

Pediatric Surgery Curriculum
Clinical Base Year

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Purpose and Educational Value

The purpose of the Pediatric Surgery rotation is to expose the resident to common pediatric surgical problems under the supervision of the full-time Department of Surgery faculty. Residents will learn how to diagnose, manage, and/or triage patients with pediatric surgical problems; how to work within a health care team; and perform a variety of invasive medical procedures.

Through rotation on the pediatric surgery service, residents shall attain the following competency goals detailed below.

I. Patient Care

- A. Preoperative Care: Residents will evaluate and develop a plan of care for preoperative patients with pediatric surgical conditions. The plan shall include any interventions that will successfully prepare a patient for surgery
- 1) Setting
 - a. Out-patient clinic attendance
 - b. Hospital consultation service
 - 2) Evaluation:
 - a. Obtain and interpret appropriate laboratory tests
 - b. Obtain and interpret appropriate radiologic tests
 - c. Evaluate the need for preoperative nutritional therapy
 - d. Participate in the informed consent process for patients being scheduled for an elective procedure or surgery. This includes simple procedures and operations, e.g. central venous access, tube thoracostomy, inguinal hernia in children, Incision & drainage
 - e. Rectal bleeding: fissure-in-ano, juvenile polyp, Meckel's diverticulum, medical conditions that may cause rectal bleeding.
 - f. Common anorectal problems: perianal abscess, fistula-in-ano.
 - g. Constipation in children: work up for Hirschsprung's' disease.
 - h. Non-bilious vomiting: pyloric stenosis, gastroesophageal reflux.

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- i. The abdominal mass: Wilms tumor, neuroblastoma.
- j. Common neonatal surgical conditions: neonatal intestinal obstruction, gastroschisis, necrotizing enterocolitis, imperforate anus, and abdominal masses.
- k. Disorders of the thorax: pneumothorax, emphysema, common lung lesions.
- l. Trauma: general approach to the multiply injured child, including initial treatment of hemorrhagic shock, management of specific organ injuries.
- m. Fluid and dietary management of the pediatric surgical patient: maintenance fluid regimens, replacement fluid regimens in specific

B. Operative Care: Gain an experience that will build toward being competent in the performance of surgeries. PGY levels indicate the level of resident most appropriate to participate. This does not preclude a more senior or more junior resident from participating if there is no level appropriate resident available.

1. Procedure as assistant of junior surgeon to the attending surgeon
 - a. Groin Hernia, open
 - b. Umbilical hernia
 - c. Placement of venous catheter
 - d. Soft tissue mass/infection/abscess, simple
 - e. Common neck and other subcutaneous masses -Lymphadenitis, lymphangioma, hemangioma, dermoid cyst, thyroglossal duct cyst, torticollis, branchial cleft cyst and fistula, lymphoma
2. Dexterity: residents shall learn to display and perform the above operations with manual dexterity appropriate for their level
 - a. Residents shall gain facility with operative techniques as assistants on their initial operative experiences.

C. Postoperative Care: residents shall develop and follow through with a plan of care for the pediatric surgical patient. This plan will include how to facilitate the recovery of patients undergoing abdominal wall, gastric, small bowel, large bowel, splenic, skin & soft tissue, laparoscopic, and endoscopic procedures

1. Setting:
 - a. Out-patient Surgery area
 - b. Inpatient floor
 - c. Out-patient clinic
2. Through evaluation of the postoperative patient, the resident shall be able to assess and manage:

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- a. Fluid management in neonate & children
- b. Importance of thermoregulation in pediatric age group
- c. Bowel function: distinguish active bowel function from adynamic ileus and/or bowel obstruction
- d. Pain management: evaluate patients for pain and the adequacy of their postoperative pain management regimen
 - i. Evaluate the use and effectiveness per oral and intravenous pain medications
 - ii. Evaluate the use and effectiveness of patient controlled anesthetic units
 - iii. Evaluate the use and effectiveness of epidural anesthesia
- e. Wound care and healing
 - i. Identify and treat infected wounds
 - ii. Identify and treat wound seromas
 - iii. Identify and treat wound dehiscence
- f. Fluid and electrolyte abnormalities after surgery
- g. Use and care of surgical drains
- h. Identify infection: surgical site, blood, genitourinary, pulmonary, catheter-related, intraabdominal abscess, bowel anastomotic disruption
- i. Identify and treat pulmonary edema, atelectasis, pulmonary embolism, pneumonia
- j. Identify and treat of renal impairment/failure: pre-renal azotemia, acute renal failure, IV-dye associated renal impairment
- k. Identify the need for parenteral nutrition and employ its use
- l. Identify a patient's readiness for discharge
- m. Identify a patient's need for rehabilitation or nursing home placement

3. Resident expectation by level

- a. PGY-1 - residents shall gain an experience in how to recognize and differentiate the above problems and conditions and be able to formulate and institute a strategy of care with the assistance of more senior residents or staff

