SickKids
THE HOSPITAL FOR
SICK CHILDREN

Pediatric Radiology Fellowship Program – CanMEDS Goals and Objectives

DEFINITION OF PEDIATRIC 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