DOE Medical Research Funding Cut in FY 2006 Budget; SNM Calls for Nuclear Medicine Community Action

The nuclear medicine community was stunned on February 7 to learn of deep cuts slated for the Department of Energy (DOE) Office of Science as detailed in President George W. Bush’s $2.57 trillion fiscal year (FY) 2006 federal budget. The budget proposes reducing funding for the Office of Science’s Office of Biological and Environmental Research (BER) medical applications programs from approximately $37 million in FY 2005 to $13.6 million in FY 2006. The results of such cuts would be immediate cutbacks and, in several cases, termination of programs essential to fundamental innovations in nuclear medicine.

SNM leadership reacted quickly to the news. On February 9, SNM President Mathew L. Thakur, PhD, visited with his colleagues and key Congressional leaders on the Hill and addressed an urgent message on February 11 to SNM leaders, members, and to all those in health care who understand the expanding and crucial role of nuclear medicine in diagnosis and treatment. “The SNM strongly opposes these proposed budget cuts and is coordinating an immediate response urging Congress to reinstate nuclear medicine funding to the DOE,” said Thakur, who outlined strategies and action items to be undertaken to counter the proposed cuts. Among these were:

- Mobilization of the general membership through an Action Alert placed on the SNM Web site on February 12, explaining the issues and providing members with a template letter to send to legislators.
- Mobilization of SNM State Health Policy Liaisons, who were asked to complete additional specialized tasks at district office levels.
- Alerting specific Congressional committees and subcommittees by sending letters to key members informing them of the Society’s position and how the proposed cuts will adversely affect patient care.
- Preparation for appropriations hearings, including submission of written testimony from the nuclear medicine community for the Congressional record and supplying key questions to members of Congress for administration officials during budget hearings.
- Initiation of outreach efforts with industry representatives, other specialty associations, and patient advocacy groups to solicit involvement in the Society’s efforts to counter the proposed cuts.
- Investigation of the feasibility of targeted advertising to Congress and Congressional staff.
- Continued work with administration groups, such as the Office of the Science Adviser and the Office of Management and Budget, to more adequately address the needs of nuclear medicine in planning for the 2007 FY budget.

A History of Accomplishment

For more than 50 years, BER has invested in the advancement of research to develop key applications of nuclear technologies for medical diagnosis and treatment. Nearly every nuclear medicine scan or test used today was made possible by past BER-funded research on radiotracers, radiation detection devices, gamma cameras, PET and SPECT scanners, and computer science. The proposed cuts threaten BER Medical Sciences funding of cutting-edge nuclear medicine research at DOE national laboratories as well as at universities and private institutions across the United States.

The current projects of the medical science programs in the BER are an outgrowth of the original charge of the Atomic Energy Commission (the forerunner of the Nuclear Regulatory Commission), “to exploit nuclear energy to promote human health.” From the production of a few medically important radioisotopes in 1947, to the development of production methods for radiopharmaceuticals used in standard diagnostic tests for millions of patients throughout the world, to the development of ultrasensitive diagnostic instruments (including PET), the DOE medical sciences program has been both a participant and an engine of change in the development of nuclear medicine.

Today the program, through radiopharmaceutical and molecular nuclear medicine research, works to develop new applications of radiotracers and in vivo radionuclide detection in diagnosis and treatment by integrating the latest concepts and developments in chemistry, pharmacology, genomic sciences, transgenic animal models, instrumentation, and structural, computational and molecular biology. The program supports directed nuclear medicine research

(Continued on page 16N)
SNM Annual Meeting in Toronto, June 18–22, 2005

For its 52nd Annual Meeting, the SNM will return to Toronto, Canada, with enhanced scientific and educational offerings, expanded poster categories, an entertaining agenda of social events, and more! The 2005 meeting will be held June 18–22 at Toronto’s Metro Convention Centre, where the Society met in 2001.

To meet the unique learning needs of annual meeting attendees, the SNM Scientific Program Committee and the SNM Technologist Section (SNMTS) Program Committee have teamed to present an educational and scientific program.

### Categorical Seminars

Full-day seminars on Saturday, June 18, will offer in-depth discussion on single topics of clinical or academic interest. To register for these courses visit www.snm.org/am.

**Physician Categorical Seminars**

CAT 1: PET/CT in Clinical Practice: “Nuts and Bolts” and Beyond  
*Organized by the Society of Nuclear Medicine Correlative Imaging Council*

CAT 2: Dementia Imaging: Metabolism, Blood Flow, and Beyond  
*Organized by the Society of Nuclear Medicine Brain Imaging Council*

CAT 3: An Introduction to Cancer Biology and the Development of Radiopharmaceuticals for Imaging and Treating Cancer  
*Organized by the Society of Nuclear Medicine Nuclear Oncology Diagnosis and Therapy Council*

CAT 4: PET/CT in Oncology: Focus on the Referring Physician: What Does Your Referring Physician Want from PET/CT?  
*Organized by the Society of Nuclear Medicine PET Center of Excellence*

CAT 5: PET/CT Instrumentation: What’s Available and How it Works  
*Organized by the Society of Nuclear Medicine Computer and Instrumentation Council*

CAT 6: Cardiovascular Molecular Imaging: A View to Clinical Applications  
*Organized by the Society of Nuclear Medicine Cardiovascular Council*

CAT 7: Pediatric PET, PET/CT, and CT Anatomy for the Nuclear Medicine Physician  
*Organized by the Society of Nuclear Medicine Pediatric Imaging Council*

**Technologist Categorical Seminars**

*Organized by the Society of Nuclear Medicine Technologist Section*

TSCAT 8: Nuclear Oncology: Past, Present, and Future

TSCAT 9: PET/CT: The Tried and True and a Look at What’s New!

TSCAT 10: Nuclear Cardiology Primer: Understanding the Basics of Nuclear Cardiology
of unmatched quality. The varied offerings include categorical seminars, continuing education courses, scientific paper and poster sessions, and presentations by keynote speakers. Continuing education credits will be available for those attending these sessions.

In the exhibit hall, representatives from more than 190 top nuclear medicine industry, publishing, and organizational entities will showcase the latest products and services. The meeting will also feature a number of special events, including 3 plenary sessions, the presentations of awards for specific and cumulative achievement, and, as always, many opportunities to network and socialize with members of the nuclear medicine community from around the world.

What’s New?
Clinicians and scientists will benefit from the new Basic Science “summary sessions,” highlighting the most important science topics presented in the Radiopharmaceutical Chemistry and Computer/Instrumentation tracks.
A substantial effort has gone into expanding the focus and content of posters presented at the meeting. A new Educational Exhibits poster category will include displays that summarize and review clinical or research topics. To increase the involvement of young professionals in SNM activities, the meeting planners this year will sponsor a new Young Professionals Poster session. Eligible applicants for this session include medical students, residents, fellows, graduate students, or young physicians or scientists less than 3 years out of training. The SNM, in association with the SNM Young Professionals Committee of the Academic Council, will recognize the best research-based or clinically oriented posters submitted to the Young Professionals Track.

