

# Academic Curriculum for Paediatric Surgery Joint Program

## Introduction

*Knowledge is power, but action is the key to success*

Paediatric surgery considered as one of the important and meticulous surgeries that confined to paediatrics and newborn anomalies; its importance comes from high incidence of congenital anomalies among paediatrics globally and among Iraqis in particular. It had to focus on Paediatric Surgery Program in Iraqi Board for Medical Specialities since 1993. Since that date, the Scientific Council of Paediatric Surgery keeps up and updated with other global programs.

## Vision

The program reflects a vision of the paediatric surgery specialist as a general surgeon for paediatrics who possesses excellent competencies to manage a majority of paediatric surgery diseases and anomalies in different Iraqi hospitals.

## Goal

The goal of the study is to enhance the role of paediatric surgery within the health system by providing specialists of Paediatric Surgery who can solve most of paediatric surgery problems. These professionals, equipped with the latest basic science (including anatomy, embryology, physiology and pathology), clinical skills to diagnose and treat the most common paediatric surgery cases, practical surgical training and learning the most modern surgical techniques and finally develop skills to conduct field research, to gather data, and analyse them to encourage to write an article in peer reviewed journal.

## Learning objectives

1. Develop competent paediatric surgeon with high professional standards, who are well prepared to face, respond and solve various surgical problems in the paediatric age group (neonate, infant, children and adolescents).

2. The graduate trained to implement evidence-based practice and to cope with the future challenges through lifelong learning and conducting the necessary medical research.
3. The program will enable the development of appropriate professional attitude, communication and problem solving skills.
4. The graduate will understand the unique anatomic, pathophysiologic and genetic conditions that affect children.
5. The graduate will learn the principles of stabilization, appropriate preoperative diagnosis and preparation of the sick child.
6. The graduate will understand the anatomic and physiologic principles that guide successful operative repair of paediatric diseases.
7. The graduate will understand the principles of routine postoperative care and postoperative critical care management.

## Study Period

It encompasses a five-year curriculum designed to equip paediatric surgeon with the knowledge, skills, and competencies necessary to understand and treat most of the common paediatric surgical problems. This period classified into the following years.

### Five-Year Paediatric Surgery (PS) Study Curriculum Map

Year		Course	Course
First year		Nine months training of General Surgery	Three months training of Paediatric Medicine
Second year	First trainee call	Six months training of Paediatric Surgery	Two months training of Orthopaedic Surgery
			Two months training of Plastic Surgery
			Two months training of Thoracic Surgery

<b>Third year</b>		Six months training of Paediatric Surgery	Six months training of Urosurgery
<b>Fourth year</b>	<b>Second call trainee</b>	Twelve months training of Paediatric Surgery	
<b>Fifth year</b>		Twelve months training of Paediatric Surgery	

### **The First call trainee tasks (2nd & 3rd year resident)**

#### **1- Inpatient department:**

- Clerking all admissions (history and examination).
- Attend and perform daily round.
- Supervised investigation request.
- Follow and obtain results of investigations and report to seniors.
- Plan the treatment under supervision.
- Follow up referral and consultations to other specialties.
- Observe seniors while informing patient about their illnesses, treatment and prognosis
- Taking consent of procedures.
- Prepare patients for surgery.
- Follow the post-surgical course of patients and manage appropriately under supervision.
- Arrange patient discharge, post-discharge treatment and follow up appointment.

#### **2- Outpatient department:**

- Attend OPD.
- Examine patients under supervision.
- Ask for investigations and prescribe treatment under supervision.

#### **3-Emergency room:**

- Assistance to the first on call.
- Conduct primary assessment and order treatment under supervision.
- Suggest admissions of patients.

#### **4- Operating room:**

- Follow the surgical procedure schedule distributed on the 2nd and 3rd year.

- Write operative notes for minor surgeries and post-operative treatment.

**5- Scientific activities:**

- Attend daily and grand rounds.
- Attend morbidity and mortality meetings.
- Case presentation in daily rounds.
- Participate in journal clubs.
- Prepare lectures.

