World attention was directed toward the 51st Annual Meeting of the SNM, June 19–23, at the Pennsylvania Convention Center in Philadelphia. More than 4,000 nuclear medicine physicians, scientists, physicists, pharmacists, technologists, and industry representatives attended the 4 days of special programs, educational sessions, scientific presentations, and auxiliary events. In the exhibition hall, more than 2,000 exhibitors and vendors showed their products and discussed their work with attendees.

Working with a list of presenters prepared by the SNM Program Committee, Society staff and consultants prepared a series of scientific press releases for distribution at the meeting. Extensive coverage followed, including synopses on major broadcast networks and cable news channels, in newspapers around the world, and on radio news. Among the foci of especially intense interest were the potential benefits of new technologies; techniques for the early diagnosis of Alzheimer’s disease (AD); advanced imaging for the diagnosis, staging, and treatment of cancer; nuclear cardiology; and growing collaboration between nuclear medicine and bioengineering. This month, Newsline looks at a few of the presentations that received international notice.

**The Discriminating Power of PET/CT**

Antoch et al. from University Hospital Essen (Germany) reported in a session on June 20 on the accuracy of ¹⁸F-FDG PET/CT in tumor staging in 260 patients with a range of oncologic disease (Fig. 1). All patients underwent PET/CT for staging, and designated reader teams subsequently evaluated (using the TNM system) CT images alone, PET images alone, and CT plus PET viewed separately. The results were compared with the results of fused imaging and with baseline references of histopathology and clinical follow-up. The authors found that 218 patients (84%) were correctly staged with PET/CT, 197 (76%) with side-by-side CT and PET, 163 (63%) with CT alone, and 166 (64%) with PET alone. Sensitivity and specificity for PET/CT were 92% and 93%, respectively, better than for any of the separate or side-by-side...
mostrad interpretations. The authors concluded that tumor staging with PET/CT is significantly more accurate than PET or CT alone or side-by-side display of images, a diagnostic advantage that in this study translated into beneficial changes in management for a number of patients. Antoch noted, “We are ecstatic with the results. Obviously, when dealing with all types of cancers, the sooner we can get to the treatment the better. The new tumor imaging method using the integrated PET/CT will now allow doctors and patients to get an earlier jump on the disease.”

On June 22, Namdar et al. from University Hospital (Zurich, Switzerland) presented an evaluation of PET/CT image quality in coronary lesion anatomy and pathophysiologic severity in a group of 25 patients with previously documented coronary artery disease (Fig. 2). The addition of PET integrated with CT angiography was significant. Of the 15 false-positive coronary segments identified by angiography, 13 were correctly labeled as normal by PET. In the 14 lesions without patent bypass graft, PET revealed stress-induced ischemia in 7 lesions in 6 patients, thus relieving the 8 remaining patients of the financial and physical burden of unnecessary revascularization. According to Namdar, “In the medical community, we are always looking for new ways to approach old problems. Any time you can avoid invasive procedures without sacrificing accuracy or increasing risk, you’re doing a great service to the patient. In the case of the combined PET/CT scanner, we have found a very accurate method of diagnosing potential heart risks that is much easier on the patient.”

While PET/CT applications in oncology continue to expand, the fused modality is also gaining ground in imaging infection. Keidar et al. from the Rambam Medical Center presented results on June 21 on the use of 18F-FDG PET in the differentiation of localized osteomyelitis adjacent to pedal soft-tissue infection in diabetic patients. Osteomyelitis occurs in up to one third of diabetic foot infections, often as a result of direct contamination from a soft-tissue lesion. Early diagnosis and initiation of antibiotic therapy are essential in sparing the limb. The study included 13 patients with diabetes who underwent PET/CT imaging for suspected osteomyelitis of the foot. PET/CT images were evaluated, as were separate PET and CT images, and the results were compared with definitive diagnoses at surgery or clinical follow-up. 18F-FDG uptake on PET imaging alone proved effective in correctly identifying 8 patients with infection. PET/CT helped to refine these diagnoses in 5 patients with uptake in bone (indicating osteomyelitis), as well as to identify the 3 patients in whom infection was confined to soft tissue. The authors concluded that PET is helpful in imaging diabetes-related infection and that PET/CT adds a level of precise anatomic localization that can prove crucial in initiating early and effective therapy. Keidar told the press, “If we can detect the precise location of infection, the treatment strategy will be easier to define. Our study shows how advances in imaging technology can directly affect patient care and make a big difference for patients with complications of diabetes.”

Wide Range of PET Topics

Infection was also the focus of a study reported in a poster session by Fukuchi and Ishida from The National Cardiovascular Center (Osaka, Japan). The team investigated the use of 18F-FDG PET in the differentiation of infected from noninfected vascular grafts. The study included 15 patients, some with suspected infected grafts and others with stable, noninfected grafts. Diagnoses based on PET were compared with final diagnoses based on surgical results or clinical follow-up. PET successfully identified inflammatory foci in all 7 patients with infection. Fukuchi noted, “Infection of vascular prosthetic grafts remains a major surgical challenge, because it can be reduced but not eradicated by avoiding risk factors and by applying antibiotic therapy.” PET studies appear to accurately, safely, and specifically diagnose graft infection and facilitate the timely initiation of appropriate therapy.

In a report that received the international media coverage at the SNM annual meeting, Wang et al. of the U.S. Department of Energy’s Brookhaven National Laboratory (Upton, NY) reported on the use of 18F-FDG PET to elucidate the functional neurologic connections between hunger and the stimulating presence of food. The study included 12 healthy individuals, in whom brain response was measured in 3 different situations: food stimulation, neutral stimulation, and no stimulation. Before each situational testing (on separate days), participants were food deprived for 18 hours. Participants’ regional brain metabolic activities were assessed by PET when presented with food (visual, olfactory, auditory, and gustatory display of food), when presented with non-food-related
items, and at baseline with no stimulation. Restraint, disinhibition, and hunger factors were scored separately and correlated with metabolic activity. The authors found that food stimulation significantly increased brain metabolic activity. According to Wang, “individuals for whom food is more reinforcing have to rely more on cognitive control to not eat when they have the desire to eat. Our results showed that people who have higher metabolic changes in the left ventral striatum of the brain during food stimulation need more cognitive restraint; in other words, for those who are more sensitive to food stimulation, it is more difficult and takes more effort to diet.” He added, “if we know how the brain reacts to food and hunger, we can figure out what occurs chemically during perceived abnormal responses. The hope is that, if we understand the brain’s chemical response to food, then we will be able to manage things like eating disorders and find new and innovative treatment options.”

On June 22, Tawakol et al. from Massachusetts General Hospital (Boston, MA) reported on the use of 18F-FDG PET in imaging carotid plaque and providing a noninvasive index of inflammation. The study included 9 patients with moderate-to-high-grade carotid stenosis who underwent PET imaging that was coregistered with carotid MR studies. In each patient, standard uptake values (SUVs) were assessed for assigned quadrants every 2.5 mm along the length of the carotid plaque. Plaque tracer uptake was reported as a ratio of plaque to separately measured blood SUV. Results were compared with histologic examination of carotid specimens collected during endarterectomy within 1 month of imaging. The results revealed a high correlation of 18F-FDG uptake on PET with the degree of plaque inflammation. “This is the first time FDG PET imaging has been used to provide an index of vascular inflammation in human subjects,” said Tawakol. “The potential applications of the study are numerous. Obviously, early detection and better characterization of carotid plaque could enhance our ability to combat stroke. We also anticipate that the FDG-PET method could be used to test plaque-stabilizing drugs. Moreover, we hope that a similar method might be developed to detect coronary artery disease in the future.”

PET continues to be a focus of efforts assessing methods to definitively detect and quantify progression in AD (Fig. 3). On June 22, Kepe et al. from the University of California at Los Angeles–David Geffen School of Medicine reported on PET studies to establish patterns of binding distribution of 18F-FDDNP as an in vivo measure of AD pathology progression. The study included 13 patients diagnosed with AD and 10 control subjects. All individuals underwent both 18F-FDDNP PET and 18F-FDG PET imaging. Regional SUVs for 18F-FDDNP were found to be elevated in the medial temporal lobe, parietal lobe, and prefrontal area in patients with AD compared with control participants. 18F-FDG PET imaging for the AD patients showed parallel decreases in glucose metabolism in temporoparietal regions and correlated well with the increased global 18F-FDDNP binding also observed in these patients. These observations were in agreement with known patterns of post mortem pathology reported in the literature. The authors concluded that “All tested measures of 18F-FDDNP binding very well separate AD and control populations, which, together with the pattern of the binding distribution, gives a very good indication of disease involvement.” Kepe told the press, “This opens opportunities for the use of PET with 18F-FDDNP, not only for possible diagnosis in early stages of the disease but also for testing the effects of future experimental drugs developed to prevent lesion formation and for monitoring the effects of the drugs aimed at removing the lesions.”

