

RSNA® *News*



Medicine Not “Bulletproof” in Recession

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- IHE® Connectathon Gives EHRs Momentum
- New Studies Show Potential for Dramatically Improved MR
- SPECT/CT Improves Thyroid Cancer Staging
- R&E Grant Provides First Step in Years of Funded Research

**Advance Registration for RSNA 2009
begins April 29**

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Mark G. Watson Named RSNA Executive Director

I AM PLEASED TO ANNOUNCE that Mark G. Watson will become the Society's executive director on April 1, 2009. Mark comes to this position with nearly 20 years of experience working at RSNA on significant projects and in key capacities, including service as the interim executive director since September 2008.

Assistant executive director (AED) for finance and administration at RSNA for the past 15 years, Mark was selected after a thorough search and from a field of candidates reviewed by Korn/Ferry International, the Executive Director Search Committee and the Board of Directors.

The Board's selection of Mark as executive director indicates not only its recognition of his history of distinguished service with RSNA but also its confidence in his ability to provide the good counsel and effective leadership needed to realize the promise of RSNA's future.

Mark graduated from Western Illinois University with a bachelor's degree in business and accounting. He began his career in 1986 at KPMG Peat Marwick. In 1990 he was hired by RSNA as the director of finance. Two years later, he became the director of finance and business affairs and, in 1994, became AED for finance and administration.

During his 15 years as an AED, Mark was responsible for all membership, financial and accounting activities for RSNA, including the development of long-term financial forecasting models that have proved critical to the Board's strategic plans and decisions.

Mark has also been responsible for Society business and administration, including reviewing and negotiating all Society agreements and contracts with outside parties and developing and administering all personnel policies. Mark was involved in every detail of the development of the RSNA head-

quarters building—from site selection and financing through construction and move-in. During RSNA management of a number of radiology societies in the 1990s, Mark served as the executive director of the Radiation Research Society and North American Hyperthermia Society, working closely with the governing boards and committees of these societies and overseeing their administration.

After years of working with the RSNA Research & Education Foundation, in 2005 he was named director of the Foundation, enabling him to work even closer with the Board of Trustees and staff in planning and executing the Foundation's Silver Anniversary Campaign.

His depth and breadth of knowledge of RSNA operations and his leadership skills made him the natural candidate for the position of interim executive director.

Members of successive RSNA Boards of Directors have long noted Mark's considerable business and financial acumen as well as his administrative skills. He shares information and knowledge, enabling informed decision making by Society leadership. He has demonstrated integrity, sound judgment and the ability to make deci-



Mark G. Watson
RSNA Executive Director

sions at strategic and operational levels. His understanding of and commitment to the RSNA mission, coupled with his genuine affinity for the volunteers and staff who carry it out on a day-to-day basis, have impressed all who have worked with him.

Mark was born in Iowa and has made the Chicago area his home since 1988. He and his wife of 23

years, Annamarie, have two children, Sarah and Matt.

On behalf of the Board of Directors and the membership, I thank the Search Committee, chaired by Hedvig Hricak, M.D., Ph.D., Dr. h.c., and consisting of Sarah S. Donaldson, M.D., Gary J. Becker, M.D., Ronald L. Arenson, M.D., and C. Douglas Maynard, M.D., for their careful and expeditious work. I also thank the RSNA staff, who, under Mark's leadership, have kept our Society functioning at such a high level during this transition period.

Finally, I ask you to join me in congratulating Mark and wishing him every success in the important role of Executive Director of RSNA.

BURTON P. DRAYER, M.D.
CHAIRMAN, 2009 RSNA BOARD OF DIRECTORS

"Listen In" to RSNA News Interviews

Starting with the April 2009 online edition, hear selected segments from interviews for *RSNA News* stories. Look for the "Listen In" icon in the print edition to identify stories with accompanying audio. Links are embedded within online articles at relevant points. *RSNA News* is available online at RSNANews.org.



"Listen In" segments are offered this month with coverage of the Integrating the Healthcare Enterprise (IHE®) Connectathon in Chicago and will accompany a May 2009 article on the Academy of Radiology Research. Segments will be archived.

QIBA Presentations Now on RSNA.org

Presentations are now available online from Quantitative Imaging Biomarkers Alliance (QIBA) activities at RSNA 2008. The presentations examine the goals of QIBA's focus areas—fluorodeoxyglucose PET/CT, dynamic contrast-enhanced MR and volumetric CT—for quantifying the effects of novel therapeutic candidates for cancer.

The QIBA mission is to help transform radiology from a qualitative to a quantitative science, helping patients benefit from accelerated development and dissemination of new pharmacologic, biologic and interventional diagnosis and treatment approaches. View the slides at RSNA.org/research/qiba_videos.cfm.

Radiology Community Urged to Help Reverse CMS Decision on CTC

Concerned medical societies, industry representatives, patient groups and legislators have joined forces in an effort to persuade the Centers for Medicare and Medicaid Services (CMS) to reverse its preliminary decision to not cover CT colonography (CTC) as a screening test.

The American College of Radiology (ACR), American Gastroenterological Association, Colon Cancer Alliance and American Cancer Society responded to the decision with a joint letter to CMS, citing a 2008 ACR Imaging Network trial that indicated CTC is as effective as optical colonoscopy for detecting polyps greater than 10 mm that require removal. Representatives Kay Granger (R-Texas) and

Patrick Kennedy (D-R.I.), as well as Rep. Danny K. Davis (D-Ill.) and 10 other members of the Congressional Black Caucus, also submitted letters emphasizing CTC's potential to save lives by encouraging more patients to undergo screening. ACR is asking the radiology community to follow suit by calling their respective House members and asking them to sign the Granger-Kennedy letter.

In its preliminary decision, CMS noted that consideration of screening tests involves factors different than those for diagnostic or therapeutic tests. A relatively high rate of subsequent referral for optical colonoscopy in patients found to have polyps in CTC would limit CTC's utility as a screen-

ing test, CMS noted. In addition, no published screening study has focused on CT colonography in an older population—"more representative of the Medicare population"—and polyp studies have shown that the proportion of individuals with polyps 6 mm or smaller increases with age, indicated the CMS summary report. The report took into account the undetermined impact of factors including radiation exposure and extracolonic findings.

CMS welcomed public comments providing further evidence about the efficacy of CTC screening before the release of the final decision in May. More information about the decision and group and legislative efforts are available at acr.org.

NIH Launches New Process for Funding Tracking

The National Institutes of Health (NIH) has begun a new process—the Research, Condition and Disease Categorization (RCDC)—for providing detailed funding information to healthcare providers and the public.

RCDC is an addition to NIH's Research Portfolio Online Reporting Tool (RePORT) Web site, intended to keep Americans informed about how their tax dollars are spent to support medical research. A data table on the RCDC Web page indicates funding amounts in 215 major areas, the same categories historically requested by and reported to Congress and the public at the end of each fiscal year.

RCDC does not reflect the entire NIH research portfolio and budget, nor will it change the grant or award process or affect the way NIH determines research priorities or funding. To learn more about RCDC, visit report.nih.gov/rcdc.

Advanced Simulation Training Proposed to Congress

A bill recently submitted to the U.S. House of Representatives seeks to amend the Public Health Service Act to authorize medical simulation enhancement programs.

H.R. 855, the Enhancing Safety in Medicine Utilizing Leading Advanced Simulation Technologies to Improve Outcomes Now Act of 2009, proposes to establish "medical simulation centers of excellence" to provide leadership and training resources, conduct research and improve efficiency of medical simulation programs. The bill was sponsored by Rep. J. Randy Forbes (D-Va.). Proposed grants will support research, aid in acquisition of simulation technology, help introduce simulation into medical and interdisciplinary curricula and assist professional organizations by means of a Federal Medical Simulation Coordinating Council.

ESR Names Honorary Members

2008 RSNA President **Theresa C. McLoud, M.D.**, was awarded honorary membership in the European Society of Radiology (ESR) during the European Congress of Radiology last month. Dr. McLoud is the associate radiologist-in-chief and director of education for the Department of Radiology at Massachusetts General Hospital in Boston and a professor of radiology at Harvard Medical School.

Honorary membership in ESR was also awarded to **James H. Thrall, M.D.**, of Boston, **Jurgen Hennig, M.D., Ph.D.**, of Freiburg, Germany, and **Ho-Young Song, M.D., Ph.D.**, of Seoul, Korea. Dr. Thrall is radiologist-in-chief at Massachusetts General Hospital, a professor of radiology at Harvard Medical Center in Boston and chair of the American College of Radiology (ACR) Board of Chancellors. He received the RSNA gold medal in 2007. Dr. Hennig is a professor at Albert Ludwig Freiburg University in Germany and co-chair and scientific director of the Department of Diagnostic Radiology at Freiburg University Hospital. Dr. Song is a professor and chief of vascular and interventional radiology at the University of Ulsan in Seoul.

Recipients of the ESR gold medal are **Helen M.L. Carty, M.B.B.Ch.**, of Liverpool, U.K., and **Antonio Chiesa, M.D.**, of Vicenza, Italy. Dr. Carty served as director of radiological services at the Royal Liverpool Children's NHS Trust and as a professor of pediatric radiology at Liverpool University. Dr. Chiesa served as chair and director of the Department of Radiology and as director of the Postgraduate School of Radiology at the University of Brescia.



Theresa C. McLoud, M.D.



James H. Thrall, M.D.



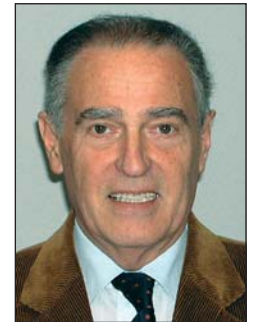
Jurgen Hennig, M.D., Ph.D.



Ho-Young Song, M.D., Ph.D.



Helen M.L. Carty, M.B.B.Ch.



Antonio Chiesa, M.D.

Texas Radiological Society Awards Gold Medals

Paul H. Ellenbogen, M.D., and **Stewart Bushong, Sc.D.**, received the gold medal of the Texas Radiological Society (TRS) during the TRS 96th annual scientific meeting held last month.

Dr. Ellenbogen, who served as 2002-03 TRS president, published a landmark article in the *American Journal of Roentgenology (AJR)*, "Sensitivity of Gray Scale Ultrasound in Detecting Urinary Tract Obstruction," in 1978, recognized as a Top 100 *AJR* article in 2006. Currently on staff at Southwest Imaging and Interventional Specialists, Dallas, Dr. Ellenbogen maintains his affiliation with The University of Texas Southwestern Medical School in Dallas as a clinical professor of radiology.

A professor of radiology at Baylor College of Medicine in Houston, Dr. Bushong was instrumental in creating The Texas Board of Licensure for Professional Medical Physicists. He is a founding member of the American College of Medical Physics.



Paul H. Ellenbogen, M.D.



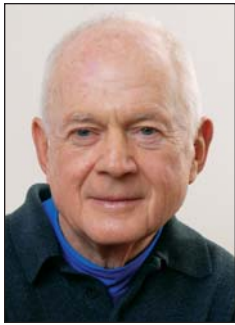
Stewart Bushong, Sc.D.

UI Radiologist Receives Neuroscience Award

Vincent Magnotta, Ph.D., an associate professor of radiology, psychiatry and biomedical engineering at the University of Iowa in Iowa City, has received a three-year, \$300,000 Neuroscience of Brain Disorders Award from



Vincent Magnotta, Ph.D. the McKnight Endowment Fund for Neuroscience. Dr. Magnotta will collaborate with John Wemmie, M.D., an associate professor of psychiatry and neurosurgery, to develop imaging techniques to measure and understand the influence of pH on normal brain function and disease.



