



Image courtesy of the Society of Interventional Radiology.

Video Glasses Ease Patient Anxiety

ALSO INSIDE:

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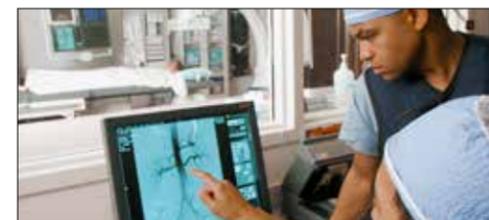
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The RSNA promotes excellence in patient care and healthcare delivery through education, research and technologic innovation.



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100 YEARS CENTENNIAL SNAPSHOTS

During this year as RSNA celebrates its 100th Scientific Assembly and Annual Meeting, *RSNA News* will take a look back at milestones in the Society's history.

1919: Society Name Changed to RSNA



With a growing membership that sprawled across the U.S. border to Canada—and evolution of the society's objectives and even the term "Roentgenology"—the Western Roentgen Society became the Radiological Society of North America. Acknowledging the great responsibility members faced in rebranding the organization, 1919 President **Oliver H. McCandless, M.D.**, observed, "It is hoped that in the selection of a name we may act without prejudice or sentiment in considering the appropriateness, dignity, and scientific fitness."

1956: First Memorial Fund Lecture (later *New Horizons*) Presented

1941 RSNA President **W. Walter Wasson, M.D.**, wanted to renew interest in the Memorial Fund he had established as a source of research support in 1927. Thus was born the Memorial Fund Lecture, renamed in 1985 to the Eugene P. Pendergrass New Horizons Lecture in recognition of a memorial endowment from the family of RSNA's 1954 president. Nearly 60 presenters have followed in the footsteps of inaugural lecturer Rollin K. McCombs, M.D., of Berkeley, Calif., who presented "Proton Irradiation of the Pituitary and Its Metabolic Effects."



1972: CT Machine First Demonstrated at RSNA Annual Meeting

RSNA members today still talk about the history-making display of a new technology called computed axial tomography, or CAT, at RSNA 1972. With the space at Chicago's Palmer House increasingly inadequate to house all the scientific and education presentations—not to mention game-changing technical exhibits—of RSNA's annual meeting, attendees also recall jockeying for space in elevators and stairwells to reach the hotel's top floor and see the new technology.



Image courtesy of Mike Goffier.

1998: IHE Launched

RSNA collaborated with the Healthcare Information and Management Systems Society in forming the Integrating the Healthcare Enterprise (IHE) initiative, designed to improve the interoperability of health care information technology systems. IHE is particularly well known for staging annual "Connectathons" where vendors assemble to demonstrate the interoperability of their products.



2006: RSNA Services Debuts at Annual Meeting

Consolidating many of the RSNA amenities previously located throughout McCormick Place, this new area became a one-stop shop for meeting attendees seeking information. Addition of the Mobile Connect area to RSNA Services in 2012 puts attendees in touch with the latest RSNA technology as well as assistance with their devices.



RSNA Issues One Million *RadioGraphics* CME Certificates

RSNA is celebrating the issuing of its one millionth *RadioGraphics* CME certificate.

RadioGraphics began offering CME credit for articles in 1992 through a tear-out postcard CME test that readers filled out and mailed to RSNA. In March 1998, *RadioGraphics* added interactive online CME testing allowing readers to answer multiple-choice questions onscreen and receive scoring, feedback and access to their earned certificate.

All online *RadioGraphics* CME tests underwent a revolutionary redesign in late 2013, allowing access from mobile devices for the first time. The new format includes the ability to enlarge images and refer to journal articles within the CME test.

The test allows immediate scoring along with access to a CME certificate (if earned). As of January 2013, all online *RadioGraphics* CME earned can be applied towards the American Board of Radiology Self-Assessment (SA-CME) requirement.

Keeping pace with the digital age and the needs of its members, *RadioGraphics* transitioned to online-only CME test submissions in May 2014.

"The new online-only CME format allows our readers to obtain their SA-CME credits online or via their mobile devices, with rapid scoring and immediate issuance of CME certificates," said *RadioGraphics* Editor Jeffrey S. Klein, M.D.

RSNA offers more than 250 mobile-capable online *RadioGraphics* SA-CME tests. Free for members at RSNA.org/library.

RadioGraphics



SAR BESTOWS HONORS



The Society of Abdominal Radiology (SAR) awarded its 2014 Walter B. Cannon Medal to **Robert J. Stanley, M.D.**, at its recent annual meeting. Dr. Stanley is professor emeritus in the Department of Radiology at the University of Alabama at Birmingham. **William H. Bush, Jr., M.D.**, an emeritus professor of radiology at the University of Washington, Seattle, was awarded the 2014 Howard M. Pollock Medal.

Robert F. Mattrey, M.D., vice-chair of radiology and director of research at the University of California, San Diego School of Medicine, was awarded the GU Lifetime Achievement Award. **J. William Charboneau, M.D.**, a professor of radiology at the Mayo Clinic College of Medicine in Rochester, was

awarded the GI Lifetime Achievement Award. Dr. Charboneau delivered the Eugene P. Pendergrass New Horizons Lecture at RSNA 2006.

Morton A. Meyers, M.D., founding chair emeritus of the Department of Radiology and distinguished professor emeritus of radiology and medicine at Stony Brook University in N.Y., was presented the special recognition Crystal Award for his contributions to SAR and abdominal imaging. Dr. Meyers presented the RSNA Annual Oration in Diagnostic Radiology at RSNA 1986.



Stanley



Bush



Mattrey



Meyers



Charboneau

Help Celebrate the Third Annual International Day of Radiology

On November 8, 2014, join 110 radiology organizations from more than 57 countries in celebrating the advances that radiologic innovations have brought to patients worldwide.

The mission of the International Day of Radiology (IDoR) is to build greater public awareness of the value that radiology research, diagnosis and treatment contribute to safe patient care, and to build understanding of the vital role radiologists perform in healthcare delivery. A major focus in 2014 is on advances in brain disease imaging, research and treatment.



IDoR is sponsored by RSNA, the European Society of Radiology (ESR) and American College of Radiology (ACR), with a dedicated website (IDoR2014.com) and social media activities. Visit RSNA.org/IDoR2014 for promotional materials you can customize for your practice or organization.

CLARIFICATION

Part of the last sentence in the story "Diffusion-tensor Imaging Aids in ADHD Follow Up," in the June 2014 print edition of *RSNA News*, was inadvertently eliminated during layout. The full sentence read, "ADHD affects approximately 7 percent of the world population and is one of the most common childhood disorders."

RAD/PATH Group Exploring Potential for Integration of Diagnostic Imaging

After more than a year of discussion and planning by representatives from RSNA's Research Development Committee and the American Society for Clinical Pathologists (ASCP), an exciting collaborative workshop came to fruition in April 2014: the RSNA/ASCP Workshop on Radiology and Pathology Diagnostics: Is it time to integrate?

Approximately 35 attendees from both specialties gathered to discuss the potential for an integrated approach to diagnostic imaging.



Speakers and panelists were organized around the following areas:

- Fundamentals of image-based radiology/pathology/correlation issues
- Integration and communication of non-image based data
- Opportunities for integrated imaging system work flow
- High dimensional fused-informatics: Is there an opportunity to redefine the diagnostic process?
- Education and training programs

One of the first follow-up activities is an RSNA 2014 special interest session where moderators will present some potential outcomes and implications of the workshop.

AIUM PRESENTS AWARDS

The American Institute of Ultrasound in Medicine (AIUM) presented its Joseph H. Holmes Clinical and Basic Science Pioneer Awards to **Greggory R. DeVore, M.D.**, and **James G. Miller, Ph.D.**, at its recent annual meeting in Las Vegas. Dr. DeVore is the director of the Fetal Diagnostic Centers in Pasadena, Tarzana and Lancaster, Calif. Dr. Miller is professor of physics in the Faculty of Arts and Sciences at Washington University in St. Louis, where he holds the Albert Gordon Hill Chair and serves as director of the Laboratory for Ultrasonics.

Levon N. Nazarian, M.D., a professor of radiology and vice-chair for education in the Department of Radiology at the Thomas Jefferson University Hospital in Philadelphia and the editor-in-chief of the *Journal of Ultrasound in Medicine*, received the William J. Fry Memorial Lecture Award. Dr. Nazarian is a member of RSNA's Public Information Advisors Network and serves on the *Radiology* Editorial Board.

Diana M. Strickland, B.S., B.A., a clinical assistant professor in the departments of obstetrics and gynecology at the Brody School of Medicine and co-director of the Ultrasound Division at East Carolina University School of Medicine, Greenville, received the Distinguished Sonographer Award.

Pascal Laugier, Ph.D., and **Yuji Murata, M.D., Ph.D.**, received AIUM Honorary Fellowships. Dr. Laugier is the head of the Biomedical Imaging Laboratory in Paris. Dr. Murata is professor emeritus at the University of California, Irvine College of Medicine, and Osaka University Medical School in Japan.