**The Second call trainee tasks (4th & 5th year resident)**

**1. Inpatient department:**

- Clerking all admissions (history & examination).
- Perform daily round.
- Request investigations.
- Modify treatment according to investigation results.
- Plan the treatment.
- Ask for referrals & consultations to other specialities.
- Inform patients' parents about their patient illness, treatment, prognosis & taking consent for procedures.
- Prepare patients for surgery.
- Follow the post-surgical course of patients, manage them appropriately, and ask for consultation of seniors if required.
- Check completeness of patient medical records and complete when needed.
- Discharge patients, plan post-discharge treatment and follow up.

**2. Outpatient department:**

- Attend OPD.
- Examine patients.
- Ask for investigations and prescribe treatment.

**3. Operating room:**

- Follow the surgical procedure schedule distributed on the 4th and 5th year.
- Write operative notes for major operations & postoperative treatment.

**4. Scientific activities:**

- Perform daily round.
- Attend grand rounds.
- Prepare morbidity and mortality meetings.
- Case presentation in scientific meetings.

- Prepare journal clubs.
- Prepare and conduct lectures.
- Participate in local and international conferences.

## **Details of topics of the study**

### **1. Year I:**

**A. Nine months of General Surgery:** Nine months training in the general surgery department as a resident who is responsible about the followings:

- a) Outpatient clinic.
- b) On call duties.
- c) Operative sessions.
- d) Bedside clinical round.
- e) Ground round.
- f) Journal club.
- g) Morbidity and mortality conference.
- h) Surgical pathology conference.
- i) Surgical radiological conference.

The first year resident is responsible about the following in the case sheet of the patient:

- a) Filling the papers of history and examination.
- b) Results of laboratory and radiological investigations.
- c) Pre and post-operative treatment.
- d) Consultation papers.
- e) Operative notes.
- f) Consent form.
- g) Daily morning and night follow up.
- h) Discharge card and treatment.

### **B. Three months course of Pediatric Medicine:**

Three months training as a resident in the pediatric department especially in the neonatal department to understand the pathophysiologic basis of common disease processes in pediatric age and their management, participate in the resuscitation and care for critically ill children.

### **2. Year II:**

#### **A. Six months course of Pediatric Surgery:**

The second year resident is responsible about the *first call trainee tasks* during the pediatric surgery-training course.

**B. Two months training course of orthopedic surgery:**

- Awareness of early diagnosis and management of possible musculoskeletal deformities especially development displaced hip (DDH), clubfoot, torticollis and scoliosis.
- An outpatient clinic attendance.
- Pre-operative preparation of patients.
- Assistant in different orthopaedic surgical operations.
- Postoperative follow up of patients in the orthopaedic ward.

**C. Two months training course of Plastic Surgery:**

- An outpatient clinic attendance.
- Pre-operative preparation of patients.
- Assistant and operator in different operative procedures such as cleft lip and palate, skin graft and flaps, dealing with trauma of hands and face, correction of ear anomalies and hand anomalies (syndactyly, polydactyly, etc).
- Post-operative care of inpatient.

**D. Two months training course of Thoracic Surgery:**

- An outpatient clinic attendance.
- Pre-operative preparation of patients.
- Assistant and operator in different operative procedures such as central vascular access, chest tube insertion, bronchoscope, esophageoscope, repair of diaphragmatic defects, repair of oesophageal atresia and TEF in addition to thoracotomy for (lung resection, biopsy, decortication, etc.).
- Post-operative care of inpatient.

**3. Year III:**

**A. Six months course of Paediatric Surgery:**

The third year resident is responsible about the *first call trainee tasks* during the paediatric surgery-training course.

**B. Six months training course of Urosurgery:**

- An outpatient clinic attendance.
- Pre-operative preparation of patients.

- Assistant and operator in different operative procedures such as hypospadias repair, diagnostic cystoscopy, urinary diversion, ureteric re-implantation, pyeloplasty (for PUJ obstruction), nephrectomy, nephrolithotomy, nephrostomy and repair of feminizing genitoplasty or masculinizing genitoplasty, repair of bladder and cloacal exstrophy.
- Post-operative care of inpatient.

