

# The University of Arizona Pediatric Residency Program

## Primary Goals for Rotation

### Radiology

1. **GOAL:** Differentiate normal from abnormal features on radiographs.
2. **GOAL:** Order and interpret radiographic studies in common and emergency conditions.
3. **GOAL:** Use appropriate imaging modalities in the diagnosis and management of pediatric patients.
4. **GOAL:** Demonstrate high standards of professional competence while working with patients under the care of a subspecialist.

**1. GOAL: Differentiate normal from abnormal features on radiographs.**

- A. Examine radiographs in a systematic manner.
- B. Interpret radiographs accurately, recognizing the characteristic patterns by which physiologic and morphologic alterations are demonstrated.
- C. Differentiate common normal variants and developmental features from pathologic conditions on plain radiographs.

**2. GOAL: Order and interpret radiographic studies in common and emergency conditions.**

- A. Request the radiographic study needed to clarify a clinical problem.
- B. Communicate key patient information related to the radiographic study to the radiologist.
- C. Manage patients effectively using radiographic information.
- D. Interpret common findings on radiographs accurately. For example, identify the following features on commonly obtained radiographs:
  - 1. Abdominal radiographs: abdominal masses, fecaliths, free intraperitoneal air, ileus, congenital and acquired intestinal obstruction, pneumatosis intestinalis, intraperitoneal and retroperitoneal calcifications
  - 2. Chest radiographs: atelectasis, airspace and interstitial pulmonary disease, cardiomegaly, foreign bodies, abnormalities of lung volume pneumothorax, pleural fluid, tumors, abnormal pulmonary vascularity, vascular anomalies
  - 3. Extremity radiographs: benign and malignant bone tumors, cysts, bone destruction, common fractures [Salter-Harris classification], common dislocations, osteomyelitis, arthritis, soft tissue swelling, foreign body
  - 4. Lateral neck radiographs: adenoidal and tonsillar hypertrophy, epiglottic and glottic edema, foreign body, retropharyngeal abscess, subglottic narrowing--congenital and acquired, cervical spine abnormalities
  - 5. Sinus radiographs: mucosal thickening, masses, air-fluid levels, bone destruction
  - 6. Spine radiographs: vertebral dislocation and fracture, vertebral destruction, collapsed vertebra, disc space disease, segmentation anomalies, scoliosis
- E. Develop a basic level of proficiency in identifying common abnormalities in these radiographic studies that pediatricians order in emergent or urgent situations:
  - 1. Skeletal survey for suspected non-accidental trauma
  - 2. Computer tomography of the head

**3. GOAL: Use appropriate imaging modalities in the diagnosis and management of pediatric patients.**

- A. Counsel families and patients regarding the basic indications for and risks and costs associated with specialized imaging such as the following:
  - 1. Computed tomography (CT)
  - 2. Contrast imaging: cystourethrography, barium esophagram, upper gastrointestinal series, small bowel follow through, contrast enema, angiogram, excretory urogram

<ul style="list-style-type: none"> <li>3. Ultrasound</li> <li>4. Nuclear medicine : Positron emission tomography (PET), Single photon emission computed tomography (SPECT)</li> <li>5. Magnetic resonance imaging (MRI)</li> </ul>
<p>B. Use radiology consultation effectively for design of workup and diagnosis; provide key patient information to the radiologist and follow up as needed.</p>
<p>C. Consult the radiologist for interventional procedures where appropriate, such as:</p> <ul style="list-style-type: none"> <li>1. Vascular intervention (angioplasty, thrombolysis, embolotherapy)</li> <li>2. Venous intervention (central venous lines, peripherally inserted central lines, peripheral and central ports)</li> <li>3. Abscess drainage</li> <li>4. Percutaneous biopsies</li> <li>5. Gastrostomy, gastrojejunostomy and cecostomy</li> <li>6. Tracheal and esophageal intervention (esophageal dilatation, tracheobronchial stents)</li> <li>7. Renal and hepatobiliary intervention (drainage catheters, stents)</li> </ul>
<p>D. Recognize the most suitable imaging study for evaluation of various disease conditions (e.g., bone scan vs. skeletal survey in suspected intentional trauma).</p>
<p>E. Conduct timely and appropriate follow-up of fetal ultrasonographic abnormalities.</p>
<p><b>4. GOAL: Demonstrate high standards of professional competence while working with patients under the care of a subspecialist.</b></p>
<p>A. <b>Competency 1: Patient Care.</b> Provide family-centered patient care that is development- and age-appropriate, compassionate, and effective for the treatment of health problems and the promotion of health.</p>
<ul style="list-style-type: none"> <li>1. Use a logical and appropriate clinical approach to the care of patients presenting for specialty care, applying principles of evidence-based decision-making and problem-solving.</li> </ul>
<ul style="list-style-type: none"> <li>2. Describe general indications for subspecialty procedures and interpret results for families.</li> </ul>
<p>B. <b>Competency 2: Medical Knowledge.</b> Understand the scope of established and evolving biomedical, clinical, epidemiological and social-behavioral knowledge needed by a pediatrician; demonstrate the ability to acquire, critically interpret and apply this knowledge in patient care.</p>
<ul style="list-style-type: none"> <li>1. Acquire, interpret and apply the knowledge appropriate for the generalist regarding the core content of this subspecialty area.</li> </ul>
<ul style="list-style-type: none"> <li>2. Critically evaluate current medical information and scientific evidence related to this subspecialty area and modify your knowledge base accordingly.</li> </ul>
<p>C. <b>Competency 3: Interpersonal Skills and Communication.</b> Demonstrate interpersonal and communication skills that result in information exchange and partnering with patients, their families and professional associates.</p>
<ul style="list-style-type: none"> <li>1. Provide effective patient education, including reassurance, for a condition(s) common to this subspecialty area.</li> </ul>

