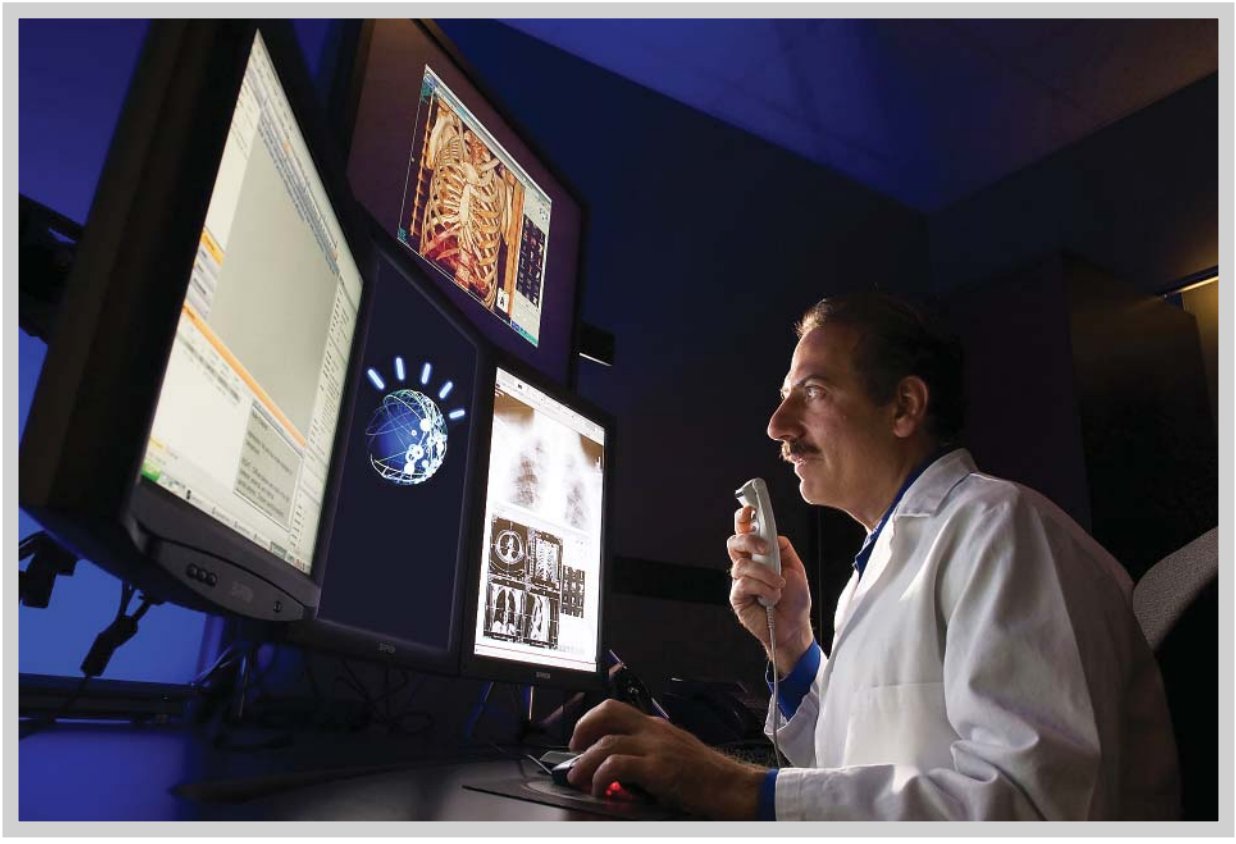
RSNA News™

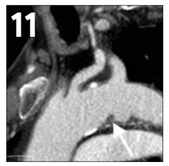
June 2011 Volume 21, Number 6



No Contest: Watson Poised to Revolutionize Healthcare

ALSO INSIDE:

Course Enrollment for RSNA 2011 Begins July 6
See Page 21



JUNE 2011 • VOLUME 21, NUMBER 6

RSNA News™

For more than 20 years, *RSNA News* has provided high-quality, timely coverage of radiology research and education and critical issues facing the specialty, along with comprehensive information about RSNA programs, products and other member benefits.

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DISTINGUISHED HONOREES ANNOUNCED

The RSNA Board of Directors has announced the distinguished award recipients to whom the Society will pay tribute at the 97th Scientific Assembly and Annual Meeting. They are:

RSNA® 2011 Celebrate the Image

November 27 – December 2 | McCormick Place, Chicago

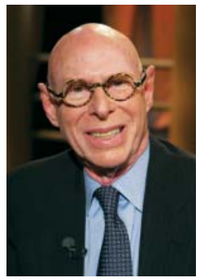
GOLD MEDALISTS

Robert R. Hattery, M.D.
Tucson, Ariz.

Bruce J. Hillman, M.D.
Charlottesville, Va.

Herbert Y. Kressel, M.D.
Boston


Hattery


Hillman


Kressel

HONORARY MEMBERS

Adrian K. Dixon, M.D.
Cambridge, U.K.

Ricardo D. Garcia-Mónaco, M.D., Ph.D.
Buenos Aires, Argentina

Yves M. Menu, M.D.
Paris


Dixon


Garcia-Mónaco


Menu

RSNA Group Billing Simplifies Renewal Process

Private practices and academic radiology groups are invited to take advantage of RSNA's membership renewal group billing option, which simplifies membership renewal by processing one check for multiple members in your group.

Under group billing, a designated contact person will receive one group invoice in September. Payment can be made by sending one check or phoning RSNA's Membership Department with credit card information. Office managers/administrators and accounting staff will appreciate the ease of using RSNA's group billing.

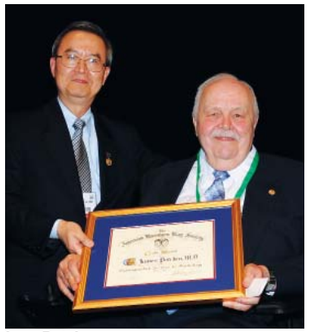
To take advantage of this option, contact the RSNA Membership Department by Aug. 1. Call 1-630-571-7857, fax 1-630-590-7711 or email *yoryhon@rsna.org*.

Wall Awarded SGR Cannon Medal

The Society of Gastrointestinal Radiologists (SGR) awarded its 2011 Walter B. Cannon Medal to Susan D. Wall, M.D., at its recent annual meeting. Dr. Wall is a professor and vice-chair of academic affairs in the Department of Radiology and Biomedical Imaging at the University of California, San Francisco. She is a former editor of *RSNA News*. The medal is the highest honor awarded by SGR.


Hasso, ARRS immediate past-president Joseph K.T. Lee, M.D.


Morin, Lee


Lee, Potchen

ARRS Names Officers, Awards Gold Medals

James A. Brink, M.D., was named the American Roentgen Ray Society (ARRS) 2011-12 president at the society's recent annual meeting. Dr. Brink is chair of the Department of Diagnostic Radiology at the Yale School of Medicine and Yale-New Haven Hospital and co-chair of the American College of Radiology-RSNA Joint Task Force on Adult Radiation.

Other 2011-12 officers are: **Charles Kahn Jr., M.D.,** Medical College of Wisconsin, Madison, president-elect; **Norman Beauchamp, M.D., M.H.S.,** University of Washington Medical Center, Seattle, vice-president; **Melissa Rosado de Christenson, M.D.,** University of Missouri, Kansas City, remains secretary/treasurer.

Gold medals were awarded to **Anton N. Hasso, M.D., Richard L. Morin, Ph.D.,** and **E. James Potchen, M.D.**

Dr. Hasso is a professor of radiological sciences and director of neuroimaging research and development at the University of California, Irvine and holds a joint appointment as professor of otolaryngology, head and neck surgery. Dr. Morin is the Brooks-Hollem Professor of Radiologic Physics at the College of Medicine, Mayo Clinic in Jacksonville, Fla., and a member of RSNA's Radiology Informatics Committee. Dr. Potchen is a professor of radiology and a professor of management at Michigan State University in East Lansing. He was RSNA's New Horizons for Radiologists Lecturer (now the Eugene P. Pendergrass New Horizons Lecturer) in 1971.

The Distinguished Educator Award was presented to **Lee F. Rogers, M.D.,** a clinical professor of radiology at the University of Arizona in Tucson. Dr. Rogers received the RSNA Gold Medal in 2008.

AUR Awards Gold Medals

The Association of University Radiologists (AUR) awarded its 2011 gold medals to G. Scott Gazelle, M.D., M.P.H., Ph.D., and Gary M. Glazer, M.D.

A clinical radiologist, educator and prolific investigator, Dr. Gazelle serves as a professor of radiology at Massachusetts General Hospital and Harvard Medical School and as a professor in the Department of Health Policy and Management at Harvard School of Public Health in Boston. A past AUR president, Dr. Gazelle serves on the RSNA Research and Education (R&E) Foundation Board of Trustees.

A clinician-scientist, visionary leader and groundbreaking researcher, Dr. Glazer serves as chair of the Department of Radiology at Stanford University in California. Dr. Glazer received the RSNA Gold Medal in 2009.


Gazelle


Glazer

Husband to Chair NCRI

Internationally renowned radiologist Janet E. Husband, F.Med.Sci., F.R.C.P., F.R.C.R., has been appointed chair of the National Cancer Research Institute (NCRI) in the U.K. A 2005 RSNA Honorary Member, Dr. Husband is an emeritus professor of radiology at the Institute of Cancer Research in London. Previously president of the Royal College of Radiologists and medical director of the Royal Marsden Hospital in London, Dr. Husband is best known for her pioneering work in cancer imaging.

AIUM immediate past-president Harvey Nisenbaum, M.D., Fowlkes

Nisenbaum, Kleinman

Abramowicz

Drose

Kudo

Pilu

AIUM Bestows Honors

The American Institute of Ultrasound in Medicine (AIUM) presented its Joseph H. Holmes Pioneer Award to **Brian Fowlkes, Ph.D.,** and **Charles Kleinman, M.D.,** at its recent annual meeting in New York. Dr. Fowlkes is a physicist and a professor in the Departments of Radiology and Biomedical Engineering at the University of Michigan in Ann Arbor. Dr. Kleinman is a professor of clinical pediatrics at Columbia University College of Physicians and Surgeons in New York.

Jacques Abramowicz, M.D., an internationally known researcher in obstetric and gynecologic ultrasound, a professor of obstetrics and gynecology and director of ultrasound at Rush University Medical Center in Chicago, received the 2011 William J. Fry Memorial Lecture Award. **Julia Drose, B.A., R.T., R.D.M.S., R.V.T., R.D.C.S.,** an associate professor of radiology at the University of Colorado Health Sciences Center, received the Distinguished Sonographer Award.

Masatoshi Kudo, M.D., Ph.D., and **Gianluigi Pilu, M.D.,** received AIUM Honorary Fellowships. Dr. Kudo is a professor and chair of the Department of Gastroenterology and Hepatology at Kinki University School of Medicine and president of Kinki University Medical Center, both in Japan. Dr. Pilu is an associate professor of obstetrics and gynecology at the University of Bologna in Italy.

AIUM also presented its Memorial Hall of Fame awards posthumously to **Robert Bree, M.D.,** an internationally respected physician and professor of radiology at the University of Washington's Harborview Medical Center in Seattle, **Richard Jaffe, M.D.,** known for contributions to gynecologic ultrasound, Doppler evaluation and computers in medicine, and **Donna M. Kepple, R.T., R.D.M.S.,** a pioneer in endovaginal sonography who served as chief sonographer and senior technical advisor at Vanderbilt University Medical Center in Nashville, Tenn.

