SNM Updates Clinician’s Guide to Nuclear Medicine

At the Annual Meeting in San Diego, CA, in June, the SNM released a new edition of A Clinician’s Guide to Nuclear Medicine, the best-selling introductory reference guide to the diagnostic and therapeutic uses of nuclear medicine procedures. With updated text, images, and references, this revised book is targeted not only at clinicians and referring physicians but also at imaging residents, interns, technologists, and medical students.

“This book truly represents what its title suggests: it is an up-to-date clinician’s guide that puts nuclear medicine practice in perspective,” said H. William Strauss, MD, of the nuclear medicine service at Memorial Sloan–Kettering Cancer Center in New York, NY. “This reference identifies the procedures and focuses on information for clinical care. No other publication comes close to the clinical utility of this text. This book should find its way onto the shelves of practitioners’ professional libraries.”

The book reviews nuclear medicine procedures, available alternatives, and the advantages and limitations of each and provides information to aid in preparing patients. The format is designed to answer the most common clinician questions: In what way can nuclear medicine aid in the diagnosis and management of diseases? What tests are available? What are their advantages and limitations? When should they be used? How do alternative tests compare with nuclear medicine procedures? What should a patient expect when coming to a nuclear medicine department? Are there radiation risks to patients or their families? What radionuclide therapy options are available, and when should they be considered?

The authors open each chapter with an introduction, followed by a list of scans and therapies detailed in the text. Readers can quickly find information by following the major subdivisions in each chapter, which include Clinical Questions, Worth Mentioning/Cutting Edge, and Patient Information categories. Patient Information sections, for example, provide a summary written especially for patients that outlines the test procedure, radiation risks, and any special requirements for most of the common nuclear medicine diagnostic studies.

The new edition contains updates and new applications for PET/CT, PET, and multidetector CT technologies. Images illustrate common clinical conditions, and each chapter includes a list of pertinent references. The last chapter lists the cost of common nuclear medicine procedures and alternative diagnostic tests (per 2006 Medicare reimbursements). In addition to every organ area and disease subspecialty in which nuclear medicine is useful, the book includes chapters on women’s health, pediatrics and radiation, radiopharmaceuticals, and imaging devices. The detailed index provides rapid access to targeted information within the text.

Coauthors of the volume are Andrew Taylor, MD, professor of radiology and codirector of nuclear medicine at Emory University’s School of Medicine (Atlanta, GA); David M. Schuster, MD, director, Division of Nuclear Medicine and Molecular Imaging, Department of Radiology, Emory University Hospital; and Naomi Alazraki, MD, professor of radiology and codirector of nuclear medicine at Emory University’s School of Medicine and chief of nuclear medicine at the Veterans Affairs Medical Center (Atlanta, GA).

The volume is available directly from the SNM Service Center at 800-513-6853 or at servicecenter@snm.org.
Two new lectureships were introduced at the June 2006 SNM Annual Meeting held in San Diego, CA. The annual lectureships were created to honor 2 nuclear medicine figures who made significant contributions to the field and who died in 2005: Hal O. Anger and Robert J. Lull, MD.

Heinrich R. Schelbert, MD, PhD, editor-in-chief of The Journal of Nuclear Medicine and professor of molecular and medical pharmacology at the University of California at Los Angeles (UCLA), was selected to present the first 2006 Hal O. Anger Memorial Lecture on June 6. The Academic Council and the Education and Research Foundation for SNM jointly sponsored the presentation, which was titled “Tips for Getting Your Article, Abstract, or Exhibit Accepted.”

“It is quite an honor to deliver a lecture named for a great man who is credited with developing the gamma camera and who revolutionized the nuclear medicine profession,” said Schelbert, the George V. Taplin professor of nuclear medicine at the David Geffen School of Medicine at UCLA.

Schelbert’s major research interest has been the development and validation of noninvasive radionuclide imaging techniques for the study of cardiovascular function and the application of these novel techniques in the study of functional and metabolic consequences of coronary artery disease. Among his major accomplishments are the discovery of the specific pattern of blood flow and metabolism in chronically dysfunctional myocardium that is predictive of potential reversibility and the development and validation of PET-based techniques for measuring regional myocardial blood flow in absolute units using $^{13}$N-ammonia.

Schelbert, who was previously awarded the SNM Georg Charles de Hevesy Nuclear Pioneer Award for his distinguished contributions to nuclear medicine, has edited several books on cardiovascular imaging, has published more than 300 peer-reviewed articles, and still serves as a regular reviewer for numerous cardiology and nuclear medicine journals. He is a 2-time recipient of the Georg von Hevesy Prize from the World Federation of Nuclear Medicine and Biology.

Jannette Collins, MD, MEd, a physician in the radiology department at the University of Wisconsin Hospital and Clinics Authority (Madison), presented the first Robert J. Lull Memorial Lecture on June 5. Her talk, “Presentation Skills: How to Prepare and Give a Better Talk,” was organized by the SNM Academic Council. “I was honored to give the first Robert J. Lull Memorial Lecture,” said Collins. “As my academic work and promotion was—and is—based on educational scholarship, it was very meaningful for me to deliver a lecture on an educational topic in memory of a man who was passionate about education. Before his untimely death, Dr. Lull and I were working with other interested individuals to further the collaboration between the program directors of diagnostic radiology and nuclear medicine. This work continues, and my presence at the SNM meeting as the current president of the Association of Program Directors in Radiology reflected the growing relationship between APDR, the Association of University Radiologists, and SNM.”

Collins’s medical interests include thoracic and breast imaging and the education of residents, medical students, faculty, and other health care providers. The lecture was presented in memory of Lull, a physician and director of the nuclear medicine residency program at the University of California, San Francisco, and chief of nuclear medicine service at San Francisco General Hospital.

After presenting the first Robert J. Lull Memorial Lecture, Jannette Collins, right, received a plaque from Darlene Metter, outgoing president of the SNM Academic Council.
Loevinger–Berman Award Presented to Brownell

Gordon L. Brownell, PhD, professor emeritus of nuclear engineering at the Massachusetts Institute of Technology (MIT) in Cambridge and honorary physicist in the radiology department at Massachusetts General Hospital (MGH), was named the recipient of the 2006 Loevinger–Berman Award for Excellence in Internal Dosimetry, presented June 4 by the Medical Internal Radiation Dose (MIRD) Committee at the annual SNM meeting, held in San Diego, CA. The award was established in 1999 in honor of Robert Loevinger, PhD, and Mones Berman, PhD, who formulated the MIRD schema for internal dose calculations. The award is given in recognition of excellence pertaining to the field of internal dosimetry as it relates to nuclear medicine through research and/or development, significant publication contributions, or advancement of the understanding of internal dosimetry in relationship to risk and therapeutic efficacy.

Brownell was honored for a career spanning 6 decades of excellence in the engineering sciences and medical technology and for his outstanding and original contributions to internal dosimetry and the development of positron imaging and PET. He and colleagues at MIT and MGH developed the first positron-imaging device for medical use in 1950 and the first PET scanner in 1970. Brownell and Gerald J. Hine, PhD, in collaboration with Loevinger, pioneered the standardization of methods to compute absorbed dose from internal emitters along with describing some of the first work with radiotracers and compartmental analysis. Hine and Brownell’s 1956 text *Radiation Dosimetry* remained the definitive work in this area for several decades.

