SNM Members Appointed to National Academy of Sciences Committee to Review State of Nuclear Medicine

Peter S. Conti, immediate past president of both SNM and the PET Center of Excellence, and a number of other SNM members were recently named to the National Academy of Sciences (NAS) ad hoc committee of experts to review the “state of the science” for nuclear medicine.

“The 13-month $700,000 study will provide the opportunity to validate the importance of basic nuclear medicine research,” said Conti, a professor of radiology, pharmacy and biomedical engineering at the University of Southern California, Los Angeles. “Nuclear medicine research has a proven record of leading to improvements—from bench to bedside—in the diagnosis and treatment of life-threatening cancer and debilitating heart and neurological diseases that affect millions each year.”

The study, which will be funded by the Department of Energy (DOE) and National Institutes of Health (NIH), was prompted by a $23 million cut in funding from DOE’s 2006 fiscal year budget, effectively eliminating all money for basic nuclear medicine and molecular imaging research. Basic molecular imaging/nuclear medicine research has been funded by the DOE since biomedical research was initially included in the Atomic Energy Act of 1954. (The Atomic Energy Commission was DOE’s predecessor.) The study is expected to provide findings and recommendations on the following issues:

- Future needs for radiopharmaceutical development for the diagnosis and treatment of human disease;
- Future needs for computational and instrument development for more precise localization of radiotracers in normal and aberrant cell physiologies;
- National impediments to the efficient entry of promising new radiopharmaceuticals.

(Continued on page 2. See NASC.)
6. Always bill separately for the PET radiopharmaceutical. Historically, payers bundled payment for PET radiopharmaceuticals with the PET procedure when billing with G codes. After the transition to CPT codes, most Medicare contractors set payment rates for radiopharmaceuticals separate from the procedures. There are a few states such as Florida that continue to bundle payment for FDG; stay tuned, as this is likely to change.

7. Know your technology. What is the difference between a PET scan and a CT scan versus a PET/CT on an integrated system? The codes will change based on the type of equipment used and how and when the scan was acquired.

8. Know the important modifiers for PET procedures. For example, “59” identifies a diagnostic CT on the same day as a PET or PET/CT scan, and the “QR” modifier is for NOPR patients.

9. For cardiac PET imaging, providers cannot use the wall motion and ejection fraction codes used with SPECT procedures. Instead, consider using “CPT 78499, unlisted nuclear medicine cardiac procedures.”

10. For FDG tumor brain imaging use CPT 78608, not the more general PET tumor codes CPT 78811-78816. As with any nuclear medicine coding, always use organ-specific coding if available.

With so many questions in the PET community’s mind about how to correctly code PET procedures, the SNM Coding and Reimbursement Workgroup set out to answer over 25 common questions and answers. Logged-in SNM members and Coding Corner members can access SNM’s newly updated PET and PET/CT Q & A at www.snm.org—click PRACTICE MANAGEMENT, then CODING CORNER.

So how does a PET facility get the details on the 10 important issues listed above and keep pace with all these and future changes? PET facilities should obtain and keep current a library of important resources for PET. Additionally, they should check frequently with CMS and their professional societies for changes and updates to any of these documents. The following list of references should be considered staples in any PET facility billing department.

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**PET Coding Resources**

- **Medicare National Coverage Determinations Manual Section 220.6**

- **Medicare Claims Processing Manual, Chapter 13 Radiology and other Diagnostic Procedures**

- **CMS Medical Learning Network MLN Matters Expanded Coverage for PET Scans MM 3741**

- **National Listing of all NCD’s, and LCD’s**
  - www.cms.gov/ncd/search.asp

- **CMS Radiopharmaceutical Transmittals**
  - Hospitals Transmittal 822 CR 4270
  - Physician offices Transmittal 923 CR 5054

