

# Research in Nuclear Medicine: Plans for the Future



Peter C. Vermeeren

In previous articles I outlined the fact that, in the framework of healthcare reform, nuclear medicine will face additional competition from other modalities. Therefore, the future for nuclear medicine lies not in cost reductions, but in market growth from innovative new products and services that cannot be performed by other modalities (i.e., therapy and function studies).

It is extremely important for nuclear medicine that fundamental research be performed on innovative new products and techniques that will be clinically relevant and cost-effective. This can only happen, however, if all partners (physicians, technicians, referring physicians and industry) cooperate in the development of these new products and services.

As a business, nuclear medicine today is not very attractive given that it has a relatively small total share of the market; it has a history of low profit margins; there is enormous competitive intensity, particularly in the distribution channels; and there is a negative perception of the industry due to problems in the handling of radioactive waste. Moreover, it is clear that, regardless of whether or not healthcare legislation is passed, price and cost pressure will continue to escalate and that less cost-effective treatments will continue to come under attack.

On a broader scale, the leadership of SNM and ACNP have looked at several market analyses and generally agree that the following challenges will particularly affect our discipline in the future:

- Cost pressure will continue to intensify under an increasing managed care-oriented environment.
- Nuclear medicine will face heightened scrutiny given perceived high costs.
- Alternate modalities are becoming more sophisticated, competitive and acceptable.
- Self-referrals are increasing and outsourcing will threaten the traditional role of the nuclear physician.

Given these challenges, nuclear physicians can expect to face the following consequences: fewer current and new procedures at our disposal and a reduced (or changed) role. We cannot deny it. There is a significant threat to the profession. If one looks at the trends of our procedures, one will ascertain that all but one have declined over the past few years. The same study which outlines industry trends also shows that modality substitution is perceived to be a major threat by nuclear physicians.

The main reason for the decreasing demand for nuclear physicians is driven by an increase in other specialists who read nuclear medicine scans, which reduces the number of process steps and minimizes the risk of inter-physician miscommunication. Additionally, the use of specialists reduces the

diagnostic turnaround time. Usually, nuclear physicians have little regular contact with the referring physician who knows exactly what to identify. Recent developments to streamline image interpretation from procedure performance, especially in cardiac studies and tumor localization. Subsequently, referring physicians outsource procedure performance scanning to nuclear technologists but read the scans themselves, thereby bypassing the nuclear physician.

Bold moves are sometimes necessary in rapidly changing times. Instead of seeing the referring physician as a threat, we should view their activities as an opportunity to stimulate our profession and better integrate nuclear medicine procedures into clinical settings and diagnostic decision making. There is already a clear difference between the totally dedicated nuclear physician and the physician who practices nuclear medicine on a part-time basis.

Why not envision a future where we have dedicated imaging centers, including nuclear medicine departments in larger settings—such as academic centers—where world class units for quality and techniques are being established? These centers are an excellent setting to partner with government and industry for research and the development of new procedures and products. On the other hand, smaller departments could also partner with referring physicians to allow scan interpretation at the specialty level. This philosophy will enhance partnerships with specialties, thereby exposing us to new ideas and clinical practices rather than building walls around our skills.

## Role of Research and Development in This New World

Again, the catch phrase to remember is better coordination between industry, nuclear medicine professionals and referring physicians. As I mentioned in a previous article, of the more than 20 products introduced since 1980, most of them are not being used. Indeed, apart from Cardiolite and a few other “blockbusters,” the average sales per year of these products is under the minimum which guarantees a return on the investment. Eighty-four percent of the revenue generated by nuclear medicine comes from products introduced before 1980. These statistics do not include investments in monoclonals because these products, except for one, never made it to market. Also, they do not include the projects which do not make it, but for which substantial investments have been made.

Often, we blame the FDA for the failure of product instructions. Although it is not making our lives easier—particularly with monoclonals—we must face up to the reality that the whole process is broken. Generally, the process for introducing new products takes 10-12 years; the FDA procedure usually requires only 2-4 years. Therefore, if we look at the entire process (this process comprises the research and development phases, clinical trials and registration), we do not see much improvement. Our problem begins during the research phase because we do

not have the right selection process—a process driven by technological, not clinical, factors. A better approach would be to ask the clinical or referring physicians what they need to give better and more efficient patient care before we solicit industry's and the nuclear physicians' views.

**How Can We Perform Better with Less Money?**

There are three key players in the innovation process: the government (NIH, DOE), who provides funding; academic nuclear medicine and imaging centers, who supply the brain power and industry, who develops and also funds some of the new technologies. Each player has a specific role to play and provides resources to the process. To make the processes more effective, the following steps need to be taken:

1. Determine the long-term vision for nuclear medicine and its role in the clinical setting.
2. Focus on new indications, such as the leverage of functional imaging, establishing connections with therapy and concentrating on major clinical areas.
3. Link with the pharmaceutical industry (large drug companies).

4. Shift research to academia and development to industry.
5. Involve and collaborate with referring physicians.
6. Focus on outcome research.
7. Provide answers to the “so what” of referring physicians early on in the process so their decision quality improves.

In the focus group on research and development, we have recommended establishing a steering committee, consisting of these players to manage the process in the future. Such an action requires a change in our thinking, and will obviously meet much resistance. However, all vested interests in nuclear medicine have one shared agenda and I believe that the SNM should continue to take the lead in this process. The steering committee needs to develop guidelines for specific areas and should set guidelines for prioritization and rating. Developing this agenda will be challenging but the system should allow enough flexibility for individual initiatives from any player. If we remain focused on the fact that we want the process to change from technologically driven to outcome-oriented, however, it becomes a lot easier. Remember, the end result will be an innovation process that proves the cost-effectiveness of nuclear medicine.

—Peter C. Vermeeren



**REMEMBER**

The 1996 American Board of Science in Nuclear Medicine Certification Examination will be given on Sunday June 2, 1996 in Denver, Colorado.

Completed applications must be postmarked by March 15, 1996.

The Examination fee is \$450 (\$400 refundable if you do not qualify).

For more information contact, Joanna Wilson at (703)708-9000.

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So, I listened to her lungs carefully and tried to develop an expression that was both concerned and wise. Her lungs were completely clear, and as I moved the stethoscope and directed her to breath deeply, then slowly, her discomfort appeared to clear. I assured her in serious tones that there were no signs of pneumonia and that I did not think she was in the midst of a malarial episode. I told her that I thought she would feel better and that the airline was prepared to let her off in Hawaii, but I thought she could complete the trip. She thanked me and told me that she was feeling better already.

“Thank you, doctor. Thank you so much.” The flight service director was thrilled. “Thank you, doctor. I’m sorry that we disturbed you. You were a great help. Thank you.”

“How strange!” I thought: No radiopharmaceuticals, no gamma camera, no technologist, no secretary. No forms to fill out, no billing information, no diagnostic codes, no QC, no QA, no Research or Radiation Safety Committee. I was simply a doctor with a borrowed red plastic stethoscope on a Boeing 747 high over the Pacific Ocean approaching the equator and the international date line. With some judgment and the simplest of tools in the most improbable of places, I had comforted a patient.

As I was returning to my seat, I thought that “*after all, it was a rather proper flight.*”

**Stanley J. Goldsmith, MD**

*Editor-in-Chief, The Journal of Nuclear Medicine  
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