Curriculum

M. Ch Pediatric Surgery

(Revised with effect from 2016-2017 onwards)
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AIM: To adequately expose students to the spectrum of Paediatric Surgical problems and to train them adequately to tackle the surgical problems pertaining to the newborn baby and the growing child.

Eligibility for admission: M.S. degree in general surgery for 3 year course, MBBS degree for 5 year course.

Duration of the course: 3 years (Post M.S.), 5yrs (Post MBBS)

**Program Outcomes**

PO1: Awareness of the extent of Paediatric Surgical practice and technical skills.

PO2: Ability to diagnose and manage Common and complex Paediatric Surgical Problems.

PO3: Careful, accurate and speedy decision making in sick children with surgical problems.

PO4: Recognition of the unique peri-operative Physiological processes in children.

PO5: Awareness about the key aspects of preparation of a child for Surgery.

PO6: Familiarity with the postoperative care in Children.

PO7: Ability to interpret common lab & imaging investigations in children.

PO8: Ability to manage Paediatric Surgical emergencies.

**Program Specific Outcomes**

PSO1: Communication skills with parents and children (obtaining focused history from parents and children)

PSO2: Awareness about the impact of chronic disease on children and their families.

PSO3: Awareness about the important ethical, moral and social issues of Paediatric Surgical practice.

PSO4: Skill in teamwork and interaction with other disciplines.

**Medical Aspects:**

1) Awareness of the extent of Paediatric Surgical practice and technical skills.

2) Familiarity with the diagnosis and management of Common and complex Paediatric Surgical Problems as well.

3) Careful, accurate and speedy decision making in sick children with surgical problems.
4) Recognition of the unique peri-operative Physiological processes in children.
5) Key aspects of preparation of a child for Surgery.
6) Familiarity with the postoperative care in Children.
7) Interpretation of common lab & imaging investigations in children.
8) Participation in the management of Paediatric Surgical emergencies.

Psychosocial aspects:

The student shall be thorough with

1) Embryology of malformations of respiratory, gastrointestinal, genito-urinary, neck and skin.
2) Physiology of fluid and electrolytes, temperature regulation, metabolism, nutrition, growth and development, Psychological aspects of infants and children.
3) Pathophysiology and principles of management of children with

- Acute respiratory distress.
- Intestinal obstruction.
- Multiple trauma.
- Sepsis
- Peritonitis.
- Gastrointestinal bleeding.
- Foreign body aspiration/ingestion.
- Abdominal masses.
- Acute swelling of groin and scrotum.
- Acute abdominal pain
- Obstructive jaundice.
- Obstructive uropathy
- Tumours
- Congenital anomalies

Evaluation Criteria

1) History taking / interviewing skill
2) Knowledge about the surgical conditions
3) Physical examination
4) Clinical judgment and diagnostic ability
5) Technical and procedural skills.
6) Oral presentation skills.
7) Written notes and records.
8) Interpersonal skills
9) Professional and ethical behavior
10) Self directed learning / initiation / motivation

Trainees should be well versed with the following essential topics:

<table>
<thead>
<tr>
<th>Head &amp; Neck</th>
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<tbody>
<tr>
<td>1. Cystic Hygroma</td>
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<tr>
<td>2. Torticollis - Sternocleidomastoid Tumor</td>
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<tr>
<td>3. Branchial Cyst &amp; Fistula</td>
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<td>4. Thyroglossal Cyst &amp; fistula</td>
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<td>5. Cervical Adenitis</td>
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<td>6. Cystic Lesions in floor of the mouth (Ranula, Sublingual Dermoid)</td>
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<td>7. Pierre- Robin Association</td>
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<td>8. Vascular Malformations and Tumors</td>
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<td>9. Facial clefts</td>
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<tr>
<th>Thorax</th>
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<tbody>
<tr>
<td>1) Acute Respiratory Distress</td>
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<tr>
<td>2) Pleural Collections (Pneumothorax, Pleural effusion, Chylo thorax, Empyema)</td>
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<td>3) Congenital Lobar Emphysema</td>
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<tr>
<td>4) Congenital Cystic Adenomatoid Malformation</td>
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<td>5) Lung Abscess</td>
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<td>6) Esophageal Atresia</td>
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<td>7) Congenital Diaphragmatic Hernia</td>
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<tr>
<td>8) Mediastinal Masses</td>
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<td>9) Thoracic Duplication Cysts</td>
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<tr>
<td>10) Achalasia Cardia</td>
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<tr>
<td>11) Gastro-oesophageal reflux</td>
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<tr>
<td>12) Sequestrations Of Lung</td>
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<td>13) Mediastinal Masses</td>
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<td>14) Vascular Rings</td>
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<td>15) Sternal Clefts (including Cantrell’s Pentology etc)</td>
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</table>