#### **4. Year IV:**

The fourth year resident is responsible about the second call trainee tasks during the paediatric surgery-training course for the whole twelve months.

#### **5. Year V:**

The fifth year resident is responsible about the second call trainee tasks during the paediatric surgery-training course for the whole twelve months.

## **Educational Program of Pediatric Surgery**

As a basic requirement, trainees expected to demonstrate regular attendance and active participation in:

- Clinical discussions ward round and Journal clubs.
- Morbidity and mortality conferences, Audit meeting.
- Radiological and pathological conferences, Tumor board.
- Meeting, Antenatal diagnosis and counseling, clinical research.
- Regional, national and international workshops.
- Regional, national and international association meeting with presentation of papers and publications of original articles and case reports.

### **Year 1: Basic Principles, Embryology and Genetics**

- Physiology of the neonatal and pediatric surgical patient.
- Endocrine and metabolic response to surgery.
- Fluid and electrolyte management.
- Respiratory physiology and support.
- Cardiovascular physiology and support.
- Nutritional support – enteral and parenteral.
- Infection and immunity.
- Hematological problems and management.
- Pediatric anesthesia.
- Trauma and resuscitation / Malignancy and chemotherapy.

### **Year 2: Management of Common Conditions**

- Hernias and hydroceles.
- Undescended testis.
- Disorders of the umbilicus.
- Pyloric stenosis.
- Hand anomalies.
- Appendicitis and non-specific abdominal pain.
- Intussusception.
- Swellings of the head and neck.
- Blood transfusion.
- Management of burns.
- Head injuries.
- Foreign body ingestion and inhalation.
- Ear anomalies.
- Cleft lip.

### **Year 3: Management of Common Conditions**

- Diaphragmatic hernia.
- Gastro-esophageal reflux.
- Child abuse.
- Malrotation.
- Meconium ileus.
- Intestinal atresia.
- Necrotizing enterocolitis.
- Renal disorders and fetal urology (multicystic kidney).
- Solid organ abdominal trauma (Liver, spleen & kidney).
- Gastrointestinal duplications.
- Anterior abdominal wall defects.
- Meckels diverticulum.
- Abdominal trauma (hollow organ injury) (small, Large bowel & rectum) (ureter, bladder & urethral injury).
- Posterior urethral valve.

### **Year 4: Management of Common Conditions**

- Pelvi-ureteric Junction obstruction.
- Bladder and urethral disorders, Neuropathic bladder.
- Nephroblastoma.
- Hypospadias.
- Pulmonary disorders.
- Hirschsprung's disease.

- Miscellaneous tumours-rhabdomyosarcoma.
- Lower GIT bleeding.
- Neuroblastoma.
- Esophageal atresia.
- Anorectal anomalies.
- Upper GIT bleeding.
- Chest wall deformities.
- Vesicoureteric reflux.
- Exstrophy of the Bladder.
- Pancreatic tumors.
- Lymphatic malformation.
- Prune belly Syndrome.

### **Year 5: Management of Common Conditions**

- Pediatric laparoscopy.
- Ambiguous genitalia.
- Liver tumors.
- Biliary atresia.
- Esophageal replacement.
- Hydatid disease.
- Ulcerative colitis and Crohn's disease.
- Vascular malformation.
- Gall Stones.
- Pancreatic disorder (excluding pancreatic tumors).
- Thyroid and parathyroid disorders.
- Choledochal cyst.
- Short bowel syndrome.
- Ovarian disorders.
- Breast disorders.
- Cleft palate.

### **Operative surgery content of program**

The minimum required operative experience laid down as an aggregate for each logbook-defined group of procedure. The given numbers are indicative target. It is expected that each trainee would be intimately involved in all aspects of the treatment of most of the cases for which he or she scrubs.

The basic requirements outlined. Operative experience will be required through progressively increasing surgical responsibility from pre and postoperative management and assisting at surgery in year I and II to operative responsibility with

assistance at year III and operative responsibility with minimum supervision at year IV and V.

A: Assistant in the operation.

B: Can do the operation with assistance.

C: Competent to do whole operation without assistance.