William Marshall, M.D.

Marshall Earns Stanford Lifetime Achievement Award

William Marshall, M.D., a professor of radiology for more than three decades at Stanford University, has received the university's Lifetime Achievement Award.

Dr. Marshall served as the neuroradiology section chief for 17 years. He graduated from medical school at the University of Rochester, N.Y., and completed an internship at the University Hospitals of Cleveland and his residency at Stanford. Dr. Marshall retired from Stanford in 1993.

PATIENT SAFETY
Question of the Month
Q Do CT automatic exposure control (AEC) systems always decrease the patient's radiation exposure?
[Answer on page 15.]



Send news about yourself, a colleague or your department to rsnanews@rsna.org, 1-630-571-7837 fax, or *RSNA News*, 820 Jorie Blvd., Oak Brook, IL 60523. Please include your full name and telephone number. You may also include a non-returnable color photo, 3x5 or larger, or electronic photo in high-resolution (300 dpi or higher) TIFF or JPEG format (not embedded in a document). *RSNA News* maintains the right to accept information for print based on membership status, newsworthiness and available print space.

MY TURN

Demonstrating Imaging Value is Imperative

RADIOLOGY FACES considerable pressure from government, insurers and employers as rapidly rising health coverage costs are attributed to imaging.

News articles describe unnecessary and duplicate imaging procedures when patients go from one institution to another. Articles published in the medical literature document unnecessary imaging performed when physicians refer their patients to facilities in which they have ownership interest.

Meanwhile, radiology has not adequately documented the value of imaging studies. Imaging reimbursement will continue to decrease if we cannot demonstrate that imaging makes a significant difference in patient outcomes.

We have been very successful in promoting the apparent benefits of new technology and techniques to our referring colleagues. While some publications demonstrate the valuable impact of imaging on patient outcomes, many commonly used imaging studies have

not been subjected to such analysis. For example, CT for pulmonary embolus and single photon emission CT (SPECT) for cardiac perfusion were widely used long before those techniques were critically analyzed for effectiveness.

The problem is twofold: well controlled studies to determine the value of imaging are costly and difficult to perform and, perhaps as importantly, there are not enough academic radiologists

My Turn
ONE RADIOLOGIST'S VIEW

trained in health services research to perform these types of technology assessment and outcomes studies.

With regard to funding, increased support is needed not only from existing sources, such as the National Institutes of Health and Agency for Healthcare Research and Quality, but also from new governmental sources such as the Centers for Medicare & Medicaid Services and non-governmental agencies as well. Continuing to garner



Ronald L. Arenson, M.D.

industry support for the RSNA Research & Education Foundation and greater collaboration with the American College of Radiology Imaging Network (ACRIN) can also help.

As for training researchers, the GE-Association of University Radiologists Radiology Research

Academic Fellowship develops young academics suited to the role. RSNA, through its R&E Foundation, as well as ACRIN and other professional societies, currently fund similar positions, but overall, only a limited number of researchers are trained each year.

This should change. Academic departments should train more researchers and practicing radiologists should realize the importance of—and contribute funds to—this worthy cause.

Ronald L. Arenson, M.D., is RSNA Liaison for Annual Meeting and Technology. He is chair and the Alexander R. Margulis Distinguished Professor of Radiology at the University of California, San Francisco.

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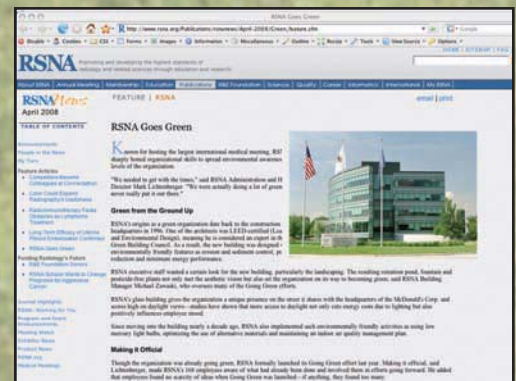
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Medicine Not “Bulletproof” in Recession

WHILE radiology demand, particularly in acute care medicine, remains steady, physicians are taking precautions to protect themselves from the effects of the U.S. economic downturn.

“I don’t think medicine can be seen as bulletproof to a recession,” said Bibb Allen, M.D., chair of the American College of Radiology Commission on Economics. “Like a lot of other businesses, healthcare is not totally a cash operation,” he said. “Hospitals and larger businesses have seen their investments suffer because of the falling stock market and falling interest rates. The availability of money for capital purchases, the amount of dividend income that foundations are contributing to their operations, all of those things are bad.”

As one of the fastest growing areas of healthcare spending, imaging services previously seemed immune to economic ebb and flow. Between 2000 and 2006, federal payments for imaging doubled, from \$7 billion to \$14 billion.

That annual growth rate of nearly 13 percent was outpaced by growth in advanced imaging procedures, such as MR imaging

and CT, which expanded at an annual rate of 17 percent, according to figures from the Congressional Budget Office.

Following the Deficit Reduction Act (DRA) of 2005, the increase in spending on physician imaging services reversed and Medicare expenditures on imaging exams fell to \$12.1 billion in 2007, a decline of almost 13 percent from 2006.

With the freefall in the U.S. stock



James H. Thrall, M.D.
Harvard Medical School



Jonathan Berlin, M.D., M.B.A.
Northwestern University



Bibb Allen, M.D.
American College of Radiology

market and the increase in unemployment, it’s not just consumer confidence that is in short supply, said radiologists. “I didn’t talk to anybody at last year’s RSNA meeting who wasn’t commenting about cutbacks in capital spending,” said James H. Thrall, M.D., a professor of radiology at Harvard Medical School and radiologist-in-chief at Massachusetts General Hospital. “There were many people who said their hospital

I didn’t talk to anybody at last year’s RSNA meeting who wasn’t commenting about cutbacks in capital spending.

James H. Thrall, M.D.

simply had no capital program for this year. “With the turmoil in the financial markets, it’s much harder for hospitals to raise money through the sale of bonds,” Dr.

Thrall continued. “Therefore it’s going to be harder for them to buy capital equipment. I think that our vendor community is going to be hit pretty hard. We may lose some vendors who are on the margin.”

Research Dollars, Compensation Affected

The ripple effects of harder times can already be felt throughout academia and the research community, Dr. Thrall

added. “Even the larger companies will be hit and will find it more difficult to continue the same level of research and development activity at least in the short term,” he said. “That will be the other shoe that drops here.”

As belts tighten, one of the trickle-down effects is changes in physician compensation. At some teaching hospitals, compensation incentives are now taking the place of guaranteed salary structures. Outlining measures his department has implemented, Dr. Thrall noted: “We have put some programs in place proactively. Instead of guaranteeing all of the raises for the radiologists this year, we have a contingency clause in effect where we have to reach certain financial targets. So far we are meeting them.

“The hospital has been conservative in approving new positions,” Dr. Thrall continued. “This is mostly cautionary, as opposed to a response to adverse financial performance.”

Some medical facilities that were heavily leveraged are seeing layoffs, said Dr. Allen. “We’ve not had huge layoffs at our hospital, but we are looking at every way to keep things tight and we’re not hoarding excess

supplies—we're not ordering until we need more, that type of thing," he said. "Everybody is cognizant of the economic downturn."

Dr. Thrall said he believes the reduction in hiring is consistent with patterns seen in previous recessions. "It is my impression that we've seen a softening in the radiology job market over the last 18 months to two years," he said. "There are still jobs available, but there are not nearly as many jobs available as five years ago. The supply and demand equation shifts very dramatically when there's economic uncertainty."

He noted a net positive effect in his department, as the institution has been able to retain highly qualified physicians.

"We see more residents who stay on for fellowships and fellows who may stay on staff for a couple of years while they look for their ideal private practice job," he said. "In our department, we usually have some openings either because of growth or turnover. Right now we do not have a single unfilled position."

Job Losses Lead to Canceled Procedures

As patients themselves are subjected to a tighter job market, radiology feels the effects of layoffs now rampant in the manufacturing, financial and retail sectors. "As people lose their insurance, they have to pay for tests themselves," said Jonathan Berlin, M.D., M.B.A., an associate professor of radiology at NorthShore University HealthSystem – Northwestern University in Evanston, Ill. "People are filling fewer prescriptions and they're going to see their doctors less. That will likely translate into less radiology.

"The volume of non-covered radiologic procedures and radiologic procedures performed on patients with high deductible health insurance policies will likely fall as consumer spending tightens," Dr. Berlin continued. "As unemployment increases, the number of patients losing health insurance increases. Uninsured patients will likely

Survival Strategies

Some radiologists with an eye on the economy offer suggestions for weathering the downturn.

1 Scrutinize practice efficiency. Scanning four patients per hour, versus two, reduces fixed costs per unit of production.

2 Focus on service. Asking referring clinicians what they want will reveal the strengths and weaknesses of your practice. At RSNA 2009, a refresher course sponsored by the RSNA Public Information Committee and featuring a member of the American Academy of Family Physicians will cover "Radiology and the Family Physician." Attendees will learn what family physicians need from radiologists and how the two groups can work together to improve patient care.

3 Be patient-centered. Patients often are influenced by different factors than their health-care providers, so it's important to know how your practice stacks up in such areas as office staff friendliness, facility cleanliness, wait times and the overall perception that the practice cares about the overall patient experience. An RSNA refresher course, "Patient-centered Radiology: Use It or Lose It," explores the value of increased patient interactions in diagnostic radiology and identifies the best opportunities for increasing patient interaction in several different practice settings.



delay care and delay certain elective procedures. The higher number of 'self-pay' patients will also increase a radiology practice's bad debt."

To Survive, Assess Competition and Find Economies of Scale

When evaluating radiology practices and scrutinizing the management of resources, Dr. Berlin advises practice leaders to assess their competition and meet patients' and referring clinicians' needs, as well as create economies of scale. "You should attempt to examine the efficiency of your practice," he said. "If you can scan four patients per hour versus two, you're going to reduce your fixed costs per unit of production.

"Another thing practices can do to preserve volume is to increase their emphasis on service," Dr. Berlin continued. "Meet with your referring clinicians and ask them what they want. Find out what your practice is doing well and what your practice is not doing so well."

Healthcare delivery should remain

as patient-centered as possible to retain a competitive advantage, Dr. Berlin emphasized. "In addition to referring physicians, patients themselves are a key client, and finding out what differentiates your practice from the practice down the street is important," he said. "Many patients make their decisions on different factors than their healthcare provider does. For example, patients may make decisions on how nice the office staff was, how clean the facility was, how long they had to wait or whether or not they sensed a caring attitude. Those are attributes your practice can address. The bottom line is you want to put yourself in a position where you're doing well against your local competition." □

The American Recovery and Reinvestment Act of 2009

■ Go to RSNA.org for information about and analysis of the American Recovery and Reinvestment Act of 2009, including health information technology provisions in the act. Information is posted at RSNA.org/Research/InTheSpotlight.cfm.

IHE[®] Connectathon Gives EHRs Momentum

THIS YEAR'S Integrating the Healthcare Enterprise (IHE[®]) Connectathon offered a glimpse of new device profiles, progress in partnerships and the promise of achieving a universal electronic health record (EHR) in the next few years.

The Connectathon, hosted by RSNA and the Healthcare Information and Management Systems Society (HIMSS) in late February in Chicago, was attended by 358 individuals representing 77 vendors who spent four days testing 126 profiles for compliance with IHE information sharing standards. "These folks are really enjoying the journey of transforming the field," said Elliot Sloane, Ph.D., assistant professor of accounting and information systems at Villanova University and co-chair of the IHE International Board.