Brownell, who has also served as director of the MGH Physics Research Laboratory, received his bachelor of science degree from Bucknell University (Lewisburg, PA) and his doctorate in physics from MIT. He is a member of the Institute of Medicine of the National Academy of Sciences, an honorary fellow of the American College of Nuclear Medicine, and a director and fellow of the American Nuclear Society. He has received the Coolidge Award from the American Association of Physicists in Medicine (1987), the Georg von Hevesy Memorial Award from the Society of Nuclear Medicine Europe (1979), and the SNM Paul C. Aebersold Award (1975).

Previous Loevinger–Berman award winners have included Roger J. Cloutier (1999), Dandamudi V. Rao, PhD (2000), Keith F. Eckerman, PhD (2001), Sven-Erik Strand, PhD (2002), John W. Poston, Sr., PhD (2003), Roger W. Howell, PhD (2004), and James S. Robertson, MD, PhD (2005).

Barry W. Wessels, PhD
University Hospitals of Cleveland/Cleveland, OH

Call for Nominations: Loevinger–Berman Award

The MIRD Committee is seeking suggestions for nominees for the Loevinger–Berman Award, which recognizes excellence in the field of internal radiation dosimetry as it relates to nuclear medicine through: (1) research and/or development; (2) significant publication contributions; and/or (3) advancement of the understanding of internal dosimetry in relation to risk and therapeutic efficacy. Recommendations made to the committee should list reasons why the nominee is deserving of the award and include a curriculum vitae and references to relevant publications by the nominee. The committee will consider all recommendations carefully. Nominations should be sent with supporting material to: Stephen R. Thomas, PhD; Chair, MIRD Committee; University of Cincinnati, Department of Radiology; 231 Albert Sabin Way; Cincinnati, OH 45267-0761; or by e-mail to steve.thomas@uc.edu.
Satoshi Minoshima, MD, PhD, a professor of radiology and bioengineering, vice chair for research in the radiology department, and head of the Primate PET Imaging Suite at the University of Washington (Seattle) was named the recipient of the 2006 Kuhl–Lassen Award for Research in Brain Imaging at the annual meeting of the SNM in San Diego, CA. This award, presented by SNM and its Brain Imaging Council on June 4, annually honors a scientist who has made significant contributions to the field of functional brain imaging using SPECT or PET.

“Receiving the Kuhl–Lassen Award is, personally, the highest honor in my career,” said Minoshima, whose lecture was titled, “Posterior Cingulate Cortex in Alzheimer’s Disease: Development of Imaging Analysis, Pathophysiological Observation and Clinical Implications.” He presented an overview of the literature, the pathophysiologic mechanisms of posterior cingulate abnormalities in Alzheimer’s disease using PET, SPECT, and MRI, and his recent imaging research concerning axonal transport in small animal brains and its relationship to Alzheimer’s disease.

The highest award of the SNM Brain Imaging Council was created to honor 2 founding pioneers in functional brain imaging, SNM member David E. Kuhl, MD, and the late Nils Lassen, and is given annually to recognize a scientist whose research in and service to the discipline of functional brain imaging is of the highest caliber.

Minoshima came to the United States in 1990 to study tomographic functional brain imaging with Kuhl, then the director of nuclear medicine at the University of Michigan. In the early 1990s, Minoshima developed a diagnostic brain mapping method using a normal database for PET and SPECT and facilitated use of statistical mapping for dementia and other brain disorders. He discovered posterior cingulate hypometabolism in Alzheimer’s disease and mild cognitive impairment, now considered to be a critical diagnostic feature in early Alzheimer’s disease on PET and SPECT images.

Minoshima’s research interests have included image analysis and computer software, pain imaging, and neurosciences. He has collaborated with numerous investigators worldwide. After earning his medical degree from Chiba University School of Medicine in Japan and completing radiology residency training there, he moved to the internal medicine department at the University of Michigan, where he subsequently held a tenured faculty appointment. He stated that he has been “lucky to have so many great colleagues—from Chiba University, the University of Michigan, and the University of Washington—who have supported my research over the years.” A former president of SNM’s Brain Imaging Council, Minoshima is the current vice chair of neurosciences for the SNM Scientific Program Committee.

The Education and Research Foundation for SNM funded the 2006 Kuhl–Lassen Award. Previous recipients of the award include Michael Devous, Sr., PhD, University of Texas; David J. Brooks, MD, DSc, Imperial College of Medicine (UK); Dean F. Wong, MD, PhD, Johns Hopkins University; Ronald S. Tikofsky, PhD, Columbia University; Yoshiharu Yonekura, MD, PhD, Fukui Medical University (Japan); Peter Herscovitch, MD, National Institute of Mental Health; Nora Volkow, MD, Brookhaven National Laboratory; Albert H. Gjedde, DSc, MD, Aarhus University (Denmark); Marcus E. Raichle, MD, Washington University; and Louis Sokoloff, MD, National Institute of Mental Health.
King Receives Hoffman Award

Michael A. King, PhD, professor of radiology at the University of Massachusetts Medical School (Worcester) and director of the Medical Physics Group within its nuclear medicine division, was presented with the 2006 Edward Hoffman Memorial Award on June 4 at the SNM Annual Meeting in San Diego, CA. This award, given by the SNM Computer and Instrumentation Council, recognizes outstanding scientific contributions to the field of computers and instrumentation in nuclear medicine.

“It is a great honor to be so recognized by my peers and having my name so associated with Dr. Hoffman, who was an outstanding scientist, mentor, and person,” said King. “I would like to thank committee members for selecting me from a sea of deserving candidates and all who have inspired me and from whom I have benefited during my career — mentors, colleagues, students, fellow scientists, physicians, technologists, reviewers, and funding sources. All have contributed to nuclear medicine being a wonderland for me.”

King’s research interests include correction for causes of image degradation in nuclear medicine, such as attenuation, distance-dependent spatial resolution, and scatter; tomographic image reconstruction for SPECT and PET; assessment of image quality by task performance studies using human and numerical observers; quantization of activity and assessment of function; and image segmentation and computer vision applications in nuclear medicine.

The Hoffman Award is presented in memory of the late Edward J. Hoffman, PhD, former president of the Institute of Electrical and Electronics Engineers Nuclear and Plasma Sciences Society, who died in 2004. Simon R. Cherry, PhD, of the University of California at Davis, received the first award in 2005.