DeVore



Miller



Nazarian



Strickland



Laugier



Murata



Hoppman

Richard A. Hoppman, M.D., received the first Peter H. Arger, M.D., Excellence in Medical Student Education Award. Dr. Hoppman is the Dorothea H. Krebs Endowed Chair of Ultrasound Education, a professor of medicine in the Department of Internal Medicine, dean emeritus of the School of Medicine and director of the Ultrasound Institute at the University of South Carolina, Columbia.

AAPM Offers Resources on CT Dose-Check Standard

The American Association of Physicists in Medicine (AAPM) has developed a slide presentation explaining the National Electrical Manufacturers Association's Medical Imaging & Technology Alliance (MITA) XR 28 standard, also known as MITA Smart Dose.

Developed by the AAPM Working Group on Standardization of CT Nomenclature, AAPM resources explain how the standard's dose notifications and alerts work, how they should be used and cautions for certain clinical applications.

All new CT scanners sold in the U.S. must now comply with the MITA Smart Dose standard. Manufacturers are also working to ensure that as many of their installed units as possible meet the new standard.

In January 2016, Medicare will begin reimbursing 5 percent less for CT scans that are acquired on technology that does not meet the MITA Smart Dose standard.

Compliant CT scanners can be configured to inform operators when scan settings would likely yield values of CTDIvol or DLP that would exceed pre-assigned values. Users are able to confirm or correct settings prior to scanning that might otherwise lead to unnecessarily high exposures. Manufacturers may include pre-assigned values in their default protocols, but all values are user-configurable.

To access the free CT Dose Notifications and Alerts presentation, go to www.aapm.org/pubs/CTProtocols/?tab=3#CTPanel.



Image Wisely™ Launches New Radiation Safety Case

Image Wisely™ has launched its third radiation safety case, "CT Brain Perfusion Dose Optimization." Radiation safety cases are free, online, mobile-compatible educational modules that help radiologists improve their understanding of radiation safety concepts.

Each case includes embedded questions, references and resources for further study. "CT Brain Perfusion Dose Optimization" offers a total of 0.5 *AMA PRA Category 1 Credits*™; 0.5 *MPCEC credit* by the Commission on Accreditation of Medical Physics Education Programs, Inc.; and 0.5 *Category A*

credit hours of the American Registry of Radiologic Technologists.

Image Wisely was developed by RSNA, the American College of Radiology, the American Association of Physicists in Medicine and the American Society of Radiologic Technologists.

For more information go to Imagewisely.org/Case.



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Radiation Safety in
Adult Medical Imaging

My Turn

Latest Mammography News Sends Unfortunate Message

Recently, a new publication on the Canadian National Breast Screening Study (CNBSS) has generated significant press coverage with the unfortunate message that screening mammography is not useful. Critically important to note is that the CNBSS is an "outlier" as the only randomized controlled trial to not show a benefit of screening mammography. The analyses of why this was the case began over two decades ago, when this trial was widely discredited for concerns regarding its compromised execution.

Two major problems were uncovered: First, there were many more advanced cancers in the screening group than were statistically predicted, indicating that the randomization process had likely been compromised. Two studies pointed out that the CNBSS randomized some women after their required clinical examination, misallocating a proportion of them to the screening arm [Boyd et al., *Radiology* December 1993 and Kopans and Feig, *American Journal of Roentgenology (AJR)* October 1993].

Secondly, mammographic technique in the CNBSS has been shown to be below the standard of care [Baines et al. *AJR* October 1990], and even though the investigators documented substantial improvements in image quality during the course of the trial, five and a half years of the 8-year trial had elapsed, so the majority of mammography exams in this trial were still sub-



Bonnie N. Joe, M.D., Ph.D., is an associate professor in residence and chief of women's imaging in the Department of Radiology and Biomedical Imaging at the University of California, San Francisco. Dr. Joe serves on the *RSNA News* Editorial Board.

Read "Breast Imagers Defend Mammography in Wake of New Study" on Page 13.

standard. It therefore comes as no surprise that screening was unable to demonstrate a beneficial outcome. This was the case back in the 1990s and remains true today.

Previously, the screening debate revolved around who to screen and how often, with overall agreement that screening mammography does indeed save lives. Mammography is the only breast cancer screening modality proven to have survival benefit in multiple randomized controlled trials, even when

this outlier Canadian trial is included in the systematic reviews, as reported by Smith et al in the September 2004 issue of the *Radiologic Clinics of North America*.

How many lives are we talking about? In the February 2011 edition of *AJR*, Hendrick and Helvie estimated that 100,000 more lives would be saved if all women in the U.S. between the ages of 30 and 39 began annual screening at age 40 (up to age 84) as compared to waiting until age 50, and then obtaining mammograms every other year as critics of mammographic screening would suggest. Screening may commit some women to additional testing and procedures, but without it many lives would be lost.

RSNA News Online Edition Expands, Enables New Tablet Access

June was the last issue of the first *RSNA News* tablet edition. All the interactive features that readers enjoyed in the tablet edition—video, audio, slide presentations and more—will be offered via *RSNA News* online, accessible at RSNA.org/News.

At the same time, the online edition of *RSNA News* continues to expand with new features designed to improve the reader experience. A new commenting feature implemented in April invites readers to be part of the radiology news conversation. In the coming months, additional new features will enhance viewing of *RSNA News* on smartphones and enable easier searching and sharing. RSNA thanks users of the tablet edition and looks forward to serving them online. Questions or comments on these changes are welcomed at tellus@rsna.org.

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RSNA/ACR Programs Lead the Way in Patient-Centered Care

BY MARY HENDERSON

We've heard the clarion call: Healthcare's new economics require all providers to transition from volume- to value-based care. For radiologists, that means shifting the practice paradigm from transactional to consultative and focusing on both interpretation and outcomes. Radiology leaders are reminding other imaging professionals that becoming more patient-centered is imperative.

To HELP RADIOLOGISTS take practical steps toward patient-centeredness, the RSNA and the ACR have established resource-rich programs, Radiology Cares and Imaging 3.0™, respectively. Both initiatives offer online toolkits stocked with the resources radiologists need to build a modern practice focused on high-value, patient-centered care—including educational materials, case studies, videos and more. (See sidebars)

Need a customizable PowerPoint presentation to share with hospital administrators or community groups or a powerful video on the importance of conveying empathy? Want to quickly peruse media, trade and scientific articles on patient-centeredness? It's all available through RSNA's Radiology Cares: The Art of Patient-Centered Practice.

Looking for practical ways to implement changes in your practice that have been successful in other organizations? Need



a quick update on accountable care organizations (ACOs) or help writing a mission statement and setting goals with associated metrics? Check out ACR's Imaging 3.0 initiative.

Another highlight of Imaging 3.0 is case studies that spotlight radiologists who are already transitioning from focusing on the volume of scans read to the value of the patient experience. Fifteen case studies—including "Class Act," summarized below—are currently available through the Imaging 3.0 initiative with another 15 in the pipeline.

The "PERCS" of Participatory Learning

Imagine your 6-month-old patient's parents are anxiously waiting in the next room. Ultrasound images confirm a tumor in their son's liver. Now you must convey the bad news. You walk into the room, readying yourself to pass on the difficult information. The parents look up at you expectantly as you walk in. However, these aren't actual

parents, and there is no son with a liver tumor. It's only a simulation. The nervous people in the next room are professional actors who specialize in improvisation and are trained to respond to various medical scenarios. They are part of an innovative workshop — offered by the Program to Enhance Relational and Communications Skills (PERCS) — held at Boston Children's Hospital (BCH) to teach radiologists and other practitioners how to communicate effectively with patients and their loved ones.

Few doubt the importance of teaching interpersonal and communication skills to healthcare professionals. These critical skills are core ACGME competencies mandated for radiology residents. However, traditional instruction through lectures and readings "place learners in a passive mode, merely absorbing information," wrote two PERCS participants in the December 2012 issue of *Academic Radiology*.

While simulation has become commonplace in medicine, it is mainly used for practicing technical skills. "Usually, simulation focuses on procedural learning with mannequins," said Elaine C. Meyer, Ph.D., R.N., director of BCH's Institute for Professionalism and Ethical Practice (IPEP) and an associate professor of psychology at Harvard Medical School in Boston. "We thought, 'Wouldn't this be a great way to learn how to interact with patients?'"

The PERCS workshops began in 2002. PERCS has subsequently developed workshops to improve communication and interpersonal skills in various medical disciplines. As Meyer notes, however, radiology was not



Meyer



Brown



RSNA and ACR have established resource-rich programs, Radiology Cares™ and Imaging 3.0™, respectively, focused on high-value, patient-centered care. Top left: One of ACR's Imaging 3.0 case studies features a hospital that trains its physicians using professional actors prepped to respond to various medical scenarios; right: as part of the Radiology Cares video library of resources, interventional radiologist Hector Ferral, M.D., and patient Debra Blue, chat during a recent consultation. (ACR Image courtesy of Stephen D. Brown, M.D., Boston Children's Hospital.)

an initial focus because radiologists have not historically practiced frontline patient communication. But times are changing, and Imaging 3.0 and PERCS are helping radiologists adapt.