Numbers in the News

87

Percent of program directors who believe new resident duty hour restrictions will lessen residents' ability to provide continuous care for hospitalized patients, according to a survey conducted by researchers at the Mayo Clinic in Rochester, Minn. Read more about program directors' opinions of the new duty hour rules on Page 9.

115

Approximate number of diagnostic, interventional, nuclear medicine and radiation therapy tests and treatments now accessible to smartphone users in English and Spanish at *RadiologyInfo.org*. Read more about the Spanish mobile site on Page 19.

195

Percent increase in total annual claims for diagnostic CT colonoscopy (CTC) for Medicare fee-for-service beneficiaries between 2005 (3,660 claims) and 2008 (10,802 claims). See Page 5 to learn about trends in CTC usage and how computer-assisted diagnosis software is facilitating interpretation of CTC results.

158,796

Number of gadolinium-enhanced MR examinations included in a study comparing reactions among five types of contrast agents. The study indicated a much lower severe reaction rate for nonionic gadolinium versus ionic gadolinium. Learn more about findings from the study, as well as successful efforts to control the reaction known as nephrogenic systemic fibrosis, on Page 7.

My Turn

The Way that You Use It: Leveraging Radiology Data for Meaningful Use

Information! It's the currency of healthcare. Health information technology (HIT) is simply a means of organizing and leveraging information. With the Health Information Technology for Economic and Clinical Health (HITECH) act, the U.S. government has taken dramatic steps to promote use of HIT. Providers are now rushing to implement electronic medical records (EMR) and attain "meaningful use" (MU), the cornerstones of which are interoperability and secure exchange, as stated by the departing National Coordinator for HIT, David Blumenthal, M.D.

How do we as radiologists leverage the information for which we are custodians to attain MU?

Radiology has led the way in advancing HIT. Together RIS and PACS are the radiology EMR—with that EMR in place, we've already accomplished a primary HITECH goal. Baseline standards, namely DICOM and HL7, were fundamental in facilitating the transition to now pervasive HIT solutions and permitted development of secondary innovative solutions. Within our domain we have already achieved many of the goals set for the wider medical community.

As for exchanging exams and reports, CDs were initially a usable but imperfect effort. Healthcare, including radiology, has yet to take advantage of the newest, most ubiquitous technology—the Internet. An estimated 20 percent of Internet traffic is devoted to sharing video. We can put some of that bandwidth to good use, which is exactly what RSNA, through funding provided by the National Institute of Biomedical Imaging and Bioengineering, is doing. A pilot—under way with real patients as this magazine goes to press—shares images and results over the Internet, directly under consumer control through personal health records. Unlike other proprietary products, RSNA's solution is built on open, well-accepted standards defined in Integrating the Healthcare Enterprise (IHE®) profiles. RSNA urges the vendor community to embrace this methodology and innovate.

This is real MU for radiology, diminishing redundant and inappropriate utilization while dramatically improving quality and controlling cost. We hope the U.S. government—appreciating the tremendous variation in MU among domains, structures MU for radiology during Stages II and III of HITECH, in a manner that makes a meaningful difference in patient care.

David S. Mendelson, M.D., is a professor of radiology and director of radiology information systems at Mount Sinai Medical Center in New York City. Dr. Mendelson serves on the RSNA Radiology Informatics Committee (RIC) and chairs the RIC subcommittee for the Integrating the Healthcare Enterprise (IHE®) initiative. Dr. Mendelson also serves on the RIC subcommittee for Structured Reporting. He is the principal investigator for the NIBIB/RSNA Image Sharing project.

Coming in *RSNA News:* An article in the September 2011 issue of *RSNA News* will detail the RSNA pilot—funded by the National Institute of Biomedical Imaging and Bioengineering—to share imaging exams and results via the Web, directly under consumer control through personal health records. The pilot will be demonstrated at RSNA 2011.

ACR Launches Dose Index Registry

Medical imaging facilities can now submit anonymized dose information for all CT exams performed to the American College of Radiology (ACR) Dose Index Registry (DIR), allowing facilities to compare their dose indices to those of other facilities of similar size or geographic area and to national benchmarks. Participating facilities receive periodic feedback comparing their dose levels to these benchmarks, enabling necessary adjustments to lower dose received from scans.

The DIR is a new component of the ACR National Radiology Data Registry (NRDR). To participate in the registry, a facility enrolls through the NRDR portal at *nrdr.acr.org*. Software is then installed at the facility to receive dose information from the CT scanner or PACS for every CT exam performed. Data is anonymized and transmitted to the registry. Periodic reports are provided to the facility through the NRDR portal.

To overcome software compatibility issues between vendors and facilities, ACR worked with Integrating the Healthcare Enterprise (IHE®). Sponsored by RSNA, the Healthcare Information and Management Systems Society (HIMSS) and several other health professional organizations, IHE is a global initiative that creates framework for passing health information seamlessly. IHE established a Radiation Exposure Monitoring Profile which allows vendors to collect and transmit information related to CT dose in a similar format.

Murphy Named SIR President

Timothy Murphy, M.D., an interventional radiologist and director of the Vascular Disease Research Center at Rhode Island Hospital in Providence, was named 2011-12 president of the Society of Interventional Radiology (SIR) at the society's recent annual meeting.

SIR's other 2011-12 officers include:

- **President-elect: Marshall Hicks, M.D., University of Texas MD Anderson Cancer Center, Houston**
- **Secretary: Scott C. Goodwin, M.D., University of California Irvine Medical Center, Orange, Calif.**
- **Treasurer: Charles E. Ray, Jr., M.D., University of Colorado, Denver**
- **Immediate past-president: James F. Benenati, M.D., Baptist Cardiac and Vascular Institute, Miami.**

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CTC Use Grows Despite Reimbursement Obstacles

Although CT colonography (CTC), or virtual colonoscopy, has yet to be approved as a screening tool by the Centers for Medicare & Medicaid Services (CMS), new research shows the technique is growing in popularity and expanding its reimbursement numbers.

A STUDY IN THE March issue of *Journal of the American College of Radiology (JACR)* revealed that the percent of U.S. hospitals offering CTC grew from 13 to 17 between 2005 and 2008. Also in that time span, nationwide use of diagnostic CTC Medicare fee-for-service beneficiaries tripled and fewer CTC claims have been denied, according to a study published in the April issue of *JACR.* The April study shows that the total annual claims for diagnostic CTC for Medicare fee-for-service beneficiaries climbed from 3,660 to 10,802, or 195 percent, between 2005 and 2008, the first four complete years for which Current Procedural Terminology (CPT) tracking codes existed, according to study co-author Perry Pickhardt, M.D., a professor of radiology at the University of Wisconsin School of Medicine and Public Health in Madison.

Pickhardt

McHugh

Dachman

Dr. Pickhardt's study also showed that the annual national denial rate decreased from 70 percent in 2005 to 43.4 percent in 2008.

The rapid growth of diagnostic CTC, even in the absence of Medicare coverage for screening CTC, emphasizes the need for an alternative for patients who choose not to undergo colonoscopy, Dr. Pickhardt said. And as more insurers provide CTC coverage, use will continue to expand, he said.

"Our study shows that CTC is slowly but surely gaining traction throughout the country," Dr. Pickhardt said. "More and more insurance companies are covering it for screening and diagnosis."

The technology even earned the imprimatur of the nation's highest office when President Barack Obama underwent CTC as part of his routine physical in February 2010.

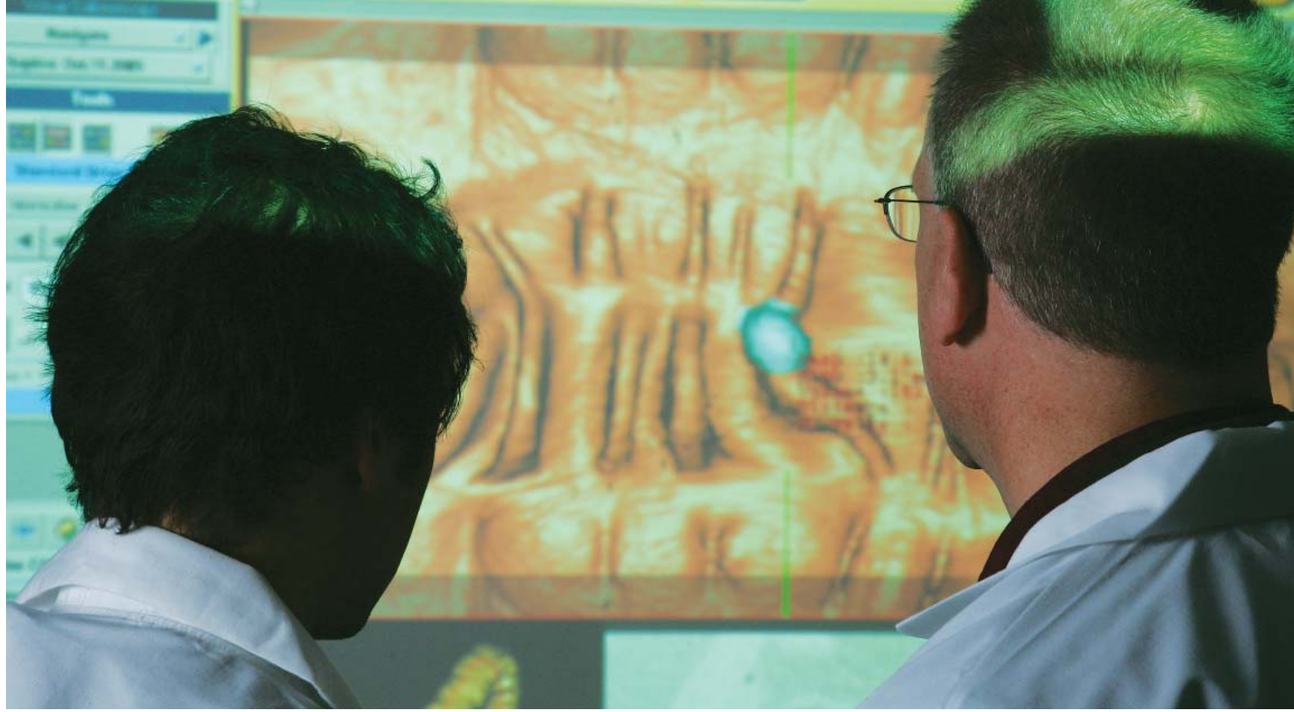
CTC Offers Alternative to Invasive Technique

Of the hospital participants interviewed for the March *JACR* study, most cited CTC's role as an alternative screening option for frail, elderly patients and those with failed optical colonoscopies as the primary reason for adopting CTC, said lead author Megan McHugh, Ph.D., an assistant professor at Northwestern University's Feinberg School of Medicine in Chicago. Other reasons included long waits for optical colonoscopy and promising CTC study results, she said.

Among those hospitals that did not offer CTC, a primary reason was lack of reimbursement, Dr. McHugh said.

"Financial incentives drive a lot of the adoption of new technology," Dr. McHugh said. "Among the six hospitals we interviewed offering CTC, five didn't use it often because it's generally reserved for patients with failed colonoscopies. However, one hospital was in a market with a local insurer that covered CTC for general screening, and that hospital performed more than 1,000 per year."