**Abdominal**

1. Cong. Pyloric Stenosis
2. Gastric Volvulus
3. Duodenal Obstructions
4. Malrotation of Gut
5. Intestinal Atresia
6. Intussusception
7. Meckels Diverticulum / Omphalo mesenteric duct lesions.
8. Duplication Cysts of Bowel
9. Necrotizing Enterocolitis
10. Hirschsprungs Disease
11. Ano-rectal Anomalies
12. GIT Bleeding.
13. Neonatal Intestinal Obstruction
14. Approach to abdominal masses
15. Appendicitis
16. Approach to Acute Abdominal Pain
17. Abdominal wall defects – Gastrochisis, Omphacocele
<table>
<thead>
<tr>
<th><strong>Hepato- Biliary</strong></th>
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<tbody>
<tr>
<td>1. Biliary Atresia</td>
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<td>2. Choledochal Cyst</td>
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<td>3. Hydatid Cyst</td>
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<td>4. Portal Hypertension</td>
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<td>5. Liver Trauma</td>
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<td>6. Liver Tumors</td>
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<tr>
<th><strong>Genito- Urinary</strong></th>
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<tbody>
<tr>
<td>1. Hydrocele &amp; Hernia / Umbilical Hernia</td>
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<tr>
<td>2. Undescended Testis</td>
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<td>3. Hypospadias</td>
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<td>4. Urinary tract infections in Children - Evaluation</td>
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<td>5. Inter Sex</td>
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<td>6. Hydronephrosis</td>
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<td>7. Megaureters</td>
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<td>8. Vu Reflux</td>
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<td>9. Posterior Urethral Valves</td>
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<td>10. Torsion Testis (Acute Scrotum &amp; groin swellings)</td>
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<td>11. Extrophy Epispadias Complex</td>
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<td>13. genito- urinary Trauma</td>
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<tr>
<th><strong>Neuro – Surgery</strong></th>
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<tr>
<td>1. Myelo-Meningocele</td>
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<td>2. Encephalocele</td>
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<td>3. Hydrocephalus</td>
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## Tumors

1. Wilms Tumor  
2. Neuroblastoma  
3. Lymphomas  
4. Soft Tissue Sarcoma  
5. Hepatic Tumors  
6. Testicular Tumors  
7. Ovarian Tumors.

## Trauma

1. Blunt Abdominal Trauma

## General

1. Burns  
2. Child abuse  
3. Perioperative fluid management  
4. Thermoregulation in a Neonate  
5. Transport of a Surgical neonate

### COURSES:

**Course - I Basic Sciences (M5PS1)**

CO1: Knowledge of embryology of malformations and relevant anatomy

CO2: Knowledge of physiology of fluid and electrolytes, temperature regulation, metabolism, nutrition, growth and development, Psychological aspects of infants and children.

CO3: Knowledge of pathology and pharmacology necessary for the practice of pediatric surgery.

Embryology of malformations of respiratory, gastrointestinal, genito-urinary, neck and skin.

Physiology of fluid and electrolytes, temperature regulation, metabolism, nutrition, growth and development, Psychological aspects of infants and children.
Normal Developmental milestones in children
Failure to thrive in children
Gross developmental deformities in pediatric age group

**Course - II General Paediatric Surgery (M5PS2)**
CO1: Competence in diagnosis and management of general pediatric surgery ailments.
CO2: Competence in managing multiple trauma
CO3: Competence in managing conditions like peritonitis and abdominal masses.
CO4: Competence in management of conditions like abdominal masses and acute swelling of groin and scrotum.
CO5: Competence in management of Sepsis

