

Pediatric Surgery Training Course
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Definition of course:

The subspecialized course of pediatric surgery is a branch of surgery that is dedicated to prevention, diagnosis, surgery treatment, and rehabilitation of evolutionary, acquired, and traumatic abnormalities from fetal period to the age of 16.

The length of the course and obligations:

There are two conditions for entering pediatric surgery course:

- 1) Those who pass entrance examination of National Board of Iranian Pediatric Surgery have the competence to participate in this pediatric surgery course.
- 2) Those who pass legal obligations, are qualified to attend in this course (according to health administration rights)

The training takes three years (36 months).

The trainees must pass the final examination at the end of the course successfully to achieve Iranian National Board Certification in Pediatric Surgery.

Thesis is obligatory and a paper based upon the thesis must be completed before the final examination.

A satisfaction letter of the Head of Department that includes the viewpoints of other consultants of the ward is necessary for trainees to take the final examination.

The need for pediatric surgeons in Iran in the next decade:

According to a study conducted in Munich University in 2003 to determine the educational condition of pediatric surgery in 25 countries throughout the world and also based on assessment of British

Association of Pediatric Surgeons, the ideal number of pediatric surgeons for every 500000 people of country population is one. Given the 73650000 population of Iran in 1387, the number of required pediatric surgeons is 147. Considering 80 pediatric surgeons in 1388 (based on statistics provided by Association of Pediatric Surgeons in Iran), 1.5% annual growth of population, and the retirement of surgeons, the number of required pediatric surgeons is approximately estimated between 90 and 100 in the next ten years.

Policy (principles and convictions):

The emphasized values in this program are as follows:

- Because children constitute a major part of a society's population at present and especially in the future, according to government's decisions, maintenance and promotion of their health physically, mentally, and socially is an underlying principle in the constant development of each community.
- Paying attention to the health of fetus is a priority.
- If needed, the access to a pediatric surgeon and professional advice on the fetus is a basic necessity.
- Without considering social level and race of an individual, the requisite services must be provided in the field of surgery for all patients.
- The preservation of quality of life would be noted in entire steps of training.
- The preservation of a patient's privacy and secrets as well as of their family is an indisputable principle of professional ethics in all fields.
- The patient's family is considered a part of healthcare team in all stages of treatment.
- It is a real right of patients and their family to enquire and receive a proper answer.
- Depending on the prevalence of diseases and the severity of each illness, the educational priorities are considered in this program.
- In this program, professional ethics, patients' right as well as their family's and preservation of mutual respect are seriously emphasized.
- The contents of the educational program have been designed based on the latest international technologies and recent scientific developments in the world. (It depends on the state and university facilities as well as on the consultants and experts' ideas of the department)
- Acquisition of science and clinical abilities would happen by national, regional, and global priorities, respectively.

Mission:

The mission of this course is to train conscious, innovative and researching specialists who are committed to professional and spiritual morality. Therefore, with acquiring knowledge, skills, and best management, they can effectively put these abilities into practice with high quality in the society. Also, with appropriate use of timely intervention, the specialists acquire the required ability to

perform subspecialized operation for infants and newborns in case need arises. Moreover, they try to promote the health of patients and their families.

Vision:

In the next ten years, we would be a pioneer in this field by training subspecialized, skillful, and committed pediatric surgeons, offering the best educational services and care in pediatric surgery according to global standards as well as producing science.

Expected outcomes:

It is expected that the graduates who pass subspecialized course of pediatric surgery would be able to:

- 1- Have cordial and professional relationship with patients, their family and co-workers,
- 2- Diagnose surgical problems under different conditions and perform necessary therapeutic measures for neonates, infants and teens,
- 3- Monitor the health of kids under various conditions with an emphasis on their growth and evolution,
- 4- Provide required mental supports for patients and their families at the time of treatment and diagnostic interventions,
- 5- Have teaching authority for pediatric surgery concepts at different levels of medicine in pediatric surgery department and other units in the hospital,
- 6- Cooperate with and contribute to multi-specialized groups and consult with other colleagues,
- 7- Undertake the directives of educational and therapeutic responsibilities especially in pediatric surgery,
- 8- Provide required mental supports for other members of the team as an authority of pediatric surgery department,
- 9- Defend the patients' and families' rights in special conditions if needed,
- 10- Design and accomplish practical research about patients' operations,
- 11- Play an effective role in improving health conditions of the society through suggestions and different approaches, and
- 12- Respect the all the activities related to professional morals.