- **SNM, Practice Management, Coding Corner, PET Facilities**

- **SNM PET Coding Educational Materials**

- **National Oncologic PET Registry**
  - www.cancerPETregistry.org

- **Medicare Transmittal 956 CR 5124**

- **MLM Matters MM5124**

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(Coding. Continued from page 1.)
<table>
<thead>
<tr>
<th>CPT/HCPCS Code</th>
<th>Code Description</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>78459</td>
<td>Myocardial imaging, positron emission tomography (PET), metabolic evaluation</td>
<td>$^{18}$F FDG used for myocardial viability</td>
</tr>
</tbody>
</table>
| 78491          | Myocardial imaging, positron emission tomography (PET), perfusion, single study at rest or stress  
(If applicable, bill separately for stress procedure CPT 93015-18 and stress agent, J0152, J1245, or J1250.) | $^{82}$Rb or $^{13}$N single study |
| 78492          | Myocardial imaging, positron emission tomography (PET), perfusion, multiple studies at rest and/or stress  
(Bill separately for stress procedure CPT 93015-18 and stress agent, J0152, J1245, or J1250.) | $^{82}$Rb or $^{13}$N multiple studies, rest & stress |
| 78608          | Brain imaging, positron emission tomography (PET); metabolic evaluation | $^{18}$F FDG used for brain tumor, Alzheimer or dementia |
| 78609          | Brain imaging, positron emission tomography (PET); perfusion evaluation | Medicare noncovered service |
| 78811          | Tumor imaging, positron emission tomography (PET); limited area (e.g., chest, head/neck) | $^{18}$F FDG used for tumor imaging of a single area |
| 78812          | Tumor imaging, positron emission tomography (PET); skull base to mid thigh | $^{18}$F FDG used for tumor imaging of skull base to mid thigh |
| 78813          | Tumor imaging, positron emission tomography (PET); whole body | $^{18}$F FDG used for tumor imaging of whole body |
| 78814          | Tumor imaging, positron emission tomography (PET) with concurrently acquired computed tomography (CT) for attenuation correction and anatomical localization; limited area (e.g., chest, head/neck) | $^{18}$F FDG used for tumor imaging of a single area |
| 78815          | Tumor imaging, positron emission tomography (PET) with concurrently acquired computed tomography (CT) for attenuation correction and anatomical localization; skull base to mid thigh | $^{18}$F FDG used for tumor imaging of skull base to mid thigh |
| 78816          | Tumor imaging, positron emission tomography (PET) with concurrently acquired computed tomography (CT) for attenuation correction and anatomical localization; whole body | $^{18}$F FDG used for tumor imaging of whole body |
| QR modifier    | Item or service provided in a Medicare specified study | Use for NOPR studies |
| V70.7 ICD 9 CM | Examination of participant in clinical trial  
(place in second diagnosis position on UB claim form) | Used by hospitals only for NOPR studies |
| G0219          | PET imaging, whole body; melanoma for non-covered indications | Medicare noncovered service |
| G0235          | PET imaging, any site not otherwise specified | Medicare noncovered service |
| G0252          | Initial diagnosis of breast cancer and/or surgical planning for breast cancer (e.g., initial staging of axillary lymph nodes), not covered (full- and partial-ring PET scanners only) | Medicare noncovered service |
| A9526          | Nitrogen ($^{15}$N) ammonia, diagnostic, per study dose, up to 40 millicuries | If two studies, rest and stress, bill two units |
| A9552          | Fluorodeoxyglucose ($^{18}$F) FDG, diagnostic, per study dose, up to 45 millicuries | $^{18}$F FDG used for a variety of PET procedures |
| A9555          | Rubidium ($^{82}$Rb), diagnostic, per study dose, up to 60 millicuries | If two studies, rest and stress, bill two units |
Below we present a small sample of some interesting articles that were recently turned up by the PCOE Newsletter’s search engine as it mined the Internet for mentions of positron emission tomography. Click the headline to read the full story.

AnaSpec Provides Vital Stains for Amyloid Imaging
Newswire Today, August 8, London, UK
When used in combination with PET or SPECT, amyloid-imaging tracers can facilitate the evaluation of the efficacy of anti-amyloid therapies. …

Siemens Completes Acquisition of Diagnostic Products Corporation; When Pending Acquisition of Bayer Diagnostics is Complete, Siemens Medical Solutions will be the First Full Service Diagnostics Company
Business Wire, July 27, Erlangen, Germany and Los Angeles, CA USA
Siemens announced today that it has completed its acquisition of Diagnostic Products Corporation (NYSE:DP), marking a significant milestone for Siemens as it enters the in-vitro diagnostics (IVD) market. …