Prepping PERCS-Radiology

Through a program called PERCS-Radiology, PERCS soon extended its curriculum to provide radiology workshops including several presented at RSNA annual meetings through a GE Healthcare/RSNA Education Scholar Grant. Stephen D. Brown, M.D., pediatric and obstetric radiologist at BCH and PERCS-radiology director, first developed a program with IPEP about difficult conversations in prenatal care. Dr. Brown immediately realized that similar programming would benefit radiologists, especially because initiatives to provide patient reports directly, either through web-based portals or direct communication, are becoming widespread.

Meyer and a hired performing arts consultant screen, prepare and educate the actors around particular patient or family member characters. "We use improvisational actors," said Dr. Brown, noting that actors do not read off scripts but are prepared to respond the way a patient or family member would. Consequently, "professionals are trained to make [the situations] not too easy, but also not too hard," Meyer said. "They hit a sweet spot where something is challenging but can still be mastered."

For more tips on patient discussions about bad news, medical errors, and radiation risk, read the full case study at ACR.org/Advocacy/Economics-Health-Policy/Imaging-3/Case-Studies/Class-Act. □

MARY HENDERSON, a writer based in Bloomington, Ind., specializing in health and medicine, and ALYSSA MARTINO, a freelance writer, contributed to this story.

RSNA's Radiology Cares Offers Roster of Resources



Radiology Cares: The Art of Patient-Centered Practice (RadiologyCares.org) features a wide variety of resources to help imaging professionals bring the patient-centered concept to their practice, including:

- **Education Toolkit:** Your index to literature about the patient-centered movement from experts, scientific journals, medical trade publications and mainstream consumer media.
- **Contact:** RadiologyCares@rsna.org with questions/comments about the campaign or to share your patient-centered activities.
- **Take the Pledge:** "Take the Pledge" to communicate more effectively with your patients and you'll receive a certificate to display in your office.
- **Presentation Toolkit:** Customizable PowerPoint presentation decks will help you convey the importance of being patient-centered to your colleagues and communities.
- **Video Library:** Produced by RSNA as well as other organizations, the growing video library includes a sample welcome video from a radiology practice and entertaining shorts on the power of empathy and how radiologists can impact the lives of their patients.
- **RadiologyInfo.org:** An invaluable resource for patient information and communication offering comprehensive information on radiology procedures, treatments and therapies.

Continued on Page 8

Video Glasses Cut Patient Anxiety in IR Procedures

BY PAUL LaTOUR

Video glasses worn by patients undergoing interventional radiology (IR) procedures help reduce anxiety without causing interference to medical staff, new research shows.

PATIENTS WEARING VIDEO GLASSES showing television or movies were 18.1 percent less anxious after their IR procedures than before, while those who didn't wear the glasses were only 7.5 percent less anxious, according to research conducted at the University of Rochester Medical Center, Rochester, N.Y.

"Anxiety is a huge problem for people undergoing interventional procedures," said lead author David Waldman, M.D., Ph.D., professor and chair of the Department of Imaging Sciences at the University of Rochester Medical Center. "Basically, we're doing minimally invasive surgery on these people, so they are anxious. Decreasing anxiety levels is important."

"Also, if you consider where medicine is going—to patient/family-centered care—clearly this technique is moving in that direction," he added. "If we can make patients more comfortable while they are in the hospital, we are offering better care."

Researchers selected 49 patients (33 men, 16 women, ages ranging 18-87) who were undergoing a variety of outpatient IR procedures at Strong Memorial Hospital, a facility within the university's system. Of those, 25 used the video glasses and 24 did not. Subjects were required to complete a standard, 20-question State-Trait Anxiety Inventory Form before and after their procedures to assess their anxiety level. Scores ranging from 20 to 80 with a score of 43 or more were considered as high anxiety.

The study showed that anxiety varies by gender, as women registered higher pre-procedure anxiety scores than men. Patients with high anxiety require "significantly larger" amounts of sedation and analgesic medications during their procedures, said co-author Adam Fang, M.D., a third-year radiology resident in the Department of Imaging Sciences.

"We think this technique can be used to reduce anxiety and actually be applied safely in a variety of



Waldman

Fang

IR procedures without disturbing the physician or support staff," Dr. Fang said. "It can be used to improve the patient experience and overall satisfaction."

Patients in the study were undergoing a variety of IR procedures, allowing researchers to also monitor whether the glasses would be a disturbance to medical staff. "We didn't pick any one

"Video glasses are an effective distraction technique that helps focus the individual's attention away from the treatment."

DAVID WALDMAN, M.D. PH.D.

type of procedure—we looked at a gamut," Dr. Waldman said. "The glasses not only lowered the anxiety of the patients, they also were not obtrusive to the physician."

The glasses also had no effect on patients' average blood pressure, heart rate, respiratory rate, pain, procedure time or amount of sedation or pain medication, he said.

T.V., Movies Offer Pleasant Distraction

The setup is relatively simple. An SD card loaded with a particular title slides into the eyewear, which is not much larger than a pair of sunglasses. Patients were able to choose from 20 titles in the video library including National Geographic specials and family-oriented movies.



"We obviously didn't want to show anything that would raise anxiety, so nothing with guns, war or the military," Dr. Waldman said, noting that "March of the Penguins" was the most popular selection.

Dr. Waldman added that the hospital is already showing videos to pediatric patients undergoing MR imaging exams, which has allowed for a reduction in the amount of anesthesia used on children. With MR imaging, however, the video displays on the walls rather than via glasses worn by the patient. By wearing the glasses, Dr. Waldman said, patients have the video directly in front of their eyes, creating fewer interruptions or distractions.

"If something is not right in front of you, it's not always consistent," he said. "We thought it would be a very simple way to get the video right in front of patients. Video glasses are an effective distraction technique that helps focus the individual's attention away from the treatment."

Next, researchers plan to conduct a much larger study across multiple sites within the university's medical system. In the meantime, Dr. Waldman said they are using the glasses in day-to-day practice but that no further data is being collected at this time.

"We want to increase the number of patients in our study and try to find as diverse a population as possible to see if the effects we were seeing at our main hospital play out at the other sites as well," Dr. Fang said. □

PAUL LaTOUR is an RSNA News staff writer.



Patients wearing video glasses during interventional radiology procedures at the University of Rochester Medical Center were less anxious after their procedures than before. Before the procedure, the patient (above left) dons the glasses that are not much bigger than a pair of sunglasses and chooses from a library of videos to watch during the procedure. Patients have the video directly in front of their eyes during treatment (top right, bottom), creating fewer interruptions or distractions. The technique was not obtrusive to the physician, research shows.

WEB EXTRAS

☑ To view a video demonstration of a patient using the video glasses during an interventional radiology procedure at Rochester Medical Center, go to RSNA.org/News.

ON THE COVER
Video glasses worn by patients help reduce anxiety during treatment new research shows.



RSNA/ACR Programs Lead the Way in Patient-Centered Care

Continued from Page 6

ACCESS ACR'S IMAGING 3.0 ARSENAL

Imaging 3.0™ (ACR.org/Imaging3) provides concrete steps to allow all radiologists to take a leadership role in shaping America's future healthcare. Highlights include:

- **Presentations & Resources:** Explore the vision for Imaging 3.0 and discover tools and approaches for putting the principles into practice.
- **ACOs and You:** Learn about the formation of accountable care organizations and what they mean to your practice.
- **Radiology Leadership Institute™:** This introductory Imaging 3.0 track provides ACR members with baseline preparation for participation in evolving delivery and payment environment.
- **Imaging 3.0 Videos:** Radiology leaders discuss issues and tools relevant to patient-centered care.



PERCS WORKSHOP PLANNED FOR FALL 2014

Designed to help radiologists and other practitioners communicate effectively with patients and their loved ones, one-day Program to Enhance Relational and Communications Skills (PERCS) radiology workshops will be offered this fall at Boston Children's Hospital and are open to 25 participants each. Workshops, which can be customized to meet individual practice and departmental needs, can also be conducted onsite at your organization.

Visit www.ipepweb.org for a consultation and more information.

Combined Residencies Energize Nuclear Medicine Job Outlook

BY MIKE BASSETT

Nuclear medicine residents—particularly international medical graduates without diagnostic radiology training—continue to face a lack of opportunities on the job front, according to experts.

ALTHOUGH THE ISSUE IS MULTIFACETED, a key problem is that graduates whose background is in nuclear medicine only are becoming less attractive to radiology practices because they lack sufficient training in diagnostic radiology, said Milton J. Guiberteau, M.D., who assumes the presidency of the American Board of Radiology (ABR) on July 1, 2014.