**Predicting Outcomes**

The ability of nuclear imaging to accurately stage oncologic disease is being rapidly expanded to include the prediction of outcomes after surgery and to a range of potential therapies. Outlining what some press coverage described as “crystal ball” capabilities, Eschmann et al. from the University of Tübingen (Germany) reported on June 21 on the prognostic effect of 18F-fluoromisonidazol (18F-MISO) PET in the management of patients with non-small cell lung cancer (NSCLC) and head and neck cancer (HNC). The study included 31 patients (NSCLC = 20; HNC = 11) who underwent both dynamic and static PET scans at 2 and 4 hours after injection of 400 MBq 18F-MISO. All patients were scheduled for curative radiotherapy. PET data were correlated with clinical follow-up
The authors found that uptake values for the tracer were nondiagnostic at 2 hours after injection but that uptake values at 4 hours after injection clearly separated those patients who would experience local recurrence from those who would not. Tumor-to-muscle ratios (TMRs) assessed at 4 hours after injection also correlated with the risk of relapse. No patient with a TMR < 1.4 (n = 3) presented with tumor recurrence, whereas 50% of patients with TMRs of 1.4–2 (n = 6) and 90% of patients with TMRs > 10 (n = 10) experienced recurrence. The authors concluded that the results of radiotherapy can be predicted in this group of patients on the basis of the kinetic behavior of 18F-MISO in tumor tissue and that accumulation, high uptake, and high TMR are highly suggestive for an incomplete response to treatment. Eschmann said, “Should this technique become standard practice—using 18F-MISO PET images to predict the possible recurrence of tumor—then treatment methods can correspond to prognosis. We believe that 18F-MISO PET represents a valuable tool for patient discrimination. Patients with increased risk of relapse may be introduced to an intensified therapeutic regimen.”

SPECT was featured in a study to predict clinical response of adult patients with attention deficit hyperactivity disorder (ADHD) to methylphenidate (MPH; Ritalin) treatment (Fig. 4). On June 22, la Fougère et al. from the University of Munich (Germany) reported on a study designed to determine whether the degree of binding of 99mTc-TRODAT-1 to striatal dopamine transporters could predict response to MPH as measured by the Clinical Global Impressions (CGI) scale before and after treatment. Because 20%–30% of patients with ADHD do not respond to MPH therapy, a method of predicting therapeutic response would eliminate unnecessary medication and facilitate the initiation of alternative therapies. The study included 18 adult patients, 13 of whom showed high levels of dopamine transporter binding. Of these, 12 showed significant improvement of symptoms after initiation of MPH therapy. None of the 5 patients who showed reduced uptake was seen to improve with MPH. According la Fougère, “Our results indicate that measurement of dopamine transporter may be an important prognostic predictor for therapeutic response to Ritalin. If we can determine who will respond to the drug and who will not respond, then only those patients who will benefit will be treated.”

Targeted and Genetic Therapies

The role of external radiation beam therapy in mantle cell lymphoma has been limited by the systemic nature of the disease. Radioimmunotherapy (RIT) offers a promising alternative, but one that must be carefully coordinated with chemotherapeutic regimens. On June 22, Divgi et al. from the Memorial Sloan–Kettering Cancer Center (New York, NY) reported on a sequential regimen using tositumomab (Bexxar) RIT for cytoreduction (to provide optimal crossfire) followed by CHOP chemotherapy. The study included 13 patients with untreated mantle cell lymphoma who showed measurable disease with less than 25% bone marrow involvement. Each patient underwent a tositumomab/131I-tositumomab regimen followed 13–16 weeks later by 6 cycles of CHOP. After all sequential treatments were completed, the overall response rate was 75%. Of the 10 patients who finished all treatments, 9 achieved a complete response. Side effects and toxicities were within acceptable limits. According to Divgi, “although further follow-up is necessary to determine if this novel therapeutic approach represents a treatment advance in mantle cell lymphoma, the results of this particular study—a 90% complete remission rate—were outstanding.”

A reversed sequential use of Bexxar was reported by Kostakoglu et al. from the Weill Cornell Medical Center and the Center for Lymphoma and Myeloma (New York, NY) and the Corixa Corporation (San Francisco, CA) on June 22. This group looked at the efficacy of sequential administration of fludarabine followed by RIT with the tositumomab/131I-tositumomab regimen in patients with untreated non-Hodgkin’s lymphoma (NHL). The study included 38 patients with NHL (51% follicular mixed and 49% follicular small cleaved). All but 1 patient were categorized as having stage III or IV disease. All patients underwent 3 cycles of fludarabine therapy (3 patients dropped out of the study during this phase). The response to fludarabine among the remaining patients was 89% (3 complete responses, 28 partial responses). After

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The opening of the exhibit hall was kicked off on Saturday evening with a reception featuring a Continental Army drum and fife corps and Philadelphia’s most famous polymath, Poor Richard himself.

Henry Royal clips Mathew Thakur’s ribbon removing the “Elect” from “President-Elect” and officially transferring the presidency at the close of the third plenary session and SNM business meeting.

Henry Royal, left, and Mathew Thakur present Virginia Pappas with the 2004 Presidential Distinguished Service Award for her accomplishments as executive director of the SNM.

The SNM House of Delegates votes to accept changes to the SNM bylaws.
Meeting in Philadelphia

Lale Kostakoglu and Ralph McCrea put their lab coats aside for an evening of collegial fun at the black and white ball Saturday night.

Members really got into the nuts, bolts, and photons of the exhibits.

Scientific sessions were the heart of the annual meeting.

Peter Kirchner commended Nora Volkow for her presentation of the Wagner Lecture during the first plenary session.
Michael J. Welch Receives Cassen Award

Michael J. Welch, PhD, codirector of the Division of Radiological Sciences at Washington University’s Mallinckrodt Institute of Radiology (St. Louis, MO) and head of the institute’s Radiochemistry Laboratory, was presented with the 2004 Benedict Cassen Award at the SNM Annual Meeting on June 22. The biennial honor, given by the Education and Research Foundation for the SNM, is awarded to a living scientist or physician-scientist whose work has led to a major advance in basic or clinical nuclear medicine science.

Donated by the estate of Mary Wylie Cassen, the award honors Benedict Cassen, whose invention of the rectilinear radioisotope scanner—the first instrument capable of making an image of a body organ in a patient—was seminal to the development of clinical nuclear medicine. Welch’s highly regarded work on rapid synthesis of positron-labeled organic chemicals was of vital importance in the development of PET at Mallinckrodt Institute in the early 1970s and in the technology’s subsequent application to diagnostic medicine. “It is a great honor for me to receive the Cassen Prize,” said Welch. “Although I am the 6th awardee of the prize, I am the first ‘synthetic chemist’ to be so honored. I believe that the synthesis of new radiopharmaceuticals is one of the cornerstones of nuclear medicine and will continue to be so into the foreseeable future. The expansion of our field will depend upon the continued development of novel agents for the molecular targets being discovered today and in the future.”

Welch received his undergraduate and initial graduate degrees from Cambridge University and earned his doctorate in radiochemistry from the University of London in 1965. Applying modern organic chemistry to the preparation of radioactive elements used in medical imaging, he developed rapid methods to synthesize positron-labeled organic chemicals, a process essential in making PET into a practical clinical modality. In the late 1980s, he and colleagues demonstrated that PET scans using radiolabeled estrogen could locate human receptors for the hormone. Subsequent PET studies with radiolabeled compounds provided a rapid and sensitive way to study biological processes in the nervous system. These and other efforts also helped PET gain acceptance for detecting breast and other cancers and for making beneficial choices in patient management.

The National Institutes of Health (NIH) recently extended the funding mechanism for “Cyclotron-Produced Isotopes in Biology and Medicine,” which, at 44 years, is among the longest continuously renewed NIH research grants. The grant has been extended for another 5 years with an additional $11 million in funding. Welch has been a principle investigator since 1979.

Additional current research at Mallinckrodt involves radiolabeling agents that can be utilized to assess the receptor status of breast tumors, the preparation of other ligands with higher binding affinity for greater contrast in imaging, and the application of microwave heating to increase the rate of chemical reactions leading to radiolabeled compounds. Welch’s group is also investigating the potential for both diagnosis and therapy with metal radionuclides.

Welch was elected to the Institute of Medicine in 1999 and was president of the SNM in 1984. Among his many honors are the SNM’s Georg Charles de Hevesy Nuclear Medicine Pioneer Award (1992); the Paul C. Aebersold Award (1980); and the Beron–Yalow Award (1988, 1990); as well as the American Chemical Society’s St. Louis (1988), MidWest (1991), and National (1990) Awards for Nuclear Chemistry. He has served for many years on the editorial board of The Journal of Nuclear Medicine.

Past recipients of the Cassen Award have included Hal O. Anger, DSc (1994), for his invention of the scintillation camera; David E. Kuhl, MD (1996), for his development of emission reconstruction tomography and quantitative measurements of brain physiology; Henry N. Wagner, Jr., MD (1998), for his contributions to nuclear medicine as a scientist, teacher, and clinician; Gerald L. DeNardo, MD, and Sally J. DeNardo, MD (2000), for their work contributing to the development of radiolabeled antibodies and radioimmunotherapy; and Michael E. Phelps, PhD (2002), for his involvement and work in translating PET science into clinical medical practice.

Michael Devous (left) congratulated Michael Welch after the Cassen Lecture and award presentation.
Aebersold Award Presented to Hank F. Kung

Hank F. Kung, PhD, professor of radiology and pharmacology at the University of Pennsylvania (Philadelphia), was presented with the 2004 Aebersold Award for outstanding achievement in basic science applied to nuclear medicine at the 51st Annual Meeting of the SNM on June 20 in Philadelphia. Kung is known for his work in the development of radiopharmaceuticals. He was instrumental in developing PET and SPECT imaging agents for dopamine and serotonin neurotransmitters, and his laboratory group’s research activities cover a wide spectrum of scientific disciplines including drug design, organic synthesis, radiochemistry, receptor pharmacology, pharmacokinetics, and PET and SPECT imaging.