The roles of graduates in society:

- Diagnostic-therapeutic and caring measures
- Education
- Research

- Management
- Counseling and support
- Care and health promotion

Professional tasks of graduates:

Diagnostic-therapeutic and caring tasks

- Development of professional relationship with patients' and their families
- Preparation of complete biography of patients
- Subtle examination of patients
- Request for necessary para-clinical examinations
- Performance of diagnostic procedural actions mentioned in this program
- Timely diagnosis of diseases
- Surgery performance related to course and in proportion with the items taught in this course
- Clinical monitoring of patients
- Logical prescription of sedatives and analgesics and appropriate use of palliative procedures
- All pain control procedures which improve the quality of patients' services before and after surgery
- Timely prescription of sensitive drugs and fluid therapy
- Performance of intravenous and gastro-intestinal feeding methods
- Therapeutic follow-up and timely care after surgery
- Record of exact findings in all steps of diagnosis and treatment
- Paying attention to conditions of each child, physical atmosphere of the ward, and resolving patients' problems
- Paying attention to mental aspects of diseases and performance of suitable intervention
- Respect towards rules and professional morality in collaboration with patients, families and colleagues
- Offering the rehabilitating methods for children with resulting complications or chronic diseases
- Providing suitable conditions for stabilization and transmission of young patients
- Request for specialized consultations if necessary
- Performance of multidisciplinary tasks as a therapeutic team
- Recording and adjustment of medical documents

Educational tasks

- Instruction of patients, entourages, health team members, scholars, assistants and society if needed
- Preparation of educational, therapeutic and care guidelines for different levels
- Emphasis on lifelong learning (constant training)

Research

- Offering the research plans in fields related to authorities of health system
- Recording patients' information and participation in setup and fix of data entry system
- Critical interpretation, evaluation and use of the results of research by others
- Contributing to designing and implementing research plans in a relation with state programs and also pediatric surgery with health systems
- Preparing a report and publishing research findings and scientific texts as papers

Management

- Direction and management of pediatric surgery teams
- Best use of facilities and equipment
- Analysis of care systems for neonates and infants who need surgery and presentation of required offers and proposals to policymakers
- Using tools and management procedures to promote the effective factors about patient care and to decrease mortality rate and complications after surgery
- Management of qualitative control in given services for pediatric surgery departments
- Collaboration in consultation and design, and helping develop and manage pediatric surgery wards
- Participation in health policies and child care, especially in urgencies and prevention of events

Counsel and support

- Development of professional relationship with patients and the families sympathetically
- Specialized consultation with patients' parents, members of health team, co-workers, other specialists, administrators of health system, and legal organizations
- Support for emotional relations between patients and their families
- Support for mental health of hospitalized patients and their families
- Support for mental health of staffs in the departments of pediatric surgery
- Preparation of families for bad news
- Preparation of patients and their families for surgical treatments and painful practical actions
- Support for patients, families and colleagues' rights

Care and health promotion

- Empowerment of patients and their families in order to increase their role in care of themselves and their children under normal and critical conditions
- Recognition of social factors and conditions of life for eliminating dangerous factors
- Use of consolidated and multiple approaches for promotion of health in serious cases
- Monitoring growth and evolution of operated patient
- Attention to immunization and prevention of infections in different situations
- Promotion of control programs about current infections in pediatric surgery department
- Support for breastfeeding in hospitalized patients in pediatric surgery department

- Promotion of programs related to health of neonates, infants, and teens and monitoring their implementation

Expected competencies and procedural skills

A: Expected competencies

Collecting and recording data:

- Development of professional communication
- Getting specialized biography
- Assessment and specialized examination of patients
- Logical request for para-clinical examination
- Filing out and recording data and regulating medical documents