This year's event revealed substantial growth in the patient care devices (PCD) domain and the interoperability of monitoring devices that share vital signs.

The PCD domain is more complex than sharing images, said Dr. Sloane. "Each piece of data has a temporal component to it, as well as an amplitude value," Dr. Sloane explained. Further, he said, information is often continuous—for example, from a Holter monitor that a patient wears for several days. "That enormous volume of data is what the patient care device domain is trying to organize in an interoperable sense," said Dr. Sloane.

New to the testing floor was IHE's Radiation Exposure Monitoring profile, which enables systems to monitor radiation dose and share the measurements with dose registries.



More than 350 individuals representing 77 vendors participated in the 2009 IHE[®] Connectathon, spending four days testing 126 profiles for compliance with IHE information sharing standards.

The profile sends a DICOM object from a scanner with details about examination dose, which is stored in the PACS along with the images, said Kevin O'Donnell, R&D manager of system solutions for Toshiba America MRI's Research and Development Center and a profile developer. "As often as

you decide is appropriate, you can go into the PACS, pull out all those objects and create summary reports," O'Donnell said.

The profile's progress is such that he recommends purchasers

ask for the IHE Radiation Exposure Monitoring profile to be included in their requests for proposals.

Also this year, the Cross-Enterprise Document Sharing (XDS) profile has emerged in a new version called XDS.b. XDS.b fits in a pure Web services model, enabling systems to use tools created by major IT companies.

"The interconnectivity and Web-based standards have evolved very quickly," said David S. Mendelson, M.D., an associate professor of radiology at Mount Sinai Medical Center in New York and IHE International Board co-chair. "They're more efficient, probably more secure and used by industries outside of healthcare." The XDS profile specific to medical imaging, XDS-I, is moving into the XDS.b realm and will address incompatibility issues unique to radiologic images.

Federal agencies have recognized the natural alliance in interoperability. "We have almost 3 million people a year come through our doors to apply for disability benefits and often they come in very dire circumstances," said Diane Kistler, program director of disability determination services for the U.S. Social Security Administration. "As part of the application process, they sign a release to authorize us to gain access to their medical records to help us make a determination about their eligibility."

Having access to electronic records could revolutionize our claims process.

Diane Kistler, U.S. Social Security Administration

The current paper process takes several weeks or months, Kistler explained. "Having access to electronic records could revolutionize our claims process," she said, expressing excitement at her office becoming the first to begin transferring information by way of the Nationwide Health Information Network.

"There is a service to ensure that all requests for medical information are appropriately logged, are auditable under HIPAA and are available to the consumer to determine who has access to their health information and for what purpose," added Craig Miller, chief architect of Federal Health Architecture for the U.S. Department of Health and Human Services.

Additional progress is being made through IHE's partnership with the National Institute of Standards and Technology (NIST) and the Commission on the Certification of Health IT (CCHIT) to develop product testing tools.

"At the Connectathon, you see competing vendors working together quite efficiently—we don't want to keep that in a room," said Charles Parisot, manager of architecture and standards for GE Healthcare and member of the HIMSS Electronic Health Record Association (EHRA) executive team.

Collaboration is critical to reaching the EHR goal, said Parisot. "EHRA doesn't want to be another group that is creating standards," he said. "We want to be a cheerleader in helping everybody work together and move forward."

Sharing data is incredibly complex, Parisot emphasized, and final implementation of EHR will be a monumental task. He noted problems that don't appear until installation. "Supporting EHR installation is going to be mighty necessary to success and we need all the forces and cleverness we have," he said. "If we prematurely start putting clinical data inside the infrastructure and then have to adjust, it's like telling a hospital CIO, 'We're going to upgrade your database schema every two months.'"

The Connectathon is the best place to learn what it takes to meet the standard, said Amit Trivedi, CCHIT certification manager and interoperability expert panel lead. "The vendor-to-vendor interoperability testing, the ability to test your product in a real-time situation, tweak your product, see what didn't work and do it again, exchanging clinical documents from different sources—it's very necessary for vendors to have confidence to move toward certification, which is 100 percent pass/fail," he said.

The Canadian Health Infoway, an independent not-for-profit organization whose goal is to accelerate EHR adoption, has established hundreds of successful projects across the country. "Our mission is not only to work at the technology level, but also to ensure standards are adopted at the clinician level and result in tangible benefits," said Alvaro Mestre, Infoway's regional director of architecture. He emphasized working efficiently with the budget established by the Canadian government and matched by individual provinces.

In the U.S., all eyes are on the economic stimulus plan, which allows significant funding for healthcare IT. Some question whether it is enough to satisfy the goal of an EHR by 2014.

"Interoperability is bigger than \$22 billion," said Charles Parisot, warning that the process must evolve if the goal is to be achieved.

The good news, said Dr. Mendelson, is that much groundwork has already been done with existing funds. "One problem is that, other than the wealthiest healthcare providers, everybody has been struggling economically and they're wary of investing millions of dollars," he said. "But healthcare IT developers have built solutions that we believe will evolve in an intelligent fashion. The stimulus package puts



This year's Connectathon revealed substantial growth in the patient care devices domain and also marked the debut of the IHE® Radiation Exposure Monitoring Profile.

dollars into the hands of providers and says, 'We're going to help you go out and purchase these solutions.' You're not going out there alone—your neighbors will be purchasing the same solutions."

With or without the stimulus, Dr. Mendelson believes that healthcare IT development remains robust and the IHE revolution will march on. "Everyone knows that the future is in building these solutions and evolving," he said. "Otherwise, you're going to be left behind." □

Learn More

■ IHE product integration statements will be stored in an easy-to-browse registry to be launched this month at product-registry.ihe.net. This new, Web-accessible database will create a clearer link between Connectathon results and the capabilities of commercial products offered by participating companies.

Listen In

■ Go to RSNANews.org for the online version of this story, where you can also hear interviews with Connectathon participants about the economy's influence on electronic health record development and how the economic stimulus plan will boost interoperability. These and other interviews from the Connectathon are part of Listen In, the new *RSNA News* feature designed to enhance understanding of some of the latest topics in radiology.



New Studies Show Potential for Dramatically Improved MR

THE FUTURE of MR imaging may be dramatically improved images and more flexibility in how patients are imaged, new studies indicate.

Contrast Agent Increases Tumor Definition

In a study at Delft University of Technology in The Netherlands, a post-graduate researcher has developed a phenylboronate-containing substance that, acting as a contrast agent, does a superb job of defining tumors in mice.

Kristina Djanashvili, Ph.D., recently received her doctorate in organic chemistry and has worked on this research for a few years. She conducted synthetic studies, chemophysical studies, in vitro cell work to prove the principle and finally the first in vivo studies. She worked with her supervisor, Joop A. Peters, Ph.D., on sugar chemistry and its ability to bind with boronates.

Dr. Djanashvili said the new contrast agent incorporates a lanthanide chelate and a member of the phenylboronate group. The lanthanide chelate makes sure there is a strong and clear MR imaging signal by influencing

the behavior of water molecules even inside the human body, leading to water exchange between lanthanide chelate and hydrogen nuclei. The more hydrogen nuclei affected, the better the MR imaging signal. Meanwhile, the phenylboronate group seeks out sialic acid that concentrates on the surface of tumor cells.

The main problem with the new contrast agent, said Dr. Djanashvili, is its propensity to bind with other blood



Kristina Djanashvili, Ph.D.
Delft University of Technology,
The Netherlands

sugars like glucose and to erythrocytes, which also contain sialic acid. The newest research in this area is aimed at overcoming this problem by developing a suitable protection, like liposomes, for the agent until it reaches the tumor site.

“There is still a long way to go

until human testing can begin,” she said. “Of course the efficiency of the agent is very important but more important is the biostability and safe clearance of the agent from the body.”

The new contrast agent won't be turning up in imaging clinics

for a couple of years, said Dr. Djanashvili, “but our study demonstrates that molecular recognition of cancer by boronate-containing agents is an extremely interesting approach. We hope that



Philip J. Grandinetti, Ph.D.
The Ohio State University

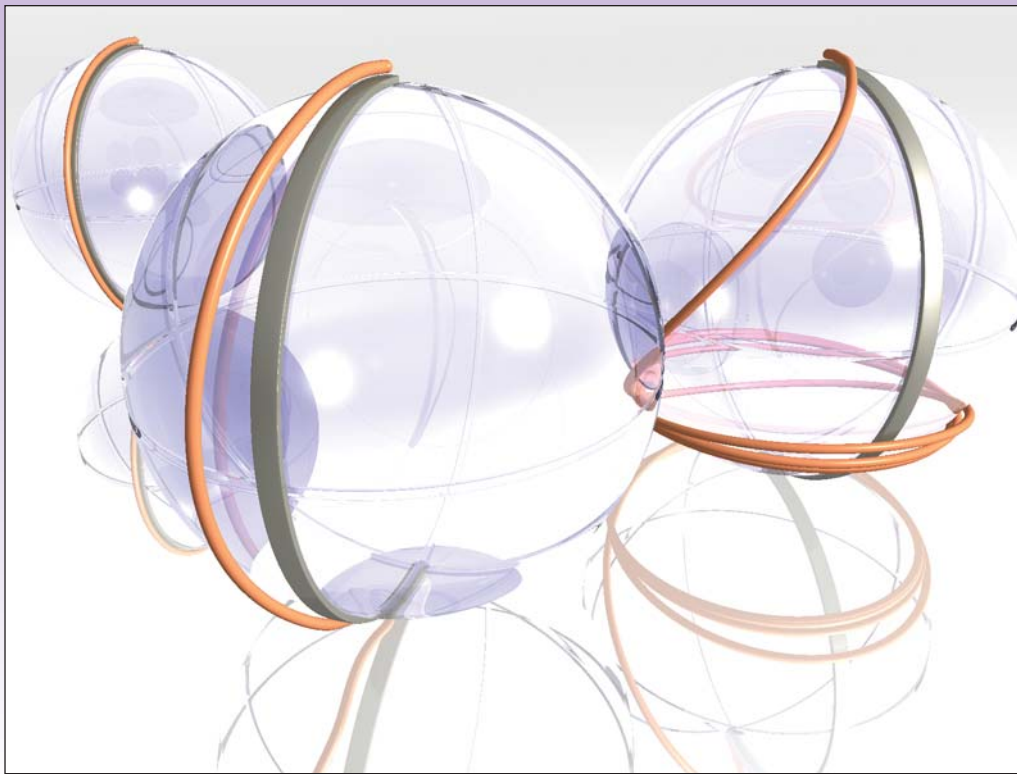
our future work will prove it with new results.”

Dr. Djanashvili's research is very exciting, said Martin R. Prince, M.D., Ph.D. “I eagerly await further results,” said Dr. Prince, a professor of radiology at Cornell University and chief of MR at New York Hospital. Dr. Prince presided over a scientific paper session in vascular and interventional MR at RSNA 2008.

It makes sense to invest in contrast agent research, said Dr. Prince, noting a trend within the MR imaging research community toward targeted imaging agents with unique biodistribution, versus the one-size fits all approach of current gadolinium-based contrast agents. “MR imaging will become more like nuclear medicine, with many unique imaging agents,” he said. “A more molecular approach will “make things more complicated on one hand, but we'll be better able to pinpoint tumors

Our study demonstrates that molecular recognition of cancer by boronate-containing agents is an extremely interesting approach.