Blumgart Award Honors Schwaiger

At the 2006 Annual Meeting of the SNM in San Diego, CA, the Society and its Cardiovascular Council recognized Markus Schwaiger, MD, with the Herrmann Blumgart Award for his pioneering work in cardiovascular radionuclide imaging and services. Schwaiger is director of the nuclear medicine department at the Technische Universität (Munich, Germany) and dean of the university’s school of medicine. “I am very honored and proud to be among the group of very established recipients of this award,” he said. “This award emphasizes the role of the SNM in advancing the field of nuclear cardiology. I feel extremely fortunate for having excellent support in my research activities.” Schwaiger is an adjunct professor of internal medicine with the University of Michigan and has served as director of research for the Institute of Radiology at the Germany Heart Center in Munich. He especially thanked Heinrich Schelbert, MD, PhD, Michael Phelps, PhD, and David Kuhl, MD, adding, “I am most grateful to all collaborators, fellows, and students I had the opportunity to work with.”
Schwaiger graduated from the Free University of Berlin in West Germany and performed his internship in Munich and postdoctoral work at the University of Cincinnati (OH). He received fellowships in nuclear medicine and in cardiology from the University of California, Los Angeles, and was a resident at the Deutsches Herzzentrum in Munich. He has received numerous honors and has authored more than 300 articles on cardiac PET (flow, viability, glucose transporter function), tumor imaging (angiogenesis), and molecular imaging (gene expression).

Blumgart was a pioneer in nuclear medicine in the earlier part of the 20th century and is considered by many to be the father of nuclear cardiology. The Herrmann Blumgart Award was created in 1978 by the SNM New England Chapter to recognize outstanding achievement. Beginning in 1989, the Cardiovascular Council took on the responsibility of presenting the award for “outstanding achievement in the field of nuclear cardiology and service to the council.”

Berson–Yalow Award for Outstanding Abstract

The authors of “Characterization of 131I-SKI243, a Radiolabeled EGFR-tk Binding Ligand, and Its Cross Reactivity for Iressa and Tarceva Binding Sites” were awarded the 2006 Berson–Yalow Award on June 4 at the 2006 SNM Annual Meeting in San Diego, CA. The award is funded by the SNM Scientific Program Committee and was presented during the Radiopharmaceutical Sciences Council business meeting.

Accepting the award was Peter M. Smith-Jones, PhD, associate attending radiochemist and associate laboratory member at Memorial Sloan–Kettering Cancer Center (New York, NY). “I feel extremely honored to be associated with the previous Berson–Yalow award recipients who are leaders in the field of nuclear medicine research,” said Smith-Jones, who is also assistant professor of radiopharmacy at Weill Medical College of Cornell University and an adjunct assistant professor with the chemistry department at the City University of New York. He added, “I am one of many researchers using the principle laid down by Berson and Yalow to screen and characterize novel radiotracers. This early screening work is essential for picking out the few drugs that show great promise, and it speeds up the clinical development of new radiopharmaceuticals.” Abstract coauthors included Mohammad Namavari, PhD, Athanasios Glekas, Cindy Usher, and Steven M. Larson, MD.

The award commemorates the work of Rosalyn S. Yalow, PhD, and the late Solomon A. Berson, MD, who together developed the radioimmunoassay technique in the 1950s. The award was established by the SNM in 1977, the same year that Yalow received the Nobel Prize for Physiology/Medicine in acknowledgement of the radioimmunoassay breakthrough. The original purpose of the award was to recognize investigators submitting the most original scientific abstracts at the SNM Annual Meeting and making the most significant contributions to basic or clinical radioassay. In 1987, the Scientific Program Committee expanded its criteria to include all research that made use of the indicator–dilution method.
JNM: Professional Fuel

If knowledge is power, then The Journal of Nuclear Medicine is the fuel of our profession, highlighting significant, peer-reviewed research of interest to the nuclear medicine, molecular imaging, and therapy community.

JNM—with its worldwide circulation and high impact and immediacy factors—has to be considered the most important and influential international journal in molecular imaging and therapy and nuclear medicine. Published by SNM since 1960, JNM continues to present the very best, covering a broad spectrum of subjects from basic science and chemistry investigations to clinical studies, molecular biology, therapies, and advanced technologies, along with continuing medical education articles, invited perspectives and commentaries, procedure guidelines (recently, both PET/CT and SPECT), book reviews, and professional news. Its publication benefits its readers—researchers, clinicians, technologists, and scientists—who find a global forum for communicating important developments and innovations that significantly impact disease recognition, staging, and management.

With 16,000 individual and institutional subscribers, the journal’s growing readership knows that its articles are consistently ranked among the world’s most cited medical imaging research and that it is in the top 5% of other publications in its category and of the more than 6,000 publications rated by the Thomson Institute for Scientific Information’s Journal Citation Report. ISI tracks scientific journals and provides detailed analysis of their usage and impact, presenting quantifiable statistical data to provide a systematic, objective way to evaluate the world’s leading journals and their impact and influence. The impact factor is often used in academic evaluation; it is a measure of the quality and influence of the journals in which researchers have been published. Many institutional librarians rely on the Thompson report—and specifically the impact factor—when choosing to subscribe to publications (both print and Web versions) and even in placement of recent issues of these publications within a library.

JNM consistently ranks among the highest of more than 80 other nuclear medicine, radiology, and medical imaging journals in (1) “impact,” the frequency with which the average article in a journal has been cited; (2) “immediacy,” an indicator of the speed with which citations to a specific journal appear in published literature; and (3) total number of citations (14,203 in 2005). I believe the journal’s strong performance—an impact factor of 4.684 and an immediacy index of 1.051—is due to its solid tradition of editorial independence; its high standards of peer review and editorial quality (of the nearly 900 top-notch scientific manuscripts that the journal sees each year, only about 30% are accepted for publication); and its editorial board (consisting of more than 130 of the world’s top scientists; more than half with doctorates).

SNM is fortunate to have Heinrich R. Schelbert, MD, PhD, professor of molecular and medical pharmacology at the University of California at Los Angeles (UCLA) and the George V. Taplin professor at UCLA’s David Geffen School of Medicine, as editor-in-chief. His broad knowledge of nuclear medicine, nuclear cardiology, and molecular imaging adds to JNM’s stellar reputation.

JNM is increasingly valuable not only to its readers but also to its authors, with the number of manuscript submissions increasing (more than two-thirds originating from countries outside the United States) and the processing time from submission to acceptance and from submission to publication decreasing. Within the next few months, JNM will begin publishing articles ahead of print, shortening that turnaround time even further and thus speeding the rate at which this research is disseminated.

SNM’s journals are also valuable to society members as revenue generators. Subscriptions from institutions and nonmembers bring in substantial revenue every year, subsidizing educational, public affairs, and other activities of the society.

JNM affects our professional lives and is considered “a 1-stop shop for high-quality articles that range from everyday practice to frontier developments,” has “well-written, well-reviewed articles with robust conclusions,” and offers a “concise reflection of the field,” according to last summer’s JNM Readership Survey of physician, technologist, and scientist readers. In that e-mail survey, more than 9,000 JNM readers reflected on a variety of questions about the journal and the quality and length of its articles, the different sections, and its layout. As a reader put it, “Having both basic and clinical research published in the same journal is very important in understanding the crucial relationship between the two.” Described as an “authoritative voice,” the journal “packs an immense amount of information,” according to another respondent.