> "There's no reason CMS shouldn't cover CT colonography. It's better, faster, safer and cheaper than optical colonoscopy."
>
> **Perry Pickhardt, M.D.**



Research continues to validate the efficacy of CT colonography (CTC), which is growing rapidly in use despite the absence of Medicare coverage. *Above:* University of Chicago physicians examine a CTC scan.

CMS last reviewed the issue in 2009 when the agency declined CTC coverage, citing inadequate evidence to support approval for reimbursement.

The decision came despite a growing list of previous endorsements for CTC screening by the American Cancer Society (ACS), the American College of Radiology and the U.S. Multi-Society Task Force on Colorectal Cancer (comprising representatives from the American College of Gastroenterology, American Gastroenterological Association, American Society for Gastrointestinal Endoscopy and American College of Physicians). The Blue Cross/Blue Shield Technology Assessment has also endorsed CTC.

Research continues to validate the efficacy of CTC, said Dr. Pickhardt, who authored a landmark 2003 study published in the *New England Journal of Medicine* showing that CTC cancer detection rates were similar to those of optical colonoscopy. The research was also presented at RSNA 2003.

"We've published findings specific to the Medicare population, and more research is forthcoming addressing the objections raised about CT colonography," said Dr. Pickhardt. "There's no reason CMS shouldn't cover CT colonography. It's better, faster, safer and cheaper than optical colonoscopy."

CAD Improves CTC Image Interpretation

Radiologists expect CTC use to continue growing, especially as new technological developments like computer-aided detection (CAD) software are shown to improve accuracy in interpreting CTC images.

In a study published in the September 2010 issue of *Radiology*, Abraham H. Dachman, M.D., a professor of radiology at the University of Chicago Medical Centers and colleagues assessed the effect of using CAD on readers' accuracy in interpreting CTC images. CAD provides locations of suspicious regions and/or quantitative analysis of these regions while each program has a unique polyp detection rate, false-positive rate and display of the CAD output. In the study, 13 of 19 radiologists demonstrated higher accuracy with CAD.

"CAD use resulted in a significant improvement in overall reader performance per polyp and per patient," said Dr. Dachman, an editor of *The Atlas of Virtual Colonoscopy,* a 2010 comprehensive overview of CTC. Dr. Dachman received a 2009 Education Seed Grant from the RSNA Research & Education Foundation for his project, "Training Tool for Colonic Insufflation and Scanning in Virtual Colonoscopy."

LEARN MORE
For more information on the studies cited in this article, go to *rsnanews.RSNA.org.*

Also in the September 2010 issue of *Radiology*, Dr. Pickhardt and colleagues authored a study that applied a CAD software system to CTC screenings in 1,638 women and 1,408 men at a single medical center between March 2006 and December 2008. Results showed that standalone CAD demonstrated excellent performance for polyp detection in that population, with high sensitivity and an acceptable number of false-positive results.

Extra-colonic Findings a "Legitimate Concern"

Nevertheless, concerns about issues related to CTC—including radiation exposure and extra-colonic findings—could hinder widespread acceptance by providers, experts agreed.

While radiation dose from CTC is relatively low—less than that from a barium enema and often less than a year's worth of background radiation—

Continued on Page 8

DACHMAN, PICKHARDT DISCUSS CAD RESEARCH IN *RADIOLOGY* PODCAST

To hear Abraham H. Dachman, M.D., discuss, "Effect of Computer-aided Detection for CT Colonography in a Multireader, Multicase Trial," and Perry Pickhardt, M.D., discuss "Colorectal Polyps: Stand-alone Performance of Computer-aided Detection in a Large Asymptomatic Screening Population," both from the September 2010 issue of *Radiology,* go to *RSNA.org/Radiology.*

Diligence Necessary to Minimize Gadolinium-related Events

While gadolinium-based MR contrast agents are now considered very safe and nephrogenic systemic fibrosis (NSF) has virtually been eliminated, continued awareness of associated contraindications and risks will help keep immediate and long-term adverse events to a minimum, experts say.

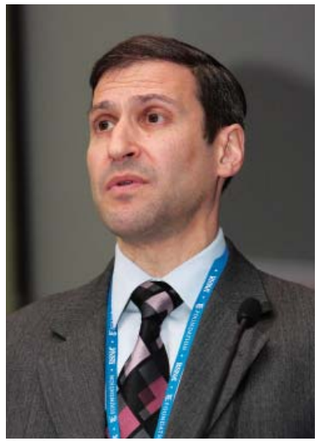
Since the connection was made between NSF and gadolinium in 2006, a concerted effort among radiologists to screen for renal disease and use methods to lower or eliminate dose in at-risk patients—as well as to avoid use of specific types of gadolinium associated with higher incidence of NSF—has rendered the disease nearly non-existent, said Emanuel Kanal, M.D., a professor of radiology and neuroradiology and director of Magnetic Resonance Services at the University of Pittsburgh Medical Center.

Approximately 1,500 total cases have been reported worldwide and 368 proven cases are recorded in Yale University's NSF registry, Dr. Kanal said.

"We are in a solid position right now," Dr. Kanal said. "The number of new NSF cases is now close to—if not literally at—zero. That means that even without fully understanding NSF and what causes it, we as a medical community have done a rather impressive job of controlling it. We are not inducing new cases and yet we're still safely administering millions of doses a year."

While the changes made in controlling NSF have positively impacted safety, radiologists should also keep in mind the more immediate risks associated with gadolinium, said Martin R. Prince, M.D., Ph.D., a professor of radiology at Cornell and Columbia Universities and chief of MR imaging at New York Hospital, and lead author of new research published in the February issue of the *American Journal of Roentgenology (AJR),* comparing reactions among different types of contrast agents.

"Focusing on NSF as the primary way to decide which gadolinium to use for all patients is a mistake," Dr. Prince said. "Optimizing safety also requires taking into consideration the risks of allergic reactions—which can happen even in patients who are relatively healthy."



Kanal

Prince

Risk of Allergic Reactions Deserves Focus

For the *AJR* study, Dr. Prince and colleagues compared reactions among five types of contrast agents: gadopentetate dimeglumine, gadodiamide, gadoteridol, gadobenate dimeglumine and gadoxetate. The study included 158,796 gadolinium-enhanced examinations conducted at Cornell and Columbia over 10 years. Researchers analyzed the U.S. Food and Drug Administration (FDA) Adverse Event Reporting System (AERS) database to compare local experience to national trends.

Overall, the risk for severe reactions was very low. A total of 140 adverse events were reported over this time, including one fatality. At 0.013 percent, abdominal imaging had the highest rate of adverse events, nearly three times higher than for brain MR at 0.0045 and four times higher than for spine MR at 0.0034 percent. The rate of severe reactions was about 1 in 40,000 injections. Immediate adverse events were more likely in women and patients with a history of prior allergic reactions.

> "Even without fully understanding NSF and what causes it, we as a medical community have done a rather impressive job of controlling it."
>
> **Emanuel Kanal, M.D.**

Based on the national FDA data, 40 deaths were reported out of 51 million gadolinium contrast agent administrations over a six-year period from 2004 to 2009.

"The most interesting finding is that nonionic gadolinium showed a much lower severe reaction rate than ionic gadolinium," Dr. Prince said. "That's something we've known about iodine-based contrast for years—that nonionic contrast has fewer immediate reactions. However, the risk profile for NSF is just the opposite—it appears that nonionic gadolinium carries a higher risk."

Dr. Kanal questioned whether immediate reaction rates significantly differ among contrast types. He cited his own prospective study published in the December 2008 issue of *AJR* reporting a total adverse event rate of 0.76 percent among 23,553 gadobenate dimeglumine administrations. By September 2010 the adverse event rate from this same drug administered to almost 100,000 patients studied was 0.5 percent. This compares to total reaction rate of 1.2 percent for gadobenate dimeglumine and 0.2 percent for nonionic gadolinium-based contrast agents found by Dr. Prince.

"Though it would not be fair to compare prospective with retrospective studies, I believe that the data suggest that adverse event rates from all the gadolinium-based agents are roughly comparable—and the package insert/product labels from prospective, carefully monitored studies seem to bear this out as well," Dr. Kanal said.

"It seems that the only significant differentiating factors among the different agents from a safety point of view are in NSF, but not in the adverse events," he continued. "All the drugs have had serious adverse events or anaphylactoid reactions, and we have to be that much more careful in patients who have had prior allergic reactions or who have allergic respiratory phenomena such as asthma."

Dr. Kanal agrees, however, that NSF should not be the only, or perhaps even the primary, consideration as to which agent should be used on which patient. "The relative relaxivity properties of these agents, which vary dramatically, are paramount in determining the relative effectiveness of the agent and the sensitivity of the resultant images to the detection of pathology," Dr. Kanal said. "Safety plus effectiveness—including cost effectiveness—should combine to serve as guiding parameters in determining our choice of contrast agent for a given patient."

Radiology Departments Need Safety Plans

No matter how rarely they occur, radiology departments should have a plan in place for responding to a severe contrast reaction, Dr. Prince said.

"Hospital-based departments, which have a code team to call, are in a much better position to handle a severe reaction than outpatient facilities, where even if there's a crash cart and a physician on staff, your code team is a call to 9-1-1."

Nevertheless, "Gadolinium is very safe—much safer than iodinated contrast," emphasized Dr. Prince. "Keep in mind that we're talking about making improvements to a practice that's already very low-risk. With about 40 deaths in 51 million administrations, that's less than a one-in-a-million. To put this in perspective, traveling 86 miles by car has a one-in-a-million chance of death by car accident."

Concurred Dr. Kanal: "Radiologists should care about objective scientific data, and the data very strongly support that these drugs have an extremely high safety profile. Used appropriately and according to their product labeling, they are among the safest drugs of all drugs that physicians prescribe today."

Radiologists are advised to consult the *Manual on Contrast Media v7,* which provides detailed recommendations for identifying and minimizing contrast risk. Co-authored by Dr. Kanal, who serves on the American College of Radiology (ACR) Task Force on Patient Safety, the manual is accessible at *ACR.org* under "Quality and Safety Resources."

First and foremost, minimizing contrast risk requires that radiologists continue to be aware of possible contraindications and safety issues and modify our practice patterns accordingly, Dr. Kanal stressed. "We are still guided by the basic principle, 'Above all, do no harm'," he said. "As the wording of a gadolinium-based contrast agent ad copy used to say, 'Peace of mind comes from knowing you've subjected your patient to no more risk than is absolutely necessary'." □

LEARN MORE

Contrast Guidelines Prevent NSF

New research, "Incidence of Nephrogenic Systemic Fibrosis after Adoption of Restrictive Gadolinium-based Contrast Agent Guidelines," showing that administering gadolinium-based contrast agents (GBCA) guidelines effectively prevents nephrogenic systemic fibrosis (NSF) will appear in the July issue of *Radiology (RSNA.org/Radiology).*

- An RSNA 2010 refresher course, "Contrast Issues 2010: What the Experts Really Do for Allergies, Contrast-induced Nephropathy, Nephrogenic Systemic Fibrosis, and Extravasation," explored best practices in weighing risks preventing against both iodinated and gadolinium-based contrast reactions. Coverage of the session appeared in the Monday, Nov. 10, 2010 issue of the *Daily Bulletin* available online at *RSNA.org/bulletin.*
- For more information on the studies cited in this article, go to *rsnanews.RSNA.org.*

CTC Use Grows Despite Reimbursement Obstacles

Continued from Page 6

Dr. Dachman called extra-colonic findings, which can lead to expensive and invasive follow-up procedures, a "legitimate concern." However, he noted that CTC generally detects only large masses and aneurysms outside the colon, especially with the very low radiation techniques now used for CTC.