“I am dedicating this award to my wife, Dr. Mei-Ping Kung, who is the real scientist in the family,” said Kung in accepting the award. “She is the best-kept secret of my lab. I also want to thank the Society of Nuclear Medicine and my current and former lab members. Especially, I want to thank Dr. Robert Mach, professor of radiology, Washington University, St. Louis, for his friendship and long-standing collaboration. Our work is built on the contributions of many colleagues and collaborators around the world.”

The Aebersold Award is named for Dr. Paul C. Aebersold, a pioneer in the biologic and medical applications of radioactive materials and the first director of the Atomic Energy Commission’s Division of Isotope Development at Oak Ridge, TN. The first Aebersold Award was given by the SNM in 1973.

Kung was trained as a medicinal chemist at the School of Pharmacy, State University of New York at Buffalo. After postdoctoral training under Monte Blau at Roswell Park Memorial Institute, Kung joined the department of nuclear medicine at Roswell. He became a member of the department of radiology at the University of Pennsylvania in 1987.

The work of the Radiopharmaceutical Chemistry group at Penn covers an extraordinarily wide range of selective radiotracers and potential applications. The development of $^{99m}$Tc-TRODAT-1, the first site-specific dopamine transporter-binding agent, under Kung’s direction was widely heralded as a milestone in efforts to achieve both qualitative and quantitative imaging of neurodegenerative processes. The first use of the agent in human brain imaging was selected as the image of the year at the 1996 SNM annual meeting. The article on in vivo characterization of the agent received the Springer award for the best science paper for the European Journal of Nuclear Medicine (1997;24:372–380). Clinical studies have validated the use of the tracer as a diagnostic tool for Parkinson’s disease and other neurodegenerative diseases.

In the past decade, a number of new $^{123}$I-labeled neuron-receptor imaging agents for SPECT were developed in Kung’s laboratory. Several have been or are being used successfully in clinical trials, including TISCH (D1 receptor); IBZM, IBF, and FIDA2 (D2 and D3 receptors); and IPT (dopamine transporter). The D2-imaging agent IBZM is currently available commercially in Europe, and the D2 receptor-imaging agent IBF is being developed in Japan. In March of 2003, the first human study of $^{123}$I-ADAM, a new serotonin transporter tracer, was performed in the department by Dr. Andrew Newberg. The group reported on early results of biodistribution and imaging with the agent in The Journal of Nuclear Medicine (2004;45:834–841) earlier this year.

A look at the Web site of Kung’s group (http://sunmac.spect.upenn.edu) shows the range and scope of work in the lab, as well as the multidisciplinary nature of work that characterizes the development of new tracers. Among the dozens of current research projects are the development of imaging agents for β-amyloid plaque, imaging agents that target breast tumor cells, and research into cardiac neuronal functioning.

Hank Kung, PhD, and spouse, Mei-Ping Kung, PhD, with the Aebersold Award at the Society of Nuclear Medicine meeting in Philadelphia, June 20.
Alavi Achievements Recognized with de Hevesy Award

Abass Alavi, MD, Professor of Radiology and Chief of the Division of Nuclear Medicine at the University of Pennsylvania Medical Center (Philadelphia), was named as the recipient of the 2004 Georg Charles de Hevesy Nuclear Medicine Pioneer Award. The award was presented on June 20 during the first plenary session at the SNM annual meeting in Philadelphia. Alavi was chosen by Henry Royal, MD, then president of the SNM, for pioneering work that has contributed to the advancement of nuclear medicine world wide.

Each year the SNM presents the de Hevesy award to an individual or individuals for outstanding contributions to the field of nuclear medicine. de Hevesy, widely recognized as one of the originators of the field of nuclear medicine, was the author of several important books and papers on radiochemistry and the recipient of the 1943 Nobel Prize in Chemistry for his investigation of the absorption, distribution, metabolism, and elimination of radioactive compounds in the human body. This research laid the foundation of nuclear medicine as a tool for diagnosis and therapy. “Dr. Alavi’s crowning achievement has been his pioneering work in PET,” said Royal in presenting the award. “We speak of molecular imaging, and PET specifically, as ‘the future,’ but he had the foresight to study PET images as early as the 1970s. If you examine nuclear medicine you will find his name. It is with great pleasure that we extend our congratulations to Dr. Alavi on being awarded this prestigious honor.”

Alavi was born in Tabriz, Iran. The example of his paternal grandfather, who practiced herbal medicine, inspired him to enter the medical profession. The first in his family to attend college, Alavi graduated from the University of Tehran Medical School in 1964. He performed his required military service as a member of the Shah’s National Health Corps. As the only physician for the people of a small mountain village, he often traveled on horseback to care for illnesses that ranged from measles to anthrax.

In 1966, Alavi arrived in the United States, where he served an internship and residency in medicine at Philadelphia hospitals, earned a hematology/oncology fellowship at Penn, and completed a 1-year residency in radiology at Harvard University. He joined the Penn School of Medicine in 1971 as a research fellow in nuclear medicine and found his true professional calling while training in nuclear medicine under David Kuhl, MD, who introduced him to SPECT and PET and became a lifelong inspiration and friend.

Today Alavi is an internationally recognized expert in advanced imaging techniques and the clinical applications of PET imaging for the detection of cancer and other disorders, including dementia, seizures, cardiovascular disease, and infection. In nuclear medicine, he has enthusiastically pursued interests and activities into areas as diverse as meditation, acupuncture, gene therapy, and angiogenesis, perhaps reflecting his broad experiences early in his medical career in Iran. He has introduced novel techniques that have changed the face of nuclear medicine, ranging from basic clinical procedures to others involving sophisticated technologies, such as tomography.

He has been a pioneer in transitioning PET from research into clinical applications. Along with Kuhl and Dr. Marcus Reivich, he was the first to perform brain tomography and whole-body imaging with $^{18}$F-FDG in patients in the early 1970s.

He has maintained a strong commitment to education and trained hundreds of students and physicians from the United States and abroad. At the SNM meeting in Philadelphia, Alavi’s group was ubiquitous, participating in more than 60 scientific presentations and poster sessions. “This is all due to the efforts of my wonderful students who work in our group,” he explained. “I am very proud of the contributions of these young talents.” He is in constant demand as a speaker and has delivered invited lectures in more than 50 countries.

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Devous Honored with 2004 Kuhl–Lassen Award

Michael D. Devous, Sr., PhD, Professor of Radiology at the University of Texas Southwestern Medical Center and Professor of Human Development and Communication Sciences at the University of Texas at Dallas, has been named as the recipient of the 2004 Kuhl–Lassen Award. The SNM Brain Imaging Council presented the award on June 20 at the SNM annual meeting.

The Kuhl–Lassen award recognizes scientists who have made significant contributions to the field of functional brain imaging using SPECT or PET. The Brain Imaging Council created the annual award to honor 2 founding pioneers in functional brain imaging: David E. Kuhl, MD, and Nils Lassen, MD. In praising the selection of the 2004 awardee, Kuhl said of Devous, “He has made great contributions to advancing brain imaging science. At the same time, he has been one of the very best teachers in the field. It is appropriate that his peers chose to recognize him. Their selection enhances the stature of the Kuhl–Lassen Award.”

“It is a great honor to be recognized by my peers who have also contributed so much to this intriguing field of (Continued on page 53N)

Tetalman Award Goes to Zaidi

Habib Zaidi, PhD, is the recipient of the 2004 Mark Tetalman Award of the SNM Education and Research Foundation (ERF). The award recognizes outstanding achievement among young investigators in nuclear medicine and is named after a young nuclear medicine physician whose death ended a promising career. Zaidi is senior physicist and head of the PET Instrumentation and Neuroscience Laboratory at Geneva University Hospital (Switzerland). “The Tetalman Memorial Award is beyond a tremendous honor, because it substantiates my choice of an academic career in the physics of nuclear medical imaging,” said Zaidi.

He received a doctorate in medical physics from Geneva University for a dissertation on Monte Carlo modeling and scatter correction in PET. He is actively involved in developing imaging solutions for biomedical research and clinical diagnosis, in addition to lecturing in graduate and postgraduate courses on medical physics and medical imaging. His research is supported by the Swiss National Science Foundation and focuses on dosimetry, image correction, reconstruction and quantification techniques in emission tomography, and statistical image analysis in functional brain imaging. Most recently he has worked on novel designs for dedicated high-resolution PET scanners in collaboration with the European Organization for Nuclear Research (CERN).

Among the contributions cited by the ERF in honoring Zaidi were his work relating to Monte Carlo modeling and image correction for PET, including the development of a Monte Carlo simulation package to generate datasets corresponding to the geometry and actual size of most commercial and prototype cylindrical PET scanners. This package has been successfully implemented on a high-performance parallel platform. His group is also pursuing research on PET/CT simulation packages PET/CT and a new method for determination of the attenuation map in 3D brain PET imaging using coregistered MRI.