Kristina Djanashvili, Ph.D.



The Superadiabatic Process

The gray path is the magnetic field along the center sphere from North Pole to South Pole as it drags the nuclei to align them in the direction of the magnetic field. Researcher Philip J. Grandinetti, Ph.D., explained that in the sphere on the left, the magnetic field moves infinitely slowly (adiabatic process). On the right, it's too fast (non-adiabatic process). The one in the middle is just right (superadiabatic process).

Image courtesy of Gwendal Kervern, The Ohio State University

and other pathology more accurately on the other.”

Algorithm Improves MR Speed, Images

Another study by researchers in the U.S. and France could potentially help scientists find ways to use MR imaging without putting patients inside magnets. The study, published recently in the *Journal of Chemical Physics*, reveals a mathematic algorithm that could lead to faster and better MR images and more information.

Philip J. Grandinetti, Ph.D., a professor of chemistry at The Ohio State University, explained that one way to do MR is with the adiabatic process, in which magnetization is slowly moved around a patient to generate an image.

Dr. Grandinetti described adiabaticity as carrying a bowl of soup from the kitchen to the dining room without disturbing the surface—one must use tiny steps the entire way.

Dr. Grandinetti and colleagues at France’s National Center for Scientific Research and the University of Lyon looked at superadiabaticity, which occurs during smooth acceleration and

deceleration, moving magnetization at a finite rate.

Using the soup analogy for superadiabaticity, Dr. Grandinetti said one starts in the kitchen with tiny steps, gradually increasing the step size to a maximum speed and then gradually decreasing the step size back to tiny steps before stopping at the dining room table, again without disturbing the surface of the soup. Every movement would be in perfect order to get the soup between the kitchen and dining room.

The researchers knew that adiabaticity worked faster but, until now, they didn’t understand why. The theoretical picture didn’t describe the process properly, said Dr. Grandinetti, because the math algorithm used for years was incomplete. “We now have the proper equation,” he said.

With the proper quantum mechanics equation, Dr. Grandinetti said new methods can be designed that are faster and with less image loss. For example, one-sided magnets could be placed under an exam table, he said. “That may be possible in about 20 years and

now we are on the right path to figure it out,” he said.

Dr. Prince greeted this research enthusiastically as well. “This is the great thing about MR imaging,” he said. “Further insights are emerging on how technology works and how to make it better. Sometimes we hear talk of a ‘brick wall’ in imaging. Then something like this study appears and it smashes that brick wall.” □

Learn More

■ For more information about the MR research being conducted at Delft University of Technology in The Netherlands, go to home.tudelft.nl/en/.

■ To read the abstract for “Superadiabaticity in Magnetic Resonance,” published in the *Journal of Chemical Physics*, go to jcp.aip.org and select the November 28, 2008, issue. More information is also available at www.grandinetti.org, the Web site of Ohio State researcher Philip J. Grandinetti, Ph.D.

SPECT/CT Improves Thyroid Cancer Staging

A BREAKTHROUGH in lymph node imaging in thyroid cancer using hybrid single photon emission CT and CT (SPECT/CT) has led to better assessment of recurrence risk and staging for treatment.

Using a SPECT/CT camera, researchers from the University of Erlangen-Nuremberg, Germany, were able to accurately distinguish malignant cells in regional lymph nodes from normal thyroid tissue in patients with differentiated thyroid carcinoma (DTC) treated with radioiodine.

Researchers published their findings in the January issue of *The Journal of Nuclear Medicine*.

DTC is the most common form of thyroid cancer, with more than 37,000 new cases forecast for 2009, according to the American Cancer Society. Because metastatic thyroid cancer has a high rate of recurrence, accurate confirmation of the spread of thyroid cancer cells to the regional lymph nodes is critical to disease treatment.

"Incorporated at first treatment, SPECT/CT allows us to better stratify patients into treatment groups," said senior author Torsten Kuwert, M.D., chair of clinical nuclear medicine at the university.

Researchers explored whether SPECT/CT would be more accurate than planar scintigraphy in the diagnosis of radioiodine-accumulating cervical lymph node metastases in a very early phase of management of patients with thyroid cancer, namely at radioablation of thyroid tissue usually performed several weeks after thyroidectomy.

The accuracy of planar imaging at that point is very low because radioiodine accumulation in the remnant is usually present and cannot be reliably distinguished from radioiodine-positive nodes with planar imaging, said Dr. Kuwert.

"We demonstrated that SPECT/CT fared significantly better than planar imaging to distinguish cancerous cells from residual thyroid tissue in a group of 57 patients," said Dr. Kuwert.

"Furthermore, our data show that SPECT/CT altered the risk classifica-

We demonstrated that SPECT/CT fared significantly better than planar imaging to distinguish cancerous cells from residual thyroid tissue.

Torsten Kuwert, M.D.

tion conforming to the Union Internationale Contre le Cancer/American Joint Committee on Cancer (UICC/AJCC) in one out of four patients," he continued. "This in turn leads to a change in the strategy of follow up in these patients. With a better assessment of the individual patient's risk of recurrence, follow-up can be intensified in those upstaged and overtreatment avoided in those who get downstaged."

SPECT/CT Continues to Migrate into Clinical Practice

"The SPECT/CT technology is not as glamorous as PET/CT, so its media coverage has so far been somewhat more limited," said Dr. Kuwert. "It is, however, a very efficient technology. The fusion images speak for themselves."

Dr. Kuwert and colleagues received one of the first SPECT-spiral CT scanners in Europe. After the machine was installed in 2005, the researchers quickly realized its potential and started work in the field of thyroid cancer.

"Now SPECT/CT is a routine



Torsten Kuwert, M.D.
University of Erlangen-Nuremberg,
Germany

tool in our clinic," he said. "Nearly every patient who previously was studied by SPECT now gets SPECT/CT. We experience its enormous advantages in our daily practice and are very enthusiastic about its potential."

Scientific work with SPECT/CT has only just begun, said Dr. Kuwert, with large studies needed to better define the modality's exact role in management of patients with thyroid cancer. He said it is important to recognize that SPECT/CT opens a new window on that disease, offering at least a 30 percent improvement in diagnostic accuracy of metastatic spread of thyroid tumors.

"I feel that some controversies recently raised on the management of thyroid cancer can be very nicely addressed using this technique," said Dr. Kuwert.

Molecular Imaging Viewed as Crucial Worldwide

Progress in molecular imaging has been slow, due in part to the challenges of the

biology and also the lack of commercial interest, according to RSNA Science Advisor Daniel C. Sullivan, M.D., a professor of radiology at Duke University Medical Center. High revenue streams are not forecast for these diagnostic agents, especially if they are designed for specific molecular targets, he said.

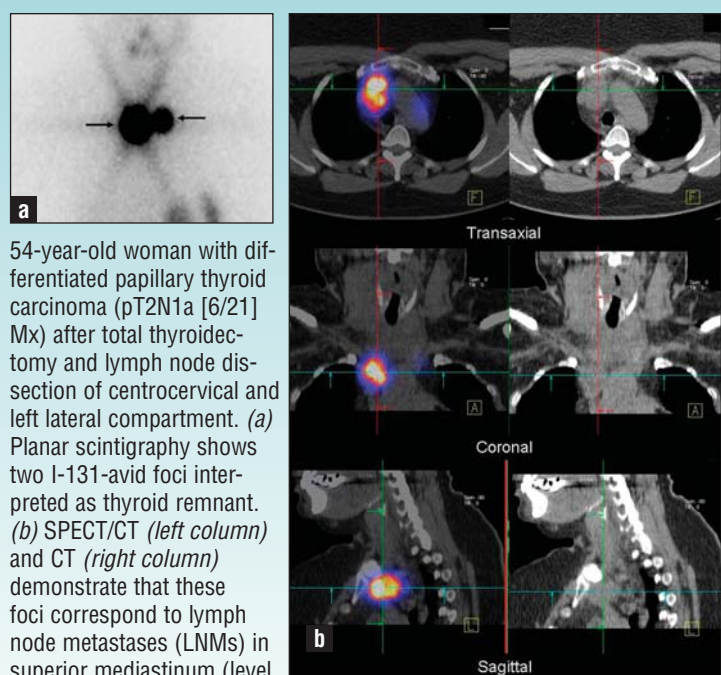
That said, a number of groups in the U.S., Europe and Asia continue to develop their molecular imaging programs, said Dr. Sullivan. “The goal is to find things like radiopharmaceuticals that are specifically taken up by cancers or other disorders the way thyroid cancer takes up I-131,” he said. “Researchers are working on discovering agents that are specific to other cancers.

“For prostate cancer they are working on variations of prostate specific antigen (PSA),” Dr. Sullivan continued. “For lung and breast cancers, they are working on a variety of different chemicals. Some of these are small fragments of antibodies to chemicals and others are compounds that are related to drugs that would be taken up by the cancer to identify where they are and localize them.”

Dr. Sullivan, who moderated the Molecular Imaging Symposium at RSNA 2008, said that all major radi-

ology departments worldwide view molecular imaging as a significant part of radiology’s future. There won’t be a quick change that revolutionizes radiology in just a couple of years, he said, but, gradually over the next five to 15 years, more and more molecular imaging techniques will be optimized and commercialized for use in humans.

“Radiologic and nuclear medical techniques will be moving closer together once again,” commented Dr. Kuwert. “I also feel that the trend toward molecular imaging in the field will gain additional strength. Radiologists will experience the clinical attractiveness of molecular imaging, just as we in nuclear medicine have realized that we need the morphological substrate of disease to improve the accuracy of diagnosis.” □



54-year-old woman with differentiated papillary thyroid carcinoma (pT2N1a [6/21] Mx) after total thyroidectomy and lymph node dissection of centrocervical and left lateral compartment. (a) Planar scintigraphy shows two I-131-avid foci interpreted as thyroid remnant. (b) SPECT/CT (left column) and CT (right column) demonstrate that these foci correspond to lymph node metastases (LNMs) in superior mediastinum (level VII)—shown here for right focus.

Image reprinted with permission of *The Journal of Nuclear Medicine (JNM)*. Co-authors of “Impact of I-131-SPECT/Spiral-CT on Nodal Staging of Differentiated Thyroid Carcinoma at First Radioablation” include Daniela Schmidt, Attila Szikszai, Rainer Linke, Torsten Kuwert, Clinic of Nuclear Medicine; and Werner Bautz, Institute of Radiology, all from the University of Erlangen-Nürnberg in Erlangen, Germany. *JNM*, January 2009.

Learn More

■ The abstract for “Impact of I-131 SPECT/Spiral CT on Nodal Staging of Differentiated Thyroid Carcinoma at the First Radioablation,” published in the January 2009 issue of the *Journal of Nuclear Medicine*, is available at jnm.snmjournals.org/cgi/content/abstract/50/1/18.

RSNA 2008 Presentation Shows Magnetic Appeal of Molecular Imaging

AN RSNA 2008 presenter said his research of molecular particle imaging (MPI) may help lead to regeneration of damaged organs through cell therapy.

Jeff W.M. Bulte, Ph.D., a professor of radiology, biomedical engineering and chemical and biomolecular engineering at The Johns Hopkins Russell H. Morgan Department of Radiology and Radiological Science, examined the feasibility of MPI to view metallic nanoparticles loaded into stem cells.

He and his team studied test tubes with mouse neural stem cells (NSC) and rat mesenchymal stem cells (MSC) labeled formulations with the clinical Resovist or Feridex, which are superparamagnetic iron oxide nanoparticles.