What’s in store for the future? Accessibility to journal articles remains high, as the journal appears online on its 

(Continued on page 34N)
The eagerly anticipated U.S. Nuclear Regulatory Commission (NRC) draft rulemaking on naturally occurring and accelerator-produced radioactive material (NARM) was released for public comment on July 28. Titled “Requirements for the Expanded Definition of Byproduct Material,” the rulemaking would revise the Atomic Energy Act of 1954 definition for “byproduct material,” add a definition for “discrete source,” amend existing regulations to include radium-226 and certain accelerator-produced radioisotopes, and modify the regulatory framework to account for these new materials.

The ACNP/SNM Joint Government Relations Committee’s NRC Task Force has been actively involved in the public NARM rulemaking process since the passage of the Energy Policy Act of 2005. The task force is currently analyzing the proposed NARM regulations and will submit comments before the close of the public comment period on September 11. Of principal concern to the task force is that the rulemaking be written with patient access to radiopharmaceuticals in mind.

The NRC will hold a public meeting on August 22 in Las Vegas, NV, to solicit verbal comments from interested members of the public. To view more information about this meeting and/or the NARM rulemaking in general, please visit the NRC Web site at: http://ruleforum.llnl.gov/cgi-bin/rulemake?source=narm&st=prule or the SNM Web site at www.snm.org/GovernmentRelations.

USP General Chapter <797> Proposed Revisions

At this writing, efforts are underway by the SNM Radiopharmaceutical Sciences Council Committee on Pharmacopeia and SNM leaders to develop draft comments in response to the recent revisions of U.S. Pharmacopeia (USP) General Chapter <797> Pharmaceutical Compounding—Sterile Preparations.

Prior to the June 16 USP Compounding Stakeholder Forum meeting, SNM submitted a written statement—cosigned by the Nuclear Pharmacy Section of the American Pharmacists Association, the Council on Radionuclides and Radiopharmaceuticals, and the National Association of Nuclear Pharmacies—containing 4 general requests regarding the proposed revisions of <797>. Essentially, SNM and its allies:

1. Called for refining the definitions of compounding, preparation, and dispensing;
2. Requested that the USP refrain from prescriptive requirements on methods to achieve desired competencies and outcomes;
3. Requested that for adaptability, the USP substitute the word “should” for the word “must” used throughout the text; and,
4. Asked for a cost evaluation by the Office of Management and Budget.

SNM expanded on these four concepts with detailed recommendations prior to the close of the public comment period on August 15. The SNM comments may be viewed online at http://interactive.snm.org/index.cfm?PageID=5466.

To download and view the proposed revisions of USP <797>, please visit the USP Web site at www.usp.org/USPNF/pf/generalChapter797.html.
NOPR Warns of Potential Violations

The National Oncologic Pet Registry (NOPR) announced on July 13 that it had received reports of PET imaging facilities offering to pay referring physicians in exchange for completing NOPR case report forms. Registry officials and supporting organizations expressed concerns that such arrangements could compromise the integrity of the NOPR and/or could be interpreted as actionable under federal and state antikickback laws.

Neither the NOPR Operations Manual nor the January 2005 National Coverage Determination announcing the Department of Health and Human Service authorization of a PET registry provides for the payment of physicians for time spent completing case report forms. Providers are required to pay to the NOPR a 1-time registration fee of $50. Any payments to physicians by providers or others intended to compensate physicians for their time must comply with state and federal law, including kickback laws, which impose limits on the solicitation, receipt, offer, or payment of any form of remuneration in exchange for arranging, recommending, or furnishing any item or service that may be paid under certain health care programs. NOPR advised that any questions about the appropriateness of payments for physicians should be directed to individual institutional compliance personnel or legal counsel.

Collaboration Urged in Cardiovascular Imaging

The future of cardiovascular imaging depends on the development of collaborative strategies among radiologists, cardiologists, and nuclear medicine physicians, according to a joint statement issued in August by the European Society of Cardiology, the European Association of Echocardiography, the European Association of Nuclear Medicine, and the Association for European Paediatric Cardiology. The statement was published simultaneously in the August issues of the European Heart Journal, the European Journal of Echocardiography, and the European Journal of Nuclear Medicine and Molecular Imaging.

In the statement, the authors described and diagrammed an ideal organization for multidisciplinary diagnostic services in cardiovascular care, with nuclear medicine, radiology, and cardiology contributing expertise to form a “joint cardiac imaging group.” The summary conclusions issued by the group included: (1) experts in different imaging modalities should collaborate not compete; (2) joint clinical services and common diagnostic pathways should be developed; (3) future diagnostic specialists should be trained in several imaging modalities; (4) diagnostic tests should be evaluated by their impact on clinical outcomes; (5) diagnostic guidelines should compare all methods that can be applied to a specific clinical question; (6) new criteria should be developed for judging the quality of diagnostic research; and (7) expertise in imaging should be encouraged and funded as an integral component of basic, epidemiologic, and clinical collaborative research networks. The full text of the article is available at: http://eurheartj.oxfordjournals.org/cgi/reprint/27/14/1750.

CMS Inpatient Final Rule for 2007

The Centers for Medicare & Medicaid Services (CMS) issued the final rule for payment reforms for inpatient hospital services in 2007 on August 1. CMS indicated in a statement issued along with the final rule that these payment reforms, which will be phased in over time, “align hospital payments more closely with the costs of a patient’s care by using hospital costs rather than charges and by accounting more fully for the severity of the patient’s condition.” Medicare’s inpatient rates for operating expenses will increase by 3.4% in FY 2007 for those hospitals that report quality data to CMS. The agency estimated that the final rule would result in increased payments to acute care hospitals by $3.4 billion. The effects of the changes on nuclear medicine services are being investigated by the SNM Public Affairs staff and will be detailed on the SNM Web site at www.snm.org/GovernmentRelations.

“These payment reforms respond to many constructive public comments to ensure that hospitals get fair and appropriate financial support for all patients, with a smooth and gradual transition to more accurate payments. Hospital payments should promote the best care for all patients, not the treatments that happen to be most profitable, and we are now on a path to making sure that happens,” said Department of Health and Human Services Secretary Mike Leavitt.

The changes, which reflect recommendations from the Medicare Payment Advisory Commission, will reduce incentives for hospitals to invest in certain service areas because payment rates significantly exceed costs. They also address concerns that specialty hospitals—hospitals that provide a limited range of services and often are owned in whole or in large part by physicians who serve as referral sources—may selectively provide such profitable services. For example, some of the greatest concerns about inappropriate payments for specialty hospitals involved payments for certain elective cardiac admissions. As a result of the payment reforms implemented in 2006 and now for 2007, payments to cardiac
specialty hospitals are expected to decline by more than 5% between 2005 and 2007.

The payment reforms are designed to “better align payment with the costs of care by increasing payments for some admissions and decreasing payments for others.” A transition to using estimated hospital costs, rather than list charges, to set payment will “eliminate biases in the current system arising from the hospital practice of having list charges that disproportionately exceed costs for some services.” In addition, CMS is announcing steps to further evaluate hospital charging practices—with a special focus on medical devices—as part of considering further reforms for 2008.