2. Communicate effectively with primary care and other physicians, other health professionals, and health-related agencies to create and sustain information exchange and teamwork for patient care.
3. Maintain accurate, legible, timely and legally appropriate medical records, including referral forms and letters, for subspecialty patients in the outpatient and inpatient setting.
<b>D. Competency 4: Practice-based Learning and Improvement.</b> Demonstrate knowledge, skills and attitudes needed for continuous self-assessment, using scientific methods and evidence to investigate, evaluate, and improve one's patient care practice.
1. Identify standardized guidelines for diagnosis and treatment of conditions common to this subspecialty area and adapt them to the individual needs of specific patients.
2. Identify personal learning needs related to this subspecialty; systematically organize relevant information resources for future reference; and plan for continuing acquisition of knowledge and skills.
<b>E. Competency 5: Professionalism.</b> Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to diversity.
1. Demonstrate personal accountability to the well-being of patients (e.g., following up on lab results, writing comprehensive notes, and seeking answers to patient care questions).
2. Demonstrate a commitment to carrying out professional responsibilities.
3. Adhere to ethical and legal principles, and be sensitive to diversity.
<b>F. Competency 6: Systems-based Practice.</b> Understand how to practice high-quality health care and advocate for patients within the context of the health care system.
1. Identify key aspects of health care systems as they apply to specialty care, including the referral process, and differentiate between consultation and referral.
2. Demonstrate sensitivity to the costs of clinical care in this subspecialty setting, and take steps to minimize costs without compromising quality.
3. Recognize and advocate for families who need assistance to deal with systems complexities, such as the referral process, lack of insurance, multiple medication refills, multiple appointments with long transport times, or inconvenient hours of service.
4. Recognize one's limits and those of the system; take steps to avoid medical errors.

## Procedures

**A. GOAL: Diagnostic and screening procedures.** Describe the following tests or procedures, including how they work and when they should be used; competently perform those commonly used by the pediatrician in practice.

1. Radiologic interpretation: abdominal ultrasound
2. Radiologic interpretation: abdominal X-ray
3. Radiologic interpretation: cervical spine X-ray
4. Radiologic interpretation: chest X-ray
5. Radiologic interpretation: cranial US
6. Radiologic interpretation: CT of head
7. Radiologic interpretation: extremity X-ray
8. Radiologic interpretation: GI contrast study
9. Radiologic interpretation: lateral neck X-ray
10. Radiologic interpretation: MRI of head
11. Radiologic interpretation: nuclear medicine GI scanning
12. Radiologic interpretation: renal ultrasound
13. Radiologic interpretation: renogram
14. Radiologic interpretation: skeletal X-ray (incl. abuse)
15. Radiologic interpretation: skull film for fracture
16. Radiologic interpretation: sinus films
17. Radiologic interpretation: voiding cystourethrogram

## Adapted From

Kittredge, D., Baldwin, C. D., Bar-on, M. E., Beach, P. S., Trimm, R. F. (Eds.). (2004). APA Educational Guidelines for Pediatric Residency. Ambulatory Pediatric Association Website. Available online: [www.ambpeds.org/egweb](http://www.ambpeds.org/egweb).