

## Competency in Nuclear Medicine

Medical specialties have increasingly recognized the importance of defining levels of competency. For example, the training that is required to achieve different levels of competency in cardiovascular CT, interventional cardiology, and nuclear cardiology has been described. Three levels of competency are typically defined. The first level is basic training required of all trainees to be competent consultant physicians. The second level enables physicians to perform and interpret studies independently. The third level allows physicians to train others, as well as supervise and be responsible for an imaging/treatment laboratory.

For nuclear medicine, 3 major training pathways are common. Pathway 1 typically consists of 4 mo of nuclear medicine training that radiology residents receive during their 4-y residencies. In July 2010, the Accreditation Council for Graduate Medical Education (ACGME) Web site listed 54 accredited nuclear medicine training programs, 21 nuclear radiology training programs (approximately 10 were nuclear radiology only), and 186 accredited diagnostic radiology training programs. This means that most nuclear medicine training in diagnostic radiology programs takes place where there is no accredited nuclear medicine or nuclear radiology training program. Usually 2 mo are spent in general nuclear medicine and 2 in PET/CT. Prior to 2005, pathway 1 included 6 mo of training.

Pathway 2 typically involves physicians trained in radiology who have an additional 12 mo of training in an accredited nuclear medicine or nuclear radiology training program (total of 16 mo of nuclear medicine training). This training may be obtained before, during, or after their radiology residency training. Pathway 3 occurs in nuclear medicine training programs, where residents receive 2 y of training if they are board eligible in another specialty or 3 y of training if they have completed at least 1 clinical y of training.

Physicians trained under pathway 1, who are usually certified by the American Board of Radiology (ABR), have enough experience to interpret diagnostic nuclear medicine studies, but they should practice nuclear medicine under the supervision of a physician who has trained under pathways 2 or 3 until they have gained sufficient experience as defined in procedure-specific guidelines as applicable, including administration of radionuclide therapy. Physicians in practice will usually have had that experience. Physicians who have followed pathway 2 have been trained to interpret all diagnostic nuclear medicine studies and usually have adequate training to administer radionuclide therapy. Pathway 2 physicians are usually board certified by either the American Board of Nuclear Medicine (ABNM) or the

ABR, with a Certificate of Added Qualification in nuclear radiology. The main distinguishing feature between nuclear radiology and nuclear medicine residencies is that comprehensive training in radionuclide therapy is mandatory for nuclear medicine residencies but is not required for nuclear radiology residencies. The Nuclear Regulatory Commission (NRC) does not give additional Authorized User (AU) status to trainees who complete nuclear radiology fellowships. Physicians who have followed pathway 3 and who are usually board certified by the ABNM have been trained to interpret all diagnostic nuclear medicine studies and to administer all forms of radionuclide therapy.

A large fraction of nuclear medicine diagnostic studies and therapies currently are performed by physicians following pathway 1, with limited training in nuclear medicine. Having physicians with limited training independently practice nuclear medicine raises significant concerns for the overall quality of patient care and safety. Of particular concern is the treatment of patients with hyperthyroidism and thyroid cancer with  $^{131}\text{I}$ . Pathway 1 physicians are currently required to have experience in only 3 cases of  $^{131}\text{I}$  therapy by the ACGME, although the ABR now requires applicants to have taken part in 3 cases of oral administration of low-dose (<33 mCi) and 3 cases of high-dose (>33 mCi)  $^{131}\text{I}$  therapy to meet requirements of the NRC for AU status. In comparison, Pathway 2 and 3 nuclear medicine training programs require experience in 10 cases of low-dose and 5 cases of high-dose  $^{131}\text{I}$  therapy, in addition to 3 cases of parenteral therapy. The experience includes reviewing the medical record and obtaining relevant history, examining the patient and obtaining informed consent, calculating the appropriate amount of radioactivity to be administered, supervising administration of radioactivity, and arranging appropriate follow-up.

For these reasons, the SNM Board of Directors recently approved the following statement: "All nuclear medicine examinations should be performed under the supervision of and interpreted by a physician certified in nuclear medicine or nuclear radiology by the American Board of Nuclear Medicine, the American Board of Radiology, the Royal College of Physicians and Surgeons of Canada, the Collège des Médecins du Québec, or the equivalent. In addition, the physician should participate in maintenance of certification in the field of nuclear medicine."

The statement is needed to ensure that physicians are adequately trained to provide patients with optimal and safe care.

*SNM Board of Directors*