D. Emergent/Urgent Care: Residents will evaluate and manage emergent/urgent general surgical conditions

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1. Setting
 - a. Outpatient clinic
 - b. Inpatient consult service
 - c. Emergency Department
2. Emergent conditions: residents shall learn to recognize and manage
 - a. Perforated hollow viscous
 - b. Acute abdomen (appendicitis, intestinal obstruction, incarcerated inguinal hernia, acute gastroenteritis, intussusception, malrotation, volvulus & cholecystitis)
 - c. Soft tissue infections
 - d. Infected prosthesis: ports, central lines, mesh
3. Management
 - a. Evaluation: residents shall learn to evaluate patients with the above emergent conditions through history & physical examination and decide upon a plan of care including the need for further evolution by other specialties, laboratory testing, or radiologic testing
 - i. Residents shall gain an experience in how to recognize and differentiate
 - b. Resuscitation: residents shall learn to identify the need for resuscitation of a child with an emergent surgical condition including the need for optimization and monitoring of the patient in an Pediatric ICU or "step-down" setting
 - i. Residents shall gain an experience in how to recognize the appropriate setting of care
 - c. Operation: residents shall learn to make a judgment, based upon their evaluation, whether a patient's condition warrants urgent or emergent operative therapy. A judgment of what the appropriate operation to be performed should be made
 - i. Residents shall gain an experience in how to recognize patients in need of urgent or emergent operative therapy
 - d. Postoperative: residents shall learn to make a judgment of the appropriate postoperative disposition for patients with urgent/emergent surgical conditions

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- i. Critically ill -PICU
- ii. Stable in need of further monitoring - "Pediatric step-down" unit
- iii. Stable - floor
- iv. Residents shall gain an experience in how to recognize and differentiate the level of care necessary for patients after an urgent or emergent operation

II. Medical Knowledge

A. Didactics: residents are expected to attend and participate in the weekly didactic sessions including the basic science course, case conference, M&M, Grand Rounds, and the Junior & Senior resident discussion sessions, as appropriate by level.

B. It is expected that residents will educate themselves upon the scientific information relating to pediatric surgery.

1. System function: residents shall gain an understanding of the anatomy, physiology, and function of organs and organ systems affected by pediatric conditions and operative procedures
 - a. Residents shall reacquaint themselves with the basic physiology and function of the organs and systems, and they shall learn how they are affected by general surgical conditions and operations
2. Disease process: residents shall become familiar with the various disease processes affecting the organ systems commonly seen in pediatric surgical patients
3. Surgery
 - a. Techniques; residents shall learn and become familiar with the various surgical techniques.
 - b. Residents shall learn the appropriateness of the application of surgical or endoscopic therapy
 - c. Complications and management: residents shall gain an experience in recognizing and managing medical and surgical complications of procedures and therapies.
 - i. Residents shall gain an experience in how to recognize and differentiate potential complications of a procedure or operation

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4. Follow-up therapy: residents shall gain an understanding of the follow-up needed and recommended for various pediatric surgical procedures
 - a. Setting:
 - i. Out-patient Surgery area
 - ii. Inpatient floor
 - iii. Out-patient clinic
5. Gain an understanding of the utility, appropriateness, and use of diagnostic modalities used in both the inpatient and outpatient settings for the evaluation of:
 - a. Organ or organ system
 - i. Abdominal wall
 - ii. Skin and soft tissue
 - iii. Gastrointestinal tract
 - b. Evaluation Modality
 - i. X-rays
 - ii. Ultrasound
 - iii. CT scan
 - iv. MRI
 - v. Nuclear medicine studies
 - vi. Contrast studies of the gastrointestinal tract
 - vii. 24-hour pH analysis
 - viii. Esophageal manometry
 - c. Residents shall gain an experience in how to recognize and differentiate the available options for an evaluation and be able to decide on the appropriate test for simple problems, e.g. ultrasound for suspected gallstone disease

III. Practice-based Learning

A. Residents are expected to critique their performance and their personal practice outcomes

1. Morbidity & Mortality Conference - Discussion should center on an evidence-based discussion of complications and their avoidance.

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2. Residents shall keep logs of their cases and track their operative proficiency as gauged by whether they assisted or were the surgeon junior or senior or teaching assistant

IV. Interpersonal and Communication Skills

- A. Residents shall learn to work effectively as part of the pediatric surgical team.
- B. Residents shall foster an atmosphere that promotes the effectiveness of each member of the pediatric surgical team
- C. Residents shall interact with colleagues and members of the ancillary services in a professional and respectful manner.
- D. Residents shall learn to document their practice activities in such a manner that is clear and concise
- E. Residents shall participate in the informed consent process for patients being scheduled for elective and emergent/urgent procedures or surgery
- F. Residents shall gain an experience in educating and counseling patients about risks and expected outcomes of elective or emergent/urgent procedures or surgeries
- G. Residents shall gain an experience in educating medical students on rotation
- H. Residents shall learn to give and receive a detailed sign-out for each service

V. Professionalism

- A. Residents shall maintain high ethical standards in dealing with patients, family members, patient data, and other members of the healthcare team
- B. Residents shall demonstrate a commitment to the continuity of care of a patient within the confines of the 80-hour duty restrictions.
- C. Residents shall demonstrate sensitivity to age, gender, and culture of patients and other members of the healthcare team

VI. Systems-based practice

- A. Residents shall learn to practice high quality cost effective patient care. This knowledge should be gained through discussions of patient care.

1. Conferences

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- a. M&M
- b. Case conference

2. Other

- a. Pediatric Surgery Rounds
- b. Outpatient clinic

Evaluation

A. Residents. All the attending physicians with whom they come in contact evaluate the residents. The final evaluation is a composite of the many individual evaluations and includes: clinical performance, attitude, and fund of knowledge, inter-personal relationships, and communication abilities. This evaluation is shared with the resident and is incorporated in the performance reviews for directed feedback, which occurs several times each year.

B. Faculty/Service. The resident completes an end of rotation evaluation of the attendings and service. This evaluation is reviewed by the Department's Director of Medical Education and is available to the program director and the training committee for their review.

Curriculum Timeline

Approved by Education Committee, September 26, 2007