“Candidates with both nuclear radiology/nuclear medicine and diagnostic radiology training are much more attractive to practices because they not only know nuclear medicine, they can also help cover night call, weekends and other areas of the practice,” said Dr. Guiberteau, chief of nuclear medicine and academic chief, Department of Medical Imaging, St. Joseph Medical Center, Houston, and a professor of radiology and nuclear medicine at Baylor College of Medicine, Texas Medical Center, Houston.

A 2013 survey of 54 nuclear medicine program directors published in the *Journal of the American College of Radiology* found that close to one-third of nuclear medicine graduates were not yet working in the field the first eight months after completing their programs. International nuclear medicine graduates fared the worst among all candidates, the survey showed.

One solution—establishing dual or combined nuclear medicine/diagnostic residency programs—is slowly beginning to gain traction. In 2010, ABR approved a program for diagnostic radiology residents that would ultimately lead to ABR certification in both diagnostic radiology and nuclear radiology. While the program is still in the early stages of implementation, some institutions—including Stanford University—are developing their own dual training pathways in diagnostic radiology and nuclear medicine/molecular imaging.

The market for graduates of nuclear medicine is so disheartening, in fact, “that there aren’t enough people going into nuclear medicine at the moment,” said Dr. Guiberteau, co-author of the *JACR* study.

ABR Dual Residency Program Breaking New Ground

Employment opportunities for nuclear medicine physicians have dropped off in recent years for a number of reasons. Many nuclear cardiology studies are now being read by cardiologists, further



Guiberteau

Harolds

Iagaru

reducing demand for nuclear medicine physicians. Changing and decreasing physician reimbursement has been a factor and the uncertain economy has prompted many nuclear medicine physicians and radiologists to delay retirement, reducing the number of new job openings.

“Minimal exposure to the other type of training—either diagnostic radiology or nuclear medicine—isn’t working.”

ANDREI IAGARU, M.D.

The problem has become so serious that the number of residents in nuclear medicine programs has been decreasing at a fairly rapid pace in recent years. There were approximately 112 at last count, according to Jay A. Harolds, M.D., co-author of the *JACR* study and the radiology residency director for Grand Rapids Medical Education Partners. Dr. Harolds is also a professor at Michigan State University and a member of Advanced Radiology Services. “The number of nuclear medicine residents reached 166 in the 2009-10 academic year, and began declining thereafter,” he said. Furthermore, the number of nuclear medicine residency programs have declined from 56 in 2009-10 to only 47 programs currently, and three more programs have given notice they will close soon, Dr. Harold said.

While the traditional path to certification in both radiology and nuclear medicine/radiology has been four years of diagnostic radiology training plus a fellowship year in nuclear medicine, the 2010 accelerated pathway to ABR certification in diagnostic radiology and nuclear radiology “is breaking new ground,” Dr. Guiberteau said.

The ABR dual program requires that the sponsoring diagnostic radiology residency program be in an institution with Accreditation Council for Graduate Medical Education-accredited nuclear radiology fellowship and/or nuclear medicine programs. In addition, 16 months of nuclear medicine or nuclear

radiology training is required within a 48-month diagnostic radiology residency. Ten of those 16 months must be consecutive to allow for continuity of patient care and a learning experience similar to a traditional fellowship.

Even though it was launched four years ago, the ABR program still needs more time to take hold in the radiology community, Dr. Guiberteau said. “We understand there are some departments intending to offer this dual program if they can overcome the logistical barriers involved in starting it,” he added.

For example, he said, “if you take residents out of the general clinical work pool and put them into nuclear medicine for 10 or 12 months, it removes them from other areas of academic practice where they can be useful in other subspecialties—so it will take careful planning to design programs that will work.”

Even with those logistical issues, “we do think this is innovative and will definitely help in two ways,” Dr. Guiberteau said. “One is that it has the potential to produce more radiologists with both diagnostic and nuclear medicine training who are sorely needed. And, of course, it will benefit patients who will have access to these radiologists.”

Stanford Offers Unique Dual Training Pathway

The Department of Radiology at Stanford University has followed its own path in developing a dual training pathway in diagnostic radiology and nuclear medicine/molecular imaging that differs from the ABR’s 16-month pathway to certification.

The introduction of combined imaging modalities like SPECT/CT, PET/CT and now PET/MR imaging in recent years has necessitated a change in training models, said Andrei Iagaru, M.D., an assistant professor of radiology and nuclear medicine program director at Stanford.

“Minimal exposure to the other type of training—either to diagnostic radiology or nuclear medicine—isn’t working,” Dr. Iagaru said. “From a workflow perspective, you’re going to need two people looking at the same scan—one looking at functional imaging and the other at anatomical imaging—and that’s something that can’t be sustained over the long term. We wanted to offer trainees who have a desire to combine functional and anatomical imaging the option to be certified by both the ABNM and ABR.”

After a preliminary year spent in internal medicine or surgery, residents in Stanford’s dual training pathway are required to spend a year under the umbrella of the nuclear medicine residency program and four years under the umbrella of the diagnostic radiology residency program (with the first three years including one month of nuclear medicine training each year and the fourth year dedicated to nuclear medicine and molecular imaging).

The extra time dedicated to nuclear medicine and molecular imaging makes the Stanford program unique. “Most diagnostic radiology programs are not set up to provide ample time for research because there is so much knowledge residents need to accumulate,” Dr. Iagaru said. “Our goal is to train the future generation of academic imaging specialists by allowing sufficient time to conduct research during these five years of dual training.”

Stanford has registered the dual training pathway with the National Residency Match Program, but getting to that point has been challenging, Dr. Iagaru said. Buy-in was needed from the diagnostic radiology and nuclear medicine departments, faculty and training programs, as well as the hospital administration.



Slowly beginning to gain traction, dual or combined nuclear medicine/diagnostic residency programs offer one solution to the lack of job opportunities experienced by nuclear medicine residents, many who are not yet working the field the first eight months after completing training.

“Then we needed to write to the ABNM and the ABR, describing the pathway, and getting confirmation that graduates would be eligible to take the Certification Examinations of both boards,” Dr. Iagaru said. “And it took a couple of years to arrive at a consensus as to how the program would be structured and even how it would be named.”

Challenges remain, Dr. Iagaru said. For example, clinical schedules will have to be adapted to account for changes in the training program. “We feel we’ve made a lot of progress, but it hasn’t been easy and we’re still not finished ... nevertheless, we’re optimistic,” he said. “We’re happy with the outcome so far, and hope for a successful match next year.”

Ultimately, a combined residency pathway leading to dual ABR and ABNM certification may be necessary to ensure the supply of an adequate number of highly trained physicians in the specialty, Dr. Harolds said. “Such a pathway takes into account the needs of nuclear medicine practices, both academic and private, as well as the additional challenges inherent in the growth of molecular imaging as an integral part of nuclear medicine and diagnostic radiology,” he said. □

MIKE BASSETT is a writer based in Holliston, Mass., specializing in health and medicine.

Developing Countries in Dire Need of Radiology Training

BY FELICIA DECHTER

Radiologists in crisis-affected, vulnerable countries grappling with substantially unmet imaging needs are desperate for global outreach programs to help meet those deficiencies.

THAT WAS THE FINDING of a survey of radiologists in developing countries across Asia, Europe and South America, assessing imaging needs and seeking input on the most effective ways to improve the situation. The survey was conducted by Bhavya Rehani, M.D., a clinical assistant in neuroradiology at Massachusetts General Hospital in Boston, as part of research presented at RSNA 2013, “Making Imaging around the World Better: Global Survey of Radiologists in 10 Countries.”

“Our survey shows the immense need for radiologists and formal training programs in developing countries,” Dr. Rehani said. “Although humanitarian teleradiology has been recently given emphasis and offers hope, high demand may limit use due to lack of sustainability. Our results show that the focus should be on creating innovative interactive online teaching modules and building training programs.”

Seeking input on their imaging needs, Dr. Rehani sent a standardized online questionnaire to 26 radiologists from 18 nations across the world. To choose which countries to survey, Dr. Rehani based her selection on the International Monetary Fund’s World Economic Outlook Report, April 2012, and World Bank data. Radiologists from Belarus, Sri Lanka, Thailand, Burma, Macedonia, Costa Rica, Czech Republic, Lithuania, Tanzania, Slovenia and Serbia responded.

“The need for more radiology residency training programs in their respective countries was expressed by 88 percent of the radiologists in our survey,” Dr. Rehani said. “A total of 96 percent of the radiologists expressed need for more subspecialty training in their country.”