CMS is also implementing a new threshold for cost “outlier” status. The law requires that Medicare provide additional payment if a hospital’s costs for treating a case exceed the usual Medicare payment for that case by a set threshold. In FY 2006, a hospital had to lose more than $23,600 on a case to receive the additional payment. The final rule for 2007 sets a threshold of $24,475. CMS also changed the way it calculates the loss threshold based on comments from hospital stakeholders. Consistent with the law, Medicare expects the additional payments for high cost cases will equal 5.1% of total inpatient payments.

CMS also announced new rules governing temporary add-on payments for appropriate technologies and clarified the CMS definition of and policy toward Graduate Medical Education.

The final rule appeared in the August 18 Federal Register and will be effective for discharges on or after October 1.

Centers for Medicare & Medicaid Services

DOE Awards Small Business Grants

The U.S. Department of Energy (DOE) announced on July 31 the designation of $116 million in grants to small businesses for innovative research in science, energy, environmental issues, and national security projects.

The awards were made under the department’s Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs.

“High-technology small companies, many of whom started in business as a result of SBIR and STTR awards, have become a valuable resource for solving high-risk, high-technology problems. Solving these problems will continue to be essential to meeting the nation’s current and future energy challenges,” said Dr. Raymond L. Orbach, DOE under secretary for science. One hundred ninety-three companies in 33 states were selected to receive a total of 291 Phase I grants worth up to $100,000 each to explore the feasibility of proposed innovations. The department also selected 113 SBIR projects and 15 STTR projects for Phase II awards to continue their research and development effort. The SBIR Phase II awards average $719,000 each and the STTR awards average $750,000 each for a period of up to 2 years.

Specific funding was awarded for advancement of projects involving PET and other nuclear medicine technologies. Radiation Monitoring Devices, Inc. (Watertown, MA) received more than a dozen separate awards. Among these were nuclear-medicine related projects for developing a fast, high-gain photodetector for PET; a dual-modality PET/MR small animal imaging system; a novel, needle-shaped CsI(Tl) scintillator for emission transmission tomography; a bright, low-persistence scintillator for radionuclide/X-ray imaging; an efficient, solid-state detector for small animal imaging; a fast neutron-imaging research scintillator with low sensitivity to gamma radiation; a bright, fast scintillator for nuclear studies; and a new scintillator for time-of-flight PET studies. Technology Assessment and Transfer, Inc. (Millersville, MD) was awarded funds for development of polycrystalline LuAlO3:Ce scintillators for PET applications. NanoTek, LLC (Walland, TN) was funded for rapid, microfluidic production of PET biomarkers.

A complete list of companies receiving grants and their research projects is available at www.science.doe.gov/sbir.

U.S. Department of Energy

NRC Seeks Comments on Expanded Authority

The Nuclear Regulatory Commission (NRC) announced on July 26 that it is seeking public comments on a proposed rule to incorporate newly added radioactive “byproduct” material into its regulatory framework as mandated by the Energy Policy Act of 2005. The Act expands the definition of byproduct material, thereby placing additional radioactive material under NRC’s jurisdiction. The Act mandates that final regulations are to be issued by February 7, 2007.

The proposed rule would establish the regulatory framework for regulating certain discrete sources of 226Ra, accelerator-produced radioactive material (ARM), and certain discrete sources of naturally occurring radioactive material (NORM). The proposed rule would revise the definition for “byproduct material,” add a definition for “discrete source,” amend existing regulations to include 226Ra and certain accelerator-produced radioisotopes, and add provisions to the regulatory framework for overseeing the newly added byproduct material. The NRC held a public meeting on the proposed rule on August 22 at the agency’s William Olmstead High-Level Waste Hearing Facility in Las Vegas, NV.

Although the NRC has not regulated ARM or NORM in the past, most states have regulatory programs for such material. Other federal agencies, states, and affected personnel from the commercial, industrial, and medical communities have been involved in the rulemaking process that included interactive discussion at a November 9, 2005, roundtable public meeting. The NRC provided a preliminary draft of the proposed rule to the states and the Advisory Committee on Medical Uses of Isotopes for an early opportunity to comment on the proposed regulations; their comments were considered in finalizing this proposed rule.
For the proposed rule, the NRC seeks comments on the issuance of general licenses and exemption provisions for certain items containing $^{226}\text{Ra}$, provisions for exemptions and “grandfathering” certain products involving ARM or NORM, and the compatibility designation of the proposed regulations for state programs. The proposed rule also contains an implementation strategy, including: (1) the use of a transition plan to lay out the NRC plan for waiver termination and for regulatory transition; (2) the plan to have Agreement States continue to carry out their regulatory programs until each state certifies and the NRC agrees that its regulatory program adequately covers ARM and NORM; and (3) the inclusion of specific regulatory provisions instead of using enforcement discretion that would allow individuals to continue using ARM and NORM, provided that these individuals comply with other applicable requirements while waiting for an NRC licensing decision.

Comments must be submitted by September 15 (although comments submitted later than this date may be considered if practical). Comments can be faxed to 301-415-1101 or e-mailed to SECY@nrc.gov. In addition, comments may be submitted through the NRC’s eRulemaking Portal at http://www.regulations.gov, where the entire proposed rule is available for review.

**Nuclear Regulatory Commission**

**DOE Seeks Large-Scale Computing Proposals**

Secretary of Energy Samuel W. Bodman announced on July 27 that the U.S. Department of Energy (DOE) Office of Science is seeking new proposals to support innovative, large-scale computational science projects. Successful proposals will be given the use of substantial computer time and data storage on some of the most powerful supercomputers in the world at DOE scientific computing centers in Berkeley, CA, Argonne, IL, Oak Ridge, TN, and Richland, WA. Each year, the Innovative and Novel Computational Impact on Theory and Experiment (INCITE) program seeks computationally intensive, large-scale research projects. The program encourages proposals from universities, other research institutions, and industry. In 2005, 15 projects were awarded a total of 18 million processor-hours from the 43 proposals submitted. “Since launching INCITE in 2003, both the number of proposals and amount of computing time requested indicate that high-performance computing resources, such as those at our national labs are in high demand,” Secretary Bodman said. “This unique program opens up the world of high-performance computing to a broader research community. So far, INCITE has enabled scientists to make significant progress in such key research areas as combustion, astrophysics, protein structure, chemistry and engineering.”

INCITE proposals will be peer reviewed both in the area of proposed research and also for general scientific merit, comparing them with proposals in other disciplines. Current DOE sponsorship is not required for this program. Complete information on the program and submission of proposals is available at: http://hpc.science.doe.gov/.

**U.S. Department of Energy**

**Radioactive Transport in the UK**

The UK Health Protection Agency (HPA) Radiation Protection Division announced on July 7 the publication of a report on accidents and incidents involving the transport of radioactive materials in the United Kingdom from 1958 to 2004. The report found that the most serious of these events involved the transport of poorly shielded industrial radiography sources and that the majority of these incidents occurred in the 1970s. Although some earlier events led to radiation exposures to workers and members of the public, improved training and performance have resulted in no similar events over the past 2 decades. The report emphasized the role of appropriate training of workers involved in all aspects of transportation and handling of radioactive materials.