Clinical reasoning, diagnosis, and decision for patient:

- Perception, clinical adaptation and use of clinical examination results such as a variety of hematologic tests, biochemistry, immunohistochemistry, tumor markers, and hormonal, pathologic and other required imaging measures
- Integration of clinical and para-clinical findings
- Inference and clinical judgment
- Diagnosis of diseases
- Clinical decisions for solving patients' problems

Patient management:

- Patient care
- Logical drug prescription
- Selection and implementation of the most appropriate diagnostic-therapeutic approach for patients
- Request and provision of medical consultation
- Provision of required coordination and patient reference
- Patient training
- Patient follow-up

Note:

1. All the above-mentioned points must be done under the consultant view
2. Trainees aren't permitted to act without the consultant view

Other competencies:

- **Research**
- **Direction and management**
- **Provision of specialized consultations**
- **Support for patients' rights**
- **Evidence-based practice**
- **Use of computer and search of scientific data in electronic sources**
- **Monitoring the health of society**

Note: During the specialization period, residents acquire the above-mentioned abilities and would qualify for higher levels.

B: Procedural skills (diagnostic-therapeutic actions):

Residents must complete their log book according to following table:

Notice:

1. Filling out the log book is necessary for final examination.
2. The training course for trainees could be extended by the head of the department if the log book is not completed within a year.
3. Early filling out of the log book doesn't mean an earlier completion of the training course.

Procedure	Observation	Help to performance	Independent performance	Total times
Correct use and maintenance of all the devices that assistants use	2	2	2	6
Diagnostic laparoscopy & thoracoscopy	10	20	20	50
Endoscopy of lower & upper GI (rigid and fibroptic)	5	10	10	25
Cystoscopy	5	10	10	25
Insertion of vascular access in neonates and infants	10	10	20	40
Head & neck surgery for acquired and congenital diseases	10	10	20	40
Ostomy, GIT, urinary tract, and airways system	10	10	20	40
Correction of congenital defects of rib cage	2	2		4
Repair of diaphragmatic hernia	5	5	5	15
Operations on acquired and congenital breast diseases	5	5	5	15
Lymphnodesbiopsy	5	5	5	15
Surgery of cleft lip & palate	5	10	10	25

Surgery of congenital defects, cysts, benign and malignant mediastinal tumors	5	10	10	25
Lung and trachea surgery including acquired and congenital diseases	5	10	10	25
Acquired and congenital esophagus surgery	15	20	25	60
Esophageal atresia surgery	5	10	10	25
Surgery of esophageal perforation	2	2	2	6
Esophageal substitution technique	2	2	2	6
GERD surgery	5	5	10	20
Surgery of abdominal wall defects	5	5	5	15
Surgery of acute condition of scrotum	5	10	10	25
Surgery of acquired and congenital testicular diseases both benign and malignant	5	10	10	25
Surgery of GI diseases such as acquired anomalies with the use of recent technologies (including stapler, ligasure laser and so on)	5	10	10	25
Surgery of GIT obstructions both acquired and congenital (such as atresia, intussusception, meconium ileus, hypertrophic pyloric stenosis, Meckel's diverticulum, duplication, malrotation and so on)	5	10	10	25
Pull-through surgery in hirschsprung disease and so on	5	15	15	35
Surgery of anorectal congenital anomalies	5	10	20	35
Surgery of anorectal	5	5	5	15

acquired diseases (polyps, fistula, prolapse, fisher and so on)				
1. Vascular access procedures 2. Portal hypertension surgical management (shunts, splenectomy, esophageal transection and so on)	2	2		4
Types of surgical treatment for bile ducts and gall-bladder atresia	5	5	5	15
Surgery of choledochal cysts, bile ducts and gall-bladder	5	5	5	15
Surgery of benign and malignant liver cysts and tumors both acquired and congenital	5	5	5	15
Surgery of adrenal diseases	2	2	2	6
Surgery of Wilms tumor	5	10	10	25
Surgery of rhabdomyosarcoma	3	3	5	11
Surgery of lymphoma	3	3	5	11
Surgery of neuroblastoma	5	10	10	25
Surgery of germ cell tumors (surgery of teratoma) especially sacrococcygeal	5	10	10	25
Surgery of benign and malignant tumors with soft tissue	5	5	5	15
Surgery of vascular and lymphatic malformations	5	5	5	15
Surgical treatment of kidney stones	5	5	5	15
UPJO surgical treatment	5	10	10	25
Surgical treatment of urinary reflux	5	10	15	30
Surgical treatment of duplications & urethroceles	5	5	5	15