Zaidi’s research efforts have been recognized with the prestigious 2003 Young Investigator Medical Imaging (Continued on page 53N)
CASNM Annual Meeting

The Chinese American Society of Nuclear Medicine (CASNM) held its annual meeting on June 20, when about 100 participants gathered in Philadelphia at the time of the SNM annual meeting. The CASNM event included an educational program, in which an invited lecture titled “Metabolic Response of Colorectal Metastasis after 90Y Radioembolisation” was presented by C. Oliver Wong, PhD, MD, from the William Beaumont Hospital (Troy, MI). Also a part of the meeting activities was a user support session on “Integral Cardiac Applications of PET with Multislice CT Mapping,” conducted by Jeff Kao, MS, GE Medical Systems. During the meeting, we had the honor of congratulating and celebrating Dr. Hank F. Kung upon being the first Chinese American to receive the prestigious Paul C. Aebersold Award (2004) from the SNM.

CASNM was established in 1977 as a nonprofit, non-political organization with the objectives of encouraging professional contact among members all over the world, facilitating scientific exchanges in research and development, and promoting international interaction with regard to the science of nuclear medicine with a special focus in the Chinese community. The membership of CASNM is not restricted to practitioners living in North America. We also welcome participants from Europe, Australia, Asia, and elsewhere to join our organization. The current president and secretary/treasurer of CASNM are Joseph C. Hung, PhD, Mayo Clinic, and C. Oliver Wong, respectively. The next annual meeting will be held in conjunction with the 52nd annual meeting of the SNM in Toronto, Canada. For anyone who is interested in learning more about CASNM, please visit the CASNM Web site at www.casnm.org.

Joseph C. Hung, PhD
Mayo Clinic
Rochester, MN
C. Oliver Wong, MD, PhD
William Beaumont Hospital
Royal Oak, MI

IASNM Annual Meeting

N early 90 members and guests attended the annual dinner and awards ceremony of the Indo-American Society of Nuclear Medicine (IASNM) at the Passage to India restaurant on June 19 during the annual meeting of the SNM in Philadelphia, PA. The IASNM Gopal Subramanian Life Time Achievement Award 2004 was presented to Dr. Diwakar Jain, a nuclear cardiologist at Drexel University in Philadelphia, PA. As president of the IASNM in 1993, he led a delegation of experts to India and was responsible for a stellar scientific program at that year’s SNM(I) annual meeting.

Travel fellowships were awarded to a physician and a scientist from India to enable their attendance at this year’s SNM meeting. At the IASNM meeting, the best abstract in the clinical sciences category was awarded to Dr. Sandeep Basu from the Radiation Medicine Centre in Bombay, and the best abstract in the basic sciences category was awarded to Dr. Jaya Shukla from the All-India Institute of Medical Sciences in New Delhi. Awards to (Continued on page 53N)
From the SNM President

Toward the end of every annual meeting of the SNM, there is a change of guard. The president of the previous year becomes the immediate past president, and the president-elect takes the helm as the president of this great organization. The president’s responsibility is primarily fiduciary, but he or she must also take care of ongoing issues as well as create new initiatives that may substantially influence the future of the organization and better serve its membership. Twelve months may seem a long time, but in a democratic process that requires one to follow set channels this is a short period in which to bring new initiatives to conclusion and fruition. For example, as president-elect, I initiated the creation of a lifetime membership status in SNM, which is seemingly advantageous both to members and to the Society. It has been approved by the Board of Directors (BOD) at their June 2004 meeting but still requires a bylaws change, review by the membership, and House of Delegates (HOD) approval of revised bylaws before it can be implemented. The next scheduled HOD meeting is not until the SNM Mid-Winter Meeting in January 2005.

During my term as the president-elect, I initiated the National Radionuclide Availability Program. Now, as president I have initiated the Molecular Imaging Task Force and the International Task Force, obtained funds for regularly sending 25 copies of *The Journal of Nuclear Medicine* (*JNM*) to developing countries, and formed a Past Presidents Task Force as a think tank to support certain SNM activities. The initiatives identified through the SNM strategic plan will continue, and work will begin on the new goals identified by the BOD for this year. All these processes take time and effort to bring to fruition. None can be accomplished by one individual. It takes a great deal of input from many experts and a great deal of work from administrative staff. Ours is a voluntary organization. Demands on every expert’s time are extremely heavy. Despite this, I feel fortunate that everyone I have asked to do something within his or her expertise for the SNM cause has not only agreed but also actively contributed toward accomplishing the goal. Our councils and committees are revitalized and have prepared their proactive agendas for the coming year. I am very pleased about this and am grateful to them. The society is composed of its membership, BOD, HOD, committees, councils, and chapters. Every single contribution in any shape or form, every abstract written, every paper published, and every nuclear medicine–related lecture given strengthens our society.

We are continuously improving our educational programs, perhaps one of the primary goals of our organization. The annual meeting in Philadelphia was a great success—socially, professionally and commercially. *JNM*, with an impact factor of 4.899, is now ranked third in the entire range of imaging periodicals. Our PET Learning Center and PET Center of Excellence activities are continuously expanding. As a result of our own efforts and those of other organizations, such as the Academy of Molecular Imaging, comprehensive reimbursement for Alzheimer’s disease is now only a matter of time.

At the SNM annual meeting, the Food and Drug Administration team, led by Dr. George Miller, director of the Center for Drug Evaluation and Research, outlined the revised and modified guidelines for Investigative New Drug applications, Radioactive Drug Research Committees, and a vision for accelerated approval for radiopharmaceuticals. Such approvals invigorate and encourage our industry and provide us with new means for improved patient care and for management of fatal diseases. Immediately after the SNM meeting, on July 2, the FDA announced a long-awaited approval of NeutroSpec (a $^{99m}$Tc murine monoclonal antibody that labels neutrophils in vivo) for imaging appendicitis.

In other news, the National Cancer Institute (NCI) is soliciting proposals for funding from small businesses to design targets to produce novel radionuclides for the creation of radiochemicals. The easier availability of such radionuclides as $^{64}$Cu or $^{124}$I could lead investigators to the development of novel radiopharmaceuticals for PET-based molecular imaging and for therapy. This NCI initiative is highly complementary to the current SNM program for national radionuclide availability and is one result of the joint SNM–NCI workshop held in September 2003. This noteworthy event is highly encouraging.

We must not, however, be self satisfied with these exciting events. We must continue to press on the initiatives we have undertaken and work hard to steer the SNM ship in the right direction in this ocean of competition and complexity.

Mathew Thakur, PhD
SNM President
SNM Leadership Update

SNM Councils

Specialty councils have existed for many years at SNM. Organized around a specific area of practice, councils were established to allow members to concentrate on issues that affect their specialty within the framework of the larger Society. These specialty groups are an ideal framework for developing and offering educational programs, networking events, mentoring activities, paths for information dissemination, and other valuable specialty-specific activities.

In the past year, SNM and its councils have focused on restructuring and rejuvenating the councils to make them an increasingly valuable resource for members. In October 2003, SNM held a retreat at which council leadership could brainstorm ways to maximize the potential benefits provided by the councils, rethink the supporting structure, and participate in strategic planning. Each council subsequently created new goals, bylaws, and standard operating procedures. These have now been approved by the council memberships. In creating these goals and organizing the necessary structure and funding to support them, the councils and their leaders have achieved what we hope will result in a significant enhancement to the benefits of belonging to SNM. It has been a massive effort that has tested and proved the abilities of these excellent leaders.

The councils have created draft business plans and budgets and presented them to the SNM Board of Directors for approval. Not surprisingly, the plans strike some common themes.

Education. A major goal for most of the councils is to continue and expand educational offerings in their specialties with new conference sessions, categorical sessions, continuing medical education courses, workshops, and/or symposia. Exhibits and road shows have been proposed by several councils this year to bring specialized training to professional conferences or to SNM chapters. Many of the councils are looking at innovative ways to provide new educational programs via satellite, Internet, or CD-ROM.

Information. Councils plan to communicate information of value (research developments, professional news, case studies, regulatory information, SNM information) to their members via printed newsletters, e-letters, and other publications as well as through Web sites and communities. All of the councils plan to improve their Web sites with professional news, links, and educational material. The new communities debuted by SNM this year (which include listserv functions and forums) will be actively used for posting and sharing information and for discussion.

Strategic Planning. Councils will focus on strategic planning for their specialty areas, including discussing the future of the profession and planning for that future, evaluating ways to educate members about developments in the profession and train them in new technologies, and planning curricula of study.

Outreach. Several councils plan to increase interaction with related organizations for information sharing and networking. Others will focus on educating regulators about their specialty areas and supporting the Society’s positions on quality assurance, streamlined regulatory processes, and reimbursement.

Awards, Fellowships, Grants. Some of the councils plan to introduce new awards to stimulate participation in the annual meeting or to foster innovation. Others hope to offer new fellowships, scholarships, or grants to subsidize projects and new researchers in their areas of specialization.

Networking. Council membership offers a unique opportunity for networking. Councils will offer educational programs at the annual meeting and elsewhere, opportunities for participation and involvement in council activities, mentoring, and joint activities with parallel organizations.