Schering in Alzheimer’s Diagnosis Pact with Avid
Reuters, July 14, Frankfurt, Germany
German drugmaker Schering will work with U.S. firm Avid Radiopharmaceuticals to develop new diagnostic imaging agents for Alzheimer’s disease. …

Bayer Divests Diagnostics to Siemens; Eases Impact of Schering Acquisition
domain-B, June 30, India
Siemens AG will acquire Bayer HealthCare Diagnostics Division, a member of the Bayer Group, for around €4.2 billion. The acquisition will enable Siemens Medical Solutions to expand its position in the high-growth molecular diagnostics market. …

GE Healthcare to Set Up India’s First Radiopharmacy Center in Delhi
Chemie.de, June 26, Germany
GE Healthcare announced that it is setting up India’s first radiopharmacy center in the national capital, Delhi. …

CHOP-R Followed by Zevalin®/Rituxan® Promising for Previously Untreated Follicular NHL
Cancer Consultants, June 12, Memphis, TN, USA
Results from a phase II trial reported that CHOP-R followed by Zevalin (90Y ibritumomab tiuxetan) and Rituxan (rituximab) provides high complete response rates and encouraging progression-free survival as initial treatment of follicular non-Hodgkin’s lymphoma. …

Students Raise Money to Fight Cancer
Wetaskiwin Times Advertiser, July 24, Alberta, Canada
In just two weeks, more than $27,000 in pledges was raised at Sacred Heart School to fight cancer. The money is destined for the whole-body PET scanner housed at the Cross Cancer Institute in Edmonton. …

The review experts are expected to solicit briefings from several quarters: from DOE, NIH, the Office of Management and Budget, and congressional staff on the study charge and expectations for the final report; from subject matter experts on trends, needs, and opportunities in nuclear medicine research, isotope production, and shortages in trained personnel; from DOE staff and selected investigators on the Medical Applications and Measurement Science program; and from NIH staff and selected investigators on radiotracer and radiopharmaceutical needs for research and clinical practice.
PET/CT Case: Breast Cancer

This 77-year-old woman had a history of right radical mastectomy for ductal carcinoma 16 years earlier. Four years ago she presented with metastatic breast carcinoma in a right neck lymph node, for which she received hormonal therapy. An adenocarcinoma in the bladder was recently discovered and a cystectomy was suggested. A PET/CT was ordered for additional staging information and restaging of the breast cancer.

The PET/CT showed uptake in a subcarinal lymph node and a left lung nodule (Fig. 1, arrowheads). Tracer uptake was also present in three right inguinal lymph nodes (Figs. 1 and 2, gray arrows) and a left iliac lymph node (Figs. 1 and 3, white arrows). The right inguinal adenopathy had not been detected clinically. An ultrasound-guided, right inguinal lymph node biopsy showed a poorly differentiated adenocarcinoma which immunostains indicated was of breast origin. The histology was identical to the prior bladder lesion, and immunostains were obtained from the bladder specimen showing it represented a breast metastasis.

How Did PET/CT Imaging Help?

PET/CT demonstrated abnormal right inguinal nodes, that, when biopsied, lead to the diagnosis of metastatic breast cancer alone, rather than an additional primary cancer in the bladder. Inappropriate treatment was therefore avoided.

Recent studies have shown the utility of PET for staging and restaging women with breast carcinoma (1,2).

References
PET in the Literature

Cardiology

Abnormal accumulation of [18F]fluorodeoxyglucose in the aortic wall related to inflammatory changes: three case reports. (16878709)

General Clinical Practice
Chapter 3: The hypothalamus, hormones, and hunger: alterations in human obesity and illness. (16876568)
Goldstone AP. Prog Brain Res. 2006;153:57–73.

Contribution of monoamine oxidase (MAO) inhibition to tobacco and alcohol addiction. (1684739)

Instrumentation & Data
Deformable and rigid registration of MRI and microPET images for photodynamic therapy of cancer in mice. (16878577)

[Evaluation of the performance of a gamma camera equipped with a 5/8” versus 1” thick NaI detector]. (16875026)

Molecular Imaging
A new predictive and prognostic marker (ATP bioluminescence and positron emission tomography) in vivo and in vitro for delivering adjuvant treatment plan to invasive breast tumor patients. (16860527)

Stem cells: a regenerative pharmaceutical. (16868534)

