

Radiology

Note:

The goals and objectives described in detail below are not meant to be completed in a single one month block rotation but are meant to be cumulative, culminating in a thorough and complete Pediatric Radiology experience at the end of residency.

Primary Goals for this Rotation

GOAL: Normal vs. Abnormal. Differentiate normal from abnormal features on radiographs.

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

GOAL: Interpreting Common Radiographs. Order and interpret radiographic studies in common and emergency conditions.

1. Request the radiographic study needed to clarify a clinical problem.
2. Communicate key patient information related to the radiographic study to the radiologist.
3. Manage patients effectively using radiographic information.
4. 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

5. 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

GOAL: Advanced Imaging. Use appropriate imaging modalities in the diagnosis and management of pediatric patients.

1. 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
3. Ultrasound
4. Nuclear medicine : Positron emission tomography (PET), Single photon emission computed tomography (SPECT)
5. Magnetic resonance imaging (MRI)

2. Use radiology consultation effectively for design of workup and diagnosis; provide key patient information to the radiologist and follow up as needed.

3. Consult the radiologist for interventional procedures where appropriate, such as:

1. Vascular intervention (angioplasty, thrombolysis, embolotherapy)
2. Venous intervention (central venous lines, peripherally inserted central lines, peripheral and central ports)
3. Abscess drainage
4. Percutaneous biopsies
5. Gastrostomy, gastrojejunostomy and cecostomy
6. Tracheal and esophageal intervention (esophageal dilatation, tracheobronchial stents)
7. Renal and hepatobiliary intervention (drainage catheters, stents)

4. Recognize the most suitable imaging study for evaluation of various disease conditions (e.g., bone scan vs. skeletal survey in suspected intentional trauma).

5. Conduct timely and appropriate follow-up of fetal ultrasonographic abnormalities.

GOAL: Pediatric Competencies in Brief. Demonstrate high standards of professional competence while working with patients undergoing radiology procedures.

Competency 1: Patient Care. 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.

1. Use a logical and appropriate clinical approach to the care of patients presenting for radiology procedures, applying principles of evidence-based decision-making and problem-solving.

2. Describe general indications for radiology procedures and interpret

results for families.
Competency 2: Medical Knowledge. 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.
1. Acquire, interpret and apply the knowledge appropriate for the generalist regarding the core content of radiology.
2. Critically evaluate current medical information and scientific evidence related to radiology and modify your knowledge base accordingly.
Competency 3: Interpersonal Skills and Communication. Demonstrate interpersonal and communication skills that result in information exchange and partnering with patients, their families and professional associates.
1. Provide effective patient education, including reassurance, for a condition(s) commonly presenting for radiology procedures.
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 radiology patients in the outpatient and inpatient setting.
Competency 4: Practice-based Learning and Improvement. 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 commonly requiring radiological intervention and adapt them to the individual needs of specific patients.
2. Identify personal learning needs related to radiology; systematically organize relevant information resources for future reference; and plan for continuing acquisition of knowledge and skills.
Competency 5: Professionalism. 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.
Competency 6: Systems-based Practice. 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 radiology, including the referral process, and differentiate between consultation and referral.

2. Demonstrate sensitivity to the costs of clinical care as it relates to radiology procedures, 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.

Rotation Specific Competencies

Patient Care:

1. Understands and weighs alternatives for diagnostic testing
2. Reasons well in ambiguous situations
3. Competently understands/performs/interprets procedures:
 - _____ Plain Films: Chest, Abdomen, Extremities
 - _____ CT Scan: Indications and Interpretation
 - _____ MRI: Indications and Interpretation
 - _____ Contrast Studies: Indications, Risks, Benefits

Medical Knowledge:

1. Is aware of indications, contraindications, and risks of commonly used contrast materials and procedures
2. Applies the basic and clinical science to the care of the patient

Interpersonal Skills and Communication:

1. Provides education and counseling to patients, families, and colleagues
2. Works effectively as a member of the health care team

Practice-based Learning and Improvement:

1. Undertakes self-evaluation with insight and initiative
2. Facilitates that learning of students and other health care professionals

Professionalism:

1. Is honest, reliable, cooperative, and accepts responsibility
2. Shows regard for opinions and skills of colleagues
3. Is responsive to needs of patients and society, which supersedes self-interest

Systems Based Practice:

1. Applies knowledge of how to partner with health care providers to assess, coordinate and improve patient care
2. Advocates for high quality patient care and assists patients in dealing with system complexity

References:

1. American Board of Pediatrics, Content Specification, 2007
2. Ambulatory Pediatric Association
3. Association of Pediatric Program Directors
4. Pediatric RRC, January 2006

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