In a new feature designed to enhance the learning experience of attendees and emphasize the international nature of the meeting, 2 posters will be presented from the Asian Regional Cooperative Council for Nuclear Medicine: “Molecular Imaging Using Sodium/Iodide Symporter Gene” and “Clinical Hypoxia Imaging Using SPECT in Patients with Cerebral, Myocardial, or Tumoral Hypoxia.”

Attendees will also be able to test their interpretation skills by reading case-of-the-day posters from the Memorial Sloan–Kettering Cancer Center. Cases will change daily, and correct diagnoses will qualify submitters for entry in a lottery for complimentary registration at next year’s SNM meeting in San Diego, CA. Answers to the previous day’s questions will be available at snmCentre, the hub of Society activities in the convention center.

Additional Educational Offerings

Three special 2-day sessions will precede the formal opening of the meeting. One, designed for scientists and to be offered on June 17 and 18, will present “Translational Applications of Molecular Imaging and Radionuclide Therapy.” Topics to be covered will include “In Vivo Tagging and Imaging Assays,” “Technical Aspects of Small Animal Imaging,” “In Vivo Imaging,” and “Bench to Bedside Translational Studies: The Role of a Diagnostic Scan in Therapy Selection.” The second 2-day session, to be offered on June 18 and 19, is a Nuclear Medicine Board Examination review course for residents seeking certification and physicians preparing for maintenance of certification. A similar 2-day course for technologists preparing for the Nuclear Medicine Technology Certification Board Examination will also be offered on June 18 and 19 and will include a mock examination.

A 3-day course, “CT Workshop: Radiology-Based Training for the Nuclear Medicine Technologist,” will be offered June 18–20, and is designed to prepare nuclear medicine technologists for the CT Certification Examination. Lectures and presentations will focus on cross-sectional anatomy, radiation exposure, instrumentation, 3D and 4D imaging protocols, and SPECT and PET/CT applications.

Get organized with the SNM Online Meeting Planner, scheduled to launch in April 2005. This user-friendly tool is a virtual personal assistant that allows attendees to log on and find the information they need to make the most of their time at the annual meeting. Attendees will find everything from session schedules and course topics to faculty bios, CE credit information, and more. After launch, the Online Meeting planner will be available at www.snm.org/meetingplanner.

Watch the SNM 2005 Annual Meeting Web site (www.snm.org/am) for more information or see the preliminary program mailed with this issue of JNM. \*\*

(Continued from page 13N)

through radiopharmaceutical development and molecular nuclear medicine activities to study uses of radioisotopes for noninvasive diagnosis and targeted, internal molecular radiotherapy. The current programs also encourage the development of a new generation of radiolabeled molecules and technologies for molecular delivery of radioisotopes.

The Effects of Deep Budget Cuts

Most, if not all, of these efforts would be seriously undermined by the proposed cuts, which would be exacerbated by other proposed funding reductions to the DOE national laboratory infrastructure. Under the 2006 budget request, the total DOE budget would drop by 2%, from $23.9 billion in FY 2005 to $23.4 billion, and the total Office of Science budget would be reduced by 3.8%, from $3,599.6 million to $3,462.7 million. Overall, BER programs would be cut by more than 21%. Thakur noted that the almost two-thirds reduction in the portion of the BER budget designated for medical applications does not even adequately reflect the severity of cuts to nuclear medicine. “Much of the remaining $13.6 million is actually slated to go to non-nuclear medicine purposes,” he said. “The loss to nuclear medicine through these proposed cuts would be truly devastating to researchers in our field, many of whom will be forced to leave ongoing projects uncompleted and curtail plans for investigations that promised significant insights and potential patient benefit.”

Details on the 2006 FY proposed budget for the DOE Office of Science are available in a budget highlights document at: www.mbe.doe.gov/budget/06budget/Content/Highlights/06_highlights.pdf under Section 3, Science (p. 72).


At their first official annual meeting in 1954, the members of the Society of Nuclear Medicine presented a series of papers and panel discussions summarizing issues of interest to the fledgling field. With no official publication organ, presentations from that meeting were submitted to a range of journals that indicate the broad scope of early endeavors. Until recently, only the program from the original meeting was available to give a sense of the content presented at the first meeting. A search in the SNM archives for early scientific articles from Society members led to the discovery of summary abstracts and reports from the 1954 meeting and, subsequently, to the identification of expanded articles published the following year elsewhere in the literature.

As part of a continued celebration of the 50th anniversary of the SNM and in preparation for the 50th anniversary of The Journal of Nuclear Medicine in 2010, Newsline initiates a series of occasional articles that look back at seminal contributions. Here we reproduce Childs’ original meeting abstract and his accompanying curriculum for resident training. It should be noted that nowhere did Childs (or any other presenter at the 1954 meeting) use the term “nuclear medicine” to describe the subject matter. This may have been the name the Society’s founders chose, but it was slow to catch on in routine usage. Another reminder of the times can be found in the author’s use of pronouns—although women were active in early nuclear medicine, Childs was probably accurate in that the overwhelming majority of early physicians working with radioisotopes were men.

An ideal time for a physician to acquire the necessary training in medical radioisotope work would be in conjunction with his residency training. During this period he should be willing to spend the necessary time to receive the training and obtain the necessary fundamental knowledge and experience to serve as the basis for his later practice.

The outline of a three-month training period for Residents in Radiology is presented. The objectives of this training are to present to the resident the fundamental material regarding radioactivity and the properties of radiation, to teach him how to handle radioactive materials safely, to give him practical experience with the various measuring instruments, to let him participate actively in the administration of beta and gamma ray-emitting isotopes to patients and care for these patients following administration, and to impart the philosophy regarding clinical radioisotope practice.

The curriculum may be divided into three main divisions:

I. Theoretical Principles
   1. Basic mathematics
   2. The units of matter
   3. Radioactivity
   4. Physical properties of radiation
   5. Biologic effects of radiation
   6. Radiologic safety
   7. Theory and use of measuring instruments
   8. Radiologic units; dosimetry
   9. Tracer methodology
   10. Training film series: The Radioisotopes

II. Practical Application of These Principles
   1. Identification of radioisotopes
   2. Calibration and use of measuring devices
   3. Preparation of radioactive material for assay
   4. In vivo and in vitro assay of material containing radioisotopes
   5. Autoradiographic procedures
   6. Safety procedures
   7. Survey for radiation hazards
   8. Decontamination, waste disposal
   9. Bookkeeping

III. Clinical Aspects of Radioisotopic Practice
   1. The patient
      a. Medical workup
      b. Indications for use of the isotope
      c. Care following administration
      d. Evaluation of results
   2. The isotope
      a. Isotopes in general use; behavior in humans; effects on disease processes; limitations
      b. Methods of administration
      c. Survey of isotope distribution in patient
      d. Assay of isotope in excreta, and so forth

The production and availability of radioactive isotopes have presented to the medical profession many valuable agents for use in the fields of medical diagnosis, therapy and research. However, the basic knowledge and disciplines necessary for the proper use of these substances are not familiar to the average physician. Since radioactive isotopes are potentially dangerous both to the patient and to all engaged in their preparation and administration, the problem of providing the basic knowledge, training and experience for their safe use has been of grave concern to those charged with the responsibility of distributing the radioisotopes for medical use.