Optical colonoscopy also carries risks, including the potential for bleeding and colon perforation. Regardless, many radiologists believe that patients reluctant to undergo an optical colonoscopy would consider CTC if it was covered by Medicare. Current colorectal cancer screening adherence remains low, despite the fact that colon cancer has a five-year survival rate of about 90 percent if detected and treated early, according to ACS.

"We're getting better at screening the average risk patient, but 40 percent still haven't undergone screening," Dr. Dachman said.

Radiologists, including Dr. Pickhardt, believe CTC may be the best way to increase that percentage.

"CT colonography has passed every litmus test conceivable," he said. "Within five years, it should be a—if not the—frontline screening test for colorectal cancer." □

New ACGME Standards Concern Program Directors

As revised standards to further limit resident duty-hours are set to take effect in July, a recent Mayo Clinic study shows that residency program directors still have significant concerns about the new restrictions.

Baker

Reed

Published in the March issue of *Mayo Clinic Proceedings*, the study gauged the views of residency program directors on the 2010 Accreditation Council for Graduate Medical Education (ACGME) duty hour recommendations as they impact resident fatigue and six core competencies: patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism and systems-based practice.

In a July 2010 survey of 464 internal medicine, pediatrics and general surgery program directors, 87 percent said the rules will lessen residents' ability to provide continuous care for hospitalized patients, while 65 percent said the rules won't have any effect on resident fatigue. Additionally, more than half of program directors believe the new duty hour restrictions will decrease residents' ability to develop competency in all core areas except for patient care competency.

"The survey revealed a marked degree of concern about educating a competent generation of future physicians in the face of increasing duty hour standards and regulations," said lead author Darcy Reed, M.D., M.P.H., of the Division of Primary Care Internal Medicine at the Mayo Clinic in Rochester, Minn. "Program directors are responsible for training physicians; therefore we wanted to understand their perspectives on the new standards."

Although not covered in the Mayo Clinic study, other experts are concerned about the financial impact the new standards could have on healthcare providers.

"Implementing these changes will be expensive," said Stephen R. Baker, M.D., of the Department of Radiology at New Jersey Medical School in Newark. "Among other expenses, hospitals may have to hire additional staff and will face greater costs."

Duty Hour Restrictions Imposed Gradually

The current debate over resident duty hours and fatigue can be traced to the 1984 death of 18-year-old Libby Zion, which was attributed, in part, to an overtired medical resident. That incident prompted New York State to pass legislation regulating resident working conditions, Dr. Reed said.

In 2003, ACGME set duty hour limits across all specialties nationally to promote safe patient care and resident well-being. In response to continued concern that resident fatigue and lack of supervision is causing preventable medical errors, Congress in 2008 requested that the Institute of Medicine (IOM) establish a committee and determine strategies to optimize resident work hours and patient care.

In 2010, IOM issued a report calling for further restrictions on resident duty hours, better resident supervision and new federal oversight of the ACGME in monitoring resident duty hours.

After soliciting public comment from the graduate medical education community, ACGME approved the standards in September 2010.

> "The survey shows a marked degree of concern about educating a competent generation of future physicians in the face of increasing duty hour standards and regulations."
>
> **Darcy Reed, M.D., M.P.H.**

While the current maximum 80-hour workweek for residents averaged over four weeks remains intact, changes under the new standards include:

- Increased resident supervision
- First-year residents limited to 16-hour shifts
- Residents must have one day free of duty every seven days, averaged over four weeks
- Residents must have eight hours between duty periods and should have 10 hours between duty periods
- Residents must have at least 14 hours free of duty after 24 hours of in-house duty
- Residents must not be scheduled for more than six consecutive nights

Concern Level Related to Specialty

Although all program directors in the three specialties voiced some degree of concern about the planned changes, surgical directors expressed the strongest reservations. The response could stem from the fact that internal medicine and pediatrics residency programs adopted specialty-specific duty hour limitations prior to the 2003 ACGME limitations for all residencies and fellowships, Dr. Reed said.

While radiology program directors were not singled out in the study, changes planned for maximum shift length, minimum time off between shifts and maximum number of in-hospital night shifts will likely be most challenging to the specialty, according to Aliya Qayyum, M.D., residency program director and a professor of radiology/abdominal imaging at the University of California, San Francisco.

"Accommodating restrictions on shift length and time off between shifts is difficult to achieve without a shift-based night float system," Dr. Qayyum said. "Such a system may require a combination of short or early evening shifts in conjunction with the night float to avoid violation of duty hours.

"The limit on six days night float rather than seven days at a time increases the frequency of additional weekend night shifts required during the year which have been unenthusiastically received by residents," Dr. Qayyum continued.

New Standards Bring Financial Challenges

Along with challenging residents' efforts to meet core competencies, the new standards create financial concerns for institutions as well, which could be considerable according to a cost-benefit analysis of the standards commissioned by ACGME.

In the November 2010 report to ACGME, researchers at the David Geffen School of Medicine at the University of California, Los Angeles, found that the total direct annual cost of the planned changes (including both recurring costs and amortized start-up costs) would be $380,766,262 nationwide (in 2008 dollars). Researchers used a decision-analytical model to examine the net cost of the planned changes, including costs associated with preventable adverse events. In addition, the team focused on the direct annual costs associated with reducing resident duty hours and planned changes to the training environment.

To make up for the shortfall in workforce resulting from fewer resident hours, hospitals will be forced to expand residency slots to bring in more trainees, hire more faculty physicians to supervise them and fill in the gaps in care

Continued on Page 12

Residents and fellows met, mingled and discussed the annual meeting during the RSNA 2010 Residents Reception. RSNA residents and fellow members receive free meeting admission with advance registration, which is now under way at *RSNA.org*.

RSNA MEMBERSHIP IS FREE FOR RESIDENTS AND FELLOWS

Residents and fellows are eligible for free RSNA membership, which confers benefits to aid in clinical practice, research and career planning:

- Subscriptions to *Radiology, RadioGraphics* and *RSNA News*
- Eligibility to apply for grants from the RSNA Research & Education Foundation
- Access to myRSNA, a customizable radiology Web portal developed exclusively for RSNA members
- Online education resources including materials from past annual meetings

RSNA resident and fellow members also receive free admission (with advance registration) to the RSNA annual meeting. New for RSNA 2011 is a Resident/Fellow Symposium—offered Wednesday, November 30, the symposium will address these topics of importance to residents and fellows:

- Where and when to look for a job
- Analyzing the offer—academic, clinic and large and small private practice jobs
- Contract negotiations—philosophical framework, legal issues and quality of life considerations
- How to get hired

Advance registration for RSNA 2011 is under way for RSNA members. Non-members who join RSNA by Sept. 1 will receive free admission. Go to *RSNA.org* for more information.

MDCT Angiography Effective for Ischemic Stroke, SAH Diagnosis

Two recent* Radiology *studies shed light on the effectiveness of multidetector CT (MDCT) angiography as a first-line exam for the etiologic workup of ischemic stroke patients and in diagnosing cerebral aneurysms in patients with acute subarachnoid hemorrhage (SAH).

In the first study, published in the January issue of *Radiology,* researchers discovered that MDCT angiography can be used as a primary imaging modality in the diagnostic work-up of patients with ischemic stroke, facilitating an accurate diagnosis in up to 83 percent of patients.

"Etiological workup of ischemic stroke is usually based on an imaging package, which is time consuming and expensive," said lead author Loic Boussel, M.D., Ph.D., of the Department of Radiology at Louis Pradel Hospital in Bron, France. "In addition, secondary stroke prevention strategies may be delayed. This is why we aimed to assess the potential of a single-session MDCT protocol in the etiological workup of acute ischemic stroke."

Researchers imaged 46 patients using a one-time MDCT examination of the heart, aorta and extra- and intracranial vessels and a standard protocol combining MR angiography of the extra- and intracranial vessels, duplex ultrasound of the extracranial vessels and transthoracic echocardiography (TEC) and transesophageal echocardiography (TEE) of the heart and aorta. The mean patient age was 63 years, and patients presented an average National Institutes of Health stroke score of 8.4.

The MDCT examination was performed with intravenous contrast on a 64-slice scanner.

Stroke etiology was determined using conventional modalities and identified cardiac sources in 20 patients, major arterial atheroma in nine cases, multiple sources in four patients and the cause was cryptogenic in 13 patients.

Compared with reference-standard methods such as TEE, MDCT appears to be feasible and well tolerated, results showed. Patient tolerance was due mainly to the short duration of the examination, which is critical in patients suffering from acute stroke, according to researchers.

CT was used to correctly classify 82.6 percent of the patients. CT misidentified the causes of stroke mainly by underestimating cardiac sources, Dr. Boussel said.

"MDCT allows rapid workup of ischemic stroke and may be the first-line imaging modality identifying acute ischemic stroke etiologies," Dr. Boussel said. "Negative MDCT exams should be confirmed with TEE and MR imaging. "

This imaging strategy should be validated with a larger randomized study involving medico-economic analysis to prove its cost effectiveness in the ischemic stroke workup, Dr. Boussel and colleagues concluded.

CTA Highly Accurate in Detecting Cerebral Aneurysms

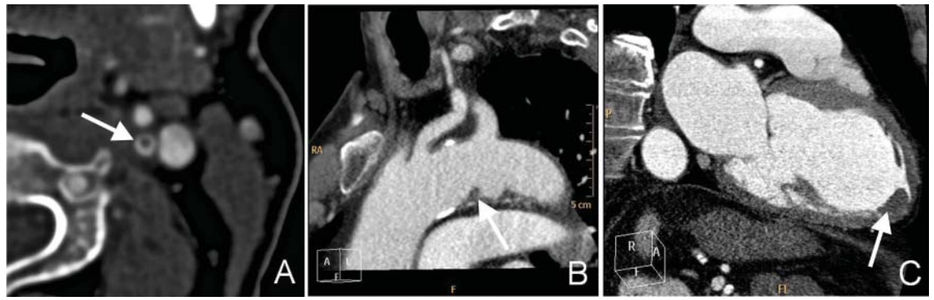
In the second study, also published in the January issue of *Radiology,* researchers systematically reviewed 50 clinical studies and calculated the sensitivity and specificity of MDCT angiography in diagnosing cerebral aneurysms in patients with acute SAH. Researchers identified the clinical studies—which included 4,097 patients—through a comprehensive search of MEDLINE and EMBASE articles published between 1997 and 2009 that assessed the value of CT angiography in patients with proven SAH. Study quality was assessed using the Quality Assessment of Diagnostic Accuracy Studies (QUADAS) tool, with a minimum score of 0 and a maximum of 14.

"We wanted to prove that ruptured intracranial aneurysms in patients with SAH can be diagnosed using noninvasive MDCT angiography," said lead author Henriëtte E. Westerlaan, M.D., of the University Medical Center Gronningen in the Netherlands.