A sample question on radiation safety knowledge revealed the critical need for better training. Respondents were asked: “If a patient underwent a chest CT and plain abdomen X-ray in the last two weeks and

has been found to be pregnant now, will you ask for termination of pregnancy?” “The correct answer is ‘No’ as this is very a small dose to ask for termination of pregnancy,” Dr. Rehani said. “However, multiple anonymous responses answered: ‘Yes.’ Thirty percent of radiologists responded that they don’t have availability of colleagues who can provide advice on radiation dose and radiation risk issues. This throws further light on the need for more radiation safety training globally.”

“Given the immense unmet imaging needs, our survey helped us prioritize and triage the areas of most weakness, so that we can specifically focus our efforts on those areas for maximum impact,” Dr. Rehani said.

“The need for more radiology residency training programs in their respective countries was expressed by 88 percent of the radiologists in our survey.”

BHAVYA REHANI, M.D.

RAD-AID Assesses Radiology Readiness

Along with data assessment, surveys such as Dr. Rehani’s are vital for properly designing global health outreach efforts, said Daniel Mollura, M.D., founder of the Washington D.C.-based RAD-AID International, a nonprofit organization dedicated to increasing international radiology services in developing countries and optimizing radiology for public health initiatives.

RAD-AID developed a comprehensive multifaceted assessment tool, “Radiology-Readiness,” to assess needs and strategies for implementing radiology in resource-limited regions.

“Because imaging capabilities and needs are as diverse as the countries in which we have partners, a ‘one size fits all’ approach to medical imaging outreach—such as that used with large capital equipment donation—is not clinically practical or cost-effective,” Dr. Mollura said. “Instead, the Radiology-Readiness assessment is invaluable in ensuring that the right collaborative medical imaging program is put into place and that sustainable implementation is possible, and eventually, scalable.”



Rehani



Mollura



Left: As part of the RAD-AID’s ASHA Jyoti Women’s Health Program in Northern India, teams of imaging professionals in a mobile health van screen women for osteoporosis and breast and cervical cancer; **right:** In Haiti, Alexandra Fairchild, M.D., a second-year radiology resident from Brigham and Women’s Hospital, offers an iPad to entertain a young patient waiting for a CT scan. A visiting pediatric surgeon was able to remove a renal mass revealed by ultrasound and CT. (Images courtesy of RAD-AID.)

received a Champions of Action Plenary Session Award of the Clinton Global Initiative for its innovative women’s health outreach program in Chandigarh.

“Since 2012, our team of radiologists, technologists and local partners have screened more than 4,000 women in our mobile health van for osteoporosis, breast and cervical cancer—three of the biggest public health needs facing impoverished women in Northern India,” Dr. Mollura said.

Another example of the organization’s work was filling the need for digital imaging solutions in Africa, which led to RAD-AID’s implementation of PACS in Korle Bu Hospital of Ghana, Dr. Mollura said.

When an assessment revealed a need for radiologic technologist education and educational loan finance in Kenya, the organization partnered with the Deutsche Bank Foundation and Kenya Medical Training College to begin structuring educational tracks for technologists. WHO-endorsed training in Kenya via RAD-AID’s team was set to begin in June 2014, Dr. Mollura said.

Additionally, Radiology-Readiness assessments have guided RAD-AID’s program in Haiti, mainly in terms of education and clinical aid for hospitals rebuilding after the 2010 earthquake. As a result, the American Medical Association awarded the organization the Community Service Award in 2013 with the following quote: “Our governing

council was thoroughly impressed with the impact of RAD-AID on the global practice of radiology and medical imaging outreach.”

“The key is to empower radiologists locally for long-term sustainability rather than short-term solutions,” Dr. Rehani said. “The more radiologists who can join hands in helping colleagues in developing countries the better.”

RSNA IVP Program Offers Personal Interaction

RSNA helps meet training and resource needs throughout the world with its International Visiting Professor program. IVP teams comprising North American professors have traveled to 43 developing nations to lecture at radiology meetings and work one-on-one with radiology residents in local hospitals. Professors and radiologists in the countries visited all call the experiences “eye opening,” “useful” and “exciting.”

Among those who have served in the IVP program is Teresita L. Angtuaco, M.D., a professor of radiology and director of the Division of Imaging at the University of Arkansas for Medical Sciences and now chair of RSNA’s Committee on International Radiology Education (CIRE). During Dr. Angtuaco’s visit to Thailand in 2010, the IVP group was asked to help improve the country’s seven radiology residency programs. She noted that all seven of the country’s residency program directors were in attendance at meetings and were eager to learn from their North American counterparts. “Interactive relationships are the most important things we can offer in our education programs,” she said. □

FELICIA DECHTER is a Chicago-based freelance writer.

WEB EXTRAS

For more information on RAD-AID—including exploring volunteer opportunities—go to RAD-aid.org. Those with questions or concerns can contact info@rad-aid.org.

For more information on RSNA’s international education programs, go to RSNA.org/International.

RSNA Travels to Brazil for JPR 2014

As part of RSNA’s partnership with the Radiological and Diagnostic Imaging Society of São Paulo (SPR) the RSNA booth traveled to Brazil for the 44th Jornada Paulista de Radiologia (JPR) in May. In August, RSNA News will feature photos and a report on the meeting which drew more than 5,000 attendees.

More than 30 RSNA speakers, including five members of the 2014 RSNA Board of Directors, lectured at dozens of sessions throughout the week.

Later this year, the RSNA Booth will travel to:

- **Cartagena, Colombia**—Interamerican College of Radiology (CIR), August 15-17
- **Kobe, Japan**—Asian Oceanian Congress of Radiology (AOOCR), September 24-28
- **Seoul, Korea**—Korean Society of Radiology (KSR), October 8-11
- **Paris, France**—French Society of Radiology (SFR), October 16-20



Breast Imagers Defend Mammography in Wake of New Study

BY RICHARD DARGAN

Recent research questioning the value of mammography in reducing deaths from breast cancer for women in their 40s and 50s has reignited a long-running debate over the value of routine screening. Noted breast imagers and national radiology organizations strongly dispute the findings and contend that the study's conclusions are based on flawed research.

THE CANADIAN NATIONAL BREAST SCREENING STUDY (CNBSS) study, published online Feb. 11 in the *British Medical Journal*, is a 25-year follow-up of nearly 90,000 Canadian women, ages 40 to 59. Researchers compared outcomes in women who underwent screening mammography with those who didn't and found that the cumulative mortality from breast cancer was similar between the two groups and that screening did not reduce breast cancer death beyond the effects of physical exams or usual care from their doctor. These results echo the preliminary findings of the CNBSS published in the 1990s.

"We were initially surprised by the results of the first report, and as we continued to follow the women we thought we might see a favorable impact for mammography later on," said principal investigator Anthony B. Miller, M.D., professor emeritus at the Dalla Lana School of Public Health at the University of Toronto. "But 16 years later, we continue to see the same long-term effect."

Dr. Miller and colleagues randomly assigned patients to the mammography or control group. Those in the mammography group had a mammogram every year for five years; the control group was not screened. Women ages 40–49 in the mammogram group and women ages 50–59 in both groups also received annual clinical breast exams. Women ages 40–49 in the control group received one clinical breast exam and typical care from their doctor. After five years, women in the study received care from their regular doctor, which could include mammograms at their doctor's discretion.

"The major deficiencies present in the study make it difficult to look at it in anything other than a very critical light."

GARY J. WHITMAN, M.D.

During the five-year screening period, 666 invasive breast cancers were diagnosed in the mammography group (nearly three-fourths of them detected through screening), with 180 of those cancers becoming fatal within 25 years. In the

control group, 524 invasive breast cancers were diagnosed—171 of them fatal within 25 years.

Because more cancers were diagnosed by mammography but essentially the same number of women died of breast cancer, researchers concluded that mammography was overdiagnosing breast cancer and they recommended that annual breast cancer screening through mammograms be reevaluated.

Experts say Research Deeply Flawed

Many in the breast imaging community view the new research as deeply flawed and say it raises the same problems as the results of the first study published in the 1990s. Deficiencies cited include the study design, the quality of the mammograms and the lack of training in those who performed and interpreted the images.

"It's déjà vu all over again," said Gary J. Whitman, M.D., professor at the University of Texas M.D. Anderson Cancer Center in Houston and a member of the *RSNA News* Editorial Board. "The major deficiencies present in the study make it difficult to look at it in anything other than a very critical light."



Miller



Whitman



Mahoney



Copit

ACR and Society of Breast Imaging (SBI) issued a joint statement characterizing the research as "an incredibly misleading analysis based on the deeply flawed and widely discredited Canadian National Breast Screening Study."

ACR and SBI officials suggested that changes in screening recommendations would place a great many women at increased risk of dying unnecessarily from breast cancer, pointing to the inclusion of women with palpable lumps at the beginning of the study period as a major flaw that may have skewed the results.

That concern is shared by Debra Copit, M.D., director of Breast Imaging at Einstein Medical Center in Philadelphia and a member of the Breast Imaging



The recent Canadian National Breast Screening Study has reignited a discussion over mammography that has been ongoing since screening recommendations first came into focus in the 1980s.