### Required Operative Procedures

No.	The operative procedure	The second year		The third year		The fourth year		The fifth year	
<b>1-</b>	<b>Head &amp; neck</b>								
1-1	Excision of thyroglossal cyst \ fistula	3	A	3	A	3	B	3	C
1-2	Excision of branchial cyst \ fistula	2	A	2	A	2	B	2	C
1-3	Excision of cystic hygroma of neck	1	A	1	A	1	A	1	B
1-4	Cervical lymph node biopsy	10	A	10	B	10	C	10	C
1-5	Thyroidectomy	1	A	1	A	1	A	1	B
1-6	Dermoid cyst	1	A	1	A	1	B	1	C
1-7	Tongue tie	15	B	15	C	5	C	5	C
<b>2-</b>	<b>Skin and soft tissue</b>								
2-1	Drainage of abscess	20	B	20	C	5	C	5	C
2-2	Excision of subcutaneous mass	5	A	5	B	5	C	5	C
2-3	Fine needle aspiration cytology	2	A	3	B	3	C	3	C
<b>3-</b>	<b>Vascular and lymphatic surgery</b>								
3-1	Central venous access	10	A	10	B	10	C	5	C
3-2	Cutaneous Lymphangioma	5	A	5	B	5	C	5	C
3-3	Cutaneous Haemangioma	5	A	5	B	5	C	5	C
<b>4-</b>	<b>Plastic surgery</b>								
4-1	Repair of cleft lip	3	A	0		1	B	1	B
4-2	Repair of cleft palate	2	A	0		1	B	1	B
4-3	Skin graft	5	A	0		1	B	1	B
4-4	Prominent ear	1	A	0		1	B	1	B
4-5	Polyductaly	5	A	0		1	B	1	B
4-6	Syndactaly	2	A	0		1	B	1	B

4-7	Correction of contracture after burn	3	A	0		1	B	1	B
<b>5-</b>	<b>Thoracic surgery</b>								
5-1	Chest tube insertion	25	A	25	B	10	C	15	C
5-2	Repair of diaphragmatic defect	5	A	5	A	2	B	2	C
5-3	Thoracotomy (lung resection, biopsy, decortication, etc)	3	A	0		1	B	2	C
5-4	Esophageal substitution	2	A	0		1	A	1	A
5-5	Esophageal atresia with or without fistula	5	A	5	A	2	B	3	C
5-6	Iver lousis operation	2	A	0		1	A	1	A
5-6	Bronchoscope	10	A	0		3	B	3	C
5-7	Esophagioscope	10	A	0		3	B	3	C
<b>6-</b>	<b>Oncology</b>								
6-1	Wilm's tumor	2	A	2	A	2	A	1	B
6-2	Neuroblastoma	2	A	2	A	2	A	1	B
6-3	Teratoma	1	A	1	A	1	B	1	C
6-4	Miscellaneous	3	A	3	A	3	B	3	C
<b>7-</b>	<b>Inguino-scrotal /genitalia</b>								
7-1	Inguinal hernia	30	A	30	B	25	C	25	C
7-2	Hydrocele	15	A	15	B	10	C	10	C
7-3	Undescended testis	15	A	15	A	10	B	10	C
7-4	Hypospadias	0		5	A	5	A	2	B
7-5	Feminizing genitoplasty	0		3	A	1	A	1	A
7-6	Musculanizing genitoplasty	0		2	A	1	A	1	A
7-7	Circumcision	15	A	15	A	10	B	5	C
<b>8-</b>	<b>GIT &amp; Abdominal surgery</b>								
8-1	Exploratory laparotomy	15	A	15	A	5	B	10	C
8-2	Pyloromyotomy	5	A	5	A	5	B	5	C
8-3	Gastrostomy	2	A	2	B	2	C	2	C
8-4	Ileostomy/colostomy	5	A	5	B	5	C	5	C
8-5	Intestinal atresia	5	A	5	B	5	C	5	C
8-6	Pull through for Hirschsprung's disease	3	A	3	A	3	A	3	B
8-7	Repair of anorectal malformation	3	A	3	A	3	A	5	B
8-8	Splenectomy	2	A	1	A	1	B	1	C
8-9	Cholecystectomy	0		1	A	1	A	1	B
8-10	Biliary atresia	0		1	A	1	A	1	B
8-11	Choledochal cyst	0		1	A	1	A	1	B
8-12	Closure of ileostomy, colostomy	5	A	5	A	5	B	10	C
8-13	Appendectomy	25	B	25	C	15	C	10	C
8-14	Pancreatectomy	0		0		1	A	1	B