The magnetic particles were loaded into

cells much more sensitive to MPI than MR. Like conventional MR, MPI uses strong magnetic fields to produce images. Unlike MR, which produces images of tissue in response to magnetic particles, the MPI technique visualizes the magnetic particles directly by means of their non-linear superparamagnetic magnetization.

Dr. Bulte found a linear relationship between the MPI signal and iron content for the two different stem cell types he tested.

His research found MPI enables a linear quantification of both cell number and iron content over a wide range of concentrations, regardless of the state of supermagnetic iron



Jeff W.M. Bulte, Ph.D.
The Johns Hopkins University

oxide nanoparticles as free or intracellular.

Another pre-clinical study released this year found that the use of MPI generates unprecedented real-time images of arterial blood flow and volumetric heart motion—a major step in taking MPI from a theoretical concept to an imaging tool to help improve diagnosis and therapy planning for heart disease, stroke and cancer. The study, “Three-

dimensional real-time in vivo magnetic particle imaging,” appears in the March issue of *Physics in Medicine and Biology*.

R&E Grant Provides First Step in Years of Funded Research

JANET F. EARY, M.D., admits it has been a long time since she thought about the study in which she used Tc-99m Neoglycoalbumin (NGA) for functional hepatic imaging following radiation therapy. So long, in fact, she didn't immediately remember that the study was funded by a 1987 RSNA Research Seed Grant.

That's what more than 20 years of research will do. But if the details of her first study were initially hazy, Dr. Eary was clear on the fact that the RSNA grant was a stepping stone to the millions of dollars in funding she has since received.

"I've had National Institutes of Health (NIH) funding ever since then, but for a different topic entirely," said Dr. Eary, a professor of nuclear medicine at the University of Washington in Seattle. "The seed grant enabled me to become familiar with the process of writing a grant proposal—focusing it, designing a project and interacting with a funding body in a review.

"My seed grant wasn't my subse-

quent research focus, but it was a terrific way to get started," Dr. Eary continued. "I ended up doing a lot more research for many years in other areas, but a lot of them had to do with functional imaging."

Dr. Eary also serves as the co-principal investigator of the University of Washington, NIH-sponsored PET in Cancer Program and the principal investigator for the University of Washington Cancer Consortium Imaging Program. She is not alone among R&E grant recipients who have received considerable subsequent grant funding—a recent survey found that, on average, each dollar awarded by the R&E Foundation generated more than \$30 in subsequent funding.

Molecular Imaging Agents are Current Focus

Dr. Eary currently serves as principal or co-principal investigator on more than a dozen funded projects. Her studies, results of which have been published in more than 150 articles and book chapters, include developing protocols for imaging and treatment in hematologic



Janet F. Eary, M.D.
University of Washington, Seattle

malignancies using radiolabeled antibodies at high doses. She has also done translational work in evaluating new biologically specific imaging tracers, as well as biomarker validation studies, primarily relating to cancer.

"The studies all have to do with characterization of molecular imaging agents, how to use them and their

NAME:

Janet F. Eary, M.D.

GRANT RECEIVED:

Research Seed Grant (1987)

STUDY:

"Tc-99m NGA Functional Imaging Following Radiation Therapy"

CAREER IMPACT:

Dr. Eary said the seed grant enabled her to become familiar with the process of writing a proposal—focusing it, designing a project and interacting with a funding body in a review.

CLINICAL IMPLICATIONS:

Dr. Eary has gone on to develop protocols for imaging and treatment in hematologic malignancies using radiolabeled antibodies at high doses. She also has done translational work in evaluating new biologically specific imaging tracers, as well as biomarker validation studies, primarily relating to cancer. "The studies all had to do with characterization of molecular imaging agents, how to use them and their validation in clinical studies," she said.



**Grants
in Action**

For more information on all Foundation grant programs, go to RSNA.org/Foundation or contact Scott Walter, M.S., Assistant Director, Grant Administration at 1-630-571-7816 or swalter@rsna.org.

validation in clinical studies,” said Dr. Eary. “This is basic translational research looking at different levels and the use of biologically specific imaging agents for learning about disease and its treatment.”

Much of her work involves studying sarcomas, said Dr. Eary, not only to learn about less-common sarcomas but also to test techniques that can be applied to other cancers.

“We found early on in FDG-PET scanning that tumor biological activity is a predictor for outcome,” she said. “There are variable levels of tumor proliferation and drug resistance that exist within them.”

Dr. Eary said her work has led to several interesting developments, pointing in particular to image analysis work that has been recently validated in the patient imaging dataset.

“Some of the other interesting work has been in imaging tumors with combinations of biologically specific imaging agents such as one targeting cellular proliferation, hypoxia and multiple drug resistance,” she said.

Curiosity is Part of Job

In addition to the many studies in which she is involved, Dr. Eary serves on the editorial boards of the *Journal of Nuclear Medicine*, *Nuclear Medicine Communications* and *Oncology Reports* and was editor of *Nuclear Medicine*

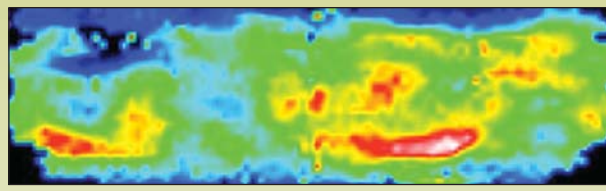
Therapy, published in March 2007.

She also is involved with resident training within that specialty and radiology and devotes time to “thinking and exploring new ideas,” she said.

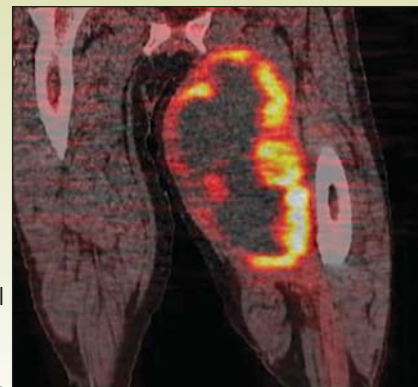
“I have a lot of thoughts and ideas and I follow them along,” she said. “Sometimes I get them funded and pursue them some more. I also try to help other people in developing their ideas. Not necessarily doing it myself, but certainly assisting or consulting.

“I’m also very curious when I hear about new imaging modalities and start thinking about their possible applications,” she added. “I pick up a lot of information in various places, think about it and synthesize it. I’m a physician, so I always think about how we can bring all this great developmental science, engineering and biology to bear on helping physicians take care of people with illnesses and understand their diseases and how to treat them the best.

“I’m always looking to the future, to the next sorts of areas I’d like to



Today, the research of 1987 RSNA Research Seed Grant recipient Janet F. Eary, M.D., focuses on the characterization of molecular imaging agents, how to use them and their validation in clinical studies. Much of her work involves studying sarcomas.



Here a sarcoma is depicted in PET/CT fusion (*right*) and in an analysis PET image of the tumor surface (*top*).

investigate,” Dr. Eary concluded.

“There will be a number of different things that I do, some of them with laboratory correlation and validation of our imaging findings and using imaging as a guide to probe tumor biology. Then I’m also spending some time looking at newer and emerging imaging modalities and their applications.” □

RSNA RESEARCH & EDUCATION FOUNDATION

Outstanding Researcher and Educator Awards

Nomination Deadline—June 15

THE RSNA R&E Foundation is accepting nominations for the 2009 RSNA Outstanding Researcher and Outstanding Educator. The awards annually honor one senior physician or scientist in each award category who has made a career of significant contributions to the field of radiology or radiologic sciences through research or teaching/education. In 2008, the Outstanding Researcher award was presented to Ralph Weissleder, M.D., Ph.D., and the Outstanding Educator award was presented to Richard B. Gunderman, M.D., Ph.D.

To nominate someone for one of these awards, send a one-page letter of intent and the nominee’s complete curriculum vitae to Scott Walter, Assistant Director, Grant Administration, at swalter@rsna.org. More details and a listing of past recipients are available at RSNA.org/Foundation/Awards.cfm.

PATIENT SAFETY

Answer

[Question on page 4.]

A No. Depending on the vendor and application, CT AEC may sometimes result in higher doses in certain situations, if caution is not observed. Understanding the AEC system in your particular scanner is important.

(Reference: *RadioGraphics* 2008;28:1451-1459)

Q&A courtesy of AAPM.



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Lalitha & Kamal K. Sarada, M.D.

Yasuo Sasaki, M.D., Ph.D.

Amy & Steven M. Schonfeld, M.D.

Ali R. Sever, M.D.

Sadashiv S. Shenoy, M.D.

Monica & Malwinder S. Singha, M.D.

Beth M. Siroty-Smith, M.D.

Vivian M. Fraga, M.D. &

James B. Spies, M.D.

Meg & Joseph Stengel, D.O.

Bruce G. Stewart, M.D.

William B. Tannehill, M.D.

Dr. & Mrs. Eastwood G. Turlington

In memory of Hillier L. Baker Jr., M.D.

Celebrating 25 years, the RSNA R&E Foundation provides the R&D that keeps radiology in the forefront of medicine. Support your future, donate today at RSNA.org/campaign.

Terry W. Tyler, M.D.

Kazuhiko Ueda, M.D.

Kim V. Villarreal, M.D. &

Michael Villarreal

Sony Chang & Kao-Lun Wang, M.D.

Jane W. Wang Chan, M.D.

Faith A. Weidner, M.D.

Vicki & O. Clark West, M.D.

Joanne & Edward J. Wickman, M.D.

Silver Anniversary Campaign Moves Closer to Goal

WITH SUPPORT from individuals, corporations, and private practices, the R&E Silver Anniversary Campaign has raised \$13.8 million toward its \$15 million goal.

The campaign, launched at RSNA 2005, is chaired by William G. Bradley Jr., M.D., Ph.D., of the University of California, San Diego, Luther

W. Brady Jr., M.D., of Drexel University and Anne G. Osborn, M.D., of the University of Utah.

Special events at RSNA 2009 will mark the anniversary. An article in the June 2009 issue of *RSNA News* will chronicle accomplishments from the Foundation's 25-year history and explore future aspirations.

Journal Highlights

The following are highlights from the current issues of RSNA's two peer-reviewed journals.

Noncalcified Lung Nodules: Volumetric CT Assessment

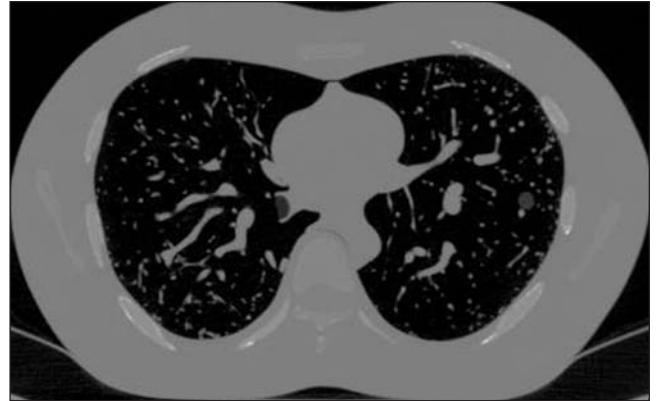
SIZE measurement of lung nodules must be accurate and consistent to enable assessment of nodule change in a short time.

In a review article in the April issue of *Radiology* (RSNA.org/radiology), Marios A. Gavrielides, Ph.D., of the National Institute of Biomedical Imaging and Bioengineering and U.S. Food and Drug Administration in Silver Spring, Md., and colleagues review findings from published studies relevant to the volumetric CT analysis of lung nodules, focusing on the extent of error in the volume-based estimation of nodule size.

