The State of Nuclear Medicine, 2009

From the Newsline Editor
The Seen and the Unseen, the Known and the Unknown

In reviewing news for the year 2008 in preparation for our annual retrospective issue of Newsline, I was struck with the contrasts that mark all aspects of our field, from clinical practice and research to more global aspects of regulation, supply and demand, and future directions. We seem to be reminded at every turn that for every known there are multiple unknowns, that our increasing ability to visualize at the molecular level still leaves much that remains to be seen, and that even the most careful planning can be brought up short by sudden economic changes or unexpected findings.

Despite breakthroughs in stem cell science and deeper understanding of several longstanding disease challenges, the year's medical news was dominated by the unexpected. Among the events that raised medical and public anxiety were: a widespread outbreak of salmonella-caused illness (source still not precisely identified) in the United States; a massive recall of contaminated heparin; worldwide fears associated with the presence of melamine in infant formula and other fortified protein foods from China; the abrupt cessation of several widely publicized drug trials; and a disturbing rise in the number of cases of measles, a disease once thought to be conquered in the United States.

Nuclear medicine had its own set of anxiety-provoking events, including the continuing international saga of radionuclide shortages resulting from unexpected production lags, cancellations of planned new reactors, and prolonged reactor repair times. Although SNM, along with representatives from the U.S. Department of Energy and the National Institutes of Health, is working to address the question of long-term reliable domestic supplies of both clinical and research isotopes, the solutions remain nonspecific. Moreover, our plans to remedy such challenges must operate in the atmosphere of constraint occasioned by an economy that took an unexpected nosedive in the second half of 2008.

At the same time, the practice of nuclear medicine has become exponentially more exciting and complex since the turn of the 21st century. We have at our disposal more modalities, combinations of modalities, radiotracers with multiple targets, radioimmunotherapeutic techniques, and rapidly proliferating nanotechnologies that promise astonishing breakthroughs in integrating novel diagnostic, therapeutic, and even noninvasive interventional approaches. The broad array of evolving molecular imaging techniques presents challenges to us in educating the next generation of specialists, in collaborating with colleagues across many disciplines to maximize the potential of new discoveries, and in "selling" these new techniques to the regulatory agencies that must facilitate their routine clinical use.

Conrad Nagle, MD

As individual practitioners, we have both the pleasure and the challenge of choosing among the many avenues opened by molecular imaging. It seems clear that no single person can master all these areas. Yet new maintenance of certification rules require us to demonstrate both continuing education and general mastery of our field on both periodic and "lifelong" bases. Looming in the not-so-distant future are regulatory requirements that will tie reimbursement to as-yet-unspecified metrics of quality performance—in theory an excellent idea but one that is sure to add layers of compliance and reporting tasks to already burdened administrative staff.

Our first concern, as it has been since the earliest days of nuclear medicine, is with the benefits that can accrue to patients from our expanding array of diagnostic and therapeutic approaches. Yet, here, too, questions outnumber answers: What will be the immediate effects of the economic downturn on patient access to much-needed imaging technologies such as PET/CT? Will the clinical advent of PET/MR be delayed by current economic challenges? How can we encourage equitable distribution of beneficial imaging technologies across the United States and the globe? How can we ensure reliable supplies of radioisotopes for even the most common studies? How can we support and encourage the rapid transition of basic medical discoveries to clinical applications?

Perhaps the most encouraging aspect of 2008—and one of which I was reminded each month as Nancy Knight, PhD, Newsline's consulting editor, and I reviewed hundreds of abstracts for potential write-ups in the "From the Literature" feature—was the continued growth in basic science knowledge and clinical research from around the world. These incremental additions to our knowledge rarely make the headlines but are likely to provide the bases for the most exciting advances of the future.

In short, 2008 brought with it continued rewards for our field but also areas of challenging uncertainty. SNM, along with other medical professional groups and government

agencies, is working to address many of these challenges. As experience in 2008 clearly demonstrated, we cannot predict what 2009 will hold but can continue to work together to do our best to advance nuclear and molecular imaging, expand its horizons, and enhance the lives of the countless patients affected by its benefits.

I hope that 2009 brings productivity and its own rewards to all Newsline readers, whatever their fields of endeavor.

Conrad Nagle, MD
Editor, Newsline

We Have Seen the Future—and It Is Now

Robert W. Atcher, PhD, MBA

In June this year, many of us will attend SNM's 56th Annual Meeting in Toronto, Canada, where we will spend several days polishing our professional knowledge and benefiting from the latest research in molecular imaging and nuclear medicine.

Consider that statement for a moment: For 56 y, SNM has held an annual meeting where the best and brightest scientists, physicians, and technologists in the field have gathered to share their expertise and knowledge.

Why? Because SNM is dedicated to advancing molecular imaging and therapy, and the best way to do this is by generously reporting on research that may have been decades in development. We recognize the importance of equipping colleagues—particularly young professionals—with the results of our labor, as well as the tools and methods necessary to achieve these results.

Other societies and organizations are equally dedicated to ensuring that current and future practitioners are equipped, instructed—and inspired—to carry on this great work. Last fall, the American Society of Therapeutic Radiology and Oncology (ASTRO) held the Translational Advances in Radiation Oncology and Cancer Imaging Symposium, an educational event at which SNM provided expertise in molecular imaging.

This was the second symposium on which SNM has partnered with ASTRO. Our involvement was considerable at every level. We participated in abstract review and selection, nominated promising young researchers from both of our communities for travel awards, and jointly developed the scientific program. The growing importance of molecular imaging and therapy in radiation oncology was underscored both by our involvement and by the increasing and constructive collaboration between our societies. The objectives of the symposium were to advance translational research in radiation oncology and imaging, provide attendees with practical information on how to review designs of clinical trials, explain how research findings are introduced into the clinic, and enhance the clinical applicability of translational research. This is precisely the information needed by young professionals as they ponder possible directions for their career paths.

Both of our societies recognize the need to continue to develop a community of translational researchers within the field and to foster opportunities for continued research with clinicians, biologists, and radiologists. Toward that end, this symposium offered an opportunity to increase knowledge of basic science principles used in current protocols and learn about new techniques that will impact translational research now and in the near future.

Building on the success of our continuing education seminar at the 2007 ASTRO meeting in Los Angeles, CA, we furthered this collaboration at ASTRO's 2008 meeting in Boston, MA. The continuing education seminar was well attended and also very highly regarded. A similar seminar is planned for SNM's Mid-Winter Educational Symposium in Clearwater, FL, on Saturday, February 7; senior members of ASTRO will participate in this seminar. The joint SNM/ASTRO educational initiative is poised to grow significantly as our organizations continue to collaborate.

By providing the next generation of scientists, physicians, and technologists an opportunity to meet today's researchers and hear them discuss the most recent advances in understanding, diagnosing, and treating cancer during the many educational and scientific sessions at the symposia and annual meetings, we are guaranteeing that our own work will be carried forth in ways we could have only imagined a few years ago.

Both ASTRO and SNM recognize molecular imaging's ability to deliver on the promise of personalized medicine by providing patient-specific information that allows tailored treatment of disease. Because molecular imaging can show a precise level of detail that provides new information for diagnosis, it is key to the development of radiation therapy protocols that will optimize the benefits for the patient. It is, therefore, another piece of knowledge that future practitioners must have. Practitioners in the field today need to encourage our younger colleagues to pursue every opportunity to enhance their knowledge and skills in this vital research area.

The next time you receive information about an upcoming scientific meeting, think about encouraging 1 or 2 of your