8-15	Abdominal paracentesis	2	A	2	B	1	C	1	C
9-	<b>Urological procedures</b>								
9-1	Nephrectomy	2	A	2	A	2	A	1	B
9-2	Nephrolithotomy/Nephrostomy	2	A	2	A	2	A	1	B
9-3	Cystoscopy	0		10	C	5	C	5	C
9-4	Repair of bladder exstrophy	0		2	A	1	A	1	A
9-5	Pyeloplasty	0		2	A	2	A	1	B
9-6	Ureteric reimplantation	0		2	A	2	A	2	A

## Assessment Methods

### I- First part exam:

- The candidate allowed to enter this exam after the end of first year of training program and allowed for re-sit exam four times maximum, exceeding this limit will lead to their dismissing from the academic program.
- The duration between each reset for the exam is 6 months.
- The candidate does not allowed starting the third year until he or she passed this exam successfully.
- The exam conducted in October and April.
- The exam consist of two papers, the paper one is about anatomy, physiology, embryology and pathology, while paper two is about the principles of paediatric surgery. Each paper contains 100 MCQ (The most appropriate one).
- The pass mark is 70%.

### II- Mid-exam:

- The candidate allowed to enter this exam at the beginning of the fourth year of training program and allowed for re-sit exam four times maximum.
- The duration between each reset for the exam is 6 months (October and April).
- The exam contains two papers, the paper one is about the general paediatric surgery, while paper two is about urology, thoracic and plastic surgeries.
- The pass mark is 60%.
- Passing this exam is mandatory to enter the final assessment.

### III- Final assessment:

- 1) **The logbook:** Candidates are required to maintain an official logbook documenting all clinical procedures and training activities throughout their residency. Each entry must be dated, clearly categorized under the appropriate rotation, and must indicate whether the procedure was performed independently, with assistant or merely observed. A minimum of 70% of all listed clinical procedures must be completed (performed) by the resident. In addition to clinical activities, participation in seminars, workshops, conferences and continuing medical education (CME) programs activities must be recorded. Every entry in the logbook must be verified and countersigned by the supervising or the trainer.

- 2) **Academic thesis:** A prospective study conducted at the beginning of (3<sup>rd</sup> year - 4<sup>th</sup> year); a scientific committee for assessment must discuss this study and accept it before May of 5<sup>th</sup> year.
- 3) **Supervisor reports.**
- 4) **Final exam:** The exam divided into two parts, the written and the practical exams.
  - **The written exam** formed of two papers, each of 100 MCQs (single best answer), the minimum pass mark for each is 60%, but the average mark is 70%. Each student gave four attempts to pass the exam, failure to do so will result in their dismissal from the study. Passing the written exam allows to join two trials of practical exam.

#### **Blueprint for part II Written Exam (paper I)**

Topics	No. of exam MCQs
Trauma	20
Abdomen	60
Inguinal region and scrotum	20
Total	100

#### **Blueprint for part II Written Exam (paper II)**

Topics	No. of exam MCQs
Thoracic	20
Urology	45
Plastic	10
Oncology	20
Miscellaneous	5
Total	100

- **The practical exam:** It consist of (slide exam and oral exam). The pass degree of these exams is at least is 60% for each, but the average mark for all these exams is 70%. Each student gave four attempts to pass this exam. Passing written exam allows two trials of practical exam. A candidate who fails the practical examination four times in a row, they are required to restart the examination process by retaking the first part exam.
1. **Slides exam:** A test consist of slides using photos of the pathological conditions with adding questions about the conditions.
  2. **Oral examination:** It consist of 3 exams as the followings:
    - i) *Long case exam.*
    - ii) *Short case exam.*
    - iii) *Viva.*