MDCT angiography proved to have a very high diagnostic value for detecting ruptured intracranial aneurysms in patients with SAH, Dr. Westerlaan said. Results showed a pooled sensitivity of 98 percent and a pooled specificity of 100 percent. The average QUADAS score for all included studies was 11.

Boussel

> "MDCT allows rapid workup of ischemic stroke and may be the first-line imaging modality identifying acute ischemic stroke etiologies."
>
> **Loic Boussel, M.D., Ph.D.**



Examples of multidetector CT findings in a patient presenting with stroke in the study by Loic Boussel, M.D., Ph.D.: *(A, arrow)*: floating thrombus in the internal carotid artery, *(B, arrow)* thick heterogeneous atheroma of the aortic arch and *(C, arrow)* thrombus in the left ventricle.
Images courtesy of Loic Boussel, M.D., Ph.D.

"Multidetector CT angiography can be integrated as a primary examination tool into the imaging and treatment algorithm for patients with SAH at presentation," Dr. Westerlaan concluded.

Experience and perceptual accuracy of the viewer were found to be important factors influencing the accuracy of CT angiography for the detection and depiction of intracranial aneurysms, researchers found.

Of the 71 ruptured aneurysms missed at CT angiography within the meta-analysis, at least 19 could be detected retrospectively. "Measures such as double reading might make it possible to lower the false-negative rate significantly," Dr. Westerlaan said.

Unlike previous studies, this research used a newer generation of CT scanners as well as a homogeneous population, Dr. Westerlaan said. "In addition to findings at selective cerebral angiography, findings at treatment and autopsy were also used as reference standards," she said. □

LEARN MORE
To access the *Radiology* studies, "Ischemic Stroke: Etiologic Work-up with Multidetector CT of Heart and Extra- and Intracranial Arteries" and "Intracranial Aneurysms in Patients with Subarachnoid Hemorrhage: CT Angiography as a Primary Examination Tool for Diagnosis—Systematic Review and Meta-Analysis," go to *RSNA.org/Radiology.*

BOUSSEL DISCUSSES *RADIOLOGY* STUDY

Listen to Loic Boussel, M.D., Ph.D., of the Department of Radiology at Louis Pradel Hospital, Bron, France, discuss his study, "Ischemic Stroke: Etiologic Work-up With Multidetector CT of Heart and Extra- and Intracranial Arteries," in *Radiology's* Hear What We Think section at *RSNA.org/Radiology.* The discussion is moderated by Deputy Editor David F. Kallmes, M.D.

Radiology

New ACGME Standards Concern Program Directors

Continued from Page 10

with more senior residents, nurse practitioners and physician assistants.

"These changes are an economic detriment and program directors will resent other people imposing such rules on them," Dr. Baker said. "It's social engineering by bureaucrats on the outside who have decided residents need more sleep."

Goals of New Duty Hour Standards are Achievable

Despite the challenges and the Mayo Clinic survey outcome, the patient-safety intent of the duty rules definitely has potential, Dr. Reed said.

"The aim of the new standards is to enhance patient safety by reducing resident fatigue and increasing supervision," Dr. Reed said. "I think it is possible to achieve these goals under the new standards if we structure our training programs to expose residents to the most valuable learning experiences, manage workload appropriately and continue to focus on safe transfers of care—for example, patient hand-off between providers."

LEARN MORE
For more information on the research cited in this article, go to *rsnanews.RSNA.org.*

She also noted that the Mayo Clinic survey was conducted immediately after the proposed regulations were announced, which may have factored into the outcome. "Skepticism to change is human nature," said Dr. Reed. "Conduct this survey a year later and views may be very different. It could be this is just a snapshot in time, and as time goes on, opinions may change." □

REED DISCUSSES ACGME STANDARDS

To view a video interview with Darcy Reed, M.D., M.P.H., discussing the Accreditation Council for Graduate Medical Education duty hour standards set to take effect in July, go to *mayoclinicproceedings.com/content/early/2011/02/16/mcp.2010.0635/suppl/DC1*

No Contest: Watson Poised to Revolutionize Healthcare

Winning the $1 million "Jeopardy!" challenge earlier this year was just the tip of the iceberg for Watson, the IBM supercomputer that experts believe has the potential to revolutionize the healthcare industry.

WELL BEFORE Watson's gameshow victory, experts at the University of Maryland (UM) School of Medicine in Baltimore and Columbia University Medical Center began working with IBM to apply Watson's analytics capabilities to healthcare. Specifically, Watson is being developed as an assistant capable of reading electronic health records (EHR) and providing instant feedback to physicians in ways not always available from doctors and nurses.

"This breakthrough in computer science will allow us to explore this technique for medical diagnosis," said Eliot Siegel, M.D., a professor and vice-chair of imaging informatics at the University of Maryland School of Medicine (MSM), chief of imaging services for the Maryland Veterans Affairs (VA) Healthcare System at the Baltimore VA Medical Center and co-chair of RSNA's Medical Imaging Resource Center (MIRC) committee.

"The potential for a renaissance in electronic health records really lies in the evolution of computer systems," said Dr. Siegel, director of UM's Maryland Imaging Research Technologies Laboratory, who was instrumental in the partnership between MSM and IBM. "I'm really surprised it has taken this long for that renaissance to start."

Physicians at Columbia University are helping identify critical medical issues to which Watson may be able to contribute, according to IBM.

Analytics Capability Critical to Healthcare

Powered by 90 servers and 360 computer chips, Watson was built in four years by IBM researchers seeking to develop a machine that could quickly answer complex questions. Through IBM's Deep Question Answering, Natural Language Processing and Machine Learning statistical techniques, Watson works to understand questions and develop answers—a capability critical to the technology's potential value to healthcare.

IBM is also working with speech-recognition software developer Nuance Communications to give Watson the analytics capabilities necessary for physician-patient consultations.

Earlier attempts at artificial intelligence required every possible question and answer to be hard-coded into the system, a time-consuming process with little value in healthcare, said Martin Kohn, M.D., Chief Medical Scientist, Care Delivery Systems, IBM Research.

"Watson uses a probabilistic, evidence-based approach," Dr. Kohn said. "It generates and scores many hypotheses using an extensible collection of natural language processing, machine learning and reasoning algorithms. Many previous such efforts relied on programmed decision rules. Watson is a self-learning system that does not rely on such rules. It gathers and weighs evidence to refine its hypotheses."

Technology Forum

Decision Support Boosted to New Level

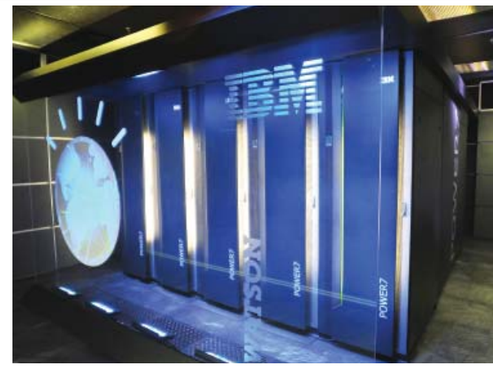
Radiology stands to benefit tremendously from Watson's capabilities, experts say.

"The technology has the potential to provide decision support on a scale not dreamt of prior to this," said Nancy Knight, Ph.D., the director of Academic and Research Development and a founder of the Maryland Imaging Research Technologies Laboratory at UM.

"Watson can supply the radiologist at the point of care with complete patient information from the electronic health record, including imaging history, allowing the radiologist to mine an often exhaustive number of records to identify the most important points," Dr. Knight said. "It also provides the latest and most extensive scientific knowledge and clinical experience that can be used to inform decisions about diagnosis, additional tests, management and likely prognoses."

> "Watson's eventual expansion into healthcare has profound implications for radiology and will certainly improve the safety, effectiveness and potentially the cost of healthcare delivery overall."
>
> **Eliot Siegel, M.D.**

Radiology stands to benefit enormously from Watson, the IBM supercomputer with the potential to create a renaissance in the application of "artificial intelligence," in medical data mining, data analysis and decision support. Watson cemented its star status by defeating celebrated contestants Ken Jennings and Brad Rutter on "Jeopardy!" earlier this year.
Images courtesy of IBM.



Watson is currently in the testing phase in that learning process, said Dr. Siegel, who pointed out the similarity to real-life students progressing from medical school to residencies.

The first step—acquiring book knowledge—is already under way. Watson's database already includes information from medical journals and textbooks such as the *Merck Manual of Diagnosis and Therapy*, *Harrison's Principles of Internal Medicine*, *the American College of Physicians Medicine* and *Stein's Internal Medicine*.

Next, experts will work to develop Watson's understanding of the physiology of the human body, followed by the third step: gathering experience.

"Watson not only needs the general knowledge that made him so successful on 'Jeopardy!,' but also information from the databases specific to medicine," Dr. Siegel said.

Watson is an Assistant, not a Physician

In time, Dr. Siegel would like to see Watson function as a physician's assistant. He envisions Watson being used for chart review, providing assistance on drug interactions or inconsistencies in prescriptions. Regardless of the technology's potential, Dr. Siegel stresses that Watson is designed to act as an assistant to a physician, rather than a replacement.

"I don't see this technology supplanting physicians or radiologists," Dr. Siegel said. "It's a tool that will gather, summarize and analyze information—very similar to the role now performed by our best residents and fellows."

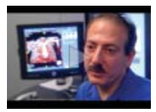
As the technology progresses and expands, it will be especially important to rural hospitals or areas where there may be fewer experts, but healthcare organizations across the board stand to benefit, he said.

"Watson's eventual expansion into healthcare has profound implications for radiology and will certainly improve the safety, effectiveness and potentially the cost of healthcare delivery overall." □

ON THE COVER

Eliot Siegel, M.D., pictured with IBM's Watson at the University of Maryland, believes the supercomputer may soon become a routine tool for diagnostic radiologists in addition to PACS, advanced visualization and speech recognition.

SIEGEL DISCUSSES WATSON'S ROLE AT UM



To view a video podcast of Eliot Siegel, M.D., discussing the development of Watson as an assistant capable of reading electronic health records and providing instant feedback to physicians at the University of Maryland School of Medicine, go to *www.umm.edu/media/video/misc_siegel_watson.htm.*

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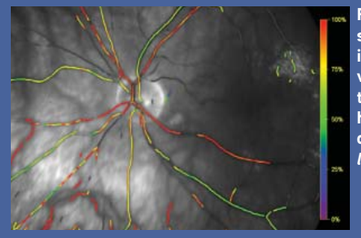
Continued on Page 17

Your Donations in Action

With an RSNA R&E Foundation grant, **Daniel Higginson, M.D.,** is using retinal oximetry, a novel, non-invasive imaging modality, to improve understanding of the pathophysiology and dose-response relationship of radiation induced retinopathy.



Retinal oximetry showing abnormalities in arteriolar/venous O_2 saturation in the most heavily irradiated quadrant *(bottom left).*

Journal Highlights

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

Transcatheter Intraarterial Therapies: Rationale and Overview

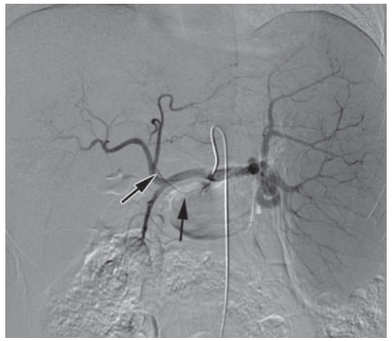
Radiology

Minimal invasiveness, reduced toxicity profiles and highly effective tumor response make transcatheter intraarterial therapies valuable in the battle against primary and secondary hepatic malignancies.

