SickKids
THE HOSPITAL FOR
SICK CHILDREN

Pediatric Radiology Fellowship Program – CanMEDS Goals and Objectives

DEFINITION OF PEDIATRIC GENERAL RADIOLOGY

Pediatric radiology is the organ/system-based subspecialty of Diagnostic Radiology dedicated to diagnosis of disorders and diseases in children utilizing different imaging techniques.

GOALS

- Upon completion of training, the fellow is expected to be a competent specialist in Pediatric Radiology capable of assuming a consultant's role in the specialty.
- The fellow must acquire a working knowledge of the theoretical basis of the specialty, including its foundations in the basic medical sciences and research.
- Fellows must demonstrate the requisite knowledge, skills, and attitudes for effective patient-centered care and service to a diverse population. In all aspects of specialist practice, the graduate must be able to address issues of gender, sexual orientation, age, culture, ethnicity and ethics in a professional manner.

TRAINING YEAR SPECIFIC OBJECTIVES

1) Medical Expert:
   - 1.1) Review and interpret pediatric imaging examinations at the level of subspecialist and appropriately conveying the degree of certainty
   - 1.2) Use of the different pediatric imaging techniques and methods
     - 1.2.1) Conventional radiography of the neck, chest, abdomen, pelvis, and musculoskeletal system
     - 1.2.2) Ultrasonography of the brain, face/neck, chest, abdomen, pelvis, musculoskeletal system, and vascular system
     - 1.2.3) Fluoroscopic studies of the gastrointestinal and genitourinary tracts
     - 1.2.4) CT of the neck, chest, abdomen, pelvis, and musculoskeletal systems
     - 1.2.5) MRI of the neck, chest, abdomen, pelvis, and musculoskeletal systems
     - 1.2.6) Nuclear Medicine and PET imaging techniques
     - 1.2.7) Use of imaging protocols adapted to the different patient's age and size, and taking into consideration patient's preexisting and existing conditions
     - 1.2.8) Identify patients that may require sedation and list indications and contraindications
     - 1.2.9) Discuss radiation safety, including guidelines and protocols that minimize radiation exposure
     - 1.2.10) Use of contrast agents including indications, contraindications, and management of adverse reactions
   - 1.3) Recognize and differentiate normal from abnormal imaging findings in a variety of pediatric diseases of neck, chest, abdomen, musculoskeletal system, vascular system, and neonatal brain. List the main clinical findings and discuss role of imaging in management of:
     - 1.3.1) The neonatal and infant brain:
       - 1.3.1.1) Normal development in premature and term neonates and infants

1.3.1.2) Hypoxic-ischemic encephalopathy
1.3.1.3) Neonatal intracranial hemorrhage
1.3.1.4) Congenital anomalies of the brain

1.3.2) Genetic syndromes in children:
1.3.2.1) Neurofibromatosis 1
1.3.2.2) Tuberous sclerosis complex
1.3.2.3) Beckwith-Wiedemann syndrome and hemihypertrophy syndromes
1.3.2.4) Osteochondrodysplasias
1.3.2.5) Cystic fibrosis
1.3.2.6) Chromosomal aberrations

1.3.3) Trauma in children:
1.3.3.1) Accidental trauma
1.3.3.2) Non-accidental trauma

1.3.4) Tumors:
1.3.4.1) Tumors of the face, skull and brain
1.3.4.2) Tumors of the neck
1.3.4.3) Tumors of the chest
1.3.4.4) Tumors of the abdomen and pelvis
1.3.4.5) Tumors of the musculoskeletal system

1.3.5) Infections:
1.3.5.1) Intracranial infections
1.3.5.2) Infections of the neck
1.3.5.3) Infections of the chest, abdomen, pelvis and musculoskeletal system

1.3.6) Vascular disorders in children:
1.3.6.1) Stroke
1.3.6.2) Thrombosis of the venous and arterial systems
1.3.6.3) Vascular anomalies

