

***Pediatric Nuclear Medicine Fellowship - Goals and Objectives*****FELLOWSHIP OVERVIEW**

Pediatric Nuclear Medicine is a subspecialty of Pediatric Radiology dedicated to diagnosis of disorders and diseases in children utilizing nuclear medicine techniques.

**GOALS**

- Upon completion of training, the fellow is expected to be a competent specialist in Pediatric Nuclear Medicine capable to perform and interpret common nuclear medicine procedures in children, including PET imaging as well as radionuclide therapy such as radioiodine therapy for thyroid cancer, in order to assume a consultant role in the specialty
- Fellows must acquire a working knowledge of the theoretical basis of pediatric nuclear medicine, 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

**FELLOWSHIP OBJECTIVES****1) Medical Expert:**

- 1.1) Describe the techniques and interpret a variety of nuclear medicine examinations specific to the investigation of pediatric diseases of neck, chest, abdomen, pelvis, musculoskeletal system, vascular system, and neonatal brain
  - 1.1.1) Techniques and methods in pediatric imaging:
    - 1.1.1.1) Sedation
    - 1.1.1.2) Nuclear medicine radiation safety and radiation risk factors
    - 1.1.1.3) Basic nuclear medicine physics and instrumentation
    - 1.1.1.4) Basic radiopharmacy
    - 1.1.1.5) Nuclear medicine imaging tests of the neonatal and pediatric neck, chest, abdomen, pelvis, and musculoskeletal system
    - 1.1.1.6) PET imaging principles and image interpretation including pitfalls
    - 1.1.1.7) Imaging protocols adapted to the neonate, young child and older child

- 1.1.1.8) Advanced imaging techniques applied to pediatric diseases such as SPECT
- 1.1.1.9) Awareness of basic principles of radioisotope therapy for Graves disease and thyroid cancer
- 1.1.2) Neonate and young infant:
  - 1.1.2.1) Normal development in prematures and infants
  - 1.1.2.2) Neonatal cardiac and lung disease
  - 1.1.2.3) Biliary atresia
  - 1.1.2.4) Congenital hypothyroidism
- 1.1.3) Brain imaging for refractory epilepsy
- 1.1.4) Trauma:
  - 1.1.4.1) Skeletal and visceral manifestation of trauma in infants, including non-accidental trauma
  - 1.1.4.2) Skeletal and visceral trauma in children
- 1.1.5) Tumors
- 1.1.6) Infections
- 1.1.7) Vascular disorders:
  - 1.1.7.1) Arterial and venous diseases
  - 1.1.7.2) Vascular malformations
- 1.1.8) Genitourinary system:
  - 1.1.8.1) Congenital malformations of kidney, bladder, genital tract, and pelvis
  - 1.1.8.2) Vesicoureteric reflux
  - 1.1.8.3) Hydronephrosis and renal obstructive disease
  - 1.1.8.4) Pyelonephritis and kidney scar
- 1.1.9) Gastrointestinal tract
  - 1.1.9.1) Congenital malformations, including atresias
  - 1.1.9.2) Inflammatory bowel disease
  - 1.1.9.3) Gastroesophageal reflux
  - 1.1.9.4) Pediatric swallowing disorders
  - 1.1.9.5) Meckel diverticulum

## **2) Communicator:**

- 2.1) Effectively communicate with patients/guardians during consent or procedures, mostly in the setting of therapy for Graves disease or thyroid cancer, explaining the procedure to the patient/family, including the risks of possible complications and answering questions
- 2.2) Obtain and synthesize relevant history and information from referring physicians, children and their parents
- 2.3) Dictate well-organized reports, describing relevant findings, diagnosis and recommendations in a timely manner and providing verbal reports when necessary

## **3) Collaborator:**

- 3.1) Review pediatric nuclear medicine cases brought to attention by clinicians on a daily basis
- 3.2) Obtain the appropriate history to guide decisions regarding the best imaging modality to pursue imaging investigation
- 3.3) Effectively communicate with imaging technologists regarding requests for further nuclear medicine imaging, demonstrating a team approach to patient care
- 3.4) Effectively communicate with radiology staff to interpret PET/CT examinations

**4) Manager:**

- 4.1) Prioritize studies
- 4.2) Describe indications for pediatric nuclear medicine studies and consider how they fit in with other imaging modalities
- 4.3) Properly delegate authority to residents and technologists

**5) Health Advocate:**

- 5.1) Select appropriate test or follow-up studies for the individual patient from discussion with referring doctors and consultants
- 5.2) Consider the benefits/risks of procedures for the individual patient such as radiation or sedation, in consultation with referring doctors.
- 5.3) Guide referring clinicians to the imaging study or studies most appropriate for their patients

**6) Scholar:**

- 6.1) Participate in research projects related to pediatric nuclear medicine with the aim of publication in scientific journals and/or presentation at scientific meetings
- 6.2) Critically appraise the literature relevant to nuclear medicine as needed
- 6.3) Actively participate in the teaching of diagnostic and pediatric radiology residents/fellows and residents from other clinical services
- 6.4) Attend and present at various clinical rounds

**7) Professional:**

- 7.1) Incorporate ethical practice, professional regulation and high personal standards of behaviour