Subcommittee of the RSNA Scientific Program Committee and the Public Information Committee. "The whole point of screening mammography is to detect breast cancer before it's palpable," Dr. Copit said. "In this study, 68.2 percent of cancers found in the group screened with mammography were palpable, which tells me that the study is flawed."

In response to the criticism, Dr. Miller noted that two U.S. epidemiologists endorsed the study design. He disputed the contention that women with advanced cancer were included in the mammography arm of the study but not the control arm and defended the quality of the mammograms.

But Dr. Copit pointed out that the mammograms used in the study did not include the more expansive mediolateral oblique view and that patients didn't receive yearly mammograms.

"Despite excellent follow-up, they didn't do correct views or screen every year," she said. "Therefore, the conclusions are difficult to interpret or validate."

Dr. Miller responds: "In fact we did screen every year, and the views we used were standard in North America in 1980 when we started the trial," he said. "We changed to include the mediolateral oblique view in 1984 from the previously standard mediolateral view, with the cranio-caudal view used as well throughout."

Research Backs Regular Mammography Screenings

The Canadian study has enlivened an argument over mammography that has been ongoing since screening recommendations first came into focus in the 1980s. Early guidelines grew out of results from large, randomized control trials that tied mammography to a significant reduction in breast cancer-related mortality, including the Two-County Study of more than 130,000 women that began in Sweden in 1977. Swedish researchers found a 31 percent decrease in mortality among women from the group who were screened compared with those who had no screening.

That study, which published its 29-year follow up in 2011, provides more useful data on screening mammography, according to Mary C. Mahoney, M.D., professor of radiology at the University of Cincinnati Medical Center and director of Breast Imaging at Barrett Cancer Center in Cincinnati. Dr. Mahoney serves as the RSNA Board Liaison for Publications and Communications.

"The Two-County study was better designed and more truly randomized than the Canadian study," Dr. Mahoney said.

Based on results from the Two-County study and other research, the American Cancer Society recommends annual screening for women starting at age 40. Other groups, like the U.S. Preventive Services Task Force and the Canadian Cancer Society, say screening should start at age 50 and take place once every two years instead of annually.

Those recommendations are counterintuitive, according to Dr. Copit, a breast cancer survivor whose cancer was detected by mammography when she was in her forties. "Women in their forties tend to have faster-growing, more aggressive cancers," she said. "They need to be screened more often, not less often."

In addition, earlier detection usually requires less aggressive treatment that is better tolerated by patients, according to Dr. Mahoney.

Mammography Scrutiny Likely to Continue

The recurring argument over screening is not likely to abate anytime soon, even with improvements in technology like tomosynthesis and the addition of supplemental imaging with ultrasound and MR in women with mammographically-dense breasts.

"Mammography comes up often as healthcare dollars get tighter and tighter and people start looking for places to cut back," Dr. Copit said. "There seems to be a persistent group of researchers who are opposed to mammography," Dr. Mahoney added. "I can't name one other test that has undergone the rigor that mammography has."

Breast imaging experts do not expect the Canadian study to impact existing screening recommendations or insurance coverage. In the U.S., most states mandate coverage for regular screenings for women 40 and older and laws would require action by state legislatures to be changed.

"There are good data showing that screening mammography decreases mortality for patients 40 to 49, as well as those ages 50 to 59," Dr. Whitman said. "Most major organizations recommend annual screening, and over time as we get more follow-up data, the research supporting it will become even stronger."

"It's clear to me, after 20 years of practice, that we should start screening at age 40 and continue every year," Dr. Copit said. "A more interesting question is, at what age do we stop screening?" □

RICHARD DARGAN is a writer based in Albuquerque N. M., specializing in healthcare issues.

WEB EXTRAS

Access the study, "Twenty five year follow-up for breast cancer incidence and mortality of the Canadian National Breast Screening Study: Randomised screening trial," at BMJ.com/content/348/bmj.g366.

Access the "Swedish Two-County Trial: Impact of Mammographic Screening on Breast Cancer Mortality During 3 Decades," in the September 2011 issue of *Radiology*, at pubs.rsna.org/doi/full/10.1148/radiol.11110469.

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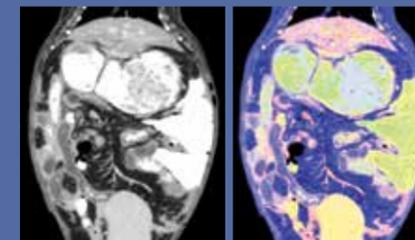
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With recent improvements in dual-energy computed tomographic (DECT) technology, the next logical steps are to extend the dual contrast DECT technique to human subjects and develop novel algorithms that can better visualize and differentiate between two contrast agents.

RSNA Research Medical Student Grant recipient and doctoral candidate **Margaret Wong, B.S., M.Eng.**, under the scientific guidance of past Research Seed Grant recipient Benjamin M. Yeh, M.D., professor of radiology, University of California, San Francisco, has optimized dual energy CT software to allow vivid separation and display of three different materials and soft tissue.

"Multi-'colored' contrast decomposition is a superior way to appreciate the rich information obtained at dual contrast DECT scanning," Wong said. "We showed that, when compared to grayscale two- and three-material decomposition, the addition of novel color-enhanced material decomposition substantially improved reader confidence, speed and quality of material separation when viewed in conjunction with conventional CT images. We also showed that our novel three-material decomposition algorithm can quantitatively measure concentration contrast."

"Potentially, this technique could lead to improved detection of disease, amplify the benefit of reduced radiation dose from multiphase dual-contrast DECT over multiple-scan CT, and aid in the differentiation of enteric versus intravenous contrast," Dr. Yeh said. "Studies are currently underway to further develop color CT, multi-contrast imaging and new and urgently needed contrast materials with less toxicity."



Color-Enhanced Four-Material Decomposition in a rabbit with iodinated IV, novel tungsten PO, and gadolinium injected in the bladder. All contrast appears white or gray in conventional CT (left). In comparison, the three contrast materials are easily differentiated on the color-enhanced DECT. (right) The stark yellow of the gadolinium in the bladder is easily differentiated from the green bismuth in the stomach and bowel. Iodinated contrast provides anatomic detail of the vasculature, bowel wall and hepatic parenchyma. Soft tissue is displayed in blue.

Vasantha & Mahadevappa Mahesh, M.S., Ph.D.
Andrea R. Manzo, M.D.
Tjasa Maslo, M.D.
Zatinahayu Mohd-Isa, M.B.Ch.B.
Kambiz Motamedi, M.D.
Vasileios Moustakas, M.D.
Jonathan S. Movson, M.B.Ch.B.
Maggie Wang & Michael H. Nguyen, M.D.
Edward P. Nicholas, M.D.
Don B. Norwood Jr., M.D., M.B.A.

Israel Palomo, M.D.
Fanny Maud Pinel-Giroux, M.D.
Rajeev Pulimi, M.B.B.S.
Tariq Rahman, M.D.
Marcelo Ribeiro, M.D.
Mark S. Ridlen, M.D.
Lisa R. Rubenstein, M.D. &
Forrest Rubenstein
Jennifer T. Salzman, M.D.
Anthony H. Semaan, M.D.
Serra Sencer, M.D.

Anita Chapdelaine &
Timothy F. Shepard, M.D.
Bruno C. Silva, M.D.
Puneet K. Singha, M.D.
Michael L. Sloan, M.D.
Rajeev Suri, M.D.
Linda P. Thomas, M.D.
Mary K. & David B. Underwood, M.D.
Deena & Heath Van De Linder, D.O.
Ester P. Van der Wal, M.D. &
Djavid Hadian, M.D.

Marco H. Villanueva-Meyer, M.D.
Dorota Wach, M.D.
Elliot J. Wasser, M.D.
James H. Watt, M.D.
Zengmin Yan, M.S., M.D.
Angela & Gerald E. York II, M.D.
Qing Hua Zhao, M.D. & Victor Holan
Lori & Steven Zieber, M.D.
Iva Zuza, M.D.

RSNA Staff Retirement

This past May, RSNA said goodbye to an employee who for many years was a familiar sight around the annual meeting, particularly with technical exhibitors.

Tom Shimala, 24 years

Tom Shimala came to RSNA in May 1990 after several years with the American Dental Association and Chicago Dental Society. Initially working as director of advertising, Shimala has served the Society in expanding and changing roles over the years, culminating in his appointment as director of technical exhibits in 2003.

During Shimala's time as director, the Society has worked with 600 to 700 exhibiting companies each year, with booths ranging from 100 to thousands of square feet. Many companies have long maintained a presence at the RSNA annual meeting; however, each year also sees as many as 100 exhibiting for the first time. Shimala has overseen efforts to welcome newcomers as well as increase opportunities for all industry representatives to interact with meeting attendees.