**Pathophysiology and principles of management of children with**

- Acute respiratory distress.
- Intestinal obstruction.
- Multiple trauma.
- Sepsis
- Peritonitis.
- Gastrointestinal bleeding.
- Foreign body aspiration/ingestion.
- Abdominal masses.
- Acute swelling of groin and scrotum.
- Acute abdominal pain
- Obstructive jaundice.
- Obstructive uropathy
- Tumours
- Congenital anomalies

**Course - III Systemic Paediatric Surgery (M5PS3)**
CO1: Competence to manage the conditions affecting the organ systems in pediatric surgery.
CO2: Competence to manage foreign body aspiration/ingestion.
CO3: Competence to manage conditions like GI bleeding, obstructive jaundice and acute abdominal pain.
CO4: Competence to manage acute respiratory distress and intestinal obstruction.
CO5: Management of Obstructive Uropathy.
Competency and Knowledge in managing the following conditions pertaining to system:

**Head & Neck**

- Cystic Hygroma
- Torticollis - Sternocleidomastoid Tumor
- Branchial Cyst & Fistula
- Thyroglossal Cyst & fistula
- Tonsillar hypertrophy
- Juvenile Nasopharyngeal Adenoma
- Cervical Adenitis
- Cystic Lesions in floor of the mouth (Ranula, Sublingual Dermoid)
- Pierre-Robin Association
- Orbital Tumours
- Vascular Malformations and Tumors
- Facial clefts

**Thorax**

- Acute Respiratory Distress
- Pleural Collections (Pneumothorax, Pleural effusion, Chylo thorax, Empyema)
- Congenital Lobar Emphysema
- Congenital Cystic Adenomatoid Malformation
- Lung Abscess
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Appendicitis
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Trichobezoar

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11. Extrophy Epispadias Complex
12. genito- urinary Trauma

Neuro - Surgery

1. Myelo-Meningocele
2. Encephalocele
3. Hydrocephalus

Tumors
1. Wilms Tumor
2. Neuroblastoma
3. Lymphomas
4. Soft Tissue Sarcoma
5. Hepatic Tumors
6. Testicular Tumors
7. Ovarian Tumors.

Course - IV Recent Advances (M5PS4)
CO1: Familiarity with advances in the practice of Pediatric Surgery.
CO2: Being up to date with the recent academic publications in the field.
CO3: Attitude to be a lifelong learner.

Up to date knowledge regarding latest treatment modalities and recent academic publications in the field in an international point of view
**Soft Skills (M5PS5) Elective Course**

CO1: Acquisition of interpersonal skills and ability to communicate effectively with the patients, caregivers and staff.

CO2: Ability to conduct clinical research.

CO3: Ability to work as a team leader.

CO4: Knowledge about medical ethics and etiquette.

CO5: Ability to be an effective teacher.
MODEL QUESTION PAPERS

PAPER I
BASIC SCIENCES

1. Discuss the development of the diaphragm and the management of a newborn baby with congenital diaphragmatic hernia. (30 Marks)

2. Discuss the approach and management of sepsis in newborn. (30 Marks)

Short Notes (10 marks each)

1. Embryology of Anorectal anomalies
2. ECMO
3. Theories of Testicular Descent.
4. Intestinal Atresia

PAPER II
GENERAL PAEDIATRIC SURGERY

1. Discuss the diagnosis and management of Long Gap Esophageal Atresia. (30 marks.)

2. Discuss the management of blunt abdominal trauma and the role of splenic conservation surgery. (30 marks.)

Short Notes (10 x 4 marks)

1. Cystic Hygroma
2. Intussusception
3. Branchial Cleft Anomalies
4. Pectus Excavatum
PAPER III

SYSTEMIC PAEDIATRIC SURGERY

1. Discuss the diagnosis and management of Testicular Feminisation syndrome. (30 MARKS)
2. Discuss the diagnostic possibilities and management of 6yr old male child with urinary incontinence. (30 MARKS)

Short Notes: 10 x 4 marks

1. Tetrology of Fallot
2. Neuroblastoma
3. Posterior Urethral Valves
4. VATS

PAPER IV

RECENT ADVANCES

1. Discuss in detail about antenatal detection of fetal anomalies and the role paediatric surgeon (30 MARKS).

2. Discuss the role of minimally invasive surgery in paediatric age group, advantages and disadvantages. (30 MARKS)

Short Notes 10 x 4 marks

1. Tumor Markers
2. Organ Transplantation.
4. Total parenteral nutrition and complications

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