

## *Pediatric Radiology Fellowship Program – CanMEDS Goals and Objectives*

### DEFINITION OF GENERAL PEDIATRIC RADIOLOGY

General 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 on a daily basis
- 1.2) Demonstrate use of the different pediatric imaging techniques and methods
  - 1.2.1) Identify patients that may require sedation and list indications and contraindications
  - 1.2.2) Risk factors – contrast agents, radiation
  - 1.2.3) Ultrasonography of the neonatal brain
  - 1.2.4) Ultrasonography of the neonatal and pediatric neck, chest, abdomen, pelvis, musculoskeletal system, and vascular system
  - 1.2.5) Fluoroscopic studies of the neonatal and pediatric patient
  - 1.2.6) CT and MRI of the neck, chest, abdomen, pelvis, and musculoskeletal systems, with sequences adapted to the pediatric patient
  - 1.2.7) Nuclear Medicine Imaging and PET imaging techniques
  - 1.2.8) Imaging protocols adapted to the neonate, young child and older child
- 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) Prescribe protocols and interpret CT, MRI and Nuclear Medicine examinations; perform and interpret ultrasound, radiographic and fluoroscopic studies
  - 1.5) 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) Present academic work on pediatric imaging at local, national or international scientific meetings
- 6.3) Preparation of a formal yearly lecture on a pediatric radiology topic to be presented to the department and undergo formal assessment
- 6.4) Teach diagnostic radiology residents as well as residents from other clinical services and medical students
- 6.5) 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