1.3.7) Pediatric cardiovascular disease:
1.3.7.1) Congenital heart disease
1.3.7.2) Acquired cardiovascular disease

1.3.8) Pleura, lungs and mediastinum in children:
1.3.8.1) Congenital lung malformations
1.3.8.2) Parenchymal and airways disease of the lungs
1.3.8.3) Mediastinal and pleural pathology

1.3.9) Pediatric genitourinary system:
1.3.9.1) Congenital malformations of kidney, bladder, genital tract, and pelvis
1.3.9.2) Vesicoureteral reflux
1.3.9.3) Hydronephrosis
1.3.9.4) Renal transplantation
1.3.9.5) Adnexal torsion
1.3.9.6) Acute scrotum

1.3.10) Pediatric hepatobiliary system, pancreas and spleen:
1.3.10.1) Parenchymal liver disease
1.3.10.2) Congenital and acquired biliary tract disorders
1.3.10.3) Liver transplantation
1.3.10.4) Pancreatic disorders
1.3.10.5) Pathology of the spleen

1.3.11) Pediatric gastrointestinal tract:
- 1.3.11.1) Congenital malformations, including malrotation and atresias
- 1.3.11.2) Hirschsprung disease
- 1.3.11.3) Meconium ileus: diagnosis and treatment
- 1.3.11.4) Pyloric stenosis
- 1.3.11.5) Intussusception: diagnosis and treatment
- 1.3.11.6) Appendicitis
- 1.3.11.7) Inflammatory bowel disease
- 1.3.11.8) Gastroesophageal reflux
- 1.3.11.9) Bowel obstruction
- 1.3.11.10) Swallowing disorders
- 1.3.11.11) Placement of enteric feeding catheters

1.3.12) Pediatric musculoskeletal system:
- 1.3.12.1) Developmental hip dysplasia
- 1.3.12.2) Metabolic bone disease
- 1.3.12.3) Osteochondroses
- 1.3.12.4) Alignment disorders
- 1.3.12.5) Bone marrow anomalies

1.4) Identify appropriateness of examination requests and make decisions as to the most appropriate imaging test for each situation

2) Communicator:
- 2.1) Explain the procedure to the patient/family, including the risks and possible complications, and answering questions
- 2.2) Generate accurate, clear and concise reports in a timely fashion and provide verbal reports whenever necessary

3) Collaborator:
- 3.1) Review pediatric cases brought to attention by clinicians on a daily basis
- 3.2) Use appropriate history to guide decisions regarding the best imaging modality for a given clinical condition or issue
- 3.3) Communicate with imaging technologists and nurses to ensure optimal patient care

4) Leader:
- 4.1) Screen and prescribe protocols for CT and MRI examinations in the pediatric context
- 4.2) Prioritize studies
- 4.3) Discuss about availability of resources and the role of triage
- 4.4) Recognize the proper steps in the imaging investigation of various pediatric pathologies
- 4.5) Become increasingly responsible for individual body imaging subsections, including the proper delegation of authority to residents and technologists

5) Health Advocate:
- 5.1) Guide referring clinicians to the imaging study or studies most appropriate for their patients

5.2) Recognize and advise on the benefits/risks of imaging procedures, including radiation exposure, in consultation with referring physicians
5.3) Learn the importance of recognizing imaging findings of non-accidental injury

6) Scholar:
6.1) Complete at least one original research project on pediatric imaging as principal author with the purpose of preparation of a manuscript suitable for publication in a peer-reviewed journal
6.2) Preparation of a formal yearly lecture on a pediatric radiology topic to be presented to the department and undergo formal assessment
6.3) Teach diagnostic radiology residents
6.4) Present at multidisciplinary teaching/clinical rounds

7) Professional:
7.1) Incorporate ethical practice, professional regulation and high personal standards of behavior
7.2) Become a member of an international pediatric radiology society