Structure. Most of the councils have now completed their organizational changes and will concentrate their efforts in the coming year on the activities mentioned. However, the Academic Council will concentrate this year on revitalization. Its vision is to be an “umbrella organization” that contains both the Nuclear Medicine Residency Program directors and the Young Professionals organizations as well as providing a forum for all who are involved or interested in education and early career development of the next generation of nuclear medicine physicians and scientists.

SNM councils include the Academic Council, the Brain Imaging Council, the Cardiovascular Council, the Computer and Instrumentation Council, the Correlative Imaging Council, the Nuclear Oncology Diagnosis and Therapy Council, the Pediatric Imaging Council, and the Radiopharmaceutical Sciences Council.

This process of goal setting and improving the benefits of council membership will continue all year. Several councils have planned surveys to help assess how to better serve their members. Other councils have planned specific activities to reach out to and plan programs for technologists in their specialty areas. Future Leadership Updates will highlight many of the specific programs and activities proposed by the councils.

Virginia Pappas, CAE
Executive Director, SNM
2005 Proposed Physician Fee Schedule Available

The Centers for Medicare & Medicaid Services (CMS) Medicare Program; Revisions to Payment Policies Under the Physician Fee Schedule for Calendar Year 2005 (CMS-1429-P) went on display at the Office of the Federal Register on July 27 and was published in the Federal Register on August 5. The document is available now on the CMS Web site (www.cms.hhs.gov/regulations/pfs/2005/1429p.asp). The comment period on these revisions will close on September 24, and instructions for submission of comments are included on the site. See the SNM Web site (www.snm.org) for specific comments from the Society on revisions that may affect nuclear medicine reimbursement.

Centers for Medicare & Medicaid Services

SNMTS Announces Scholarships

The SNMTS Professional Development and Education Fund (PDEF) announced in July its sponsorship of 2 $5,000 scholarships for technologists in 2005.

The PDEF Mickey Williams Minority Student Scholarship offers assistance for a minority student currently accepted or enrolled in a nuclear medicine technology program at the time of application for the scholarship. The award is open to students in associate and baccalaureate level programs only. Individuals with previous certificates or degrees in nuclear medicine sciences are ineligible. The scholarship honors the memory of Mickey Williams, SNMTS president in 1991.

The PDEF Professional Development Scholarship assists a nuclear medicine technologist in his or her pursuit of a master’s or doctoral degree related to the advancement of a career in nuclear medicine. Scholarship recipients are chosen by a committee that ranks applicants based on financial need, previous academic performance, recommendations, and other factors. Each carries a $5,000 award, and both are funded through the support of the Corporate Friends of the PDEF. Award monies will be available in January 2005.

The SNMTS PDEF supports the advancement and practice of nuclear medicine technology through activities that ensure an adequate supply of qualified nuclear medicine technologists; encourage research studies, publications, and papers in nuclear medicine technology that promote the development of best-practice techniques; advance the educational background of clinical nuclear medicine instructors, practicing nuclear medicine technologists, and those just entering the field; and advance the education and research programs of SNMTS.

Deadline for scholarship application submission is October 15. Complete information and submission forms are available at www.snm.org.

Sokoloff Honored

The Intramural Research Program of the National Institute of Mental Health hosted a reception and dinner on July 10 to honor Louis Sokoloff, MD, chief of the Laboratory of Cerebral Metabolism and its Section on Developmental Neuroscience and a major contributor to the understanding of biochemistry and physiologic function in the central nervous system. Sokoloff received his BA from the University of Pennsylvania College of Arts and Sciences in 1943 and his MD from the university’s school of medicine in 1946. His postdoctoral work focused on general circulatory and cerebral physiology, pharmacology, and metabolism. His laboratory studies the mechanisms responsible for the interactions of cerebral blood flow, energy metabolism, and functional activity. Methods developed in his laboratory to measure local rates of blood flow, glucose utilization, and protein synthesis in laboratory animals have been central to the development and advancement of clinical and research PET imaging. He has received the F.0. Schmitt Medal in Neuroscience (1980), the Albert Lasker Clinical Medical Research Award (1981), the National Academy of Sciences Award in the Neurosciences (1988), and the Ralph Gerard Award of the Society of Neuroscience (1996). Sokoloff was elected to the National Academy of Sciences in 1981 and the Institute of Medicine in 1997.

National Institute of Mental Health

Pinpointing NMT Radiation Exposure

In a report published in a recent issue of Radiation Protection and Dosimetry (2004;109:201–209), R. Smart, from the 500-bed St. George Hospital (Kogarah, Australia) monitored nuclear medicine technologist (NMT) workflow to assess which points in the management of radioactive patients are most likely to result in NMT radiation exposure. NMTs wore dosimeters that measured and recorded dose rates in microsieverts per hour every 32 seconds. The major sources of exposure were associated with transferring incapacitated patients from the imaging table to a gurney, performing difficult injections without syringe shields, and preparing and positioning patients for gated myocardial scans. The average doses to the NMT for each of these procedures are detailed in the article. The author suggests that “staff waiting for assistance with patient transfers stand away from the patient, that tungsten syringe shields be used for all radiopharmaceutical injections, and that a 0.5-mm lead apron be worn when attending patients con-
taining high activities of $^{99m}$Tc radiopharmaceuticals, such as those having myocardial imaging.”

Radiation Protection and Dosimetry

HHS and Health Information Technology Reform Goals

On July 21, U.S. Health and Human Services (HHS) Secretary Tommy G. Thompson released the first report on a 10-year plan to transform the delivery of health care by building a new health information infrastructure, including electronic health records (EHR) and a new network to link health records nationwide. At the same time, he announced a number of new steps to help advance health information technology in the near term. The plan, prepared by the new National Coordinator for Health Information Technology, David J. Brailer, MD, PhD, lays out the broad steps needed to achieve a current, always-available EHR in the United States. EHR systems would also enable physicians and other health professionals to electronically tap into a wealth of treatment information as they care for patients. The report was released in Washington, DC, at a Secretarial Summit on Health Information Technology bringing together the nation’s technology and health leaders.

The report, titled The Decade of Health Information Technology: Delivering Consumer-centric and Information-Rich Health Care, says federal leadership can help hasten efforts to be carried out by the private sector. The report identifies 4 major goals, with strategic action areas for each: (1) inform clinical practice: bring information tools to the point of care, especially by investing in EHR systems in physician offices and hospitals; (2) interconnect clinicians: build an interoperable health information infrastructure, so that records follow the patient and clinicians have access to critical health care information when treatment decisions are being made; (3) personalize care: use health information technology to give consumers more access and involvement in health decisions; and (4) improve population health: expand the capacity for public health monitoring, quality of care measurement, and bring research advances more quickly into medical practice.

In addition, the report identifies potential policy options for providing incentives for EHR adoption, including grants, low-rate loans for EHR adoption, adjustments in Medicare reimbursements, demonstration projects, and “updating federal rules on physician self-referral that may unintentionally restrict investment and networks.” Secretary Thompson announced he would appoint a special leadership panel to assess total costs and benefits of health information technology and report to him by fall 2004. He also announced efforts underway to develop private sector certification for health information technology products. And he said HHS will begin reviewing the feasibility of a private sector consortium to plan and develop a new nationwide network for health information.

Department of Health and Human Services

Biomedical Informatics Symposium Proceedings Available

A symposium on “Biomedical Informatics for Clinical Decision Support: A Vision for the 21st Century” was conducted on June 21–22 at the Natcher Conference Center at the National Institutes of Health (NIH) in Bethesda, MD. The symposium was jointly conducted by the NIH Biomedical Engineering Consortium and the Biomedical Information Science and Technology Consortium. The purpose of the meeting was to identify opportunities, needs, and directions for applying computer science and informatics principles and methods to clinical decision support. Specific areas covered during the meeting included data management (databases and digital libraries), enabling technologies (modeling, software tools, and techniques), and translational informatics. Approximately 400 people attended the symposium. Presentations from all speakers are available at www.becon.nih.gov/symposium2004.htm.

National Institutes of Health

Report on Hospital Deaths from Medical Errors

HealthGrades, Inc., a Lakewood, CO-based health care quality assessment firm, issued a report on July 28 indicating that an average of 195,000 people in the United States died as a result of in-hospital medical errors in each of the years 2000, 2001, and 2002. The study was based on a review of 37 million patient records from across the country. The Patient Safety in American Hospitals study is the first to look at the mortality and economic effects of medical errors and injuries that occurred during Medicare hospital admissions nationwide from 2000 to 2002. The resulting annual number of deaths is more than double the number estimated in the widely read 1999 Institute of Medicine (IOM) report, To Err is Human. “The HealthGrades study shows that the IOM report may have underestimated the number of deaths due to medical errors, and, moreover, that there is little evidence that patient safety has improved in the last 5 years,” said Dr. Samantha Collier, HealthGrades’ vice president of medical affairs. “The equivalent of 390 jumbo jets full of people are dying each year due to likely preventable, in-hospital medical errors, making this one of the leading killers in the U.S.”

HealthGrades examined 16 of the 20 patient safety indicators defined by the Agency for Healthcare Research and Quality (AHRQ), from bedsores to postoperative sepsis, omitting 4 obstetrics-related indicators not represented in the Medicare data used in the study. Of these 16, the mortality associated with 2, failure to rescue and death in low-risk
hospital admissions, accounted for the majority of deaths associated with patient safety incidents. “If we could focus our efforts on just 4 key areas—failure to rescue, bed sores, postoperative sepsis, and postoperative pulmonary embolism—and reduce these incidents by just 20%, we could save 39,000 people from dying every year,” said Dr. Collier.