Neurology
Net influx of plasma 6-[F]fluoro-l-DOPA (FDOPA) to the ventral striatum correlates with prefrontal processing of affective stimuli. (16882026)


Oncology
F-fluorodeoxyglucose-positron emission tomography in evaluation of primary cutaneous lymphoma. (16882175)

Increased 18F-FDG Uptake in Degenerative Disease of the Spine: Characterization with 18F-FDG PET/CT. (16883005)

Radiopharmacology
Tissue Distribution of 18F-FDG-Labeled Peripheral Hematopoietic Stem Cells After Intracoronary Administration in Patients with Myocardial Infarction. (16883008)

Imaging Prostate Cancer with 11C-Choline PET/CT. (16883001)
Coming Soon: 3-D Imaging That Flies “Through” and “Around” Cancer

Released: July 12, 2006

Stanford University Pilot Study Demonstrates Feasibility of 3-D PET/CT Images’ “Omnipotent Perspective” to Visualize, Diagnose Cancer and Heart Disease, Says Article in July Journal of Nuclear Medicine

RESTON, VA—Stanford University researchers demonstrated for the first time the ability to create 3-D positron emission tomography (PET)/computed tomography (CT) images for “fly-through” and “fly-around viewing” of cancer in the lungs and colon, according to a study in the July issue of The Journal of Nuclear Medicine.

“Three-dimensional fusion provides unique views of the body that internal organs typically impede,” said Quon. “Our new imaging and processing protocol can peel away the organs, highlight tumors and detect cancerous ‘hot spots’—providing an omnipotent perspective of the body,” he indicated. Stanford’s 3-D fusion imaging “appears to have potential for presurgical visualization, particularly in guiding biopsies,” explained the coauthor of “Flying Through” and ‘Flying Around’ a PET/CT Scan: Pilot Study and Development of 3-D Integrated 18F-FDG PET/CT for Virtual Bronchoscopy and Colonoscopy.” This imaging technique “may add important diagnostic information that may herald new applications for the use of PET/CT,” he noted. In addition, its diagnostic value was demonstrated in one case in which it revealed a cancer lesion that had not been detected by PET, CT or PET/CT imaging. “This case one shows the potential synergistic enhancement of both PET and CT when rendered into three dimensions,” said Quon. …

Is Being Overweight All in the Brain?

Released: June 5, 2006

PET Study Links Obesity to Serotonin Receptor, Suggesting Possibility of Curbing Appetite with Future Drugs

SAN DIEGO, CA—By using positron emission tomography (PET) to study the brain’s neurotransmitters in relation to obesity, scientists may be getting closer to determining important information about the neurobiological mechanisms involved, according to a group of Danish researchers.

“From our molecular imaging research, we have discovered that overweight people have more of a certain type of serotonin receptor (the so-called 5-HT2A receptor) in their brains,” said David Erritzoe, research fellow with the Neurobiology Research Unit and Center for Integrated Molecular Brain Imaging in Copenhagen, Denmark. Serotonin is a chemical compound in the brain involved in the regulation of many functions, including appetite, sleep and emotions, he added. “This relationship suggests that

Annual Meeting Research Abstracts Available Online

All of the June press release excerpts below describe research presented at the 53rd SNM Annual Meeting, held June 3-7 in San Diego, CA. Each headline links to the full press release on the SNM Web site or you may view all SNM press releases in the NEWS CENTER at www.snm.org. Abstracts of the research presentations may be viewed online at The Journal of Nuclear Medicine Web site at http://jnm.snmjournals.org.
the 5-HT2A receptor is crucially involved in regulation of body weight and that the receptor should be exploited as a target for regulation of appetite,” said Erritzoe, co-author of “Overweight Associated With Increased Serotonin 2A Receptor Binding in Humans,” the first study to examine links between the 5-HT2A receptor and body weight. …

PET scans were performed on 76 healthy humans, of whom 47 were normal weight (body mass index between 19.2 and 24.9) and 29 were overweight (BMI between 25.1 and 34.7). “The relationship between the brain’s 5-HT2A receptors and body weight will prompt further investigation to explore whether this is a trait or rather a state marker of obesity,” said Erritzoe. “Our study emphasizes the importance of conducting large-scale PET studies in healthy people to address complex questions with molecular brain imaging,” he indicated. …