Up to a half million packages with radioactive contents are transported in the United Kingdom annually for industrial, medical, and research purposes. The report on accidents and incidents provided an overview of the types of events over almost half a century. Except for relatively rare handling problems, mainly at airport cargo centers, the transport of nuclear medicine materials was not problematic in this period. More serious were events involving irradiated nuclear fuel transport and lost radioactive sources. Most of the recorded events resulted in negligible radiologic consequences to workers involved or to members of the public. In only 19 of 806 cases detailed in the report were radiologic exposures categorized as “not negligible,” and only 2 of these occurred after 1985. The study was released at a time of increased focus on transport (particularly international transfer) of radioactive materials, including radioisotopes for medical uses. The full report is available at: www.hpa.org.uk/radiation/publications/hpa_rpd_reports/2006/hpa_rpd_014.htm.

**UK Health Protection Agency**

**New Health IT Regulations Adopted**

Department of Health and Human Services (HHS) Secretary Mike Leavitt announced on August 1 final regulations that will support physician adoption of electronic prescribing and electronic health records technology. “Electronic health records help doctors provide higher quality patient care and improve efficiency with less hassle,” he said. “By removing barriers, these regulation changes will help physicians get these systems in place and working for patients faster.”

The final rules were issued by the Centers for Medicare & Medicaid Services (CMS) and the Office of the Inspector General (OIG) and create new exceptions and safe harbors to 2 key federal fraud and abuse laws for arrangements involving the donation of certain electronic health information technology and services. The CMS rule creates 2 new exceptions to the physician self-referral law, which prohibits

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a physician from referring Medicare patients for certain designated health services (DHS) to entities with which the physician has a financial relationship, unless an exception applies. The law also prohibits the health care entity from billing for Medicare services that are furnished as a result of a prohibited referral. Like the CMS rule, the OIG rule establishes 2 new safe harbors under the federal anti-kickback statute. Arrangements involving the provision of items and services that meet the requirements of the safe harbors are exempt from enforcement action under the federal antikickback statute related to electronic prescribing as well as electronic health records systems.

The rules finalize an exception and safe harbor for the provision of electronic health records information that is more expansive than the exception and safe harbor proposed by CMS and OIG on October 11, 2005. The Medicare Prescription Drug, Improvement, and Modernization Act mandated exception and safe harbor for arrangements involving the provision of electronic prescribing technology and services were finalized as proposed. The exceptions and safe harbors establish the conditions under which (1) entities furnishing DHS (and certain other entities under the safe harbor) may donate to physicians (and certain other recipients under the safe harbor) interoperable electronic health records software, information technology, and training services; and (2) hospitals and certain other entities may provide physicians (and certain other recipients under the safe harbor) with hardware, software, or information technology and training services necessary and used solely for electronic prescribing.

The exception under the physician self-referral law for arrangements involving the donation of electronic health records technology are designed to protect the provision of software or information technology and training services that are necessary and used predominantly to create, maintain, transmit, or receive the electronic health records of the donor’s or physician’s patients.

The final rules were published in the Federal Register on August 8. For more information, visit the CMS Web site at www.cms.hhs.gov and the OIG Web site at www.oig.hhs.gov.

Centers for Medicare & Medicaid Services

Newsline 29N
Each month the editor of Newsline selects articles on diagnostic, therapeutic, research, and practice issues from a range of international publications. Many selections come from outside the standard canon of nuclear medicine and radiology journals. Note that although we have divided the articles into diagnostic and therapeutic categories, these lines are increasingly blurred as nuclear medicine capabilities rapidly expand. Many diagnostic capabilities are now enlisted in direct support of and, often, in realtime conjunction with therapies. These briefs are offered as a monthly window on the broad arena of medical and scientific endeavor in which nuclear medicine now plays an essential role.

FROM THE LITERATURE

Neuroendocrine Tumors

Kim and Wang from the University of Southern California Keck School of Medicine (Los Angeles) reported in the July issue of Neurosurgery (2005;59:147–156) on a study correlating findings on SPECT and MR scans in patients clinically identified as having facetogenic axial back pain. The study included 31 patients with severe axial back pain who underwent both lumbar MR and SPECT imaging. MR identified 230 facets and SPECT identified uptake in 29 joints. These findings were assessed and correlated. The authors described 4 morphologic patterns on the basis of synovial appearance on MR imaging: light, mottled, narrowed, and obliterated. The MR facets were graded from 1 to 4 using these architectures, a scale that most likely parallels the continuum of facet degeneration, with 4 representing the obliterated joint. Of the subtypes represented by the scale, grade 2, or mottled, showed the highest specificity (90%) for SPECT and synovial fluid increase suggestive of inflammation. Synovial abnormalities correlated well with SPECT findings, and a grading scale was proposed to characterize the degeneration of a lumbar facet over time. The authors proposed a new subtype of SPECT-positive inflamed joint and called for additional studies to delineate the natural history of the lumbar facet.

Sentinel Node Biopsy and Multicentric Breast Cancer

Knauer et al. from the General Hospital (Feldkirch, Austria) reported in the July 20 issue of the Journal of Clinical Oncology (2006;24:3374–3380) on a multi-institutional trial of the feasibility and accuracy of sentinel node (SN) biopsy in patients with multicentric invasive breast cancer. The study included 142 such patients enrolled in the Austrian Sentinel Node Study Group (ASNSG) trial and compared this group’s data with those from 3,216 patients with unicentric cancer. A mean number of 1.67 sentinel nodes were excised in the multicentric group, and the incidence of SN metastases was 60.8%. These diagnoses were confirmed by axillary lymph node dissection in 125 patients. Of patients with positive SNs, 60.8% (48 of 79) showed involvement of nonsentinel nodes (NSNs), as did 3 patients with negative SNs. The sensitivity, negative predictive value, and overall accuracy of the SN technique in the multicentric group were 96.0%, 93.3%, and 97.3%, respectively. This group had significantly higher rates of SN metastases and nonsentinel node metastases than the patient group with unicentric cancer, but no differences were noted in detection or false-negative rates. The authors noted that these trials indicate that sentinel lymph node biopsy without routine axillary lymph node detection appears to be appropriate for multicentric breast cancer. They concluded that “Given adequate quality control and an interdisciplinary teamwork of surgical, nuclear medicine, and pathology units, SN biopsy is both feasible and accurate in this disease entity.”

Journal of Clinical Oncology
Chernobyl Follow-Up Studies

The 20-year anniversary of the nuclear accident at Chernobyl has been the subject of numerous studies and reports in 2006. In the July 5 issue of the Journal of the National Cancer Institute (2006;98:897–903), Tronko et al. from the Institute of Endocrinology and Metabolism (Kiev, Ukraine) published the official results of the first cohort study of thyroid cancer among those exposed as children and adolescents. The study began with a solicitation to 32,385 individuals who had been younger than 18 years of age and resident in the most heavily contaminated areas in Ukraine at the time of the accident. These individuals were invited to be screened between 1998 and 2000 for any thyroid pathology by ultrasound and palpation. A total of 13,127 individuals (44% of the original cohort) were screened. Radiation measurements made shortly after the accident and interview data provided the bases for individual estimates of radiation dose to the thyroid. During this screening, 45 pathologically confirmed cases of thyroid cancer were identified. Thyroid cancer incidence showed a strong and approximately linear relationship with individual thyroid dose estimates, yielding an estimated excess relative risk of 5.25 per Gy. In the absence of the accidental exposure event, 11.2 thyroid cases would have been expected from this study group, rather than the 45 observed. Exposure to radioactive iodine, therefore, was strongly associated with increased risk of thyroid cancer among those exposed as children and adolescents. The authors cautioned, however, that these results should not be generalized to any future or hypothetical radiation accidents, “because of the potential differences in the nature of the radioactive iodines involved, the duration and temporal patterns of exposures, and the susceptibility of the exposed population.”