In addition to identifying a number of under-examined areas of research regarding volumetric assessment of lung nodules, including the effects of pitch and section collimation, researchers specifically examine:

- Effect of different factors on the volumetric assessment of lung nodules with thoracic CT, including image acquisition, reconstruction parameters and nodule characteristics
- Performance of algorithms for nodule segmentation and volume estimation

While pointing to the need for continued research, Gavrielides and colleagues promote understanding and try to quantify the sources of volumetric measurement error in assessing lung nodules with CT as a first step toward developing methods to minimize that error. "An understanding of the sources and extent of error would allow software developers and users of quantitative imaging to control for



Axial CT section shows phantom with synthetic nodule attached to the vasculature in left lung.

(Reprinted, with permission, from Kinnard LM, Gavrielides MA, Myers KJ, et al., "Volume error analysis for lung nodules attached to bronchial vessels in an anthropomorphic thoracic phantom." In: Giger ML, Karssemeijer N, eds. *Proceedings of SPIE: Medical Imaging 2008-Computer-aided Diagnosis*. Vol 6915. Bellingham, Wash: International Society for Optical Engineering, 2008.)

these effects through system improvements (hardware, software and operator contributions), while physicians could incorporate this knowledge into their assessment of lung nodule change and patient care," the researchers conclude. (*Radiology* 2009;251:26-37)

Strategies for Establishing a Comprehensive Quality and Performance Improvement Program in a Radiology Department

TO ENSURE safety, accuracy and high-quality care and maintain a competitive edge, imaging departments should establish and manage comprehensive and effective performance improvement programs, many of which are mandated by regulatory agencies.

In an article in the March-April issue of *RadioGraphics* (RSNA.org/radiographics), Jonathan B. Kruskal, M.D., Ph.D., of Harvard Medical School and chair of radiology at Beth Israel Deaconess Medical Center in Boston, and colleagues define various terms

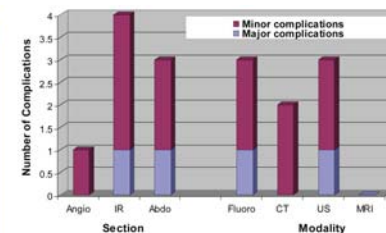
commonly used in quality management, review principles of performance improvement and describe essential "ingredients" of an effective program. Specifically, the authors discuss:

NPSG Compliance

- ID checked x2
- Preprocedure time out
 - Documented
 - In final report
- Results communicated
- Abbreviations avoided
- Med reconciliation
- Fall reduction efforts

Radiology Metrics

- Postprocedure orders
- Patient follow-up orders
- Orders signed in chart
- Sample disposition
- Procedural complication



Data are linked to adverse event monitoring and staff assessment process

Complication: bleeding following liver biopsy

Graph and chart illustrate the monitoring of compliance with the Joint Commission's National Patient Safety Goals and several radiology-specific metrics.

When note is made that an adverse event (for example, bleeding requiring hospital admission) occurred following an imaging-guided procedure (for example, ultrasonography-guided liver biopsy), the review process is used to link this information to an adverse event reporting system to ensure that the event has been or is now being recorded. The data are then further linked to the departmental procedural complication key performance indicator. IR = interventional radiology.

(*RadioGraphics* 2009;29:315-329)

Continued on Page 19

Radiology in Public Focus

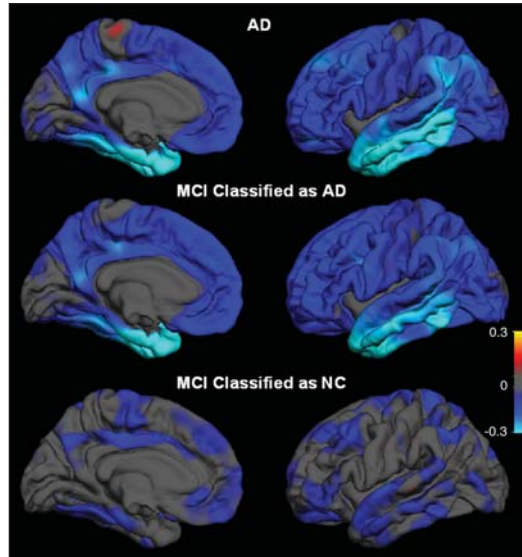
Press releases have been sent to the medical news media for the following articles appearing in the April issue of *Radiology* (RSNA.org/radiology):

Alzheimer Disease: Quantitative Structural Neuroimaging for Detection and Prediction of Clinical and Structural Changes in Mild Cognitive Impairment

SEMI-AUTOMATED quantitative structural MR methods can identify a pattern of atrophy characteristic of mild Alzheimer disease (AD) and predict decline in patients with mild cognitive impairment (MCI), researchers have found.

Linda K. McEvoy, Ph.D., of the Department of Radiology at the University of California, San Diego, and colleagues studied 84 patients with mild AD, 175 with MCI and 139 control volunteers. They found that atrophy in the mesial and lateral temporal areas, isthmus cingulate and orbitofrontal areas distinguished patients with AD from controls with 83 percent sensitivity and 93 percent specificity. Patients with MCI with phenotypic AD atrophy showed significantly greater clinical decline.

“Such an improvement in predictive prognostic information could be valuable for



Average differences in thickness (mm) for subjects with Alzheimer disease (AD) and mild cognitive impairment (MCI) relative to controls (NC). *Top:* Controls versus subjects with AD. *Middle:* Controls versus subjects with MCI who had AD imaging phenotype. *Bottom:* Controls versus subjects with MCI who had control imaging phenotype. *Right:* Lateral views. *Left:* Mesial views. Blue areas indicate regions of thinning with disease. Scale reflects thickness in millimeters, ranging from -0.3-mm thickness (bright blue or cyan) to +0.3-mm thickness (yellow). (*Radiology* 2009;251:195-205)

individual patient treatment, particularly when aggressive new treatments that may prevent or delay AD become available,” the researchers write. “Currently such information could provide an important enrichment strategy for the design of large-scale clinical trials, enabling them to identify a more homogenous cohort of individuals with MCI who are at high risk of imminent decline, allowing for smaller sample sizes and shorter trial durations.”

Nondestructive Insights into Composition of the Sculpture of Egyptian Queen Nefertiti with CT

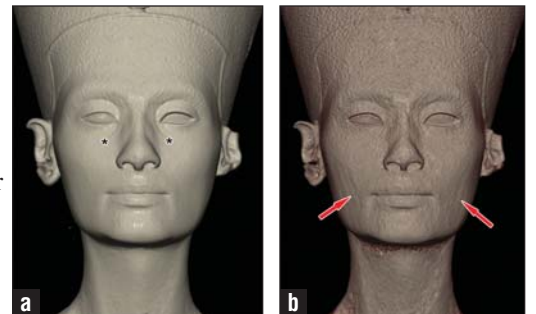
NEW EXAMINATION with 64-slice CT of the bust of Nefertiti on exhibit in Berlin’s Altes Museum reveals new details about the sculpture’s composition and a more realistic inner face under the stucco mask.

The bust, excavated in 1912 from the workshop of the royal sculptor Thutmose, is composed primarily of stucco layers over a limestone core. An earlier CT study confirmed the bust’s antiquity and used a slice thickness of 5 mm. The new study by Alexander Huppertz, M.D., of the Imaging Science Institute Charité in Berlin, and colleagues used a slice thickness of 0.6 mm.

Different attenuation values indicated a multistep process in the sculpture’s cre-

ation, the researchers note. Differences in the inner and outer faces suggested Thutmose made customized aesthetic changes and the limestone core was not merely a mold. “Nefertiti’s inner face was not anonymous, but rather delicately sculpted,” Dr. Huppertz and colleagues write.

“While high-resolution CT provided new information regarding the creation and unmasked for the first time the hidden inner face of Nefertiti’s bust, it just as importantly documented the conservation status and provided precious information on how to avoid future damage to the art treasure,” the researchers conclude.



3-D volume-rendered reformations of (a) visible outer layer and (b) hidden inner layer.

Threshold value for surface depiction was set to level higher than 900 HU to subtract outer stucco layer. (a) More pronounced shaping of eyelid corners (*) in comparison with inner layer can be seen. (b) Creases in corners of mouth (arrows) were detected. (*Radiology* 2009;251:233-240)

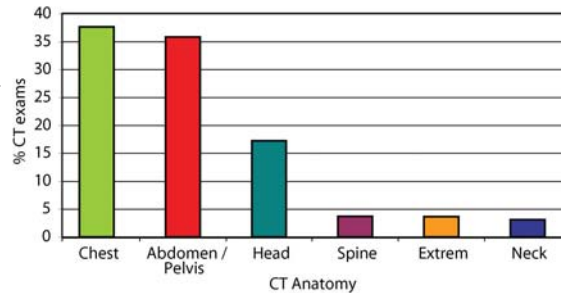
Recurrent CT, Cumulative Radiation Exposure, and Associated Radiation-induced Cancer Risks from CT of Adults

RESEARCHERS have identified a subgroup of patients who undergo high numbers of recurrent CT imaging procedures with potentially high radiation-induced cancer risks.

“While most patients accrue low radiation-induced cancer risks from cumulative CT exposures, incremental risks above baseline are estimated to exceed 1 percent in 7 percent of scanned patients,” writes Aaron Sodickson, M.D., Ph.D., of Brigham and Women’s Hospital in Boston.

Dr. Sodickson and colleagues performed individualized cumulative dose and risk estimates in a cohort of 31,462 patients who underwent CT in 2007 and had a total of 190,712 CT exams in the prior 22 years. Thirty-three percent of patients had five or more lifetime CT exams and 5 percent had between 22 and 132 exams.

Cumulative CT radiation exposure added incrementally to baseline cancer risk and, though the risk for most patients was low, the subgroup undergoing repeated imaging was at



Distribution of anatomic locations for the 190,712 CT examinations captured over the 22-year study period in the cohort of 31,463 patients.

(*Radiology* 2009;251:175-184)

higher risk.

The researchers suggest that patient-specific cumulative radiation risk estimates can inform decisions that balance the individual’s clinical presentation against anticipated benefits of recurrent imaging. “Identification of patients with the highest rates of recurrent imaging may help to focus radiation protection efforts where they are most needed,” the researchers write.

Read—and Hear—More on These Topics at *Radiology* Online

Drs. Sodickson, McEvoy and others talk about their articles in the April edition of the *Radiology* podcast Hear What We Think. Listen to featured discussions from the authors, deputy editors and *Radiology* editor Herbert Y. Kressel, M.D., at RSNA.org/radiology.

Also in the April issue, *Radiology* further explores radiation risk to patients with essays presenting authors’ opposing viewpoints toward using the linear “no-dose-threshold” method for estimating carcinogenic effects and risks. See the Controversies in Radiology section at RSNA.org/radiology.

Media Coverage of Radiology

In February, media outlets carried 195 news stories generated by articles appearing in the print and online editions of *Radiology*. These stories reached an estimated 93 million people.

News releases promoted findings from a study on a technique using CT guidance and microcoils to locate and remove small lung nodules (*Radiology* 2009;250:576-585), a study comparing the benefits of exercise and endovascular revascularization in the treatment of intermittent claudication (*Radiology* 2009;250:586-595), chronic airflow changes in the lungs of patients with asthma (*Radiology* 2009;250:567-575), extension of the stroke therapy window (*Radiology* 2009;10.1148/radiol.2503080811) and an atrophy pattern in the brain possibly predictive of Alzheimer disease (*Radiology* 2009;10.1148/radiol.2511080924).