Shimala has been lauded by exhibitors and peers alike for his customer service ethic. In an interview with *Trade Show Executive* magazine published in October 2012, he attributed his success to his dedicated staff and RSNA's relationship



with its meeting general contractor. "And living by my motto, 'be prepared,'" he added.

"Tom is the consummate professional with an abundance of quality attributes, not the least of which is his pleasant interpersonal skill that has served him well throughout his career. His contributions will be missed, especially his fun and energetic personality," said Steven T. Drew, RSNA Assistant Executive Director for the Scientific Assembly and Informatics.

Michael C. Brunner, M.D., of Madison, Wis., worked with Shimala as chair of the RSNA Technical Exhibits Committee from 2004 to 2007. "In that process I learned that an optimal model for leading medical societies consists of trust and true partnership between very professional staff and volunteer leadership," Dr. Brunner said. "Tom's approach of 'you define the vision and professional ethic and we'll make it happen' has served me well both as a leader for RSNA and SIR and throughout my professional career."

Annual Meeting Watch

News about RSNA 2014

Course Enrollment Begins July 9

The RSNA 2014 Advance Registration, Housing and Course Enrollment brochure will be mailed in late June. On July 9, the brochure will be available online at RSNA.org/AnnualMeeting. Use this brochure to make the most of your RSNA 2014 experience. The information is organized 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.



RSNA 2014 Registration

HOW TO REGISTER

There are two ways to register for RSNA 2014:

1 INTERNET

(fastest way)

Go to RSNA.org/register

2 TELEPHONE

(Mon.-Fri. 8 a.m. – 5 p.m. CT)

1-800-650-7018 • 1-847-996-5862

Registration Fees

BY NOV. 7	VIRTUAL	COMBO	
\$0	\$100	\$100	RSNA/AAPM Member
0	100	100	RSNA/AAPM Member Presenter
0	0	0	RSNA Member-in-Training, RSNA Student Member and Non-Member Student
0	300	300	Non-Member Presenter
180	300	480	Non-Member Resident/Trainee
180	300	480	Radiology Support Personnel
825	300	1,125	Non-Member Radiologist, Physicist or Physician
825	300	1,125	Hospital or Facility Executive, Commercial Research and Development Personnel, Healthcare Consultant and Industry Personnel
325	300	625	One-day registration to view only the Technical Exhibits

Other Important Dates for RSNA 2014

Deadlines

July 9: Course enrollment opens

October 24: International deadline to have full conference badge mailed

November 7: Final housing and discounted registration deadline

November 26: Deadline to guarantee a seat for all ticketed courses

Nov. 30–Dec. 5: 100th Scientific Assembly & Annual Meeting

For more information about registering for RSNA 2014, visit RSNA.org/AnnualMeeting e-mail rsna@experient-inc.com, or call 1-800-650-7018.

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 27 to guarantee a seat. RSNA ticketed courses fill up fast, so ensure you get the courses you need by enrolling at RSNA.org/register. There is no onsite course ticketing. Registrants without tickets will be allowed entrance into a course after all ticketed registrants have been seated.

Enjoy the Sip & Savor Social

When registering for RSNA 2014, you can purchase tickets to the Sip & Savor Social celebrating RSNA's centennial on Wednesday, Dec. 3, in the Skyline Ballroom at McCormick Place. Enjoy drinks, entertainment and tastings from some of Chicago's top restaurants. Tickets are \$40 (Children under age 16 will not be admitted). The event will be held from 5 to 7 p.m.



Buy Bistro RSNA Tickets Now

Avoid long lines by purchasing Bistro RSNA tickets now. Advance tickets to Bistro RSNA—which provides a comfortable setting for attendees to eat, meet and network during the annual meeting—are only \$20 a ticket.

Bistro RSNA is located in all 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.

Purchase tickets in advance during online registration at RSNA.org/register.



5K Fun Run

Tuesday, December 2, 6:30 a.m.– Arvey Field, South Grant Park, Chicago

Enjoy a 5K event with your colleagues along Chicago's beautiful Lake Michigan shore and help fuel critical research to keep our specialty at the forefront of healthcare. During online registration or onsite at McCormick Place, you can sign up as a runner or walker for the 5K Fun Run. The signup donation of \$40 will benefit the RSNA R&E Foundation and is fully tax deductible. Participants receive a commemorative T-shirt.



Book Now With RSNA Housing System

Top Reasons Why You Should Reserve Your Hotel Rooms via the RSNA Housing System:

- 1. Lowest rates.** Eighty-four hotels in the heart of the city offering a wide range of options and price points and the lowest rates possible.
- 2. Free transportation.** Free Metra train service to the Randolph Street Station as well as shuttle bus service between all 84 hotels and McCormick Place.
- 3. Flexible terms (New this year).** Unlike online travel agencies that require prepaid stays or have restrictive penalties, RSNA has established flexible booking terms up to 72 hours prior to arrival.
- 4. Customer Service.** RSNA is your advocate if a dispute or problem arises and is available to assist with housing questions or concerns.
- 5. Supporting RSNA.** By booking through the RSNA Housing System, you are supporting the Society and creating cost benefits that are passed on to attendees. By avoiding attrition fees, RSNA is able to negotiate better deals on room rates.
- 6. Easy booking.** The RSNA website offers one-click booking while providing a wide range of choices at different price points. Another advantage: No need to scour the Internet to find the best rates.



Hotel Name Changes

Searching the RSNA 2014 list for a hotel where you previously stayed, but can't find the name? Please note these new hotel names (former names in parentheses):

- Hampton Inn and Suites Chicago Magnificent Mile (Avenue Crowne Plaza Hotel)
- Homewood Suites Chicago Magnificent Mile (Avenue Crowne Plaza Hotel)
- Hotel Chicago Downtown (Hotel Sax)
- Kinzie Hotel Chicago (Amalfi Hotel Chicago)

Residents & Fellows Corner

RSNA Resident and Fellow Committee Report

The RSNA Resident and Fellow Committee, chaired by Richard E. Sharpe Jr., M.D., M.B.A., met recently at RSNA Headquarters in Oak Brook, Ill., to discuss many topics affecting the Society's members in training.

Next Symposium Subjects Announced

The committee approved the topics for the Resident and Fellow Symposium to be held Wednesday, Dec. 3, during the RSNA annual meeting. Symposium seats can be reserved during RSNA 2014 Course Enrollment, starting July 9, using course codes MSRP41 and MSRP42. Topics include:

- Career 101: What Type of Job is Best for Me?
- Career 201: Career Essentials, From the Experts
- Money Talk: The Veil is Lifted
- Candid, Frank and Personal Job Advice from Recent Grads



The RSNA Resident and Fellow Committee met recently at RSNA Headquarters.

Handy Checklist Helps Trainees Manage Their Moves

A moving checklist has been designed to help residents and fellows manage the many tasks associated with moving—such as updating information with healthcare providers and financial institutions and keeping identifications such as driver's licenses and passports in order—and starting a new training program or beginning practice. The checklist will be made available to residents and trainees in a number of ways including the Trainees area of the RSNA website at RSNA.org/Trainees.

Check Position Postings on Fellowship Connect

Fifty-nine institutions are now using RSNA Fellowship Connect to post available radiology fellowship positions, with 138 positions currently listed. Fellowship Connect can be found at fellowships.RSNA.org.

Radiology in Public Focus

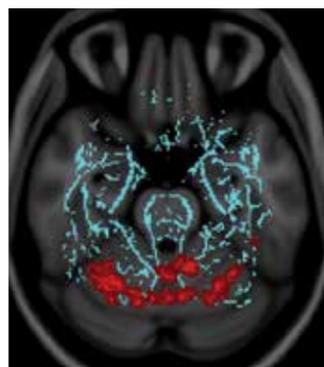
Press releases were sent to the medical news media for the following articles appearing in recent issues of *Radiology*.

Detection of Central White Matter Injury Underlying Vestibulopathy after Mild Traumatic Brain Injury

DIFFUSION TENSOR IMAGING (DTI) findings in patients with mild traumatic brain injury (TBI) and vestibulopathy support the hypothesis that posttraumatic vestibulopathy has a central axonal injury component, new research shows.

Lea M. Alhilali, M.D., of the University of Pittsburgh Medical Center, and colleagues retrospectively reviewed DTI images in 30 patients with mild TBI and vestibular symptoms and 25 patients with mild TBI and ocular convergence insufficiency. Control subjects consisted of 39 patients with mild TBI without vestibular abnormalities and 17 patients with mild TBI and normal ocular convergence.

Fractional anisotropy (FA) maps were generated as a measure of white matter integrity and were analyzed with tract-based spatial statistics regression analysis by using a general linear model. DTI abnormalities were correlated with symptom sever-



Vestibular disturbances correlate with decreased FA in cerebellar regions responsible for sensorimotor processing and central and/or axial balance as well as fusiform gyrus, which is responsible for visually guided locomotion and stereoscopic vision. Images derived from TBSS results and rendered on T1-weighted images from Montreal Neurologic Institute atlas indicate that significant white matter differences in patients with mild TBI and vestibular symptoms involve lobule VI and vermal lobules VIIIa, VIIIb, and IX, as shown in the axial. Significant voxels were thickened by using TBSS fill function into local tracts (red) and overlaid on white matter skeleton (blue).