Journal of the National Cancer Institute

SPECT/CT SLN Detection in Bladder Cancer

Sherif et al. from the Uppsala University Hospital (Sweden) reported in the July issue of European Urology (2006;50:83–91) on the use of SPECT/CT in preoperative sentinel lymph node (SLN) detection in patients with invasive bladder cancer. The study included 6 patients scheduled for radical cystectomy who underwent lymphoscintigraphy after transurethral injection of $^{99m}$Tc-alkubres in the detrusor muscle peritumorally both with planar imaging and with SPECT/CT. Radical cystectomy began with extended lymphadenectomy and intraoperative detection of SLNs with a Geiger probe and dye marker. Conventional planar lymphoscintigraphy and fused SPECT/CT images were compared and correlated with the results of intraoperative SLN detection and subsequent histopathology. The researchers found that SPECT/CT provided anatomically detailed preoperative visualization of 21 SLNs in 5 of the 6 patients, but the planar images showed a total of only 2 SLNs in 2 of the 6 patients. SPECT/CT identified all metastatic SLNs, whereas conventional lymphoscintigraphy detected only 1 of 6. The authors concluded that, “The combination of lymphoscintigraphy with CT enhanced preoperative anatomic localization of sentinel nodes in bladder cancer and aided in the identification of sentinel nodes during surgery.”

European Urology

111In-Octreotide Brain Scintigraphy

In an article e-published on July 19 ahead of print in the Journal of Neuro oncology, Nathoo et al. from the Cleveland Clinic Foundation (OH) reported on the use of $^{111}$In-octreotide brain scintigraphy for noninvasive differentiation of meningiomas from other cranial dural-based pathologies, while the addition of FDG PET differentiates benign from malignant lesions.”

Journal of Neurooncology

PEM in Primary Breast Cancer

Berg et al. from American Radiology Services and Johns Hopkins Green Spring (Lutherville, MD) reported in the July/August issue of Breast Journal (2006;12:309–323) on a multicenter study of the diagnostic performance of a high-resolution PET scanner using mild breast compression (positron emission mammography [PEM]). The study included 94 women with known or suspected breast cancer who underwent $^{18}$F-FDG PEM imaging. PEM readings were correlated with histopathology for 92 lesions in 77 women: 77 index lesions (42 malignant), 3 ipsilateral lesions (3 malignant), and 12 contralateral lesions (3 malignant). Of 48
Microglial Activity Maps in Stroke

In an article published in the July issue of Stroke (2006;37:1749–1753), Price et al. from the University of Cambridge and Addenbrookes Hospital (Cambridge, UK) reported on nuclear medicine techniques to establish temporal and spatial patterns of microglial activity in the perifocal zone as part of the neuroinflammatory response in the subacute phase of ischemic stroke. The study included 4 patients who had experienced cortical territory ischemic stroke and 4 age-matched controls, all of whom underwent 11C-R-PK11195 PET imaging. Controls were imaged once, and patients were imaged at 3 time windows up to 30 days after ictus. The resulting data were coregistered with T1-based MR images to identify significant binding in core infarction, contralateral hemisphere, and within a defined perifocal zone. Significant binding potential elevations were identified beyond 72 hours and extended to 30 days in core infarction, contralateral hemisphere, and the perifocal zone. Minimal microglial activation was seen in the initial period up to 72 hours. The authors suggested that this may “represent a therapeutic opportunity that extends beyond time windows traditionally reserved for neuroprotection.”

PET Predictive Powers in Glioma Treatment

In an article e-published on July 11 ahead of print in the International Journal of Radiation Oncology, Biology, Physics, Charnley et al. from the University of Manchester (UK) reported on a study assessing the ability of 18F-FDG PET to predict response among patients with glioma to temozolomide therapy alone or to temozolomide combined with radiotherapy. The study included 19 patients with high-grade glioma, including 8 patients with recurrent glioma, who received only temozolomide for a period of 7 weeks, and 11 newly diagnosed patients, who received temozolomide plus radiotherapy over 6 weeks, followed by 6 cycles of adjuvant temozolomide beginning 1 month after the last radiotherapy. Both PET and MR images were acquired at baseline and 7 and 19 weeks after first temozolomide administration. The authors found that patients in the temozolomide-only group who survived more than 26 weeks showed a greater reduction in glucose metabolic rate at 7 weeks than those who would not survive to 26 weeks. Also in the temozolomide-only group, PET responders (defined as glucose metabolic rate ≥25%) survived longer than nonresponders. MR imaging was not predictive of these responses, nor was PET predictive in the group receiving both temozolomide and radiotherapy.

Receptor Imaging in Bipolar Disorder

Cannon et al. from the National Institute of Mental Health reported in the July issue of the Archives of General Psychiatry (2006;63:741–747) on a study using 18F-FP-TZTP, a selective muscarinic 2 (M2) receptor radioligand, for PET imaging in the assessment of M2 receptor binding in individuals with major depressive disorder and bipolar disorder. The study included 17 patients with major depressive disorder, 16 with bipolar disorder, and 23 healthy controls. All participants underwent 18F-FP-TZTP PET imaging and were unmedicated at the time of imaging. The authors assessed tracer distribution volumes and compared illness severity as measured by clinical rating metrics with these volumes. Mean anterior cingulate cortex distribution volumes differed significantly in the group with bipolar disorder, with significantly lower binding potential, and these reductions correlated with severity of depressive symptoms in this group but not in controls or individuals with major depressive disorder. The authors suggested that these data provide the “first direct evidence that altered M2 receptor function contributes to mood dysregulation in bipolar disorder.”

PET/MR Imaging in Autism

Haznedar et al. from the Mount Sinai School of Medicine (New York, NY) reported in the July issue of the American Journal of Psychiatry (2006;163:1252–1263) on the use of coregistered PET and MR imaging to map volumetric and metabolic abnormalities in structure and function within the dorsal striatum and thalamus in 17 patients with autism or Asperger’s disorder and 17 age-matched controls. All participants underwent MR and 18F-FDG PET imaging. In addition, participants were asked to perform a serial verbal learning test during the PET tracer uptake period. PET and MR images were coregistered, with MR region-of-interest coordinates applied to the PET scan for each participant. The authors found that individuals with autism spectrum disorders had greater volumes in the right caudate nucleus than did control subjects, as well as a reversal of the expected left-greater-than-right hemispheric asymmetry. Patients also had lower relative glucose metabolic.
rates bilaterally in the ventral caudate, putamen, and thalamus. Patients with autism had lower metabolic activity in the ventral thalamus than those with Asperger’s disorder but did not differ from comparison subjects in metabolic activity in the caudate nucleus. They concluded that these results are consistent with the existence of a deficit in the anterior cingulated–ventral striatum–anterior thalamic pathway in patients with autism spectrum disorders.