Coverage included CNN, FOX News Channel, United Press International, Asian News International, Medical News Today, Medscape, *Health & Medicine Week*, *Obesity, Fitness & Wellness Week*, *HealthImaging.com*, *Ivanhoe.com*, *ModernMedicine.com* and *docguide.com*.



Strategies for Establishing a Comprehensive Quality and Performance Improvement Program in a Radiology Department

Continued from Page 17

- Principles of quality and performance improvement and key elements in ensuring the success of an improvement program
- Specifics of applying quality management to radiology, including compliance with regulatory groups
- Key performance indicators and their applications in a radiology department

Although their structure and focus

can vary, programs share

a number of common components including

patient safety, process improvement, customer and consumer relations, professional staff assessment and education. “For each component, we describe strategies for implementing continuous programs to monitor performance, analyzing and depicting data, implementing change and meeting regulatory requirements,” the authors write.

This article meets the criteria for 1.0 AMA PRA Category 1 Credit. CME is available online only.

Imaging Safety the Focus of April Outreach Activities

In April, RSNA will distribute the “60-Second Checkup” audio program to nearly 100 radio stations across the U.S. Segments will focus on dose reduction in CT scanning and the “Image Gently” campaign to reduce pediatric radiation dose.

Working For You

RSNA 2008 Green Initiative Makes Deep Impact

Recycling and conservation efforts at RSNA 2008 led to an environmental waste diversion rate of 70 percent, up from 57 percent in 2007. Reports from Allied Waste Services indicated that green annual meeting initiatives saved 3,020 trees, 67,514 gallons of oil, 728,797 kilowatts of electricity, 234 yards of landfill space and 1,243,681 gallons of water.

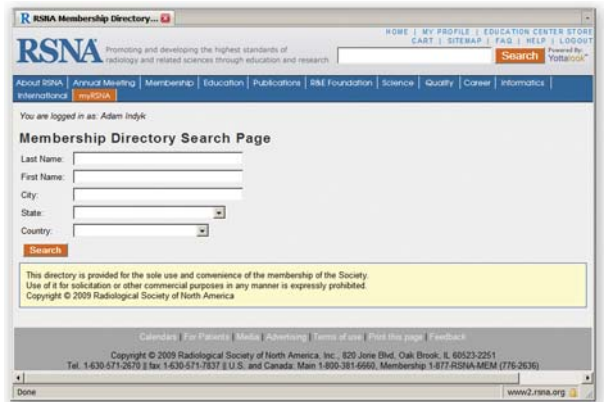


In addition, RSNA's surplus food donation was much larger than in past years, according to Chicago Restaurant Partners data. The donation to Chicago's Pacific Garden Mission included four pallets of produce valued at \$5,000 as well as a large assortment of sandwiches, salads, loaves of bread and breakfast pastries.

2009 RSNA Membership Directory

The printed 2009 RSNA Membership Directory is available by request only. If you would like a copy, go to RSNA.org/requestdirectory by May 1.

The online RSNA Membership Directory (RSNA.org/directory) is easy to use, searchable and always up to date. A user name and password are required.



RSNA Visits ECR

RSNA welcomed European Congress of Radiology (ECR) attendees (a) and (b) to its informational booth at ECR. Booth guests could learn more about RSNA membership and receive a free gift. Also on hand at the booth was 2009 RSNA President Gary J. Becker, M.D. (c, on left), who was joined by Alexander R. Margulis, M.D., and new RSNA Executive Director Mark G. Watson. The winner of the RSNA-at-ECR iPod nano promotion was Philip J. Jurgens, M.D. (not pictured), of Eindhoven, Netherlands.

The RSNA informational booth will be at SNM in Toronto, June 13–17, and the 100th meeting of the French Society of Radiology in Paris, October 16–20.

RSNA will also be on hand for next year's ECR in Vienna, March 5–8, 2010, and the International Congress of Radiology in Shanghai, China, April 9–12, 2010.



News about RSNA 2009



Advance Registration and Housing Opens April 29

RSNA 2009 advance registration and housing open April 29 for RSNA and AAPM members. Non-member registration and housing open May 27. The Advance Registration and Housing brochure will be available in electronic format only at RSNA2009.RSNA.org.



RSNA 2009
Quality Counts

November 29–December 4, 2009
McCormick Place, Chicago

Registration Fees

BY 11/6	ONSITE	
\$0	\$100	RSNA/AAPM Member
\$0	\$0	RSNA/AAPM Member Presenter
\$0	\$0	RSNA Member-in-Training, RSNA Student Member and Non-Member Student
\$0	\$0	Non-Member Presenter
\$150	\$250	Non-Member Resident/Trainee
\$150	\$250	Radiology Support Personnel
\$680	\$780	Non-Member Radiologist, Physicist or Physician
\$680	\$780	Hospital or Facility Executive, Commercial Research and Development Personnel, Healthcare Consultant and Industry Personnel
\$300	\$300	One-day registration to view only the Technical Exhibits

■ For more information about registering for RSNA 2009, visit RSNA2009.RSNA.org, e-mail reginfo@rsna.org or call 1-800-381-6660 x7862.

Registering for RSNA 2009

There are four ways to register for RSNA 2009:

1 Internet—Fastest way to register!

Go to RSNA.org/register

2 Fax (24 hours)

1-800-521-6017

1-847-996-5401

3 Telephone

(Monday–Friday,
8:00 a.m.–5:00 p.m. CT)
1-800-650-7018
1-847-996-5876

4 Mail

Experient/RSNA 2009
568 Atrium Dr.
Vernon Hills, IL 60061
USA

Important dates for RSNA 2009

April 29	RSNA/AAPM member registration and housing open
May 27	Non-member registration and housing open
June 30	Course enrollment opens
October 23	International deadline to have full-conference materials mailed in advance
November 6	Final discounted advance registration, housing and course enrollment deadline, to have full-conference materials mailed in advance
Nov. 29 – Dec. 4	RSNA 95th Scientific Assembly and Annual Meeting

Register by Nov. 6 to receive the discounted registration fee and full conference materials mailed to you in advance. International visitors must register by Oct. 23 to receive these materials in advance. Registrations received after Nov. 6 will be processed at the increased fee and conference materials must be obtained at the McCormick Place Convention Center. No hotel reservations will be accepted after Nov. 6.



News about RSNA 2009

International Visitors

International Letters Available— Act Now for Visa

Personalized letters of invitation to RSNA 2009 are available for request at RSNA2009.RSNA.org. Click International Visitors. This section of the annual meeting Web site also includes important information about the visa application process. Visa applicants are advised to apply as soon as they decide to travel to the U.S. and at least three to four months in advance of their travel date.



Exhibitors Plan for RSNA 2009

Representatives from about 40 companies planning to exhibit at RSNA 2009 met in Chicago in late February. Jonathan M. Alexander, M.D., chair of the RSNA Technical Exhibits Committee, recapped RSNA 2008 and previewed the meeting to come. The technical exhibition will be offered in three halls again this year and the popular Bistrot RSNA dining option will return as well.

MAINTENANCE OF CERTIFICATION

MOC News

RSNA Tools Organize MOC Efforts

RSNA continues to enhance its line of products and online tools to help physicians organize, obtain, record and store their CME and MOC-related activities. These resources are available through the RSNA Education Portal at RSNA.org/education/moc:

- **My Professional Learning Map**—Create a practice profile, enter CME requirements, calculate a history and analysis to plan for future activities and create personalized action plans.
- **MOC File**—Store documents pertaining to a user's personalized MOC plan.
- **RSNA Credit Repository**—Verify and print RSNA-awarded *AMA PRA Category 1 Credits™* and enter self-claimed Category 2 Credit for self-directed learning.
- **Quality Web page**—Discover information and resources relevant to quality in radiology and MOC practice quality improvement (PQI) projects.
- **MOC Brochure Series**—Read up on everything from basic MOC guidelines to quality principles.

For more information on how RSNA can assist with maintenance of certification, call 1-800-381-6660 x3733.

New SAMs Available Online

The RSNA Education Center offers these new self-assessment modules (SAMs) online:

- Radiofrequency Ablation, Cryoablation and Renal Neoplasms
- Obstetric Ultrasound
- When the Physician is the Problem
- Determining Thyroid Malignancy
- Imaging of the Scrotum
- Lesions of the Orbit

These SAMs are “qualified by the American Board of Radiology (ABR) in meeting the criteria for self-assessment toward the purpose of fulfilling requirements in the ABR Maintenance of Certification Program.” Each SAM qualifies for 1 SAM credit, in addition to 2.5 CME credits. To view SAMs, free of charge to RSNA members, go to RSNA.org/education. For additional information, call 1-800-381-6660 x3733.



Program and Grant Announcements

RSNA Clinical Trials Methodology Workshop

January 9–15, 2010 • Hyatt Regency Scottsdale, Arizona

Application Deadline—June 8

OVER THE COURSE of this 6½-day workshop, each trainee will be expected to develop a protocol for a clinical study, ready to include in an application for external funding. Participants will learn how to develop protocols for the clinical evaluation of imaging modalities. A dynamic and experienced faculty will cover topics including:

- Principles of clinical study design
- Statistical methods for imaging studies
- Design and conduct of multi-institutional studies
- Sponsorship and economics of imaging trials
- Regulatory processes

Applicants will undergo a competitive selection process for entrance into the course. Once admitted, trainees will participate in advance preparation, didactic sessions, one-on-one mentoring, small discussion sessions, self-study and individual protocol development. Familiarity with basic concepts and techniques of statistics and study design is required of all applicants.

Applications are available online at RSNA.org/CT2010. For more information, contact Fiona Miller at 1-630-590-7741 or fmiller@rsna.org.



World Congress on Interventional Oncology

June 25–28 • Beijing International Convention Center, China

The World Congress on Interventional Oncology (WCIO) is a scientific and educational forum where international experts from multiple disciplines can advance the future of cancer therapy by exploring the potential combination of minimal invasive strategies with traditional and other new therapeutic procedures.

WCIO welcomes all oncology specialists interested in learning more about collaborating with other specialties in caring for patients using image-guided technology. The congress includes scientific sessions and a technical exhibition.

RSNA is represented on the WCIO planning committee. For more information, go to www.chinamed.com.cn/wcio2009.

RSNA/AUR/ARRS Introduction to Academic Radiology Program

Application Deadline—July 15

Sponsored by RSNA, American Roentgen Ray Society (ARRS) and Association of University Radiologists (AUR), this program introduces second-year residents to academic radiology, demonstrates the importance of research in diagnostic radiology, illustrates the excitement of research careers and introduces residents to successful clinical radiology researchers. Successful applicants will be assigned to either a seminar held during RSNA 2009 or the ARRS annual meeting in 2010.

More information and an application/nomination form are available at RSNA.org/Research/educational_courses.cfm.

World Molecular Imaging Congress (WMIC)

Abstract Submission Deadline—May 11

The 2009 World Molecular Imaging Congress (WMIC), to be held Sept. 23–26 in Montreal, is now accepting abstract submissions at www.wmicmeeting.org.

Along with RSNA, organizations participating in WMIC include the Academy of Molecular Imaging, Society for Molecular Imaging, European Society for Molecular Imaging, Federation of Asian Societies for Molecular Imaging and SNM. WMIC will encompass all aspects of molecular imaging and—with the exception of the first day's Educational Workshop Sessions—will be constructed almost entirely on the strength of submitted abstracts.

For more information or to see a complete list of abstract categories and access the submission system, browse the Web site or contact Charles Metzger at 1-830-896-0332 or cmetzger@molecularimaging.org.