The goal of these therapies—which include transarterial embolization, intraarterial chemoinfusion, transarterial chemoembolization with or without drug-eluting beads and radioembolization with use of yttrium 90—is to inflict lethal insult to tumors while preserving normal hepatic parenchyma.

In a State-of-the Art article in the June issue of *Radiology (RSNA.org/Radiology),* Robert J. Lewandowski, M.D., of Northwestern University Feinberg School of Medicine, Northwestern Memorial Hospital, Robert H. Lurie Comprehensive Cancer Center in Chicago, and colleagues describe the rationale behind each of these therapies and review existing medical literature. As part of the interventional oncology review series, the authors also examine the considerable potential of transcatheter therapies.

"The future of transcatheter therapies is promising," the authors conclude. "Ongoing research in this field incorporates advances in the knowledge of liver cancer biology, new concepts in targeting liver cancer, development of new drugs, improvement of intraarterial drug delivery techniques and technological advances in imaging systems."



Common extrahepatic arteries that need to be recognized and potentially embolized prior to transcatheter intraarterial therapy. Above: Celiac angiogram reveals right gastric artery *(arrows)* originating from the proximal left hepatic artery.
(*Radiology* 2011;259;3:641–657) ©RSNA, 2011. All rights reserved. Printed with permission.

Optimal Tube Potential for Radiation Dose Reduction in Pediatric CT: Principles, Clinical Implementations and Pitfalls

While optimal tube potential may improve image quality or reduce radiation dose in pediatric CT, selecting an appropriate tube potential and determining dose reduction depend on the patient's size and the diagnostic task being performed. The power limits of the CT scanner and the desired scanning speed also must be considered.

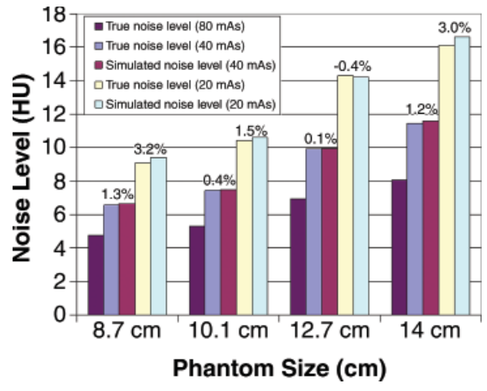
In the May-June issue of *RadioGraphics (RSNA.org/RadioGraphics),* Lifeng Yu, Ph.D., of the Mayo Clinic College of Medicine in Rochester, Minn., and colleagues describe the basic principles of optimal tube potential for reducing radiation dose in pediatric CT examinations. Specifically, the authors:

RadioGraphics

- Provide a tutorial for optimizing tube potential
- Describe how to implement a technique chart for tube potential and tube current settings
- Discuss special considerations and common pitfalls associated with lower tube potentials

"The use of a lower tube potential and the amount by which to reduce radiation dose must be carefully evaluated for each type of examination to achieve an optimal tradeoff between contrast, noise, artifacts and scanning speed," the authors concluded.

This journal-based CME activity has been approved for *AMA PRA Category 1 Credit™*.



Graph shows the effectiveness of the noise insertion tool on four acrylic cylindrical phantoms (8.7 cm, 10.1 cm, 12.7 cm and 14 cm). Two simulated dose levels (50 percent and 25 percent of the original doses) were included, and the noise levels in the simulated images were compared with those in the images acquired directly from the CT scanner.
(*RadioGraphics* 2011;30;835–848) ©RSNA, 2011. All rights reserved. Printed with permission.

Education and Funding Opportunities

RSNA Derek Harwood-Nash International Fellowship

Application Deadline
July 1

INTERNATIONAL RADIOLOGISTS three to 10 years beyond training are invited to apply for this six- to 12-week fellowship at a North American institution. One or two fellows will be selected.

The application for this program is available at *RSNA.org/international/CIRE/dhnash.cfm.* For more information, contact Fiona Miller at *fmiller@rsna.org* or 1-630-590-7741.

RSNA/AUR/ARRS Introduction to Academic Radiology Program

Application Deadline
July 15

SPONSORED BY RSNA, the American Roentgen Ray Society (ARRS) and Association of University Radiologists (AUR), the Introduction to Academic Radiology program:

- Exposes second-year residents to academic radiology
- Demonstrates the importance of research in diagnostic radiology
- Illustrates the excitement of research careers
- Introduces residents to successful clinical radiology researchers.

Successful applicants will be assigned to either a seminar held during RSNA 2011 or the ARRS annual meeting in 2012.

More information and an application/nomination form for this programs is available at *RSNA.org/Research/educational_courses.cfm.* Questions can be directed to Fiona Miller at 1-630-590-7741 or *fmiller@rsna.org.*

RSNA Advanced Course in Grant Writing

Application Deadline
July 31

APPLICATIONS are now being accepted for this course designed to assist participants, generally junior faculty members in radiology, radiation oncology or nuclear medicine programs, prepare and submit a National Institutes of Health (NIH), National Sciences Foundation (NSF) or equivalent grant application by the October 2012 deadline. The course, to be held at RSNA Headquarters in Oak Brook, Ill., will consist of four two-day sessions: October 14-15; January 27-28, 2012; March 16-17, 2012; and May 11-12, 2012.

For more information and an application, go to *RSNA.org/Research* and click Grant Writing and Research Programs or contact Fiona Miller at 1-630-590-7741 or *fmiller@rsna.org.*

Medical Meetings

July–October

JULY 31–AUGUST 4
The American Association of Physicists in Medicine (AAPM), 53rd Annual Meeting, Vancouver Convention Center, British Columbia • *www.aapm.org/meetings/2011AM*

SEPTEMBER 8–11
Australasian Society for Ultrasound in Medicine (ASUM), 41st Annual Congress in Medical Ultrasound, Crown Conference Centre, Melbourne, Australia • *www.asum.com.au*

SEPTEMBER 14–17
American Society of Emergency Radiology (ASER), Annual Scientific Meeting, Ritz Carlton, Key Biscayne, Miami • *www.erad.org*

SEPTEMBER 21–24
International Skeletal Society (ISS), Annual Meeting, Hotel del Coronado, San Diego • *www.internationalskeletalsociety.com*

SEPTEMBER 24–27
North American Society for Cardiac Imaging (NASCI), 39th Annual Meeting, Hilton Baltimore Hotel, Md. • *www.nasci.org*

OCTOBER 13–16
International Urogenital Radiology, joint meeting of European Symposium on Urogenital Radiology (ESUR) and Society of Uroradiology, Hotel Dubrovnik Palace, Croatia • *www.esur2011.com.hr*

OCTOBER 16–19
Radiology Business Management Association (RBMA), Fall Educational Conference, Aria Resort & Casino Las Vegas • *www.rbma.org*

Continued on Page 20

R&E Foundation Individual Donors

Continued from Page 15

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Radiology in Public Focus

Press releases were sent to the medical news media for the following articles appearing in the latest issue of *Radiology.*

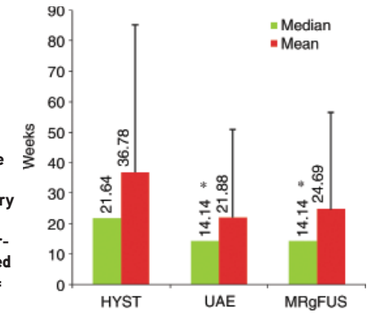
Quality-of-Life Assessment of Fibroid Treatment Options and Outcomes

QUALITY OF LIFE increases significantly after fibroid treatment ranging from abdominal hysterectomy to uterine artery embolization (UAE) to MR imaging-guided focused ultrasound surgery, according to new research.

In a retrospective study, Fiona M. Fennessy, M.D., Ph.D., of Brigham and Women's Hospital, Harvard Medical School in Boston, and colleagues used the waiting trade-off (WTO) method, a variation on the time trade-off method, to obtain utilities for diagnostic procedures based on the fact that people wait longer to avoid noxious tests and/or procedures. The study included 62 patients who had undergone abdominal hysterectomy, 74 who had undergone UAE and 61 who had undergone MR imaging-guided focused ultrasound surgery.

The median WTO time was longer for hysterectomy (21.6 weeks) than for UAE or MR imaging-guided focused ultrasound surgery (14.1 weeks for both), results showed.

" ... the health utility values obtained in this study suggest that all of the evaluated treatments for uterine fibroids increased the quality of life and that the perceived morbidity of treatment procedures varied, all of which may inform more robust cost-utility analyses of fibroid treatment," researchers concluded.

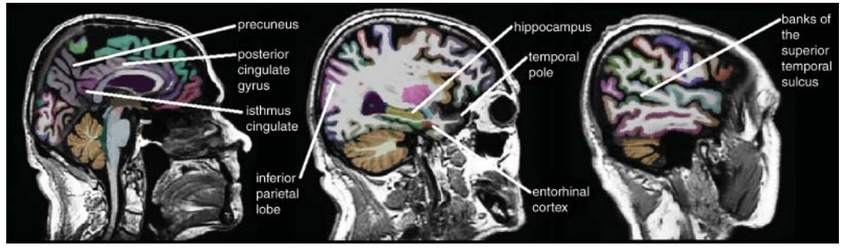


Bar chart shows the mean and median raw wait times for each treatment group. Data were obtained from 60 of the 62 patients who had undergone hysterectomy, 72 of the 74 patients who had undergone uterine artery embolization and all 61 patients who had undergone MR imaging-guided focused ultrasound. * = P < .05 versus hysterectomy with Kruskal-Wallis method with post hoc test, which indicates the significant disutility of hysterectomy as compared with the other procedures.

(*Radiology* 2011;259;3:785–792) ©RSNA, 2011. All rights reserved. Printed with permission.

Identifying Cognitively Healthy Elderly Individuals with Subsequent Memory Decline by Using Automated MR Temporoparietal Volumes

AUTOMATED temporal and parietal volumes from a single baseline MR examination can be used to identify with high accuracy cognitively healthy individuals who are at risk for future memory decline, researchers have discovered.



Automated segmentation of 15 temporal and parietal volumes of interest on (a) axial, (b) coronal and (c) sagittal MR images, performed by Freesurfer software.

(*Radiology* 2011;259;3:844–851) ©RSNA, 2011. All rights reserved. Printed with permission.

In a multicenter study of 149 cognitively healthy participants recruited through the Alzheimer Disease Neuroimaging Initiative, Gloria C. Chiang, M.D., of the University of California, San Francisco, and colleagues performed a standardized baseline 1.5 T MR examination as well as neuropsychological assessment at baseline and after two years of follow-up.

Use of the most accurate region model, which included the hippocampus; parahippocampal gyrus; amygdala; superior, middle, and inferior temporal gyri; superior parietal lobe; and posterior cingulate gyrus, resulted in a fitted accuracy of 94 percent and a cross-validated accuracy of 81 percent, researchers concluded.

"The ability to identify high-risk cognitively healthy individuals may be useful in targeting individuals for preventative therapy and for enriching trials to maximize power, and it represents another step toward integrating imaging into the diagnosis and management of Alzheimer Disease," they concluded.