The complete study, including the list of AHRQ patient-safety indicators, can be accessed at www.healthgrades.com.

_JCAHO Supports Increased Accountability, Opens Public Info Site_

On July 20, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) announced its support of a proposal made that day by Representative Pete Stark (D-CA) and Senator Chuck Grassley (R-IA) to develop legislative language that would make the JCAHO hospital accreditation program specifically accountable to the federal government for deemed status purposes. “We view this as a major opportunity to enhance the longstanding, successful public/private-sector partnership between the Joint Commission and the Centers for Medicare & Medicaid Services (CMS) in overseeing the performance of America’s hospitals,” said Dennis S. O’Leary, MD, president of the JCAHO. “We look forward to working with CMS and the Congress to strengthen the government’s mechanisms for oversight of the Joint Commission.”

For more than 20 years, the Joint Commission has worked with CMS, formerly the Health Care Financing Administration, to assure that federal performance expectations for hospitals are met and to afford the government access to and application of state-of-the-art standards and evaluation methods.

“We are very pleased that CMS acknowledges, in its last 3 reports to Congress, that Joint Commission-accredited hospitals are in compliance with Medicare standards 98% of the time,” O’Leary said. The congressional proposal would, in essence, provide the same deemed status framework for hospitals that exists for other federal deemed status relationships. The JCAHO has 6 other deemed status relationships that are subject to oversight by the secretary of the Department of Health and Human Services. Similar federal deeming relationships with other accrediting bodies exist as well.

During the same week, the JCAHO launched a new Web site for reporting health care information about the quality and safety of care provided in its accredited health care organizations across the country.

Quality Check (www.qualitycheck.org) will provide data to individuals that will permit them to compare local hospitals, home care agencies, nursing homes, laboratories, and ambulatory care organizations with others on state and national bases. For the first time, the JCAHO will provide hospital-specific information about clinical performance in the care of patients with 4 major conditions: heart attack, heart failure, pneumonia, and pregnancy and pregnancy-related conditions. Individuals will also be able to determine how health care organizations compare with other accrediting bodies exist as well.

Joint Commission on Accreditation of Healthcare Organizations

**Alzheimer’s Spending, Numbers Expected to Increase Rapidly**

In little more than a decade, U.S. spending on Alzheimer’s disease (AD) may triple, according to projections made by presenters at the 9th International Conference on Alzheimer’s Disease and Related Disorders, held July 17–22 in Philadelphia, PA. The growth in spending will outpace even the predicted explosion in numbers of individuals affected by the disease. Recent estimates have put the current number of individuals in the United States with AD at 4.5 million, and projections see 11–16 million individuals with AD in 2050. Moreover, several researchers at the annual convention sponsored by the Alzheimer’s Association predicted rising numbers of AD cases in minorities.

“Unless a prevention or cure is found soon, Alzheimer’s disease will overwhelm our already stretched health care system and bankrupt Medicare and Medicaid,” said Sheldon Goldberg, president and CEO of the Alzheimer’s Association. “Medicare expenditures for people with Alzheimer’s are almost 3 times higher than the average for all beneficiaries. And, Medicare spending for beneficiaries with Alzheimer’s will triple between now and 2015, from $62 billion in 2000 to $189 billion in 2015. State and federal Medicaid spending on people with Alzheimer’s disease, for nursing home care only, is estimated to rise from $19 billion in 2000 to $27 billion in 2015.”

Groups of researchers from Duke University (Durham, NC) and the University of Pennsylvania (Philadelphia) reported in 3 studies on rising cost of care for individuals with AD.

Among the most striking findings from the meeting were conclusions offered from research on the rising toll of AD in minority groups in the United States. Clark et al. from the University of Pennsylvania described a study evaluating 119 Latinos and 55 non-Latino AD patients and their families at 5 National Institute on Aging–sponsored AD Centers. They found that the first symptoms of AD began 6.8 years earlier in Latinos compared with non-Latinos, after adjustment for differences in sex and years of education. Unadjusted mean age of onset for the 2 groups was 67.6 (Latino) versus 73.1 (non-Latino) years. AD and related dementias are projected to increase more than 6-fold among Hispanics in...
the United States during the first half of the 21st century, according to a report released earlier this year by the Alzheimer’s Association. This increase means that 1.3 million Hispanics will have AD by 2050, compared with fewer than 200,000 currently living with the disease.

High rates of AD were also identified among African Americans in a study by Laditka et al. of the University of South Carolina at Columbia. South Carolina is the only state to keep a comprehensive database of individuals diagnosed with AD. The research team found that African Americans aged 55–64 years were more than 3 times as likely to have AD as their European American counterparts. At ages 65–84, African Americans were more than twice as likely to have AD. Even over the age of 85 African Americans have an Alzheimer’s rate nearly 1.5 times higher. Marenberg et al. from the University of Pennsylvania School of Medicine, however, cautioned against a tendency to overestimate the number of African Americans with early signs of AD, noting that screening tests must be adapted to cultural differences. The team’s research on a large population indicated that mild cognitive impairment (MCI; increasingly looked to as a precursor for AD) was overdiagnosed in African Americans when using traditional testing methods. “In order to accurately identify African Americans with MCI, we need to develop tools that correct for the fact that many neuropsychological tests are not sensitive to cultural differences,” said Marenberg.

Alzheimer’s Association

DOE Science Education Initiative Launched

Secretary of Energy Spencer Abraham announced on July 8 that the U.S. Department of Energy (DOE) and its national laboratories will launch an initiative to promote science literacy and help develop “the next generation of scientists and engineers.” The initiative will begin with a 7-step program called STARS: Scientists Teaching and Reaching Students. The program is designed to enhance the training of America’s mathematics and science teachers; grow students’ interest in science and math, especially in the critical middle school years; draw attention to the women and men who have contributed to DOE science; and encourage young people and prospective teachers to pursue careers in math and science. “The risks of a scientifically illiterate nation in the 21st century are too great for business as usual,” Secretary Abraham said. “We will work with our partners at the National Science Foundation, the Department of Education and others as we explore new opportunities to attack this challenge.” A number of DOE outreach programs to be coordinated through the national laboratories were outlined and will be directed through a new DOE Office of Science Education.

U.S. Department of Energy

From the Literature

Each month the editor of Newsline selects articles on therapeutic, diagnostic, research, and practice issues in nuclear medicine from a range of international publications. Most selections come from outside the standard canon of nuclear medicine and radiology journals. 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.

Research

Monitoring Angiogenic Gene Therapy

The growing involvement of nuclear medicine tools and techniques in the most innovative areas of medical research is evident in articles published across the spectrum of practice and investigation. Small animal PET in particular promises not only to aid in novel investigations of disease but to provide a means to radically transform the process of validation of imaging techniques and tracers and to revolutionize the process of pharmaceutical trial and development. During 2004, the number of articles published in the medical literature on research applications of small animal PET has more than doubled every quarter.

Of recent note was a study by Wu et al. from the University of California at Los Angeles on the use of microPET in rats to monitor transgene expression and function in angiogenic gene therapy. The results were published ahead of print in Circulation on July 26. An angiogenic gene linked to a PET reporter gene was transected into rat embryonic cardiomyoblasts in vitro and then injected into the left anterior descending artery in rats with sites of previously induced infarction. Small animal PET assessed the uptake of 9-(4-18F-fluorohydroxymethylbutyl)-guanine (18F-FHBG) PET reporter probe by cells expressing the PET reporter gene. Cardiac transgene expression was found to peak at day 1 and decline over the next 2 weeks. Although the angiogenic gene therapy induced significant increases in capillaries and small blood vessels, these results did not yield significant improvements in functional parameters as measured by echocardiography, 13N perfusion, or 18F-FDG PET. The authors concluded that the findings “establish the feasibility of molecular imaging for monitoring angiogenic gene expression with a PET reporter gene and probe noninvasively, quantitatively, and repetitively.” They also noted that the principles demonstrated in this investigation can be translated in studies of other therapeutic genes in animal models before the initiation of clinical trials.

Circulation

Mouse Model Validation of PET in Breast Cancer

In a study e-published ahead of print on July 26 in the Proceedings of
the National Academy of Sciences of the USA, Abbey et al. from the University of California–Davis reported on the use of 18F-FDG PET to monitor the longitudinal development of mammary intraepithelial neoplasia outgrowths in immunocompetent FVN/NJ mice. The study was widely covered in the scientific press and provided evidence suggesting the utility of PET imaging for breast cancer in humans. The neoplasia imaged in the mouse model mimics the progression of breast cancer from premalignant ductal carcinoma in situ to invasive carcinoma. The results of the study not only showed progression of the disease and a correlation with chronic heart failure, changes in cardiac β1-ARs vary and have not previously been imaged or quantified in vivo. As part of the research, 6 pairs of new compounds with the 3-aryloxy-2-propanolamine core of the selective β1-AR ligand, ICI 89,406 (X: CN, Y: H), were synthesized. Each pair consisted of the racemic and the (S)-aryloxypropanolamine derivatives. The comparison of racemic (11a: X: I, 11b: X: 125I, 11c: X: 123I, Y: COOH) with (S)- (15a: X: I, 15b: X: 125I, 15c: X: 123I, Y: COOH) compounds indicated that the (S)-enantionomer should improve the feasibility of SPECT imaging of β1-AR density noninvasively. Biodistribution and metabolism studies in rats indicated that there is a specific heart uptake of 11b-c and especially 15b-c accompanied by rapid metabolism of the radioligands, so that radioiodinated 11c and 15c appeared to be unpromising SPECT radioligands for assessing β1-ARs in vivo in the rat. The authors noted that the rat may metabolize β1-AR ligands more rapidly than other species (as has been demonstrated for a structurally related radioligand) and called for studies in a different animal model.