*American Journal of Psychiatry*

**PET and GRPR Imaging in Breast Cancer**

In an article e-published on July 13 ahead of print in *Breast Cancer Research and Treatment*, Parry et al. from the Washington University School of Medicine (St. Louis) reported on research designed to assess the feasibility of using positron-labeled bombesin analogs for PET detection of gastrin-releasing peptide receptor–(GRPR) expressing breast cancers. The study employed dedicated, small animal imaging PET technology and mice bearing T-47D human breast cancer cells. The authors first investigated a series of bombesin analogs that could be labeled with $^{64}$Cu, and the most promising were evaluated in the mouse model. biodistribution studies indicated that a bombesin analog with an 8-carbon linker had the highest tumor uptake but also had high normal tissue uptake in the liver. The analogs containing the 6- or 8-carbon linkers also showed good tumor uptake. The authors concluded that these results indicate “the feasibility of using positron-labeled bombesin analogs for PET detection of GRPR-expressing breast cancer.”

*Breast Cancer Research and Treatment*

**Genetic Influences in Fitness**

Hannukainen et al. from the University of Turku (Finland) reported on July 6 ahead of print in *Journal of Applied Physiology* on a study investigating the heredity-dependent or -independent effects of increased physical activity and aerobic fitness on skeletal muscle free fatty acid (FFA) uptake and perfusion at rest and during exercise. The study included 9 pairs of young adult male monozygotic twins. Members of each pair had significant differences in routine physical activity and aerobic fitness. All were imaged with PET before and after various exercises. Submaximal knee-extension exercise increased perfusion, FFA uptake, and oxygen uptake in quadriceps femoris muscles 6–10 times over resting values. The more active twins tended to utilize more oxygen, but no differences were found in muscle perfusion or FFA uptake between twins. Exercise decreased both perfusion and FFA uptake heterogeneity within the muscles similarly in both groups. The authors found that although a long-term history of moderately increased physical activity tended to enhance muscle oxidative metabolism, it had no significant influence on FFA uptake or perfusion rates or their heterogeneity in skeletal muscle. They concluded that “the genetic influence is more important to determine the heterogeneity of perfusion and FFA uptake in skeletal muscle than exercise training.”

*Journal of Applied Physiology*

**Mouse Model for Radiation Bone Loss**

In a study widely covered in the popular media, Hamilton et al. from Clemson University (SC) and Loma Linda University (CA) reported on June 8 ahead of print in *Journal of Applied Physiology* on a study designed to evaluate bone loss in a murine model of radiation-induced osteoporosis. The research involved exposing mice to gamma, proton, carbon, or iron radiation at 2-Gray doses, representing both a clinical treatment fraction and projected exposures on exploratory space flights. Mice were killed 110 days after irradiation, and proximal tibiae and femur diaphyses were analyzed using microCT. Results showed profound changes in trabecular architecture for all types of radiation. Bone loss was 29% for gamma, 35% for proton, 35% for carbon, and 34% for iron irradiation. Connectivity density, thickness, spacing, and number were also affected. Although much of the popular attention on this research focused on the effects of radiation on astronauts during space travel, these results with relatively low levels of radiation also reinforce recent studies suggesting significant increases in fractures among individuals who have undergone radiation therapy. In addition to providing a novel animal model for future investigations, these results point to the need for continued investigations into imaging methods that can accurately assess and characterize bone loss.

*Journal of Applied Physiology*

**Caregiver Exposure After $^{131}I$ Therapy**

In an article e-published ahead of print on July 6 in *Radiation Protection and Dosimetry*, Marriott et al. from Hamilton Health Sciences (Ontario) reported on a study designed to assess radiation exposure to caregivers of patients who had received high-dose radiiodine therapy for differentiated thyroid cancer. The study consisted of radiation dose measurements on family members designated as the primary caregiver in 25 instances of high-dose therapy with 3.7 GBq of $^{131}$I and 2 additional instances in which the dose varied slightly. Radiation doses for the caregivers were monitored each hour for 1 week with electronic personal dosimeters. The average penetrating dose was $98 \pm 64 \mu$Sv, and the maximum penetrating dose was 283 $\mu$Sv. Dose rate profiles indicated that approximately one-third of the total caregiver dose was received during the trip home from the hospital. The resulting dose rate profiles showed rapid clearance of $^{131}$I, but suggested that this clearance occurs in 3 distinct phases associated with specific events:
<1 hour, corresponding to the ride home; 21 hours, corresponding to clearance of the radioisotope from the patient; and 8 days, corresponding to the persistence of small quantities of radioiodine in the home.

_Radiation Protection and Dosimetry_

**RIT Approach Reviewed**

In an article e-published on July 6 ahead of print in _Cancer_, Weigert et al. from the University of Munich (Germany) reviewed literature and guidelines on radioimmunotherapy (RIT) with ⁹⁰Y-ibritumomab tiuxetan in patients with follicular lymphoma or B-cell non-Hodgkin’s lymphoma. They surveyed the results of trials leading to the approval of the treatment regimen in the United States, as well as other current trials assessing efficacy in other subtypes of lymphoma, such as diffuse large-cell and mantle-cell lymphoma. Current challenges were reviewed, including how best to integrate this RIT approach into existing established treatment planning approaches. The authors also evaluated current recommendations and future prospectives and provided practical recommendations for patient management.

_Cancer_

(Continued from page 24N)

own Web site. In a recent development—and in response to changing technology that makes the Internet an economical and efficient conduit for delivery of information—the society’s board of directors elected to make _JNM_ an open-access journal, allowing full-text, online articles to be available for free 12 months after publication. This move expands the journal’s audience to include medical researchers, physicians and other health care providers, patients and their advocates, students, and the global public. Such unrestricted access to scientific knowledge is bound to have a major impact on medical practice and on promoting the benefits of molecular imaging and therapy.

The first issue of a Chinese edition of the journal was published last month through a unique arrangement with Blackwell Publishing, and a Japanese version of _JNM_ has been printed for about 2 years. The publication of these 2 language editions, overseen by editors selected from _JNM_’s review board, accelerates the journal’s professional impact.

SNM has almost completed an archiving project, having scanned nearly 50 years of _JNM_ issues, which will be available online before the end of this year. This will improve access to articles that are often still used and cited. Public relations efforts introduce published research to a wider audience every month. The journal is a valuable SNM member benefit, with new supplements being planned. One coming this year will focus on clinical PET/CT and patient care.

Where is the journal going in the future? _JNM_ continues to parallel the society’s direction: As the profession expands and merges with molecular biology, molecular medicine, and medical imaging, so too will _JNM_ continue to follow and report those developments.

_Martin P. Sandler, MD_
President, SNM