PET: Additive or Replacement?

In an article in the January issue of the *Journal of the American College of Radiology* (2012;9:33–41) Hillner, from Virginia Commonwealth University (Richmond), and colleagues from across the United States reported on the growth in utilization of PET for 6 cancer types after the initiation of coverage by Medicare in 2001. They looked at data gathered from 2004 through 2008 and asked whether physicians in these years were using PET as a replacement for or in addition to CT, MR, or bone scintigraphy studies. The analysis was conducted in a database of 125,000 Medicare fee-for-service beneficiaries who were >64 y old in the study period and had at least 1 hospital admission with a primary cancer diagnosis or 2 nonhospital claims with a cancer diagnosis per calendar year for the covered diseases (non–small-cell lung, esophageal, colorectal, and head and neck cancers, lymphoma, and melanoma). Data points included numbers of imaging claims and claim-days by modality and cancer, as well as PET use in addition to and in specific sequence with other imaging. The combined annual imaging days per person-year in 2008 were 2.3 for CT, 0.49 for MR, 0.70 for PET imaging, and 0.13 for bone scintigraphy. This represented increases over the study period of 0.5% for CT, 3.2% for MR, and 18.0% for PET imaging and a decrease of 12.7% for bone scintigraphy. The growth in PET use was not associated with meaningful changes in body CT. By 2008, body CT preceded PET within 30 d in about half of patients, and PET preceded CT in 22%. The authors concluded that these data, gathered several years after initiation of reimbursement, indicated that PET in some percentage of cases was replacing bone scintigraphy. They added that the fact that about half of PET use occurred shortly after body CT suggested an "additive or final arbiter role" for PET.

Journal of the American College of Radiology

Enhanced AD Funding

On February 7 a press release from the Department of Health and Human Services (HHS) announced new funding for Alzheimer disease (AD), including the immediate availability of $50 million for cutting-edge AD research. At the same time, the Obama administration announced that its fiscal year 2013 budget will boost funding for AD research by $80 million, with an additional $26 million in caregiver support, provider education, public awareness, and improvements in data infrastructure. In January 2011, the National Alzheimer's Project Act, which calls for an aggressive and coordinated national AD plan, was signed into law. The Act also established an Advisory Council on Alzheimer's Research, Care, and Services. The preliminary framework for the National Alzheimer's Disease Plan, which is still in development, identifies key goals including preventing and treating AD by 2025.

The HHS announcement noted that as many as 5.1 million Americans currently suffer from AD, a number that could more than double by 2050. "These projections are simply staggering," said National Institutes of Health (NIH) Director Francis S. Collins, MD, PhD. "This new funding will accelerate NIH's effort to use the power of science to develop new ways of helping people with Alzheimer's disease and those at risk."

Together, fiscal years 2012 and 2013 investments total $130 million in new ADA research funding over 2 y, more than 25% higher than current funding. The additional NIH research funding will support both basic and clinical research, and it is anticipated that imaging will serve as an endpoint in many of the associated investigations.

Department of Health and Human Services

Iodinated Media and Thyroid Dysfunction

In an article appearing in the January 23 issue of the *Archives of Internal Medicine* (2012;172:152–159), researchers from the Brigham and Women's Hospital and Massachusetts General Hospital (Boston) reported on a study focusing on the association between exposure to iodinated contrast media and thyroid dysfunction. Rhee and colleagues performed a nested case-control study of almost 400 patients treated during a 10-y period for hyperthyroidism or hypothyroidism without previous histories of thyroid dysfunction. The complex study design included parallel analyses in which incident hyperthyroid or hypothyroid cases were defined by a change in thyrotropin level from normal (at baseline) to low or high (at follow-up). Matched euthyroid controls were included in the study. Iodinated contrast media exposure from CT or cardiac catheterization studies was included as a variable. The results indicated that contrast media exposure was significantly associated with incident hyperthyroidism but not directly associated with hypothyroidism. Secondary analysis, however, showed that iodinated contrast media exposure was associated with both incident overt hyperthyroidism and hypothyroidism. The authors noted that: "These data leave open the possibility that iodine-induced hyperthyroidism among patients without predisposing lesions is more commonplace than previously recognized. Regardless of mechanism, the observed association between [iodinated contrast media] exposure and incident hyperthyroidism (if externally validated) is of considerable clinical importance given the effects of prolonged hyperthyroid status on cardiovascular disease and survival."