Typically, a 3-month program of study was the first to propose integrating nuclear medicine training into routine graduate medical education. Not only was it well received by the SNM audience, but the editors of the Journal of the American Medical Association thought highly enough of the piece to publish an amplified version in their October 1955 issue.
Munho Lee, MD, PhD, 1922–2004

Munho Lee, MD, PhD, professor emeritus of the College of Medicine, Seoul National University, died on December 5, 2004. He was an internationally recognized leader and pioneer in nuclear medicine in Korea.

Lee graduated from Kyungsung University (the forerunner to Seoul National University) and became a postgraduate assistant in 1946. In 1953, having finished training in internal medicine, he became an instructor at the Seoul National University. During this period of Korea’s postwar reconstruction, he traveled to Germany for additional graduate training under the supervision of Professor Heilmeyer at Freiburg University. Although Lee received his doctorate in hematology, at Heilmeyer’s recommendation he also became familiar with the field of nuclear medicine. Interested in the clinical utilization of radiotopes, Lee went beyond the usual limited range of 1950s nuclear medicine applications and in Germany worked with investigators studying $^{131}$I, $^{51}$Cr, and $^{59}$Fe.

After returning to his home country in 1957, Lee became a prominent figure in Korean academic medicine. Although no previous models existed in Korea, the young assistant professor established the country’s first radioisotope clinic in the College of Medicine of Seoul National University. With the help of the International Atomic Energy Agency and individuals and organizations from the United States, Lee and his associates would go on to build four nuclear medicine laboratories complete with donated scanners, scintillation counters, and uptake systems. With these facilities in place, Lee initiated and founded the Korean Society of Nuclear Medicine in 1961, just 1 year after the founding of the Japanese Society of Nuclear Medicine.

Lee introduced radioiodine treatment for Graves’ disease and thyroid cancer to Korea and was perceived by many in the public to have almost magical powers. He immersed himself in research as well as organizational and administrative work. During research on the effects of $^{59}$Fe on hookworm-induced anemia, he served as a volunteer subject. His own area of expertise was in the diagnosis and treatment of thyroid disease, but Lee also taught hematology and oncology. He revived the Cancer Research Institute at Seoul National University and was a pioneer in the study of Korean hemorrhagic fever. Under his supervision, the clinical schemata of Korean hemorrhagic fever were established on a solid background. At his university he was also a founder of nephrology and rheumatology, relatively new fields at that time in Korea.

In 1975, Lee won the Academic Award from the Korean Academy of Science. Both in the eyes of the public and international science, he had become a leader through his work in setting high scientific and medical standards for Korea. He continued to devote significant effort to enhance the medical and scientific environment. Among many such efforts, he was one of the founders of the World Federation of Nuclear Medicine and Biology (WFNMB).

During his extraordinary 22-year leadership as president of the Korean Academy of Medicine (1972–1994), he continued to foster development in the field of nuclear medicine. During these same two decades, nuclear medicine practitioners in Korea, like their colleagues in the rest of the world, were confronted with the need to implement rapidly changing and cutting-edge electronic technologies, new radiochemistry systems, and new imaging modalities, including PET. In this environment of rapid modernization, Lee successfully lobbied for his country to host the third Asia and Oceania Congress of Nuclear Medicine. He presided over the event in 1984, the first international medical congress to be held in Korea.

As an international pioneer, he served as a role model and leader for many members of a younger generation of nuclear medicine specialists. Lee retired from Seoul National University in 1988 and left a rich legacy. He had looked forward to observing and participating in Seoul at the 2006 congress of the WFNMB, an organization now presided over by one of his followers, Dr. Myung-Chul Lee.

As a direct result of Dr. Munho Lee’s organizing efforts and contributions, the Korean Society of Nuclear Medicine has grown rapidly and matured. A specialty board of nuclear medicine was established in 1995. Today, Korea has 130 departments or divisions of nuclear medicine and 45 PET or PET/CT machines in clinical settings. More than 500,000 nuclear medicine imaging studies and 12 million radioimmunoassay tests are performed annually, as well as approximately 9,000 radionuclide treatments. As a result of emphasis on scientific advancement, attendees from Korea presented 106 papers at the 2004 SNM Annual Meeting in Philadelphia, PA.

Although age called him away, it is certain that Dr. Lee’s soul will continue to follow the progress of the Korean Society of Nuclear Medicine and the WFNMB.

June-Key Chung, MD, PhD
Dong Soo Lee, MD, PhD
Seoul National University Hospital
Seoul, Korea
Society Advances Strategic Goals at Mid-Winter Meeting

T he SNM’s leaders discussed and voted on measures affecting the futures of physicians, technologists, and scientists during the Society’s 2005 Mid-Winter Meeting and Educational Symposium, January 27–30, in Tampa, FL. I would like to highlight some of the major decisions made by the SNM and SNMTS boards in support of our strategic goals.

Goal: The Value of Nuclear Medicine and Molecular Imaging in Patient Care Will Be Universally Recognized

The SNM’s board of directors (BOD) voted to support the publication of the “Collaborative White Paper on Concurrent PET/CT With an Integrated Imaging System.” This white paper, developed by SNM and the ACR, promotes the superior diagnostic accuracy of PET and CT images. It notes that the combination of PET and CT brings challenges to nuclear medicine physicians, health care providers, and radiologists to make the modalities available for patient care on a timely basis. The white paper explains the need for practice guidelines to achieve and maintain a high standard of care. It covers PET/CT definitions and terminology, clinical indications in oncology, specifications of the examination, practice guidelines, safety issues, regulatory and legal issues, and reimbursement and economic issues.

SNM continues to monitor the Centers for Medicare & Medicaid Services (CMS) on coding and reimbursement issues. The BOD created a task force to fully investigate and evaluate the potential implications to our members of physician self-referral legislation. In addition, the BOD placed a “high priority” on resident funding by CMS for nuclear medicine, creating a task force that includes nuclear medicine program directors and members of the Academic Council and the Government Relations Committee.

Goal: Nuclear Medicine and Molecular Imaging Will Achieve Significant Growth in Science and Utilization

SNM board members approved the operating procedures for the Society’s PET Center of Excellence, which focuses primarily on educational programs and information and practical issues related to PET, and the Molecular Imaging Center of Excellence, which promotes education in molecular imaging, fosters research, seeks research funding, and addresses regulatory pharmaceutical issues. The protocols and standard operating procedures for the Molecular Imaging and Radionuclide Therapy Trials Group were also approved.

Goal: Membership in SNM Will Be Viewed as Essential by All With an Interest in the Field of Nuclear Medicine and Molecular Imaging

The SNM and SNMTS boards approved position statements for entry-level, practicing, and non-practicing technologists. These position statements reflect the clinical and didactic training and competencies needed because of recent advances in medical imaging.