Surgical treatment of megaloureter	5	5	5	15
Cytoplasty (including mitrofanoff surgery and so on)	5	5	5	15
Surgical treatment of bladder exstrophy and cloaca	5	10	10	25
Reconstructive surgery (urethral surgery such as hypospadias, epispadias, stenosis, urethroplasty, and so on)	10	20	20	50
Surgery of urinary tract duplications	5	5	5	15
Developmental Sex Disorder Surgery (DSD)	5	10	10	25
Surgery of urinary diversion	5	5	5	15
Circumcision	5	20	25	50
Surgery for insertion of peritoneal shunts and peritoneal dialysis	5	5	5	15
Surgery of congenital vaginal anomalies and trauma	5	10	10	25
Surgery of syndactyly and polydactyly	5	5	5	15
Twining surgery		1		1
Insertion of AVF for pediatric dialysis	2	2	2	6
Helping the graft surgery team		5		5
Rehabilitation of neonates and infants	10	5	20	35

Overlapping:

According to accepted international standards which are presented in the most developed countries, surgical intervention demands additional education and certificates in treatment of infants from the time of birth to maturity as well as training in a specialized course. With respect to this definition, no specialty has any overlap or interference with pediatric surgery subspecialty.

On the other hand, if other specialties do not have the requisite period for education and skills-acquisition to interfere with the mentioned age range, they are not permitted to practice treatment and surgical intervention. Minimal requisite training for surgical intervention in neonates and infants is three years in addition to the specialized course.

Given the above-mentioned items, pediatric surgery has some overlap with pediatric plastic surgery, pediatric urology, pediatric orthopedics, and pediatric neuro-surgery. Obviously in complex cases, the operation may be done through team work with the leadership of a pediatric surgeon.

Teaching and learning methods:

- 1- Self-study and self-education with presenting weekly conferences based on one of the discussions of pediatric surgery textbooks introduced by the board between assistants and consultants of the department (this program is under the staff view)
- 2- Attendance in pediatric surgery clinics and joint clinics based on ward programs and daily visit to surgical departments for diagnostic measures and cares before and after operation
- 3- Participation in surgery based on the regulated program of the ward under the direct consultant view and with graded responsibility
- 4- Attendance in morning reports – clinical reports, round, educational grand round and case presentation with an approach to problem and case, clinical pathology conferences (CPC), mortality and morbidity report, tumor board, discharge and follow-up of patients, and radiologic conferences
- 5- Study of important inside and outside journals and presenting them in Journal Club based on the regulated program of the ward
- 6- Participation in the workshop of teaching and research methods based on the regulated program of the wards and university
- 7- Training students, interns, and rotating assistants and nurses of pediatric surgery department

- 8- Attendance in domestic and international conferences with an emphasis on the presentation of scientific papers in the field of pediatric surgery
- 9- Use of media facilities for updating scientific data including books in the library of educational center and digital facilities (E-books, E-journals)
- 10- Use of simulators
- 11- Other teaching methods based on educational goals and facilities

General structure of educational course:

Department and training unit	Contents	Period of time
Clinic	Visit to outpatient – selecting, filing, and hospitalizing patients – following up specialized consultations of patients – doing the outpatient procedures – training lower classes – answering the requested specialized consultations under the supervision of a professor and other actions based on the regulated programs of the ward	During the week 2 days for each assistants minimally
Hospitalized ward	Visit to hospitalized patients – patient care – stabilization of hospitalized patients in conventional and intensive care unit –doing the diagnostic-therapeutic procedures for patients – training lower classes and other actions based on the regulated programs of the ward	During the course Every day except holidays
Operation room	Participant in surgery through observation, helping, or independent performance based on the regulated programs of the ward	During the course Three days in the week minimally
Outpatient procedures room (clinic or emergency)	Participation in doing procedures through observation, help, or independent performance based on the regulated programs of the ward	During the course per case
Pediatric intensive care unit (general PICU)		One month in one year
Neonatal intensive care unit (general NICU)		One month in one year consistently and during the

		course
Selective unit	Laparoscopy department – pediatric urology – plastic surgery – reconstructive and burning	Three months

Titles of subjects that assistants must attend in rotating departments (the detachment per sector):

1. Pediatric and neonatal intensive care unit

A) Getting familiar with equipment:

A.1) Incubator

A.2) Infusion pump

A.3) Invasive and non-invasive monitoring

A.4) Ventilator machine (putting neonates on the ventilator and releasing them)

B) Getting to know and training in central and peripheral vascular access in neonates

C) Antibiotic therapy and TPN in neonates as well as serum therapy

D) Interpretation of and familiarity with ABG and treatment of acid-base disorders

E) Dealing with the neonatal jaundice and changes of enzymes and liver indexes during surgery

F) Approaching pre-mature neonates (recognition of prevalent difficulties in preterm neonates)

G) Pain control and seizure in neonates and sepsis workup

H) Getting familiar with NEC

2. Plastic surgery

A) Getting familiar with the principles of flaps, grafts, and cosmetic surgical incisions

B) Principles of dealing with facial cleft and cleft head

C) Dealing with complex congenital anomalies of upper and lower limbs

D) Getting familiar and dealing with hemangioma and AVM

E) Burning in pediatrics, and medical and surgical cares

3. Urology

A) Getting familiar with lower urinary dysfunctions

B) Getting familiar with urodynamic machine

C) Intense hypospadias surgery and the disability

D) Getting familiar with endoscopic surgical treatments of reflux

E) Getting familiar with tissue engineering in pediatric urology

F) Participation in urology clinic to examine non-operated patients (for example, dealing with patient with nocturnal enuresis)

4. Neurosurgery

A) Getting familiar with spinal dysraphism (myelomeningocele, and so on)

- B) Getting familiar with the principles of VP shunt
- C) Getting familiar with the principles of craniosynostosis
- D) Getting familiar with cerebral anomalies
- E) Getting familiar with neuro-endoscopy

References:

A –Main books:

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|---|--------------------|
| 1- Pediatric Surgery | Keith W. Aschcraft |
| 2- Pediatric Surgery | Jay L. Grosfeld |
| 3- Clinical Pediatric Urology | Kellalis |
| 4- Principles and Practice of Pediatric Surgery | Keith T. Oldham |
| 5- Pediatric Surgery | Arnold Coran |

B – Main journals:

- 1- Journal of Pediatric Surgery
- 2- European Journal of Pediatric Surgery
- 3- International Journal of Pediatric Surgery
- 4- Seminar in Pediatric Surgery
- 5- European Journal of Pediatric Urology

Explanation:

- 1) These references are a guidance to perform this program. Sources of state tests are announced by board of course and regulations with regard to these references.
- 2) The last published version of each book is available.
- 3) The issues of journals in the last two years are available.

Student assessment:

A: Assessment methods

- For assessing, valid and stable methods are used including:
 - Mini-CEX (mini clinical examination exercise)
 - DOPS (direct observation of procedural skills)
 - CBD (case-base discussion)

Consistent student assessment about written drafts in patients' file, type of diagnosis, treatment, decision, description of operation, file outline, clinical drafts and appropriate feedback to the student

- **MSF (Multi Source Feedback): 360 degree assessment**
- **MCQ (Multiple Choice Questions) for evaluating medical and theoretical knowledge**
- **Assessment of article and research work of students**
- **Assessment of assistance file (portfolio) including log book, the results of conducted assessments, papers, certifications, and so forth**
- **Other methods based on facilities and educational goals**

B: Periods of assessment

- **Cyclic assessment**
- **Annual assessment**
- **Final assessment**