
- 20.2. Diagnostic and interventional methods
- 20.3. Interpretation
- 20.4. Recent advances in diagnostic methods like CT, MRI, USG, radioisotope scanning

21 Recent advances in pediatric medicine