SNM’s leaders agreed to enact a conflict of interest policy that adheres to new Accreditation Council for Continuing Medical Education standards for commercial support, thus ensuring the independence of continuing medical education activities. The Society must now show that everyone who is in a position to control the content of an educational activity has disclosed relevant financial relationships with any commercial interest to the provider.

In another area of interest, Paul Wing of the Center for Health Workforce Studies, School of Public Health, University of Albany, provided information about leading the Society’s 3-year Nuclear Medicine Workforce Study. This study will allow SNM to acquire information and insights about nuclear medicine professions that will help leaders plan more effectively for the future. Wing will conduct surveys of SNM members and others to better understand who nuclear medicine professionals are, what they do, and where they work; initiate interviews and discussions to elucidate the planning and policy contexts in which nuclear medicine professionals work; gather information about and delineate current and future professional opportunities and challenges; and synthesize and interpret the information obtained in the study into ideas for future SNM strategies, programs, and activities.

In other actions, board members declined a membership dues increase, approved Society financial reports, and began a discussion on whether the SNM should send both CD and printed copies of the 2006 Annual Meeting abstract books to members and JNM subscribers.

The reports from the Society’s various committee meetings will be posted online at www.snm.org in the ABOUT SNM area.
SNM, SNMTS, and ERF: A Joint Venture in Funding the Future

It has been almost 2 years since the Society of Nuclear Medicine, the SNM Technologist Section, and the Education and Research Foundation (ERF) formalized a strategic alliance. For many years, ERF functioned as an independent education and research fundraising arm of SNM, establishing and administering scholarships, grants, and research awards for which they obtained support. As of last year, the dynamics of this relationship changed. SNM and SNMTS now supply the ERF with proposed projects, develop selection criteria, and select award recipients for all ERF-funded awards and grants except the Cassen Prize and Cassen Fellowship. The reconfigured foundation board focuses on the critical role of raising and managing financial support.

Last year, SNM, SNMTS, and ERF helped nearly 60 students, physicians, scientists, and technologists pursue their educational dreams, initiate and participate in cutting-edge research in molecular imaging and therapy, and contribute to the advancement of nuclear medicine. Through scholarships, grants, and awards, SNM, SNMTS, and ERF foster fundamental goals to train physicians and technologists in state-of-the-art imaging technology, to disseminate research findings, and, in the long term, to make a difference in the lives of patients every day. Since its inception, hundreds of students and professionals have benefited from foundation-funded research grants, scholarships, fellowships, and recognition awards. Over the years, ERF has given more than $1.5 million to the nuclear medicine community.

Through the hard work of ERF President Michael D. Devous Sr., PhD; ERF President-Elect Robert F. Carretta, MD; and foundation officers, the ERF continues its successful mission: to advance excellence in health care through education and research in nuclear medicine by provision of grants and awards. An array of newly developed programs will need your support along with current grant and award programs. New programs include educational scholarships in nuclear medicine, research fellowships in molecular imaging and therapy, support for departmental fellowships, international fellowships, seed grants for research, clinical fellowships in PET/CT, technologist scholarships in PET/CT, and professional development grants in correlative/anatomical imaging.

ERF programs have been made possible with your generosity. Last year, SNM and SNMTS members donated more than $200,000, with more than $60,000 of it given in response to the 50th anniversary campaign. The ERF accepts many kinds of donations and at times other than membership renewal. For additional information on ways to give, please visit the ERF Web site (http://erf.snm.org) or call Kathy Bates, SNM director of development, at 703-708-9000.

The size of a donation is not the most important factor. It is the fact that through your donation to the ERF, you support your profession, promote its growth, and help make these educational programs a reality. Working together, we will shape a bright future for nuclear medicine and its vital role in improving medical care and the quality of life for people around the world for generations to come.

Mathew L. Thakur, PhD
President, SNM

Nanci A. Burchell, CNMT
President, SNMTS
Ionizing Radiation Classed as Official Carcinogen

The U.S. Department of Health and Human Services (HHS) released the 11th edition of the Report on Carcinogens on January 31, adding ionizing radiation and several viruses to a growing list of cancer-causing agents, bringing the total to 246. The report, referred to as the RoC, lists cancer-causing agents in 2 categories: “known to be human carcinogens” (58) and “reasonably anticipated to be human carcinogens” (188). Federal law requires HHS to update the report every 2 years.

X-radiation and gamma-radiation are listed in the report as “known human carcinogens,” because “human studies show that exposure to these kinds of radiation causes many types of cancer including leukemia and cancers of the thyroid, breast, and lung.” The report summarizes the risk from exposure:

The risk of developing cancers due to these forms of ionizing radiation depends to some extent on age at the time of exposure. Childhood exposure is linked to an increased risk for leukemia and thyroid cancer. Exposure during reproductive years increases the risk for breast cancer, and exposure later in life increases risk for lung cancer. Exposure to X-radiation and gamma radiation has also been shown to cause cancer of the salivary glands, stomach, colon, bladder, ovaries, central nervous system and skin.

Of the total worldwide exposure to X-radiation and gamma-radiation, 55% is from low-dose medical diagnosis such as bone, chest, and dental X-rays, and 43% is from natural sources like radon. Other sources, such as industry, scientific research, military weapons testing, nuclear accidents, and nuclear power generation, account for about 2%.

Neutrons are also listed in the report as a “known human carcinogen.”

The announcement received wide coverage in the press, leading to some speculation about the generation of unwarranted fears about routine imaging and therapeutic procedures. In a press release issued on February 3, the SNM advised the public that “the benefits patients receive from appropriately indicated, appropriately performed diagnostic imaging greatly outweigh potential risks stemming from the radiation exposure.” SNM Past President Henry D. Royal, MD, said, “SNM remains concerned about patients’ safety and works to prevent unnecessary radiation exposure of patients through the development of procedure guidelines designed to optimize the diagnostic information obtained from nuclear medicine tests.”

The RoC is prepared by the National Toxicology Program, an interagency group coordinated by HHS. The full report is available at: http://ntp.niehs.nih.gov.

Department of Health and Human Services

99mTc Vials Tied to Hepatitis C Outbreak

After a patient died on December 25 in Baltimore, MD, of complications from hepatitis C acquired from tainted 99mTc administered for stress testing, state officials stepped up their inquiries into a cluster of related infections. The implicated radiopharmaceutical batch was shipped from a Cardinal Health facility in Timonium, MD. Twelve people were infected with the disease from tests administered on October 15, according to Gordon Troup, president of Cardinal Health Nuclear Pharmacy Services. No more than 16 patients were injected with the infected material, he said, and only 1 had died. “Our thoughts and condolences go out to the family of that individual, and we’re going to continue to support the investigation to quickly resolve and find out the cause of the infection,” said Jim Mazolla, a Cardinal Health spokesman.