NIH Challenge Grants in Health and Science Research

Application Deadline—April 27

As part of new funding under the Recovery Act, at least \$200 million has been designated for National Institutes of Health (NIH) Challenge Grants in Health and Science Research to fund research that has a high impact in biomedical or behavioral science and/or public health. NIH anticipates funding 200 or more grants of up to \$1 million, pending the number and quality of applications and availability of funds.

For more information and to apply, go to www.grants.nih.gov/grants/funding/challenge_award.

Product News



NEW PRODUCT

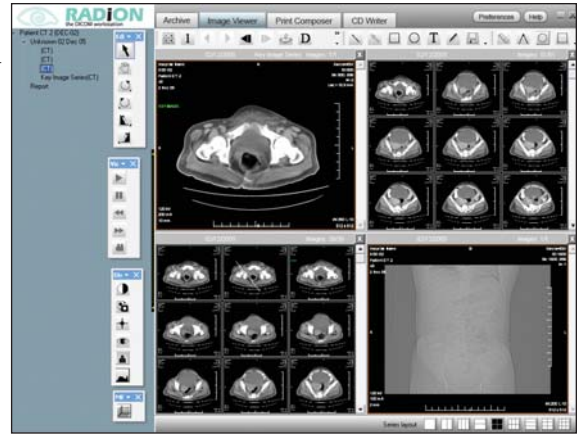
Patient Data Portal Application

RIS Concepts (www.risconcepts.com) now offers a patient data access portal option for its flagship enterprise RCI-RIS, a browser-based multifacility application that supports a comprehensive range of advanced RIS features. Using the portal, patients registered with a radiology practice's site can log in over the Internet and download their reports and related data in real time, using a HIPAA-compliant password. Patients also have access to the radiologist's final signed reports.

PRODUCT UPGRADE

DICOM Workstation

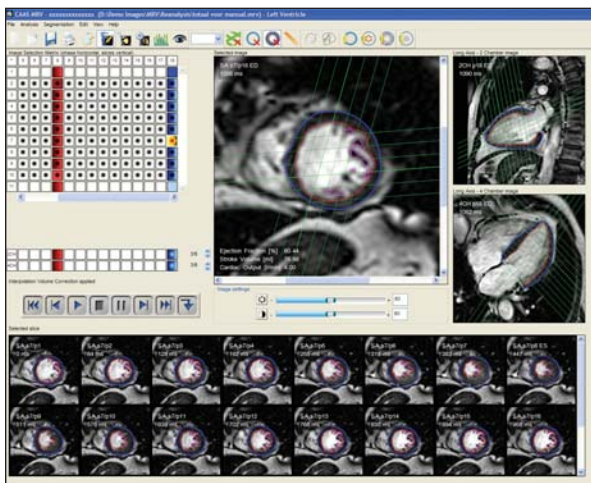
Version 2.2 of RADiON DICOM Workstation (www.dicomworkstation.com) by Ashva Technologies is now Windows Vista compatible and has new features including hanging protocols, key images, series synchronization, merge/split studies, image stitching and digital subtraction angiography, as well as the ability to download studies in the background and archival and backup modules. The new version also includes improved reporting features such as reporting notes, categorization of reports based on study and multiple versions for each report.



NEW PRODUCT

Fiber Material Grids for Dose Reduction

Dunlee (www.dunlee.com) introduces a new line of Smit-Röntgen grids for CR and DR applications. The new "Hi-5" grid utilizes 5 mm-high interspace material between the lead lamella that focus the radiation and absorb the scatter, resulting in dose reductions of up to 40 percent and improved image quality. Smit-Röntgen grids use fiber in place of aluminum, offering the advantage of lower radiation attenuation and a better signal-to-noise ratio. Improved selective transmission through the grid means that radiation doses can be lowered to reveal the same quality images.



NEW PRODUCT

MR Ventricular Analysis Software

PIE MEDICAL IMAGING (www.piemedicalimaging.com) introduces a new release of its cardiac MR quantitative analysis software, CAAS MRV. CAAS MRV enables cardiologists and radiologists to perform easy and fast functional analysis on cine-magnetic resonance images for cardiac MR studies. The quantitative analysis package provides automatic segmentation of the endo- and epicardial left ventricular heart wall on short- and/or long-axis images. The viability analysis and perfusion analysis modules, currently available only for research in the U.S., easily quantify delayed enhancement studies and assess the local deterioration of myocardial blood flow.

RSNA.org

RSNA Career Connection

FINDING A JOB in these dire economic times could be just a mouse click away for visitors to Career Connection, RSNA's online resource for radiology and related healthcare jobs. Career Connection is updated daily with the latest radiology job listings and postings from employers around the world.

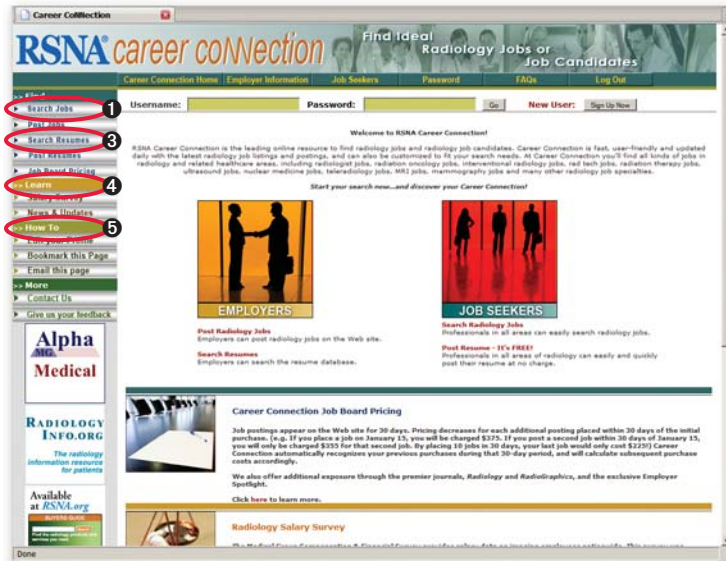
To begin your search, go to RSNA.org/career and click Search Jobs in the left-hand sidebar ①.

Make your search broad or focused by completing the optional fields of position, subspecialty, education level, location, company size, salary range, travel level and experience ②.

Users can also post their resume at no charge, increasing exposure to potential employers. Click Post Resumes in the left-hand sidebar ③. First-time users must complete a brief sign-up form and create a username and password to log in. Creating an account will also enable you to receive e-mails alerting you of jobs matching your search criteria.

Other tools on the left-hand taskbar include Learn ④, offering information on the latest salary trends, industry news and current articles from *RSNA News*, and How To ⑤, allowing you to edit your profile and bookmark or e-mail the page.

Career Connection is equally targeted to employers, who can submit job postings, search for potential candidates, post a company profile and check out advertising rates. As another advantage to employers, search aggregators *Indeed.com* and *Simplyhired.com* link job seekers from those sites directly to Career Connection.



Connections Your online links to RSNA

RSNA.org

myRSNA®
RSNA.org – click My RSNA

Radiology Online
RSNA.org/radiology

RadioGraphics Online
RSNA.org/radiographics

RSNA News
rsnanews.org

Membership Applications
RSNA.org/mbrapp

RSNA Membership Directory
RSNA.org/directory

Education Portal
RSNA.org/education

RSNA CME Credit Repository
RSNA.org/cme

CME Gateway
CMEgateway.org

International Radiology Outreach Resources
RSNA.org/International/IROR.cfm

InterOrganizational Research Council
radresearch.org

RSNA Medical Imaging Resource Center
RSNA.org/mirc

RSNA Career Connection
RSNA.org/career

RadiologyInfo™
RSNA-ACR patient information Web site radiologyinfo.org

RSNA Press Releases
RSNA.org/media

RSNA Research & Education (R&E) Foundation
Make a Donation
RSNA.org/donate

Silver Anniversary Campaign
RSNA.org/campaign

Community of Science
RSNA.org/cos

CQI Initiative
RSNA.org/quality

Resident Learning Portfolio
RSNA.org/myportfolio

RSNA 2009
RSNA2009.RSNA.org

Abstract Submission
RSNA.org/abstracts

CALENDAR

Medical Meetings April – July 2009

APRIL 30–MAY 1

SNM/RSNA, Symposium on Multimodality Cardiovascular Molecular Imaging, National Institutes of Health, Bethesda, Md.
• www.snm.org/cvmi2009

APRIL 30–MAY 2

French Society of Radiology, InterAmerican College of Radiology, Sao Paulo Society of Radiology and Brazilian College of Radiology, French and Latin American Congress of Radiology, São Paulo, Brazil • www.spr.org.br/jpr2009

MAY 2–5

American College of Medical Physics (ACMP), 26th Annual Meeting, Westin Virginia Beach Town Center, Virginia
• www.acmp.org/meetings/09AM

MAY 2–6

American College of Radiology (ACR), Annual Meeting and Chapter Leadership Conference, Hilton Washington, D.C.
• www.acr.org

MAY 12–15

Association of University Radiologists (AUR), Annual Meeting, Crystal Gateway Marriott, Arlington, Va. • www.aur.org

MAY 16–21

American Society of Neuroradiology (ASNR), 47th Annual Meeting, Vancouver Convention and Exhibition Center, British Columbia • www.asnr.org

MAY 30–JUNE 2

2nd World Congress of Thoracic Imaging and Diagnosis in Chest Disease, Valencia Conference Centre, Spain
• www.geyseco.es/thoracicimaging.htm

MAY 31–JUNE 2

American Brachytherapy Society (ABS), Annual Meeting Westin Harbour Castle Hotel, Toronto
• www.americanbrachytherapy.org

JUNE 2–5

Latin American Association of Radiation Oncology Therapy (ALATRO), 2nd Congress, Cancún, México • www.alatro.org

JUNE 4–7

Society for Imaging Informatics in Medicine (SIIM), Annual Meeting, Charlotte Convention Center, North Carolina
• www.siim2009.org

JUNE 7–10

Radiology Business Management Association, Radiology Summit, Loews Royal Pacific Resort, Orlando, Fla.
• rbma.org/conferences/radiology_summit

JUNE 7–11

International Stereotactic Radiosurgery Society (ISRS), 9th Congress and Exhibition, Sheraton Grande Walkerhill Hotel and Congress Center, Seoul, Korea • www.isrs2009.org

JUNE 8–10

U.K. Radiological Congress (UKRC), Manchester Central
• www.ukrc.org.uk

JUNE 13–17 VISIT THE RSNA BOOTH

Society of Nuclear Medicine (SNM), 56th Annual Meeting, Metro Toronto Convention Center • www.snm.org

JUNE 23–26

European Society of Gastrointestinal and Abdominal Radiology (ESGAR), 20th Annual Meeting, Palacio de Congresos de Valencia, Spain • www.esgar.org

JUNE 25–28

World Congress on Interventional Oncology (WCIO), Beijing International Convention Center • www.chinamed.com.cn/wcio2009

JULY 12–16

Society of Radiopharmaceutical Sciences (SRS), 18th International Symposium on Radiopharmaceutical Chemistry, Edmonton, Alberta
• www.srs.snm.org

JULY 23–25

Latin American Society of Pediatric Radiology/Brazilian College of Radiology, International Symposium on Pediatric Radiology, Rio de Janeiro • www.pedrad2009.com.br

JULY 26–30

American Association of Physicists in Medicine, 51st Annual Meeting, Anaheim Convention Center, California
• www.aapm.org/meetings/09AM

NOVEMBER 29–DECEMBER 4

RSNA 2009, 95th Scientific Assembly and Annual Meeting, McCormick Place, Chicago • RSNA2009.RSNA.org