PET/CT Offers “Superior” View of Atherosclerosis Plaque, May Be Used to Identify Those at High Risk for Heart Attack, Stroke
Released: June 5, 2006

Massachusetts General Hospital Researchers Release Findings About Plaque Inflammation
SAN DIEGO, CA—Positron emission tomography (PET) in combination with computed tomography (CT) offers a “superior” view of atherosclerosis plaque inflammation—so much so that it may eventually be used to identify individuals who are at high risk for heart attack or stroke, according to researchers at Massachusetts General Hospital in Boston. …

“The future is using PET/CT—and other developing technologies—to assess plaques that are biologically active with deadly consequences when they misbehave,” said Ahmed Tawakol, cardiologist and co-director of the Cardiac MR/PET/CT Program at Massachusetts General Hospital. “PET/CT in combination is more powerful than either PET or CT alone, providing us with an enriched data set,” added the co-author of “Combined PET/CT Assessment of Carotid Plaques: A Human Histopathological Study.” …

No Bones About It: FDG PET Successful in Difficult-to-Detect Chronic Osteomyelitis
Released: June 5, 2006

Molecular Imaging Aids Diagnosis—and Developing Treatment—for Bone and Bone Marrow Infection, Report Philadelphia Researchers
SAN DIEGO, CA—Diagnosing chronic osteomyelitis—a common, serious and often incapacitating infection of bone and bone marrow—in children and adults is often difficult, posing a challenge to physicians. Using positron emission tomography (PET)—with the radiotracer fluorodeoxyglucose (FDG)—“is a highly effective imaging method for determining the presence or absence of chronic osteomyelitis,” detailed researchers from the Hospital of the University of Pennsylvania and Children’s Hospital of Philadelphia …

“Our findings show that FDG PET should be employed as a study of choice for diagnosing chronic osteomyelitis,” said Wichana Chamroonrat, a research fellow at the Hospital of the University of Pennsylvania in Philadelphia. “Recent studies have shown that FDG PET can be used in the evaluation of a variety of inflammatory and infectious processes, and we extended the use of this noninvasive scanning technique in our study,” noted the co-author of “FDG-PET Is Highly Accurate for the Diagnosis of Chronic Osteomyelitis.” …

Researchers used FDG-PET imaging with 57 patients with suspected osteomyelitis, comparing scanning images with their final diagnosis based on surgical findings, microbiology and clinical follow-up, noted Chamroonrat. “FDG PET images allowed physicians to correctly diagnose the presence or absence of osteomyelitis in 53 of 57 patients,” she said, as well as in 26 of 27 patients with chronic osteomyelitis. FDG PET had a 93 percent accuracy rate in the evaluation of osteomyelitis, she added. …

FDG PET Takes Its Place as a Valuable Tool in Diagnosing Fevers of Unknown Origin
Released: June 5, 2006

Study Widens Use of PET Scans, Say Researchers in the Netherlands
SAN DIEGO, CA—By providing early diagnosis of fevers of unknown origin in patients, positron emission tomography (PET)—with the radiotracer fluorodeoxyglucose (FDG)—eliminates the need for additional exhaustive and invasive tests, say researchers from university and community hospitals in the Netherlands. …

“PET has the potential to make an enormous impact in providing earlier diagnosis and risk stratification, in delivering the right therapy early and in avoiding long in-patient hospital stays,” said Wim J.G. Oyen, nuclear medicine physician and professor of nuclear medicine at Radboud University Nijmegen Medical Centre in Nijmegen, the Netherlands. “For patients with fever of unknown origin, FDG PET offers the chance for earlier diagnosis with fewer diagnostic procedures and an earlier start of adequate treatment. For referring physicians, FDG PET offers the opportunity to shorten the diagnostic process, which is now often performed during a long in-patient evaluation—in many cases over many weeks,” added the co-author of “A Prospective Multicenter Study of the Value of FDG PET as Part of a Structured Diagnostic Protocol in Patients With Fever of Unknown Origin.” …

“We were struck by the fact that PET indicated that half of the 70 patients studied had no abnormal findings as the cause of the fever,” said Oyen. With a negative result from a PET scan, physicians “can cross out other diagnostic tests (such as chest X-rays and abdominal ultrasound) since those tests won’t reveal causes for the fever,” he said. In addition, PET contributed to the diagnosis of one-third of the patients, “picking up diseases that would have required other diagnostic tests,” he noted. …