In an Internet statement released on January 13, Cardinal Health reported that it had voluntarily closed the Timonium pharmacy on December 6, immediately after learning the facility might be involved and that the Maryland Board of Pharmacy had also formally suspended operations there. The state’s investigation is currently focusing on cross-contamination from a blood sample to the vial of 99mTc. Both the state and Cardinal Health have emphasized that this is regarded as a unique event rather than an ongoing public health risk.

Maryland Board of Pharmacy

Cardinal Health, Inc.

NIH Asks for Early Release of Scientific Articles

The National Institutes of Health (NIH) announced on February 3 a new policy designed to accelerate the public’s access to published journal articles resulting from NIH-funded research. The policy, which is set to go into effect on May 2, calls on scientists to release to the public manuscripts from research supported by NIH as soon as possible and within 12 months of final publication. These peer-reviewed publications will be available in a Web-based archive to be managed by the NIH National Library of Medicine (NLM). “With the rapid growth in the public’s use of the Internet, NIH must take a leadership role in making available to the public the research that we support,” said NIH Director Elias A. Zerhouni, MD.

(Continued on page 30N)
(Continued from page 28N)

The announcement came after months of debate and sometimes acrimonious exchanges between NIH and the publishers of peer-reviewed scientific journals. The much anticipated formal policy is less stringent than anticipated, but left observers on both sides of the issue with questions about whether and how the new requirements will be encouraged and enforced. Proponents of “open access” to articles based on NIH-funded research had expected mandatory submission to the database and a 6-month deadline. Journal publishers and many of the professional societies that depend on journal revenues had lobbied against open access, arguing that such a requirement could cut subscriptions, produce reports of questionable quality, and ultimately work against the overall status and growth of scientific literature. They also maintained that the proposed NLM database would be wasteful and duplicate material already available in electronic archives.

In the days following the announcement, neither side seemed to know exactly how scientific authors should respond or what each journal’s responsibility would be in notifying authors of this new policy. Beginning May 2, the policy requests that NIH-funded scientists submit an electronic version of final manuscripts upon acceptance for publication. The author’s final manuscript is defined as the “final version accepted for journal publication” and includes all modifications from the publishing peer-review process. At submission, the author will be asked to select a specific time frame for public release—ranging from immediate public access after final publication to a 12-month delay. Articles will be available on PubMed Central (www.pubmedcentral.nih.gov), a part of the NLM digital repository of full-text biomedical, behavioral, and clinical research journals.

“While this new policy is voluntary, we are strongly encouraging all NIH-supported researchers to release their published manuscripts as soon as possible for the benefit of the public. Scientists have a right to see the results of their work disseminated as quickly and broadly as possible, and NIH is committed to helping our scientists exercise this right. We urge publishers to work closely with authors in implementing this policy...NIH recognizes the importance of preserving quality peer review and the viability of a diversity of publishing models. Nevertheless, we expect that only in limited cases will authors deem it necessary to select the longest delay period.”

Heinrich Schelbert, MD, PhD, editor-in-chief of The Journal of Nuclear Medicine, said, “JNM’s editorial board recognizes the importance of the wide dissemination of significant scientific information such as that regularly published in our journal. Like many other medical and science publishers, we continue to investigate ways to do this that ensure both the continued reliability and quality of published materials and the long-term future and growth of the journal itself.”

Details of the new policy can be seen at: www.nih.gov/about/public access/publicaccess_imp.pdf.

National Institutes of Health

Stringent NIH Ethics Reform Announced

The National Institutes of Health (NIH) announced on January 1 a new supplemental ethics regulation that addressed concerns raised about employees who perform outside consulting with pharmaceutical and biotechnology industries and went a step further to impose strict guidelines and new restrictions on the private financial dealings of employees and their families as well as on awards that employees may accept. The regulation was developed by the Department of Health and Human Services (HHS), with the concurrence of the Office of Government Ethics, the federal agency that prescribes executive branch-wide ethics standards.

“Nothing is more important to me than preserving the trust of the public in NIH. It is unfortunate that the activities of a few employees have tainted the stellar reputation of the many thousands of NIH scientists who have never compromised their integrity and have selflessly served the nation with great distinction through their discoveries. I am confident that these new rules will prevent the recurrence of past abuses and will go a long way in preserving the historic role of NIH as the primary source of unbiased scientific health information for the country,” said NIH Director Elias A. Zerhouni, MD.

Under the new rules, all NIH employees are prohibited from engaging in certain outside employment with: (1) substantially affected organizations, including pharmaceutical and biotechnology companies; (2) supported research institutions, including NIH grantees; (3) health care providers and insurers; and (4) related trade, professional, or similar associations.

Investments in organizations substantially affected by the NIH, such as the biotechnology and pharmaceutical industries, are also not allowed for those employees who are required to file public and confidential financial disclosure reports and are restricted for other staff.

At a town hall-style meeting on February 2, Zerhouni faced a hostile audience in which representatives of the agency’s 18,000 employees expressed their distress over the new rules. Several speakers questioned the reasons for singling out NIH employees among federal employees and among others in the health care fields. “If we really want to reassure the public,” asked one speaker, “why don’t we apply these to everyone who gets an NIH grant?”

The rules will go into effect in 90 days. Over the next year, HHS will evaluate the effects of this regulation. NIH scientists will continue to be able to conduct academic activities, such as teaching courses at universities, writing general textbooks, per-

(Continued on page 32N)
(Continued from page 30N)

forming scientific journal reviews, participating in scientific meetings, and providing general lectures to physicians and scientists at continuing professional education and similar events, as well as practicing medicine as appropriate, provided that the activities are otherwise in accordance with existing regulations and adhere strictly to the conditions specified in the new rules.

For additional information see www.nih.gov/about/ethics_COI.htm.

National Institutes of Health

HHS Releases Report on Medical Innovation

On January 13, Department of Health and Human Services (HHS) Secretary Tommy G. Thompson announced steps the agency plans to take “to advance medical innovations and move products more quickly to the bedside.” The recommendations were outlined from the lab bench to the bedside.

The reports were made available to the Centers for Medicare & Medicaid Services (CMS), the Food and Drug Administration (FDA), and the National Institutes of Health.

The report recommended that HHS should:

- Enter into new or expanded Memoranda of Understanding to improve cooperation with other federal agencies that play an important role in medical technology development.
- Streamline its involvement in medical technology by creating a forum, based on the Interagency Council on Biomedical Imaging in Oncology model from the National Cancer Institute, to serve as a sounding board for investigators and manufacturers to communicate with HHS agencies.
- Support the ongoing development of standard formats for electronic clinical trial data.
- Improve collaboration between CMS and FDA.
- Support new interagency scientific education and cross-training efforts to identify knowledge gaps among those serving in technology transfer functions in HHS.


Department of Health and Human Services

Health Care Spending Slows

According to a report in the January/February issue of Health Affairs, the rate of health care spending growth slowed in 2003, marking the first such drop in 7 years. In making the report, the Office of the Actuary of the Centers for Medicare & Medicaid Services was careful to note the distinction between spending being reduced and a reduction in the rate of increase. Health expenditures in the United States grew 7.7% in 2003 to $1.7 trillion, down from a 9.3% growth rate in the previous year. On a per capita basis, health spending increased from $5,317 to $5,670. Despite the slowed growth rate, health spending accounted for 15.3% of the gross domestic product in 2003 and outpaced the growth rate of the overall economy by 3%.