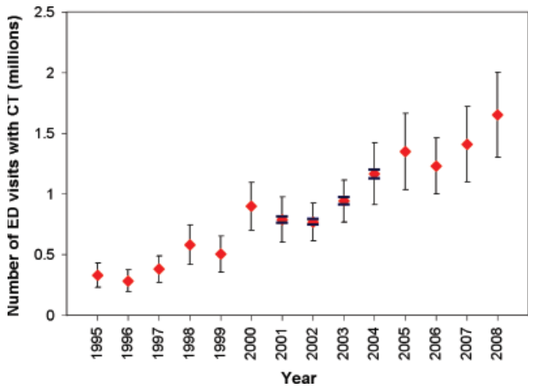
Radiology in Public Focus

Rising Use of CT in Child Visits to the Emergency Department in the United States, 1995–2008

CT use in children who visit the emergency department (ED) has increased substantially and occurs primarily at non–pediatric-focused facilities, underscoring the need to ensure that imaging is appropriately ordered, performed, and interpreted in the pediatric population, according to researchers.

Using data from the 1995–2008 National Hospital Ambulatory Medical Care Survey, David B. Larson, M.D., M.B.A., of Cincinnati Children's Hospital Medical Center, and colleagues evaluated the number and percentage of visits associated with CT for patients younger than 18 years. The number of pediatric ED visits in that time period escalated from 0.33 to 1.65 million, a fivefold increase, with a compound annual growth rate of 13.2 percent. Among pediatric visits to the ED that were associated with CT, 89.4 percent took place at non–pediatric-focused facilities.

Because of the higher susceptibility to potential effects from ionizing radiation in children compared with adults, the rapid rise in CT warrants further efforts to ensure appropriate use and dose optimization, authors wrote.



Graph illustrates number of emergency department (ED) visits with CT from 1995 to 2008 in patients younger than 18 years. Data points = national estimates of the number of annual ED visits. Error bars = 95 percent confidence intervals. Data for 2001–2004 were derived from estimates of CT use or MR imaging use. High and low estimates of these values *(thick horizontal lines)* for these years are indicated.

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"It is the professional obligation of all radiologists who perform pediatric CT to invest the required time and effort in developing the expertise to ensure that this occurs consistently for children," researchers concluded.

Media Coverage of RSNA

In April 2011, media outlets carried 2,535 RSNA-related news stories. These stories reached an estimated 1.3 billion people.

A study published online in *Radiology* received widespread attention in the press in April. "Rising Use of CT in Child Visits to the Emergency Department in the United States, 1995–2008" (see study, above) was covered in more than 1,600 print, broadcast and online outlets, including newspaper articles in *The New York Times, Wall Street Journal, Los Angeles Times* and *Chicago Tribune* and television news stories on *NBC Nightly News, CBS Evening News, Today, CBS Early Show* and CNN. The study's lead author, David B. Larson, M.D., M.B.A., was interviewed for the *NBC Nightly News* story.

Additional April print coverage included Associated Press, *Chicago Sun-Times, South Florida Sun-Sentinel, Cincinnati Enquirer, San Jose Mercury News, St. Paul Pioneer Press* and *St. Petersburg Times.*

Other broadcast coverage included CNN Headline News, *CBS Morning News,* WNBC-TV (New York), WPLJ-FM (New York), KNBC-TV (Los Angeles), KTTV-TV (Los Angeles), WLS-TV (Chicago), WGN-TV (Chicago), WMAQ-TV (Chicago), WBBM-AM (Chicago), WRC-TV (Washington, D.C.), WCAU-TV (Philadelphia), KPRC-TV (Houston), WFAA-TV (Dallas), CBS Radio and Bloomberg News.

Online coverage included The Huffington Post, Yahoo! News, *ABCNews.com, MSNBC.com, CNN.com, The New York Times* – Online, *USA Today* – Online, *Wall Street Journal* – Online, *Los Angeles Times* – Online, *Chicago Tribune* – Online and WebMD.

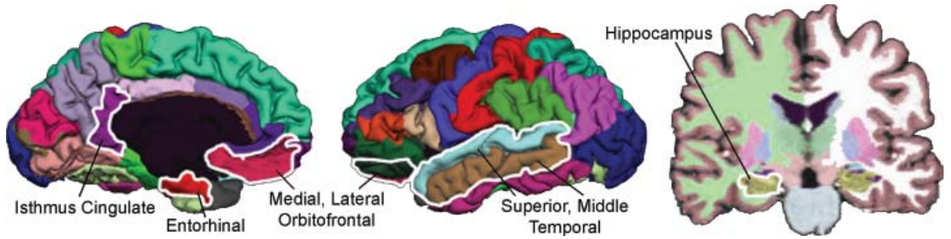
June Outreach Activities Focused on Radiation Safety

In June, RSNA's 60-Second Checkup radio program focused on radiation safety related to CT scans and pediatric patients.

RadiologyInfo.org Spanish Mobile Site Now Live

Visitors to *RadiologyInfo.org* can use their smartphone to access information in English and Spanish on more than 115 diagnostic, interventional, nuclear medicine and radiation therapy tests and treatments. Visitors can also access video clips, images, safety information, the latest radiology news and more.

Mild Cognitive Impairment: Baseline and Longitudinal Structural MR Imaging Measures Improve Predictive Prognosis



Relative to the risk of conversion to Alzheimer Disease (AD) conferred by the clinical diagnosis of mild cognitive impairment (MCI) alone, MR imaging measures yield substantially more informative patient-specific risk estimates, research shows.

In a cross-validated discriminant analyses of MR imaging measures to differentiate 164 AD cases from 203 healthy control cases, Linda K. McEvoy, Ph.D., of the University of California, San Diego, and colleagues performed separate analyses using data from MR images obtained at one time point or by combining single-time-point measures with one-year change measures. Resulting discriminant functions were applied to 317 MCI cases to derive individual patient risk scores.

Individualized risk estimates from baseline MR examinations indicated that the one-year risk of conversion to AD ranged from 3 to 40 percent (average group risk, 17 percent), results showed.

"A quantitative estimate of the risk of conversion to AD over the short term for a patient with MCA can be derived from a summary numeric value that reflects the degree to which the individual's MR images depict the regional atrophy pattern associated with AD," researchers concluded.

Regions examined in quadratic discriminant analysis are outlined *(in white)* on medial *(left)* and lateral *(middle)* views of reconstructed parcellated left-hemisphere cortical surface and on segmented coronal view *(right)* of brain. Average thickness or volume across left- and right-hemisphere regions was used. Examined regions included isthmus cingulate, entorhinal cortex, medial and lateral orbitofrontal cortices, superior and middle temporal gyri, bank of superior temporal sulcus (not visible) and hippocampus. These regions were chosen on the basis of their utility for discrimination of Alzheimer Disease (AD) data from healthy control subject data in a prior study involving a subset of the subjects with AD and healthy control subjects evaluated in the current study (211 [57.5 percent] of 367 subjects) (28). Whole-brain and inferior lateral ventricle volumes (not shown) also were included in the analysis.

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Education and Funding Opportunities

Continued from Page 17

CORE Workshop

October 28–29, 2011
Oak Brook, Ill
• Registration Deadline
September 23

Formerly the Revitalizing the Radiology Research Enterprise (RRRE) program, the newly named Creating and Optimizing the Research Enterprise (CORE) workshop will be held Friday and Saturday, Oct. 28 and 29 in Oak Brook, Ill. The workshop will focus on strategies for developing and expanding research programs in radiology, radiation oncology and nuclear medicine departments. The CORE program features a combination of presentations, case studies and group discussions. Register now at *RSNA.org/CORE.*

2011 World Molecular Imaging Congress

September 7 – 10
San Diego Convention Center

RSNA is a sponsor of the 2011 World Molecular Imaging Congress (WMIC), along with the Academy of Molecular Imaging, Society for Molecular Imaging, European Society for Molecular Imaging, Federation of Asian Societies for Molecular Imaging, International Society for Magnetic Resonance in Medicine and SNM.

In addition to scientific presentations and a technical exhibition, WMIC will feature plenary lectures on these topics:

- Preclinical modeling of therapy of early or advanced stage metastatic disease
- Clinical fluorescence imaging
- Imaging VMAT2 as a biomarker of beta cell mass in health and disease
- Metabolic and physiological imaging of cancer
- Capturing signals from ultrafast relaxing spins with SWIFT MRI
- ImmunoPET for imaging cell surface biomarkers in vivo

Learn more at *www.wmicmeeting.org.*

Annual Meeting Watch

News about RSNA 2011

RSNA® 2011 Celebrate the Image

November 27– December 2 | McCormick Place, Chicago

Course Enrollment Begins July 6

Course enrollment information will be mailed in late June to all members and 2011 meeting attendees and will also be available online at *RSNA2011.RSNA.org*. People registering for RSNA 2011 prior to June 8 who wish to view course enrollment information online only can "opt out" of receiving the copy by mail. The Advance Registration, Housing and Course Enrollment brochure will be available online and in print starting July 6. RSNA will mail the brochure to all RSNA/AAPM members and all non-member registrants as of June 8, except those who "opted out" of a printed copy at the time of online registration. The brochure can be viewed and printed from *RSNA.org/register*.

Use this brochure to make the most of your RSNA 2011 experience. RSNA has organized the information in the course brochure to help you complete your enrollment in just a few steps. Find the courses you need, build your schedule and enroll quickly and easily online or via the print form.

Guarantee Your Seat!

Tickets are required for various meeting components, including refresher, multisession, informatics workshops and RSNA tours and events.

All ticketed courses must be confirmed prior to November 23 to guarantee a seat. RSNA ticketed courses fill up fast, so ensure you get the courses you need by enrolling at *RSNA.org/register*. Onsite course ticketing has been eliminated. Registrants without tickets will be allowed entrance into a course after all ticketed registrants have been seated.

CME UPDATE: This live activity has been appproved for *AMA PRA Category 1 Credit™*.

RSNA 2011 Registration

How to Register

There are four ways to register for RSNA 2011:

Fastest way to register!

1 INTERNET
Go to *RSNA.org/register*

2 FAX (24 hours)
1-800-521-6017
1-847-996-5401

3 TELEPHONE
(Mon.-Fri. 8:00 a.m. – 5:00 p.m. ct)
1-800-650-7018
1-847-996-5876

4 MAIL
Experient/RSNA 2011
568 Atrium Drive
Vernon Hills, IL 60061 USA

Registration Fees

BY NOV. 4	AFTER NOV. 4	
$ 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
165	265	Non-Member Resident/Trainee
165	265	Radiology Support Personnel
750	850	Non-Member Radiologist, Physicist or Physician
750	850	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

Important Dates

July 6	Course enrollment opens
October 21	International deadline to have full-conference materials mailed in advance
November 4	Final discounted advance registration, housing and course enrollment deadline to have full-conference materials mailed in advance
Nov. 27 – Dec. 2	RSNA 97th Scientific Assembly & Annual Meeting

For more information about registering for RSNA 2011, visit *RSNA2011.RSNA.org*, e-mail *reginfo@rsna.org* or call 1-800-381-6660 x7862.