ADHD Drug ‘Harmonizes’ With Body’s Dopamine System, Gives Hint to Effect on Children, Adults
Released: June 5, 2006

Preliminary Basic Science Study Provides Direct Evidence of Beneficial Effect of Methylphenidate
(Continued on page 9)
SAN DIEGO, CA—The brain’s dopamine system, which has long been associated with reward learning and reward-related behavior, works differently in treated and untreated attention deficit hyperactivity disorder (ADHD) individuals, according to a study presented by German researchers …

“The significant difference we found between treated and untreated ADHD patients provides an important hint on the effect of the most commonly prescribed drug for this disease, which has long baffled and frustrated parents and physicians,” noted Felix M Mottaghy, research fellow at University Ulm in Germany. Until this study, there has been no direct evidence pointing to the beneficial effect of methylphenidate (drugs like Ritalin) on the body’s dopamine system, added the co-author of “Midbrain, Striatal and Amygdalar Dopaminergic Dysfunction in Attention Deficit Hyperactivity Disorder (ADHD).” …

The researchers used positron emission tomography (PET), a noninvasive brain scan, with 18F-DOPA, an imaging drug that is a precursor of dopamine. The University Ulm researchers also used statistic parametric mapping to obtain the statistical comparison of normalized and reoriented brain images, said Mottaghy. “It gives an impression of the distribution of differences within the brain comparing groups of patients or different conditions within one subject,” he explained. …

A Step Toward Halting Alzheimer’s: Using FDDNP PET To Detect Disease Progression, Mild Cognitive Impairment

Released: June 5, 2006

UCLA Researchers Use PET Radiotracer to Demonstrate Progression of Alzheimer’s Pathology for Diagnosis and Monitoring of Therapeutic Interventions

SAN DIEGO, CA—By using positron emission tomography (PET) with the radiotracer 18F-FDDNP, UCLA scientists were able to detect increases in the brain pathology (of beta-amyloid plaques and neurofibrillary tangles) associated with the progression of Alzheimer’s disease. …

“We have demonstrated that the worsening of memory and other cognitive functions is correlated with the increase of 18F-FDDNP brain binding in a progressive pattern closely matching the known pattern of pathology progression,” explained Vladimir Kepe, assistant researcher at the David Geffen School of Medicine at the University of California, Los Angeles. “Our method is sensitive to detect the regional increases in pathology (or the nature of the disease) as well as spreading of pathology within the brain of the same person as the disease worsens over time,” added the co-author of “Detection of MCI-AD and Control-MCI Conversions in Alzheimer’s Disease Patients With 18F-FDDNP PET.” …

Just-Right PET/CT Imaging for Patients of All Sizes

Released: June 4, 2006

Time-of-Flight PET Scanner With Detector Crystals Improves Diagnostic Accuracy for Whole-Body Imaging

SAN DIEGO, CA—Researchers discovered that diagnostic accuracy of images can be improved for people of varying weight and size with use of a fully 3-D, time-of-flight positron emission tomography (PET) with computed tomography (CT) scanner. …

“This new time-of-flight scanner—used with LYSO detector crystals—will improve the diagnostic accuracy of images, potentially leading to improved sensitivity and specificity in cancer lesion detection tasks in heavy patients, who have traditionally been difficult to image,” said Suleman Surti, a research assistant professor at the University of Pennsylvania. “The current generation of PET scanners is limited in the quality of images produced for those patients who are overweight,” he said. “This new technology can also reduce scan times for small- and average-size patients without losing diagnostic accuracy,” added the co-author of “Imaging Performance of an LYSO-Based TOF PET Scanner.” …

Philips Gemini TF is the world’s first commercially available time-of-flight PET/CT system that allows this more accurate tracking of photons using time measurements without compromising good characteristics of traditional PET scanners. Image acquisition could be shortened to 10–20 minutes for a whole-body PET scan, depending on patient size. …

Japanese Researchers Get to the Heart of Atherosclerosis

Released: June 4, 2006

PET Reveals High-Risk Heart Patients Before Disease Becomes Clinically Evident

SAN DIEGO, CA—Using positron emission tomography (PET), the medical isotope 15O-water and cold pressor tests, Japanese researchers were able to detect the beginnings of atherosclerosis—before the disease became clinically evident. …