Private payers (private health insurance and payments by individuals for copays, deductibles, and services not covered by insurance) funded more than half of national health expenditures ($913.2 billion). The public sector funded $766 billion (Medicaid program, $267 billion; Medicare, $283 billion).


Centers for Medicare & Medicaid Services

NIBIB Strategic Plan

The National Institute of Biomedical Imaging and Bioengineering (NIBIB) has developed a draft 5-year strategic plan, including goals, strategies, and objectives designed to maximize the institute’s impact on human health. When finalized, the plan will provide the framework and action plan for the institute’s direction over the coming years and will help determine how the NIBIB will allocate resources to support and enhance scientific research and research training. The complete draft plan can be viewed at: www.nibib.nih.gov.

National Institute of Biomedical Imaging and Bioengineering

Commerce and Brain Imaging

In an article in the online magazine Slate, posted on January 25, author David Dobbs posed a series of interesting questions about the future of nonmedical applications in brain-imaging technology, including PET and functional MRI. He surveyed the routine applications of these modalities and then noted: “Perhaps the most intriguing progress, most of which has come in the past 5 years, has been researchers’ increasing ability to identify patterns distinctive to many of our more complex mental processes.” The article went on to survey a number of proposed uses of functional imaging, including as lie detection and for screening job and school applicants. He also reported on the activities of groups such as those at the University of Pennsylvania’s Center for Cognitive Neuroscience and the Stanford Center for Biomedical Ethics, who are working to predict and respond to the ethical issues such applications will raise.

Members of the nuclear medical community will be interested in reading Dobbs’ description of the emerging neuromarketing industry, in which at least 1 marketing research firm is scanning volunteers to learn more about how the brain reacts to specific stimuli and advertising strategies. The complete article is available at: www.slate.com/id/2112653.
Factors in Successful SLN Biopsy

Schirrmeister et al. from the University of Kiel (Germany) reported in the December issue of Cancer Biotherapy and Radiopharmaceuticals (2004;19:784–790) on a multicenter study to assess the reliability of sentinel lymph node (SLN) biopsy in breast cancer and to identify factors influencing success rates. The study included 814 patients in whom SLN biopsy and axillary lymph node dissection were performed. Surgeons were allowed to choose the use of the blue dye (137 patients), radiocolloid (169 patients), or combined blue dye/radiocolloid (508 patients) techniques. The SLN was identified in 83.9% of all patients, a rate that varied with technique (blue dye, 71.6%; radiocolloid, 78.8%; combined blue dye and radiocolloid, 89.6%). Other significant factors included the method of injection (with the combined subdermal/peritumoral injection of the colloid showing a higher identification rate than subdermal or peritumoral injection alone) and whether or not the SLN biopsy was performed before or after lumpectomy (94.7% and 82.8% detection rates, respectively). The experience of the surgeon in performing the detection procedure was also directly correlated with success rates. The authors concluded that SLN mapping predicts the axillary lymph node status accurately and that while several factors may influence the detection rate, “the false-negative rate was independent of experience and injection technique.”

Cancer Biotherapy and Radiopharmaceuticals

99mTc-Labeled Tracers and In Situ Breast Carcinoma

In a report e-published on November 8 ahead of print in Breast Cancer Research (2005;7:R33–R45), Papantoniou et al. from the Alexandria University Hospital (Athens, Greece) described a retrospective study undertaken to investigate the distribution of 99mTc-pentavalent dimercaptosuccinic acid (99mTc-V-DMSA) and 99mTc-sestamibi in ductal breast carcinoma in situ and lobular breast carcinoma in situ. The study included 102 women with palpable masses or mammographic findings, who were assigned to 1 of 3 scintimammography imaging groups (99mTc-V-DMSA, 99mTc-sestamibi, and both radiotracers). Images were acquired at 10 and 60 minutes, and results were correlated with mammographic, histologic, and immunohistochemical characteristics. Diffuse 99mTc-V-DMSA accumulation was noted in 18 of 19 cases of in situ carcinoma identified after surgery, whereas diffuse 99mTc-sestamibi was noted in 6 of 13 such cases. For 99mTc-V-DMSA, the tumor-to-background ratio was significantly higher at 60 minutes, and the uptake was associated with the presence of suspicious microcalcifications. The authors showed complementarity in results from the 2 tracers, with 99mTc-V-DMSA having a high sensitivity and 99mTc-sestamibi a high specificity.
in detecting in situ breast carcinoma. They concluded that “these radiotracers could provide clinicians with preoperative information not always obtainable by mammography.”

*Breast Cancer Research*

**Prognostic Value of Residual 99mTc-Sestamibi Uptake After Chemotherapy for Breast Cancer**

In an article e-published ahead of print on January 6 in *Cancer*, Dunnwald et al. from the University of Washington (Seattle) reported on a study of the prognostic value of residual tumor uptake of 99mTc-sestamibi after neoadjuvant chemotherapy for locally advanced breast cancer. The study included 62 patients with locally advanced breast cancer who underwent 99mTc-sestamibi scintimammography immediately before chemotherapy and 2 months later, with a third imaging procedure performed in those individuals whose treatment lasted more than 3 months. 99mTc-sestamibi uptake was quantified using the lesion-to-normal breast ratio. Outcomes were compared with posttherapy primary 99mTc-sestamibi uptake. The authors found that patients with high uptake on the last 99mTc-sestamibi (whether the second or third) had shorter disease-free survival and overall survival times than patients with low uptake. They concluded that “serial MIBI imaging may provide a useful quantitative surrogate end point for neoadjuvant chemotherapy trials” and that “given the association between MIBI uptake and tumor blood flow, this prognostic capability may be related to retained tumor vascularity after treatment.”

*Cancer*

**An Improved Camera for Mammography**

Writing in the February issue of *Technology in Cancer Research and Treatment* (2005;4:55–60), Weinberg et al. from Naviscan PET Systems (Rockville, MD) discussed the performance advantages of a full-breast positron emission mammography (PEM) device that provides images with spatial resolution matching individual ducts (1.5 mm full width at half maximum). This spatial resolution, supported by count efficiency that results in high signal-to-noise ratio, allows confident visualization of intraductal as well as invasive breast cancers. They cited clinical trials with the PEM device that have shown 93% sensitivity and 83% specificity for characterizing images identified as suspicious through conventional imaging or palpation. This high sensitivity (91%) was preserved for intraductal cancers. The authors concluded that “it is likely that the use of PEM will complement anatomic imaging modalities in the areas of surgical planning, high-risk monitoring, and minimally invasive therapy” and that the “quantitative nature of PET promises to assist researchers interested in studying the response of putative cancer precursors (e.g., atypical ductal hyperplasia) to candidate prevention agents.”