Apollo Features One in a Million Musical

Eye on Chicago

DON'T MISS "MILLION DOLLAR QUARTET," the smash-hit musical inspired by the famed recording session that brought together Elvis Presley, Johnny Cash, Jerry Lee Lewis and Carl Perkins for the first and only time, playing at Chicago's Apollo Theater.

These four young musicians gathered on Dec. 4, 1956 at Sun Records in Memphis for what would be one of the greatest jam sessions ever. The musical features rock hits including "Blue Suede Shoes," "That's All Right," "Sixteen Tons," "Great Balls of Fire," "Walk the Line," "Whole Lotta Shakin' Goin' On," "Folsom Prison Blues" and more.

Obtain pre-arranged tickets for the Wednesday, Nov. 30, show only through RSNA's 2011 tours and events program. Tickets go on sale July 6 when course and tour enrollment opens at *RSNA2011.rsna.org*. Future dates will be available to the general public through the Apollo Theater, 2540 N. Lincoln Ave., at *www.milliondollarquartetlive.com/index.html*.

RSNA's series of exciting tours and events during the annual meeting week also includes:

- "Memphis," the Tony Award-winning musical, at the Cadillac Palace Theater
- Boris Godunov at the Lyric Opera
- Ariadne auf Naxos at the Lyric opera
- Vienna Boys Choir at the Symphony Center

The RSNA lineup will also feature city tours, shopping excursions, culinary experiences, museum exhibits and much more. Tickets go on sale July 6 when course and tour enrollment opens at *RSNA2011.rsna.org*.

Save on This Year's Airfare, Enter to Win Future Travel Credit

RSNA attendees who book air travel through Gant Travel by September 30 will be entered into a drawing to receive a $500 (USD) travel credit good toward future airfare on United Airlines. Benefits of using Gant Travel for RSNA 2011 include:

- Up to a 15 percent discount on available fares on United Airlines
- Fare-checker technology (checking for lower fares until your return flight home)
- Seat-checker technology (checking for the best available seats per your preference)
- Emergency assistance available by phone

For more information, contact Gant Travel at 1-877-613-1192, international +1 011 630-227-3873, or *RSNA@ganttravel.com*.

INTERNATIONAL VISITORS

International Letters Available—Act Now for Visa

Personalized letters of invitation to RSNA 2011 are available by request during online registration. In addition, the International Visitors section of *RSNA2011.RSNA.org* 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. International visitors are advised to begin the visa process now.

Buy Bistro RSNA Tickets Now

Avoid long lines by purchasing Bistro RSNA tickets earlier this year.

Tickets to Bistro RSNA—which provides a comfortable setting for attendees to eat, meet, and network during the annual meeting—have been on sale since May. The largest variety and best value for lunch at McCormick Place is now only $19.

Bistro RSNA is located in all three Technical Exhibit Halls and the Lakeside Learning Center. The daily lunch menu includes salads, soup, entrée choices, vegetables, pasta and more. Menu price includes full meal, beverage choices and dessert.

To purchase tickets in advance, go to *RSNA.org/register*.

For Your Benefit

Faculty Development Workshop Expands to Membership

Continuing its charge to offer members a wide variety of opportunities to learn and earn CME, RSNA's Education Center is opening its Faculty Development Workshop to the entire RSNA membership this year.

Scheduled for Sept. 14, the daylong course on best techniques for designing and delivering radiology education is open to all members for a fee of $150. Valerie Jackson, M.D., chairman of RSNA's Refresher Course Committee, will lead the workshop focusing on how adults—especially physicians—best learn and how faculty can use test questions to improve their teaching.

Originally offered to RSNA Annual Meeting faculty, the workshop aided instructors in preparing courses and keeping abreast of the latest developments in adult education. In 2010, for the first time RSNA opened the workshop to a limited number of radiologists who were not annual meeting faculty.

"The response was fantastic," said Richard L. Baron, M.D., RSNA Board of Directors Liaison for Education. "Attendees were excited at having the chance to learn to use interactive education tools effectively."

The workshop provided a chance to develop questions and learn to use the electronic audience response system utilized at RSNA annual meetings.

"Research clearly shows that interactive courses are very effective for adult learners," Dr. Baron said. "RSNA is always finding ways to not just teach the radiologist, but to teach the teacher. This workshop is a great way to hone your teaching skills."

RSNA staff and faculty will be on hand to discuss questions with participants. To register online for the 2011 Faculty Development Workshop, go to *www2.rsna.org/timssnet/meetings/fdw2011/index.cfm.* For more information, call Jennifer Comerford at 630-590-7772.

Baron

Credit Repository Offers Instant Access to Organized CME Record

RSNA automatically deposits CME and SAM credits earned through RSNA activities into the RSNA CME Credit Repository. Member Mizuki Nishino, M.D., said she appreciates the convenience of the system—it's available whenever needed and requires minimal efforts to maintain the record.

"I probably consult it once in two to three months, when I need my CME record for credentialing and licensing purposes," said Dr. Nishino, of the Department of Radiology, the Dana Farber Cancer Institute and the Brigham and Women's Hospital in Boston. "The repository is very helpful in that it gives instant online access to the official CME record, with details of the courses and contents. It also has a unique feature that provides the total credits in each subspecialty, which is useful to plan future CME activity."

RSNA members can print a cumulative record of RSNA-awarded credits. As an added feature for members, all RSNA-awarded credits will automatically be pushed to the CME Gateway. Also, members have the ability to self-enter other earned CME credits into the repository to create a cumulative CME report.

The Value of Membership

Learn more at *RSNA.org/CME.*

Nishino

RSNA.org

Web Page Features All Things RSNA 2011

What are the Top 5 Reasons to Attend RSNA 2011? That answer and a host of other important details about the world's premier medical meeting are available on RSNA's ever-expanding annual meeting page at *RSNA.2011.RSNA.org*.

Anchored by a video message to members from RSNA President Burton P. Drayer, M.D., the page offers separate links for attendees, technical exhibitors, the meeting program, past and future RSNA meetings and newsroom highlights. New information will be added as the meeting approaches. For example, members can now access advance registration and housing, while online course enrollment begins July 6.

You'll also find RSNA 2010 content and image highlights, a list of important dates for attendees and exhibitors, connections to RSNA's social media portals, and more.

Log on early and often to stay on top of all things RSNA 2011.

IHE Webinar Series Begins This Month

Integrating the Healthcare Enterprise (IHE®), an initiative devoted to improving the exchange of information among healthcare systems and accelerating the adoption of electronic health records, is sponsoring its annual series of free educational webinars for health information technology (HIT) developers and users beginning in June.

Web Tip

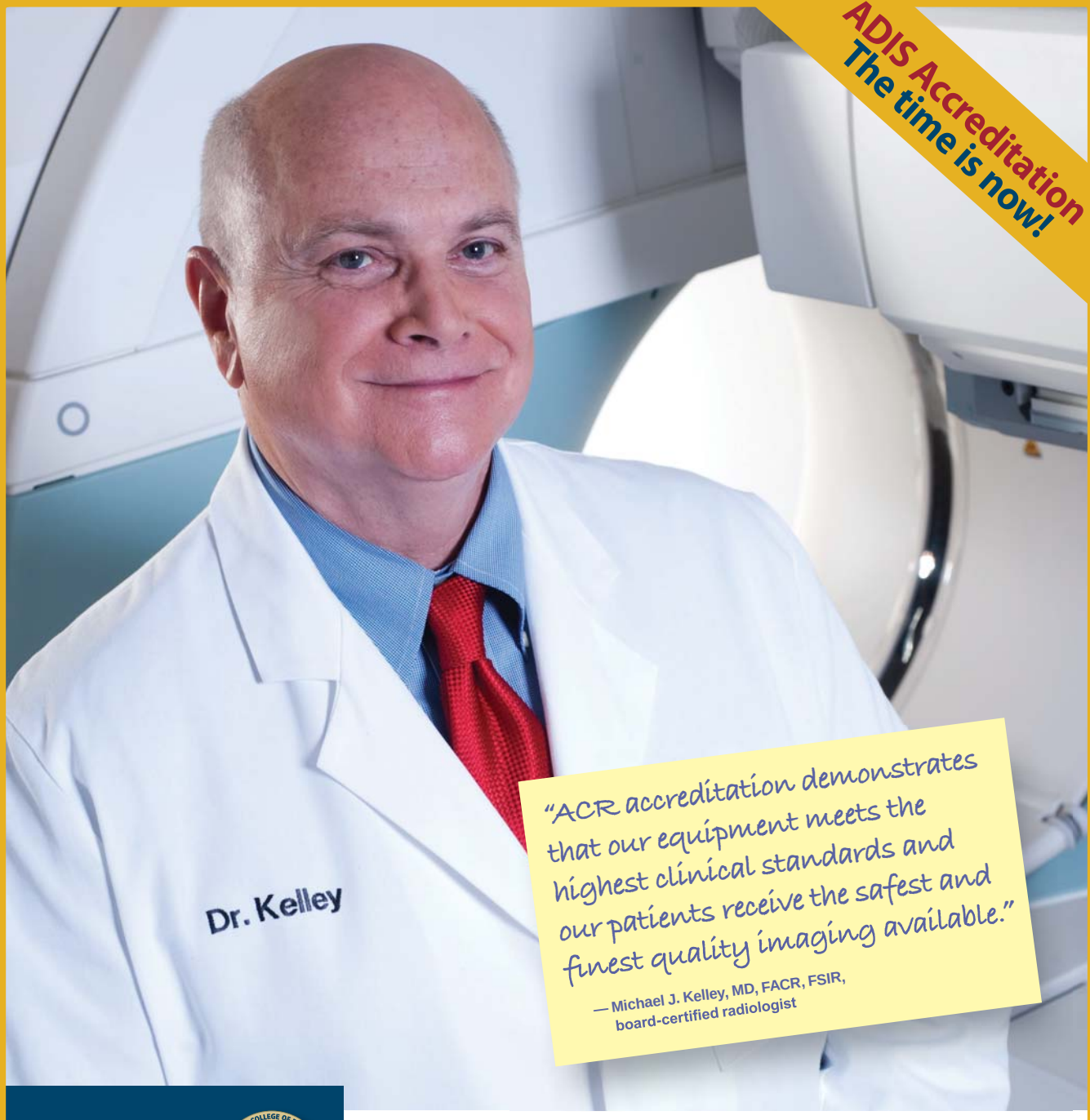
The series, which runs from June 28 through September 2011, will highlight ways to engage in IHE, learn about the latest IHE Profiles and Technical Frameworks developed in IHE Domains, IHE's National Deployment Committees, Connectathons and demonstrations. Participants will also learn how to build and implement interoperable HIT systems.

In collaboration with IHE USA and Health Information and Management Systems Society, the series includes more than 30 webinar presentations hosted each week on Tuesdays and Thursdays.

To review the full schedule for specific dates and times, visit *www.IHE.net.*

COMING NEXT MONTH

From educating the public on radiation safety to aiding victims impacted by the devastating earthquake, radiologists continue to play a significant role in the ongoing recovery in Japan. Next month *RSNA News* reports on radiology's ongoing mission—in the U.S. and abroad—to provide expertise and assistance in the wake of this overwhelming tragedy.



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- Designed by radiologists and medical physicists
- Guided by expert technologists
- Multi-site, multi-modality pricing

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Only ACR delivers medical imaging accreditation from medical imaging experts. To apply, visit **acr.org**.

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