Pediatric Nuclear Medicine Fellowship - Goals and Objectives

FELLOWSHIP OVERVIEW

Pediatric Nuclear Medicine is a subspecialty of Diagnostic 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) Involved with the daily review/interpretation of pediatric nuclear medicine examinations.
   1.2) Involved with a variety of nuclear medicine techniques and procedures specific to the investigation of pediatric diseases of neck, chest, abdomen, pelvis, musculoskeletal system, vascular system, and neonatal brain.
      1.2.1) Techniques and methods in pediatric imaging:
          1.2.1.1) Sedation
          1.2.1.2) Nuclear Medicine radiation safety and radiation risk factors
          1.2.1.3) Knowledge of basic nuclear medicine physics and instrumentation
          1.2.1.4) Knowledge of basic radiopharmacy
          1.2.1.5) Nuclear medicine imaging examinations of the neonatal and pediatric neck, chest, abdomen, pelvis, musculoskeletal system, and vascular system
          1.2.1.6) PET imaging principles and image interpretation including pitfalls

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1.2.1.7) Imaging protocols adapted to the neonate, young child and older child
1.2.1.8) Advanced imaging techniques applied to pediatric diseases such as SPECT
1.2.1.9) Awareness of basic principles of radioisotope therapy for Graves disease and thyroid cancer
1.2.2) Neonate and young infant:
   1.2.2.1) Normal development in prematures and infants
   1.2.2.2) Neonatal cardiac and lung disease
   1.2.2.3) Biliary atresia
   1.2.2.4) Congenital hypothyroidism
1.2.3) Brain imaging for refractory epilepsy
1.2.4) Trauma:
   1.2.4.1) Skeletal and visceral manifestation of trauma in infants, including non-accidental trauma
   1.2.4.2) Skeletal and visceral trauma in children
1.2.5) Tumors
1.2.6) Infections
1.2.7) Vascular disorders:
   1.2.7.1) Thrombosis of the venous and arterial systems.
   1.2.7.2) Arterial and venous diseases
   1.2.7.3) Vascular malformations
1.2.8) Genitourinary system:
   1.2.8.1) Congenital malformations of kidney, bladder, genital tract, and pelvis
   1.2.8.2) Vesicoureteric reflux
   1.2.8.3) Hydronephrosis and renal obstructive disease
1.2.9) Gastrointestinal tract
   1.2.9.1) Congenital malformations, including atresias
   1.2.9.2) Inflammatory bowel disease
   1.2.9.3) Gastroesophageal reflux
   1.2.9.4) Pediatric swallowing disorders
   1.2.9.5) Meckel diverticulum

2) Communicator:
   2.1) Effective communication skills when dealing with patients, during consent or procedures as well as with consulting physicians. Mostly in the setting of therapy for Graves disease or thyroid cancer, trainees will be responsible for 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) Dictating well-organized reports, describing relevant findings, diagnosis and recommendations in a timely manner and providing verbal reports when it is necessary

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3) **Collaborator:**

3.1) Gain experience in reviewing 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) Responsible for communicating requests for further nuclear medicine imaging to imaging technologists demonstrating a team approach to patient care

4) **Manager:**

4.1) Learn how to prioritize studies

4.2) Gain expertise in the proper steps in imaging investigation of pediatric pathologies

4.3) Develop an understanding of indication for pediatric nuclear medicine studies and considering how it fits in with other imaging modalities

4.4) Develop skills to become increasingly responsible for proper delegation of authority to residents and technologists

5) **Health Advocate:**

5.1) Gain expertise in the selection of appropriate test or follow-up studies for the individual patient from discussion with referring doctors and consultants.

5.2) Take into consideration the benefits/risks of procedures for the individual patient such as radiation or sedation, in consultation with referring doctors.

5.3) Gain expertise in guiding 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) Ability to critically appraise the literature relevant to nuclear medicine as needed

6.3) Actively participate in the teaching of diagnostic and pediatric radiology residents 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