*Technology in Cancer Research and Treatment*

**Promise of PET Mammography**

In a separate article in *Technology in Cancer Research and Treatment* (2005;4:55–60), Weinberg et al. from Naviscan PET Systems (Rockville, MD) discussed the performance advantages of a full-breast positron emission mammography (PEM) device that provides images with spatial resolution matching individual ducts (1.5 mm full width at half maximum). This spatial resolution, supported by count efficiency that results in high signal-to-noise ratio, allows confident visualization of intraductal as well as invasive breast cancers. They cited clinical trials with the PEM device that have shown 93% sensitivity and 83% specificity for characterizing images identified as suspicious through conventional imaging or palpation. This high sensitivity (91%) was preserved for intraductal cancers. The authors concluded that “it is likely that the use of PEM will complement anatomic imaging modalities in the areas of surgical planning, high-risk monitoring, and minimally invasive therapy” and that the “quantitative nature of PET promises to assist researchers interested in studying the response of putative cancer precursors (e.g., atypical ductal hyperplasia) to candidate prevention agents.”

*Technology in Cancer Research and Treatment*

**Asymptomatic Diabetic Patients and SPECT Screening**

In the January 4 issue of the *Journal of the American College of Cardiology* (2005;45:43–49), Rajagopalan et al. from the Mayo Clinic (Rochester, MN) reported on an extension of their investigations into the utility of SPECT screening in asymptomatic diabetic patients. The group previously reported a high percentage of abnormal and high-risk SPECT scans in such patients (*Am Heart J.* 2004;147:890–896). In the current study, they examined the associations between clinical and laboratory variables, long-term survival, and high-risk stress SPECT scans in 1,427 asymptomatic diabetic patients without known coronary artery disease (CAD) in an effort to assess which patients should be screened. More than half of the patients (826; 58%) had abnormal stress SPECT scans, and 261 (18%) had scans classified as high risk. They identified 7 variables as independently associated with high-risk scans, with the 2 most important being electrocardiogram (ECG) Q waves and peripheral arterial disease (PAD). Coronary angiography was performed in 127 of the high-risk SPECT imaging patients, 61% of whom were shown to have angiographic high-risk CAD. Mortality rates at 1 year for the patients screened by SPECT were: high-risk, 5.9%; intermediate-risk, 5.0%; and low-risk, 3.6%. The authors concluded that the use of ECG Q waves and/or evidence of PAD might be used to identify the most suitable candidates for screening and that the high prevalence of severe CAD and high annual mortality rate among those identified by SPECT as high-
risk is a strong argument in favor of such screening.
Journal of the American College of Cardiology

SPECT MPI in High-Risk Patients

Borges-Neto et al. from Duke University (Durham, NC) reported in the January 15 issue of the American Journal of Cardiology (2005;95:182–188) on a study designed to evaluate the prognostic power of SPECT myocardial perfusion imaging (MPI) in a group of patients with known or suspected coronary artery disease. The study included 3,275 patients who underwent cardiac catheterization and SPECT MPI. The median follow-up was 3.1 years, and outcomes measured included death, cardiovascular death, and a composite of cardiovascular death or nonfatal myocardial infarction. The authors correlated a SPECT summed stress score (SSS) with each outcome and found that a 1-unit change in SSS was associated with increased risks of 4%, 7%, and 5% for death, cardiovascular death, and death or nonfatal myocardial infarction, respectively. The authors concluded that SPECT SSS provides information beyond clinical and angiographic data in patients who have known or suspected coronary artery disease and that “this information may be useful for stratifying patients into multiple risk categories for future cardiovascular events and potentially guiding therapy.”
American Journal of Cardiology

Radionuclide-Guided Endoscopy

Rayman and Srinivasan, from West Virginia University (Morgantown) reported in the December issue of Medical Physics (2004;31:3306–3313) on a system for performing radionuclide-guided endoscopies. The Endoprobe system includes a beta detector and position tracker, which are mounted on the tip of an endoscope, and a user interface that displays information from the beta detector and tracking system as well as the video signal from the endoscope. The device facilitated visual identification of simulated lesions in 18F-FDG phantom studies. The position tracking system was used to plot the location of the Endoprobe tip in real time on a previously acquired PET/CT image of the phantom. The device was able to assist in distinguishing normal esophagus from simulated tracer-avid areas as small as 3.5 mm in diameter. The authors noted that the Endoprobe is suitable for use with other PET tracers and that work continues toward eventual clinical applications.
Medical Physics

Registration of PET and CT Images of the Liver

In the December 7 issue of Physics in Medicine and Biology (2004;49:5393–5405), van Dalen et al. from the University Medical Center Nijmegan (The Netherlands) reported on a semiautomatic, organ-focused method to minimize the uncertainty usually present in registration of PET and CT images of the liver. The study included CT and 18F-FDG PET images of 10 patients with liver metastases. The novel method included restricting registration to the liver region, isolating the liver on CT from surrounding structures using a thresholding technique, and using the mutual information-based method as implemented in the National Library of Medicine’s Insight Toolkit. Results of this method were compared with results of manual, landmark-based, and standard mutual information-based methods or registration in which no dedicated image processing was performed. The new method outperformed the other methods with a precision of 2.5 ± 1.3 mm. The authors concluded that their approach “allows for robust CT-FDG-PET registration of the liver, with an accuracy better than the spatial resolution of the PET scanner that was used.”
Physics in Medicine and Biology

Value of Extensive Staging in Melanoma

In a study published in the January issue of the Journal of the European Academy of Dermatology and Venereology (2005;19:66–73), Vereecken et al. from the Free University of Brussels (Belgium) evaluated the effect of extensive initial staging, including PET, on the management of intermediate/high-risk melanoma patients. The study included 43 patients with prognoses of intermediate/poor primary melanoma who underwent staging with CT, MR imaging, and whole-body 18F-FDG PET before complementary excision and sentinel lymph node (SLN) biopsy. The SLN procedure identified regional lymph node metastases in 10 patients, of whom PET identified only 4. These 10 patients benefited from early surgery and were included in adjuvant treatment protocols. The combination of staging techniques also identified a secondary primary cancer in 2 additional patients. The authors noted that the development of new adjuvant therapies and a wider choice of therapeutic procedures have placed new emphasis on extensive staging of patients with melanoma and intermediate/poor prognoses. Although PET was determined to be unhelpful in the detection of micrometastases and inferior to SLN biopsy in initial regional staging, the authors were encouraged by the fact that “12 of 43 patients were treated early or were included early in treatment protocols thanks to the extensive staging procedure.” They called for caution in drawing conclusions about the overall utility of such screening and for larger prospective trials to evaluate the effects of these early diagnoses and new treatments on overall survival before defining new diagnostic and therapeutic guidelines.
Journal of the European Academy of Dermatology and Venereology
PET After Therapy in Head and Neck Cancer

In an article e-published ahead of print on December 30 in *Head and Neck*, Porceddu et al. from the Peter MacCallum Cancer Centre (East Melbourne, Australia) reported on the use of 18F-FDG PET in the detection of disease in residual neck nodes after definitive chemo- and radiation therapy. The study included 39 patients with node-positive mucosal head and neck squamous cell carcinoma who achieved complete response at the primary site but had residual mass 8 weeks or more after chemo- and radiotherapy. All patients underwent PET scanning for reevaluation. PET showed no metabolic activity in the residual mass in 32 patients. Of these, 5 underwent a neck dissection and were negative for disease. The remaining 27 patients in the group were observed for a median of 34 months, with only 1 locoregional failure. The negative predictive value of PET for viable disease in a residual anatomic abnormality was 97%. The authors concluded that “patients who have achieved a complete response at the primary site but have a residual abnormality in the neck that is PET negative approximately 12 weeks after treatment do not require neck dissection and can be safely observed.”