This revelation will allow physicians to advise high-risk patients—who show no cardiovascular symptoms—to make lifestyle changes modifications or to undergo medical treatment, said Masanao Naya, a physician at Hokkaido University Graduate School of Medicine in Sapporo, Japan. In addition, researchers determined that elevated levels of interleukin-6—one of the inflammatory chemicals produced by endothelial cells and that has been associated with an increased risk of heart disease—is “a major determinant” of coronary endothelial dysfunction, especially in individuals with high blood pressure. …

“We can assess the endothelial dysfunction in the human heart noninvasively using PET and evaluate factors that can determine endothelial dysfunction,” said the co-author of “Determinants of Coronary Endothelial Dysfunction in Hypertensive Patients.” …

In their study, researchers examined 27 untreated patients with high blood pressure. Myocardial blood flow was measured both at rest and during stimulation induced by a cold pressor test by using PET with 15O-water. …
Publication of consensus recommendations for the use of FDG-PET in National Cancer Institute (NCI) trials will go a long way in helping physicians and scientists determine ways to manage cancer and promote drug development in the future. The recommendations, published in the June issue of The Journal of Nuclear Medicine, focus on the practical aspects of FDG PET (patient preparation; image acquisition, reconstruction and analysis; and quality assurance) and provide a valuable reference for incorporating PET into clinical trials.

“There should be less variability in the performance of FDG PET in clinical trials by enacting these recommendations,” explained principal author Lalitha K. Shankar, NCI medical officer at the Cancer Imaging Program. “This would help speed the evaluation of FDG PET as a biomarker. If FDG PET, as is hoped, proves to be a useful biomarker in certain cancers—such as lymphoma, lung and breast cancer among others—this could potentially result in be shorter clinical trials in these malignancies and improved therapy for patients with these cancers,” she said. These guidelines, drafted by PET experts at various universities and institutes in the United States and abroad, represent a step toward qualifying FDG PET as a biomarker or biologic indicator to assess cancer treatment response.

“To date, there has been no significant agreement on the best methodology for obtaining or analyzing ¹⁸F-FDG PET. Standard protocols needed to be developed so that data about the effectiveness of FDG PET as an indicator of treatment response in patients could be collected and compared,” Shankar added. Publication of the consensus recommendations is the culmination of attempts to reach agreement between physician and scientist members of the imaging community on certain basic issues regarding the acquisition and analysis of these scans, she said.

The recommendations are the result of a workshop sponsored by NCI’s Cancer Imaging Program in Washington, DC, in 2005. Participants reviewed the status of FDG PET technology and clinical experience in both diagnosis and in monitoring therapeutic response. More recently, NCI, the U.S. Food and Drug Administration and the Centers for Medicare & Medicaid Services entered into a memo of understanding to improve “the clinical utility of biomarker technologies as diagnostic and assessment tools that facilitate the development of safer and more effective cancer therapies.”

“Consensus Recommendations for the Use of ¹⁸F-FDG PET as an Indicator of Therapeutic Response in Patients in National Cancer Institute Trials,” was authored by Shankar, Daniel Sullivan, Cancer Imaging Program, National Cancer Institute, National Institutes of Health, Bethesda, MD; John M. Hoffman, Division of Nuclear Medicine, Huntsman Cancer Institute, University of Utah School of Medicine, Salt Lake City; Steve Bacharach, Department of Radiology, University of California, San Francisco, CA; Michael M. Graham, Division of Nuclear Medicine, Department of Radiology, University of Iowa, Iowa City; Joel Karp, Division of Nuclear Medicine, Department of Radiology, University of Pennsylvania, Philadelphia, PA; Adriaan A. Lammertsma, Department of Nuclear Medicine and PET Research, VU University Medical Centre, Amsterdam, the Netherlands; Steven Larson, Department of Radiology, Memorial Sloan-Kettering Cancer Center, New York, NY; David A. Mankoff, Division of Nuclear Medicine, University of Washington, Seattle; Barry A. Siegel, Mallinckrodt Institute of Radiology, St. Louis, MO; and Amnick Van den Abbeele and Jeffrey Yap, Department of Radiology, Dana-Farber Cancer Institute, Harvard Medical School, Boston, MA.

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