

The Future of Nuclear Medicine in the United States

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Nuclear medicine (NM) in the United States is experiencing a manpower shortage that is steadily getting worse. It largely derives from inadequate production of well-trained NM physicians. It is different in the rest of the world, where NM is an independent specialty and training is more rigorous. Three suggestions are offered to help reverse the situation: (1) stop radiologists with inadequate training from practicing NM; (2) strengthen NM training programs; and (3) inform medical students of career opportunities in NM. If we do nothing, the rest of the world will move forward, leaving us behind.

Key Words: medical students; residency programs; training

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It is becoming increasingly clear that there is a manpower problem in nuclear medicine (NM) in the United States that is steadily becoming worse (1–5), both in academia and in private practice. The number of active Accreditation Council for Graduate Medical Education (ACGME)-certified training programs has dropped from 86 in 1995 to 36 today (Fig. 1). There are at least 21 sites seeking well-qualified NM physicians (posted recently on the Society of Nuclear Medicine and Molecular Imaging [SNMMI] website) and very few well-qualified applicants. Training in NM, which is nominally for 3 y, is usually only for 1–2 y, because almost all residents have prior training in diagnostic radiology. United States-trained radiologists usually complete 1 y of NM residency to become eligible for the American Board of Nuclear Medicine (ABNM). Foreign medical graduates complete 1 or 2 y of NM to help fulfill American Board of Radiology (ABR) requirements but often are not planning to practice NM in the future. We are simply not producing very many high-quality academic NM physicians.

This situation has been steadily building during the past 2 decades. A major problem during the 2000s was that our residency graduates had real difficulty getting jobs. This was because many academic and private-practice programs preferred to hire diagnostic radiology radiologists with minimal NM training instead of well-trained NM physicians who could not do part-time radiology. The job situation resulted in medical students' perception of NM as an unattractive specialty, and the number and quality of the applicants for NM residency fell significantly. In recent years, this has changed in that more jobs are available but that now most NM

residents are radiologists who have completed 1 y of NM training and are competent in NM. Some of them, but not enough, are academically inclined. The numbers of academic physicians are not being adequately replenished.

The situation is quite different in the rest of the world, not only because NM is a separate specialty, not practiced by radiologists, but also because the training is significantly more rigorous. In Europe, most programs require 4–5 y after medical school and often include a year of research. In Australia, the training program is for 7–8 y. This certainly contrasts with the United States, where most residents get much less experience and little exposure to research methodology.

I often think of my mentor during my early career, Wil Nelp, who always said “Don't bring me problems; bring me solutions.” Accordingly, I present 3 suggestions. If all these suggestions can be implemented, NM can emerge as a strong specialty, but it will take at least a decade to recover. If we do nothing, which has been our policy for the past 2 decades, NM will become a small part of radiology, doing studies that are developed elsewhere and contributing little innovation.

Suggestion 1 is to stop inadequately trained radiologists from practicing NM. NM cannot completely separate from radiology, but we have to insist that 4 mo of training are not sufficient to practice NM. Radiologists with an extra year of NM training are competent, but 4 mo is not enough. This has been discussed with radiology leadership for years, with no significant change. We should definitely try to have further discussion with radiology leadership. However, another option to accomplish this might be for the ABNM to bring a resolution to the floor of the annual American Board of Medical Specialties meeting to require a minimum of 1 y of training to be able to practice NM.

Suggestion 2 is to add one more year to the NM residency program that would be primarily research but could also emphasize involvement in radionuclide therapy, since that is becoming a

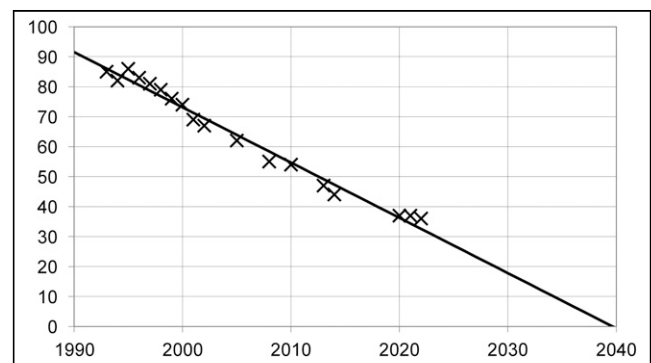


FIGURE 1. Updated number of ACGME-approved NM residency programs in United States.

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growing part of what we do. Similar to radiation oncology, research would not be mandatory but could include rotations in cardiology, neurology, medical oncology, or radiation oncology. This extra year would not apply to radiologists completing only 1 y of NM training but would apply to those in the 3-y program. Funding may prove to be a problem but could at least partially be solved by SNMMI scholarships. In 2007, when an extra year was added to NM training by the ACGME, there was no problem with funding.

Suggestion 3 is to develop a strong and effective long-term informational campaign directed at medical students, so they become aware of the exciting aspects of NM. Currently, medical students are completely unaware that NM is a possible career direction until very late in their time in medical school. In the past, the SNMMI and others (5) have occasionally mounted a short-term effort, but to be effective the campaign will have to be well funded and continuous. In the past, the responsibility for informing medical students has been assigned to the directors of NM in individual programs. This approach has repeatedly failed. We need a new approach that will almost certainly involve creative use of the Internet, including social media.

If suggestions 1, 2, and 3 can be implemented by the ABNM, the ACGME NM residency review committee, and the SNMMI, respectively, our specialty could gradually recover. If we do nothing, the rest of the world will move forward, leaving us behind.

The title of this editorial is “The Future of Nuclear Medicine in the United States,” yet it seems to concern itself mostly with academic practices. However, academic practice is in fact the central core of NM and is essential for the future of both academic and private-practice NM. A separate, emerging problem is how we will be able to provide support for the increasing numbers of theranostics patients. This is discussed in detail elsewhere (6,7).

A significant weakness of the above discussion is lack of hard data. It would be useful to know the actual number of board-certified NM practitioners in the United States over time entering via the ABNM or ABR pathway and what fraction is practicing NM a year later, stratified by prior training: diagnostic radiology versus other. Also, how many foreign medical graduates in the ABR alternate pathway, who do a year of NM, actually practice NM later? These numbers are currently not available but might be determined through efforts of the ABNM, ABR, and ACGME residency review committees.

DISCLOSURE

No potential conflict of interest relevant to this article was reported.

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