*Head and Neck*

PET and Pancreatic Cysts

Sperti et al. from the University of Padua (Italy) and the Castelfranco Hospital (Treviso, Italy) reported in the January issue of the *Journal of Gastrointestinal Surgery* (2005;9:22–29) on the use of 18F-FDG PET in the preoperative work-up of patients with pancreatic cystic lesions. The study included 50 such patients who underwent both PET and spiral CT imaging, with results compared with pathologic findings after surgery (31 patients), percutaneous biopsy (4 patients), and follow-up (15 patients). Of the 17 patients who were shown to have malignant cystic lesions, 16 had increased tracer uptake on PET. CT identified only 11 of these patients. Of the 33 patients with benign tumors, 2 patients had increased uptake on PET (false-positives) and 4 patients were false-positive on CT. The authors concluded that 18F-FDG PET “is accurate in identifying malignant pancreatic cystic lesions and should be used in combination with CT in the preoperative evaluation of patients with pancreatic cystic lesions” and added that “a negative result with 18F-FDG PET may avoid unnecessary operation in asymptomatic or high-risk patients.”

*Journal of Gastrointestinal Surgery*

Therapy __________

131I-Tositumomab and Mantle Cell Lymphoma

Rajendran et al. from the University of Washington (Seattle) reported in the December issue of *Cancer Biotherapy and Radiopharmaceuticals* (2004;19:738–745) on a review of normal organ radiation-absorbed doses to antigen-bearing tumor in 25 patients with mantle cell lymphoma who received myeloablative radioimmunotherapy (RIT) using 131I-tositumomab. Radiation dosimetry was performed on all patients after a trace-labeled infusion of 131I-tositumomab. The mean organ residence times (in hours) were: lungs, 9.0; liver, 12.4; kidneys, 1.7; spleen, 2.17; and whole body, 62.4. Mean radiation absorbed doses (in mGy/MBq) were: lungs, 1.2; liver, 1.1; kidneys, 0.85; spleen: 1.7; and whole body, 0.21. The authors concluded that “myeloablative RIT using 131I-tositumomab results in normal organ radiation-absorbed doses similar to those in patients with other non-Hodgkin’s lymphoma, and is suitable for treating patients with relapsed or refractory MCL.”

*Cancer Biotherapy and Radiopharmaceuticals*

NMT PET Radiation Dose

In the February issue of *Health Physics* (2005;88:S17–S21), an Australian group headed by Robinson from Austin Health (Heidelberg, Victoria) and others from the Australian Radiation Service (Nunawading, Victoria) reported on the results of a study of the personal radiation dose received by nuclear medicine technologists working in a dedicated PET center. They determined that the typical staff member received approximately 1 μSv per minute of close contact with patients, which resulted in an average daily dose for nuclear medicine technologists of approximately 31 μSv. The average daily administered activity to patients at the facility was 1,280 MBq.

*Health Physics*

Third-Party Exposure to 131I

The debate over the significance and regulation of third-party radiation exposure from patients treated with 131I continues in the United States and around the world. In an article in the December issue of *Medical Physics* (2004;31:3194–3200), Matheoud et al. from the Ospedale Maggiore di Milano (Italy) reported on a study that included 33 hyperthyroid patients treated with a mean administered activity of 414 MBq radioiodine. The purpose of the study was to determine whether pretreatment dosimetry could be used to give radiation protection advice that could improve compliance with effective dose constraints suggested by the European Commission. The mean estimated effective doses to travelers, coworkers, and sleeping partners were 0.11 mSv, 0.24 mSv, and 1.8 mSv, respectively. The authors identified the best correlation between effective dose in millisieverts and maximum activity (AUmax) in megabequerels taken up in the thyroid. For co-workers, the effective dose constraint of 0.3 mSv could be met with no restrictions if the AUmax was lower than 185 MBq or by having the
patient take 3 days off work if it was higher. For sleeping partners, the effective dose constraint of 3 mSv could be met with no restrictions if the AU\textsubscript{max} was lower than 185 MBq and with 4 nights sleeping apart if it was higher. The potential for contamination was determined from perspiration samples taken from patients’ hands, foreheads, and necks, and from saliva at 4, 24, and 48 hours after radioiodine treatment. The authors concluded that their results “indicate that there is minimal risk of contamination from these patients.”

Medical Physics

Retinoids and Increases in Iodine Uptake

Short et al. from the Royal Marsden Hospital (London, UK) reported in the December issue of *Clinical Oncology* (Royal College of Radiology) on a phase II study designed to assess whether oral isotretinoin could increase radioiodine uptake in patients who had uptake-negative thyroid cancers. The study included 16 patients with iodine-uptake-negative metastatic papillary (9 patients), follicular (5 patients), or Hurthle cell (2 patients) thyroid cancers, who were imaged with CT or MR and in whom absence of iodine uptake was confirmed using a diagnostic radioiodine scan before study entry. All patients were reviewed every 2 weeks during the full 8-week oral isotretinoin treatment period. All patients tolerated 8 weeks of oral isotretinoin. In 1 patient, radioiodine uptake increased after retinoid administration, but not sufficiently to permit a significant dose of iodine to sites of metastases. No uptake was seen in the remaining 15 patients, indicating that the retinoid did not redifferentiate cells to allow for increased radioiodine uptake.

Clinical Oncology

131I-MIBG and 111In-Octreotide Palliation in Neuroendocrine Neoplasms

Both 111In-octreotide and 131I-metaiodobenzylguanidine (131I-MIBG) have shown limited antitumor effects in therapy for neuroendocrine neoplasms (NENs). In a study published in the December issue of *Surgery* (2004;136:1218–1226), Pasieka et al. from the University of Calgary and Tom Baker Cancer Center (Alberta, Canada) assessed the palliative effects of these radionuclides in such therapeutic applications. The study included 24 patients with progressive, nonsurgically resectable NENs. Patients whose NENs were MIBG positive (13) received 131I-MIBG therapy, and patients whose NENs were octreotide-only-positive (11) received 111In-octreotide therapy. Twelve patients (92%) in the 131I-MIBG group experienced symptomatic improvement. Symptomatic benefit was seen in 6 patients (55%) in the 111In-octreotide group. A wide range of variations in types of disease was seen across the spectrum of participants in this study. The authors concluded that “radionuclide therapy appears to offer good palliation to patients with progressive NENs.”

Surgery