Bioorganic and Medicinal Chemistry

Diagnosis

PET in FUO Work-Up

Buysschaert et al. from the University Hospital Gasthuisberg (Louvain, Belgium) reported in the June 15 issue of the European Journal of Internal Medicine (2004;15:151–156) on the use of 18F-FDG PET in evaluating patients with fever of unknown origin (FUO). The study included 74 patients who underwent PET imaging after meeting the criteria for classic FUO. Scanning results were evaluated against the results of additional diagnostic tests and follow-up, where a final diagnosis was established (39 [53%] patients). Abnormal scans were categorized as helpful (if pointing toward the final diagnosis) or noncontributory (all other scans). For the 74 patients imaged, PET scans were abnormal in 53 (72%). Of these, 19 scans (36% of abnormal scans and 26% of all scans) were helpful. In the group in whom final diagnoses were established, 49% of scans were helpful. 18F-FDG PET contributed positively to the diagnosis in a quarter of all patients undergoing work-up for FUO. The authors commented that, “against the background of the wide array of heterogeneous disorders that make up the FUO spectrum and the low number of final diagnoses established (in only 53% of cases), the diagnostic yield of FDG-PET is encouraging” and should be considered whenever a baseline work-up fails to reveal the cause of a prolonged, febrile illness.

Another note on PET in FUO appeared in July in the American Journal of Hematology (2004;76:236–239). Hoshino et al. from the Gunma University Hospital (Japan) reported on the use of PET to diagnose a case of intra-vascular lymphomatosis (IVL) that was categorized on presentation as FUO. IVL is a relatively rare systemic disease in which diagnosis is often made only when the illness has progressed or at post mortem analysis. Both 67Ga scintigraphy and CT were normal in the patient, but 18F-FDG PET revealed increased uptake in the sternum, left and right vertebra, humerus, femur, and the ilium. A definitive diagnosis was made after iliac bone marrow biopsy.

European Journal of Internal Medicine

American Journal of Hematology
PET and Recurrent Cervical Cancer

In a study published in the July issue of Gynecologic Oncology (2004; 94:212–216), Unger et al. from the Louisiana State University Health Sciences Center (Shreveport) reported on the use 18F-FDG PET in detection of recurrent cervical cancer in both asymptomatic and symptomatic women. The retrospective study included 44 women who had been treated previously for cervical cancer and who underwent a total of 47 whole-body PET scans to detect recurrent disease. Of these scans, 26 were performed in asymptomatic women and 21 were performed in women with symptoms suggesting recurrent disease. PET imaging showed recurrent disease in 30.8% of asymptomatic women and 66.7% of women with symptoms. The authors found that sensitivity and specificity of PET for recurrent disease were 80% and 100%, respectively, in asymptomatic women and 100% and 85.7%, respectively, in symptomatic women. The authors concluded that “whole-body FDG PET scan is a sensitive imaging modality for the detection of recurrent cervical carcinoma in both symptomatic and asymptomatic women.”

Gynecologic Oncology

15O-Water PET and Marathon Running

Kallikoski et al. from the University of Turku (Finland) reported in the August issue of the Scandinavian Journal of Medicine and Science in Sports (2004;14:208–214) on a study designed to assess the effects of marathon running on cardiac function and myocardial perfusion. Each of 7 endurance-trained men underwent echocardiography and 15O-water PET imaging before running a 42.2-km marathon. Echocardiography was repeated at 10 and 150 minutes and 20 hours after completion of the race, and PET imaging was repeated at 85–115 minutes after running. Echocardiography showed only mild, clinically non-significant changes in cardiac function after running. Rate-pressure-corrected basal myocardial perfusion was increased after running. Adenosine-stimulated perfusion was somewhat higher and perfusion resistance during adenosine stimulation was significantly lower after running. Plasma free fatty acid (FFA) concentration was significantly increased after running. The authors concluded that these “results show that marathon running does not cause marked changes in cardiac function in healthy men” and that “strenuous exercise also seems to enhance coronary reactivity, which could thereby serve as a protective mechanism to vascular events after exercise.”

Scandinavian Journal of Medicine and Science in Sports

PET and Conventional Imaging in Metastatic Melanoma

In a study e-published ahead of print on July 12 in the Annals of Surgical Oncology, Finkelstein et al. from the National Cancer Institute (Bethesda, MD) reported on a study comparing PET and CT or MR imaging in the detection of stage IV metastatic melanoma in patients scheduled to undergo metastasectomy for palliation or cure. The study included 18 patients who underwent CT or MR and 18F-FDG PET imaging, followed by metastasectomy and serial postoperative evaluations. Independent observers performed separate analyses of CT or MR alone, PET alone, or PET read with knowledge of the CT or MR results. Results of these analyses were compared with clinical outcomes and subsequent evaluations. A total of 94 lesions were noted in the 18 patients. Lesion-by-lesion analysis showed sensitivity, specificity, positive predictive value, and negative predictive values of 76%, 87%, 86%, and 76%, respectively, for CT or MR imaging; 79%, 87%, 86%, and 80%, respectively, for PET alone; and 88%, 91%, 91%, 88%, respectively for PET plus CT or MR imaging. The authors concluded that these results indicate that a combined use of 18F-FDG PET and conventional imaging may be “an accurate strategy to identify sites of disease in patients with stage IV melanoma being considered for metastasectomy.”

Annals of Surgical Oncology

PET in Gallbladder Cancer

To counter difficulties in differentiation of gallbladder cancer from cholecystitis or choledocholithiasis, Rodriguez-Fernandez et al. from the Virgen de las Nieves University Hospital (Granada, Spain) explored the presurgical use of 18F-FDG PET in diagnosing gallbladder lesions. The results were published in the August issue of the American Journal of Surgery (2004;188:171–175). The study included 16 patients with clinical symptoms suggesting biliary colic or chronic cholecystitis in whom CT and ultrasound findings were inconclusive for the presence of cancer. All patients underwent 18F-FDG PET imaging, with a sensitivity of 80%, specificity of 82%, and positive and negative predictive values of 67% and 90%, respectively, for gallbladder cancer. The authors concluded that 18F-FDG PET “may be of utility to establish the diagnosis of gallbladder cancer in patients with nonspecific clinical and imaging findings.”

American Journal of Surgery

Metabolic Bases of Impairment in Cocaine and Alcohol Addiction

The research group at Brookhaven National Laboratory (Upton, NY) continues to publish groundbreaking studies illuminating the functional and physiologic mechanisms underlying a range of addictions and associated symptoms and behaviors. Goldstein et al. reported in a recent issue of Neuropsychologia (2004;42:1447–1458) on a study exploring the severity of neuropsychological impairment in 42 crack/cocaine-addicted individ-
Marrow $^{18}$F-FDG Uptake in Hodgkin’s Lymphoma

Elmstrom et al. from the University of Pennsylvania Medical Center (Philadelphia) reported in the June issue of Clinical Lymphoma (2004;5:62–64) on a case in which a woman with Hodgkin’s lymphoma was imaged with $^{18}$F-FDG PET for staging. Marked tracer uptake by tumor and bone marrow initially suggested diffuse marrow involvement of lymphoma. However, iliac crest bone marrow examination showed marked myeloid hyperplasia without evidence of lymphoma. The authors discussed the implications for interpretation of PET imaging of bone marrow in staging and treatment assessment in lymphomas.

Clinical Lymphoma

Early Diagnosis of Progressive Supranuclear Palsy

Mishina et al. from the Nippon Medical School Chiba-Hokusoh Hospital (Japan) reported in the August issue of Acta Neurologica Scandinavica (2004;110:128–135) on the use of $^{18}$F-FDG PET in the diagnosis of progressive supranuclear palsy (PSP), which is often misdiagnosed in its earliest manifestations. The study included 15 patients with diagnoses of PSP and 16 healthy individuals. All individuals underwent PET imaging. Glucose metabolism in the midbrain was found to be significantly lower in the PSP patients than in the control subjects, but these findings did not correlate with clinical deterioration as measured by traditional evaluation standards. Statistical maps clearly demonstrated hypometabolism in the midbrain in PSP patients, which the authors called “a most promising sign for early diagnosis of PSP.”