Archives of Internal Medicine

Analyzing Increased Cardiology Imaging Claims

Andrus and Welch, from the Dartmouth–Hitchcock Medical Center (Lebanon, NH) and the Dartmouth Medical School (Hanover, NH) reported in the January 1 issue of *Circulation. Cardiovascular Quality and Outcomes* (2012;5:31–35) on the growth and distribution of Medicare services provided by cardiologists in the United States from 1999 to 2008. The authors looked at the complete range of cardiologist Medicare Part B claims (more than 30 million each year) for each year of the study period, grouping 1,000 CPT-9 codes into 3 broad service categories: evaluation and management, noninvasive procedures, and invasive procedures. Over the study period, cardiologist-generated claims increased 44% (from 2,082 to 2,997 per 1,000 beneficiaries), and the allowed charges increased 28% after adjusting for inflation. The authors found that evaluation and management services and invasive procedures contributed relatively little to this growth. Noninvasive procedures, however, saw a 70% increase in claims. Dramatic increases in noninvasive procedures were seen, as expected, in cardiac CT, MR, and PET imaging, but the bulk of the growth occurred in 2 established technologies: resting echocardiography and stress tests with nuclear imaging.

Circulation. Cardiovascular Quality and Outcomes

NIH Living Lab

The National Institutes of Health (NIH) announced on January 12 the creation of a new type of lab to utilize near-atomic resolution microscopy and other structural biology technologies to accelerate important medical discoveries relating to global health challenges, such as cancer and HIV/AIDS. The Living Lab Structural Biology Center was formed through a cooperative research and development agreement between NIH and FEI (Hillsboro, OR), a scientific instruments company. The lab, which will be located on the NIH campus, is a unique interdisciplinary collaboration among experts from FEI and scientists from the National Cancer Institute (NCI) and the National Institute of Diabetes and Digestive and Kidney Diseases, both part of NIH, in the fields of cryoelectron microscopy, nuclear MR spectroscopy, X-ray diffraction, and biochemistry. A Titan Krios transmission electron microscope, among the world's most powerful commercially available electron microscopes, will be located at NIH to enable the collaborative research.

The collaboration involves the development of methods and workflows, from sample preparation through data analysis, that combine information from all of the technologies in the Living Lab. Sriram Subramaniam, PhD, senior investigator in NCI's Laboratory of Cell Biology, is the director of the Living Lab. "The prospects for applying cryoelectron microscopy to study the structures of a broad spectrum of medically relevant complexes have changed dramatically in recent years with advances in microscope hardware and powerful new methods for image analysis," said Subramaniam. "Our goal with the Living Lab is to capture the synergy between the latest methods by studying selected large molecule complexes that span the range from viral and DNA-binding proteins to integral membrane proteins and nucleic acids that are representative of key scientific challenges in modern structural biology." For more information, see http://electron.nci.nih.gov.

National Institutes of Health

New NIBIB Advisory Council Members

On January 11, the National Institutes of Health announced the appointment of 3 new members to the National Advisory Council for Biomedical Imaging and Bioengineering (NACBIB) of the National Institute of Biomedical Imaging and Bioengineering (NIBIB). The council includes scientists, engineers, physicians, radiologists, researchers, and other health professionals who represent disciplines in and outside of biomedical imaging and bioengineering. NACBIB meets 3 times each year to advise on policy and program priorities related to the conduct and support of research, training, health information dissemination, and other programs that address biomedical imaging, biomedical engineering, and associated technologies and modalities with biomedical applications. The NACBIB also provides an additional level of review for all applications for funding of research and training grants or cooperative agreements by NIBIB. New members include: (1) John C. Gore, PhD, chair in medicine and university professor of radiology and radiological sciences and biomedical engineering, molecular physiology and biophysics, and physics and astronomy, and director of the Institute of Imaging Science at Vanderbilt University Medical Center (Nashville, TN). Gore is vice-chair for research in the Department of Radiology and Radiological Sciences, as well as an investigator at the Vanderbilt Kennedy Center for Research on Human Development. (2) Cato T. Laurencin, MD, PhD, director of the Institute for Regenerative Engineering and chief executive officer of the Connecticut Institute for Clinical and Translational Science (Farmington). He is also the Albert and Wilda Van Dusen Distinguished Professor of Orthopaedic Surgery and professor of chemical, materials, and biomolecular engineering at the University of Connecticut (Storrs). (3) Mark A. Musen, MD, PhD, head of the Stanford Center for Biomedical Informatics Research and professor of medicine and computer science at Stanford University (CA). Musen is principal investigator of the National Center for Biomedical Ontology at Stanford, co-editor-in-chief of *Applied Ontology: An International Journal of Ontological Analysis and Conceptual Modeling*, and chair of the World Health Organization's Health Informatics and Modeling Topic Advisory Group.

National Institute of Biomedical Imaging and Bioengineering