Acta Neurologica Scandinavica

Amino Acid Infusion Effects in Peptide Radiotherapy

In a study e-published ahead of print on July 13 in Nephrology, Dialysis, Transplantation, Barone et al. from the University of Louvain Medical School (Brussels, Belgium) reported on a PET study investigating the metabolic effects associated with the infusion of large amounts of amino acids, a technique that is used for reduction of renal uptake during peptide radiotherapy for neuroendocrine tumors. The study included 24 patients, divided into 4 groups of 6. All received a 4-hour infusion of 120 g of mixed amino acids, and 1 group received a 4-hour infusion of 50 g of l-lysine, a second group received a 10-hour infusion of 240 g of mixed amino acids; a third group received a 4-hour infusion of 50 g of l-lysine + l-arginine; and 1 group received no additional infusion. All underwent underwent $^{86}$Y-DOTA(0)-D-Phe(1)-Tyr(3)-octreotide imaging. No clinical side effects occurred during the infusions except for nausea and vomiting in the mixed amino acid group, which also showed an increase in serum urea. Varied alterations in serum potassium, chloride, and inorganic phosphate levels were noted in all groups except the controls. The authors concluded that “although infusion of AA solutions can improve the effect of therapy by allowing the administration of higher doses of radio-labeled somatostatin analogues, each preparation has specific sides effects that should be taken into account with this type of therapy.”

Nephrology, Dialysis, Transplantation

Complete RCC Response to Semaxanib

Jennens et al. from the Royal Melbourne Hospital (Parkville, Australia) reported in the May–June issue of Urologic Oncology (2004;22:193–196) on a case in which SU5416 (semaxanib) treatment of probable von Hippel-Lindau syndrome and metastatic renal cell cancer (RCC) resulted in a complete radiological and metabolic response. SU5416 is a small-molecule inhibitor of vascular endothelial growth factor (VEGF) receptors. The patient was enrolled in a clinical trial examining the efficacy of 145 mg/m$^2$ SU5416 administered twice weekly for 5 weeks to patients with metastatic cancer. $^{18}$F-FDG showed an early metabolic response in the patient after 2 weeks of treatment, and subsequent PET (at 9 months after therapy) and CT (at 12 months after therapy) showed ongoing complete radiologic and metabolic response. The patient remained tumor free 18 months after treatment. The authors called for additional
studies using VEGF inhibitors in patients with von Hippel-Landau syndrome and RCC.

Urologic Oncology

Functional Imaging and Radiotherapy Planning

In a study published in the June issue of Medical Physics (2004;31: 1452–1461), Das et al. from Duke University (Durham, NC) reported on an investigation of the dosimetric feasibility of delivering radiotherapy doses to lung tumors in proportion to 18F-FDG activity measured in tumors on PET. The fact that FDG uptake is correlated with tumor cell proliferation rate, the authors reasoned, implies that this dose delivery strategy is theoretically capable of providing the same duration of local control at all voxels in tumor. Preliminary work with target dose-delivery calculations based on SPECT maps of normal lung perfusion was outlined and additional considerations described. An intensity modulation optimization methodology was developed to deliver the calculated doses and applied to 2 patients with lung cancer. Dose-volume histograms from the nonuniform dose prescription (18F-FDG PET derived) with those from a uniform dose prescription with equivalent tumor integral dose. Although the optimization methodology was capable of delivering the nonuniform target prescription as easily as the uniform target prescription, in 1 patient the critical structure dosage from the nonuniform dose prescription exceeded dose-volume/function limits and greatly exceeded that from the uniform dose prescription. Adhering to these limits in practice would theoretically entail reduction of the duration of local control. The authors concluded that “even though it appears feasible to tailor lung tumors dose to the FDG-PET activity distribution. . .strict adherence to dose-volume/function limits could compromise the effectiveness of functional image guided radiotherapy.”

Medical Physics

From the SNM Annual Meeting (Continued from page 16N)

Bexxar therapy, all patients showed a response, with 83% showing a complete response. Seventy-two percent of all patients treated are still in complete remission 4.4 years later. Kostakoglu noted that “the results are very encouraging. We feel that further evaluation of the addition of RIT to chemotherapeutic regimens for patients with follicular lymphoma is warranted. This may be the future of RIT to chemotherapeutic regimens for patients with follicular lymphoma.”

The use of radiotracers in gene therapy is among the most rapidly growing areas in medical research. Lee et al. from the Case Western Reserve University (Cleveland, OH), the Thomas Jefferson National Accelerator Facility (Newport News, VA) and the University of Virginia (Charlottesville) reported on small animal 125I-FIAU imaging of the expression of the HSV1-tk delivered into cystic fibrosis (CF) knockout mice. The authors had previously reported on in vivo imaging of radiolabeled DNA complexes containing the therapeutic CF transmembrane conductance regulator gene and monitored its distribution in transgenic CF mice. The HSV1-tk in the current study was delivered in the same fashion. In this study, a custom-built imaging system included both x-ray and planar gamma scintigraphy. The authors found that x-ray images of the mice were readily aligned with scintigraphic images and that radioactivities detected on day 2 indicated that new genetic material was being expressed in the lungs of the mice. According to Lee, “Although the results are preliminary, they are extremely encouraging.”

de Hevesy Award (Continued from page 36N)

Alavi’s contributions to nuclear medicine extend well beyond his own research. He and his wife, Dr. Jane Alavi, have been long-time supporters of educational and research opportunities for students in nuclear medicine. Their names are associated with the Alavi–Mandell Awards, which recognize trainees and young scientists who publish articles as senior authors in The Journal of Nuclear Medicine. Their generosity also supports the Pilot Research Grants and the Bradley–Alavi Student Fellowship Awards funded by the Education and Research Foundation (ERF) of the SNM. The Alavis not only continue to contribute to the foundation but are active in persuading other colleagues to join them in their support of these important endeavors. Most recently, Abass donated time, energy, and funds to his country of origin, Iran, by assisting physicians and scientists from that country in developing a PET center. He is similarly generous with his time: he serves on the Society’s ERF board of directors and is also involved in numerous SNM activities.

“I am honored that I was selected by the Society of Nuclear Medicine for such a distinction,” said Alavi. “I share this recognition with my family, my mentors, and with so many students with whom I have worked over the past 3 decades. This is truly a highlight of my career.”
Kuhl–Lassen Award  (Continued from page 38N)

study,” said Devous in accepting the award. “I can’t imagine a more interesting career, unless as a poet, than to be part of the effort to unravel one of the last great mysteries of biology—the intersection between thought and the physical functioning of the brain.”

Devous received his undergraduate degree from Washington University in 1970 and earned his doctorate in nuclear chemistry and physics from Texas A&M University in 1976. Among his awards and honors are the SNM Presidential Distinguished Service Award (1997), the Award of Merit from the Hong Kong Society of Nuclear Medicine (1997), and the Charles A. Dana Foundation award (2001). His wide-ranging investigations include the role of functional brain imaging in exploring the biology of psychiatric and neurologic disorders as well as in understanding brain function and central nervous system pathology in animal models. His work with functional brain imaging has included foci on mood disorders, deafness and speech disorders, substance abuse, bipolar disorders, dementia, schizophrenia, anxiety disorders, head trauma, epilepsy, and stroke.

Previous recipients of the Kuhl–Lassen award include 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, director of the National Institute of Drug Abuse; Albert H. Gjedde, DSc, MD, Aarhus University, Denmark; Marcus E. Raichle, MD, Washington University; and Louis Sokoloff, MD, National Institute of Mental Health.

Tetalman Award  (Continued from page 38N)

Science Award given by the Nuclear Medical Imaging and Sciences Technical Committee of the Institute of Electrical and Electronics Engineers and the Varian Prize awarded by the Swiss Society of Radiobiology and Medical Physics. He is a member of the editorial boards of a number of Scientific journals. He is the editor of 2 textbooks on therapeutic applications of Monte Carlo calculations in nuclear medicine and quantitative analysis in nuclear medicine imaging. He recently joined the Computed Imaging for Medical Imaging collaboration hosted by CERN to work on novel design of high-resolution, parallax-free Compton-enhanced PET scanners.

IASNM  (Continued from page 40N)

young investigators of Indian origin working in the United States went to Dr. Rakesh Kumar from the University of Pennsylvania for best abstract in clinical science and to Dr. S. Vemulapalli from Duke University for best abstract in basic science.

The relationship between the IASNM and SNM(I) is growing, and IASNM is building a relationship between the SNM and the SNM(I). An important milestone for Indians in North America was the assumption of the presidency of the SNM by a person of Indian origin, Mathew Thakur, PhD, has contributed significantly to the field, not least with his development of white cell labeling techniques. To commemorate Mathew’s presidency, we plan a strong presence in India at the annual meeting of the SNM(I), December 15–18, in Mysore. A number of speakers, including Drs. Tom Miller of Washington University (chair of the SNM Scientific Committee), Steve Larson of Memorial Sloan–Kettering Cancer Center (a director of the American Board of Nuclear Medicine), and Alexander McEwan from the Cross Cancer Institute (president of the Nuclear Oncology Council) have agreed to participate. The SNM(I) has graciously drawn up a program that will feature keynote lectures by these speakers. A finalized list of speakers and topics will be available shortly.

During the past year, the IASNM has taken several steps toward strengthening the organization and expanding its services. The Web site (www.iasnm.org) is fully functional and updated regularly. Jim Strommer at the University of California at Los Angeles has provided valuable assistance in maintaining the site.

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Errata

In the August issue of Newsline, page 20N, Suzuki et al. from the Jikei University School of Medicine (Japan) should have been listed as the authors of the study on differentiation of Parkinson’s disease from dementia with Lewy bodies discussed in the text and presented in Figure 13.

In the same issue, page 37N, the text should have indicated that “83 FDA-approved RDRCs conducted 280 studies” in 2002.