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ity, neurocognitive test scores and time to recovery with the Pearson correlation coefficient.

Patients with mild TBI and ocular convergence insufficiency have decreased FA in the right anterior thalamic radiation and right geniculate nucleus optic tracts compared with control subjects ($P < .0001$), with anterior thalamic radiation injury showing a correlation with decreased processing speed ($R = 0.402$, $P < .05$).

“This has the potential to change the current clinical management of vestibulopathy in mild TBI, which previously lacked both an understanding of the central component of the underlying injury, as well as biomarkers to aid in prognosis,” the authors write.

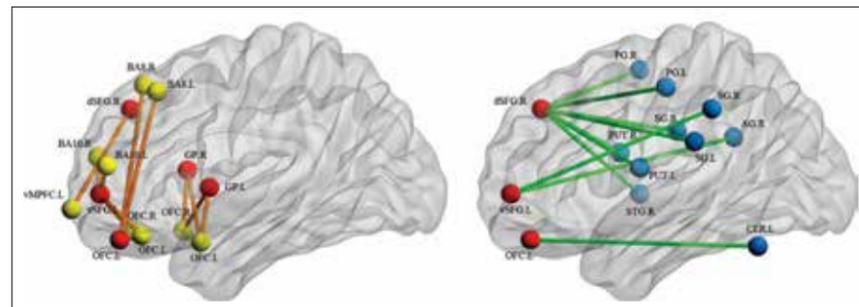
Intrinsic Brain Abnormalities in Attention Deficit Hyperactivity Disorder: A Resting-State Functional MR Imaging Study

ALTERED REGIONAL BRAIN FUNCTION was detected in the prefrontal cortex and globus pallidus—as well as aberrant functional connectivity (FC) in large-scale networks—in children and adolescents with attention deficit hyperactivity disorder (ADHD), new research shows.

Fei Li, Ph.D., of West China Hospital of Sichuan University, and colleagues compared resting state functional MR imaging (rsfMRI) results in 33 boys with ADHD, ages 6 to 16, with those of 32 similarly aged, healthy controls. Amplitude of low-frequency fluctuation and seed-based FC were calculated to examine regional neural function and functional integration, respectively, and were compared between patients and control subjects using the voxel-based two-sample t test. Pearson correlation analyses were performed

to identify neural correlates of executive function.

Patients with ADHD showed altered structure and function in areas of the brain including the orbitofrontal cortex and the globus pallidus, according to researchers. “Our research suggests that the characteristics of the brain’s resting-state functional architecture are relevant to understanding relationships between neural substrate and executive function in ADHD,” they write.



Anatomic replicas show differences of FC between patients with ADHD and healthy control subjects. The red nodes represent the seed areas of FC. The yellow nodes and orange lines and blue nodes and green lines represent, respectively, increased and decreased FC in patients with ADHD relative to healthy control subjects. Left: BA8.L = BA8, left; BA8.R = BA8, right; BA10.L = BA10, left; BA10.R = BA10, right; dSFG.R = dorsal superior frontal gyrus, right; GP.L = globus pallidus, left; GP.R = globus pallidus, right; OFC.L = orbitofrontal cortex, left; OFC.R = orbitofrontal cortex, right; vMPFC.L = ventral medial prefrontal cortex, left; vSFG.L = ventral superior frontal gyrus, left. Right: AG.R = angular gyrus, right; CER.L = cerebellum, left; dSFG.R = dorsal superior frontal gyrus, right; OFC.L = orbitofrontal cortex, left; PG.L = precentral gyrus, left; PG.R = precentral gyrus, right; PUT.L = putamen, left; PUT.R = putamen, right; SG.L = supramarginal gyrus, left; SG.R = supramarginal gyrus, right; STG.R = superior temporal gyrus, right; vSFG.L = ventral superior frontal gyrus, left.

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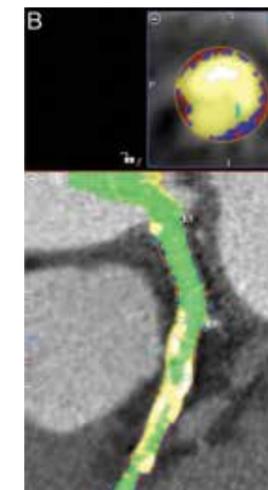
Coronary Artery Plaque Volume and Obesity in Patients with Diabetes: The Factor-64 Study

IN ASYMPTOMATIC DIABETIC PATIENTS, body mass index (BMI) was the primary modifiable risk factor associated with total and soft coronary plaque as assessed with coronary CT angiography (CTA), according to new research.

In a study by Alan C. Kwan, B.A., National Institutes of Health Clinical Center, Bethesda, Md., and colleagues, 224 asymptomatic diabetic patients underwent coronary CTA. Total coronary artery wall volume in all three vessels was measured by using semiautomated software. Researchers determined the coronary plaque volume index (PVI) by dividing the wall volume by the coronary length.

Results showed that PVI in the proximal coronary arteries is more closely related to the calcium score than to the total coronary plaque index ($r = 0.57$ vs 0.47 , respectively; $P < .001$). Major determinants of plaque in diabetic patients in addition to age and sex are BMI ($P < .0001$) and duration of diabetes ($P = .03$).

“This study supports reduction of BMI as a therapeutic goal to reduce cardiovascular risk in diabetic patients,” the authors wrote.



Automated plaque detection. Red = soft plaque, blue = fibrous plaque, yellow = calcified plaque, green = luminal area. Image in patient with large amounts of calcified plaque. PVI = 20.1 mm², soft PVI = 2.5 mm², fibrous PVI = 6.1 mm², calcified PVI = 11.5 mm².

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Effect of Diabetes on Brain Structure: The Action to Control Cardiovascular Risk in Diabetes MR Imaging Baseline Data

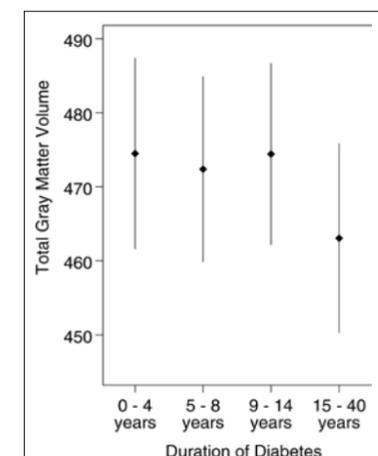
IN THE DIABETIC POPULATION of an Action to Control Cardiovascular Risk in Diabetes substudy, duration of diabetes and fasting plasma glucose (FPG) were associated with brain atrophy—specifically that of gray matter—but were not associated with greater ischemic lesion volumes, new research shows.

In a study of 614 patients with type 2 diabetes, R. Nick Bryan, M.D., Ph.D., of the University of Pennsylvania, Philadelphia, and colleagues evaluated baseline severity by testing FPG, hemo-globin A1c levels and duration of diabetes. MR imaging was performed with fluid-attenuated inversion recovery, proton-density and T2-weighted and T1-weighted sequences, which were postprocessed with an auto-

rated computer algorithm classifying brain tissue as gray or white matter and as normal or ischemic.

Longer duration of diabetes was associated with lower gray matter volumes ($r = 20.11$), possibly reflecting direct neurologic insult; higher FPG levels showed similar associations with lower brain volumes ($r = 20.10$). Researchers found no association of diabetes characteristics with small vessel ischemic disease in the brain.

“Our findings raise the possibility that cognitive changes arising in patients with diabetes might not be strongly related to vascular dementia but to neurodegenerative disorders, such as Alzheimer disease,” the authors wrote.



Graph shows least squares means for total gray matter volume by duration of diabetes quartiles (at baseline).

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New on *RadiologyInfo.org*

Visit *RadiologyInfo.org*, the public information website produced by the RSNA and ACR, to read the latest content posted to the Disease/Conditions section on Breast Cancer.

• www.radiologyinfo.org/en/info.cfm?pg=breast-cancer

Media Coverage of RSNA

In April, 739 RSNA-related news stories were tracked in the media. These stories reached an estimated 245 million people. Coverage included *Time*, *Newsday*, *The Washington Post*, *MSN.com*, *NFL.com*, *CNN.com*, *FOXNews.com*, *CBSNews.com*, *WebMD*, *KCAL-TV* (Los Angeles) and *WGN-TV* (Chicago).

JULY PUBLIC INFORMATION OUTREACH ACTIVITIES FOCUS ON ULTRASOUND

In July, RSNA’s 60-Second Checkup radio program will focus on the use of ultrasound to detect suspected appendicitis in children.

Journal Highlights

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

Resting-state Functional MR Imaging: A New Window to the Brain

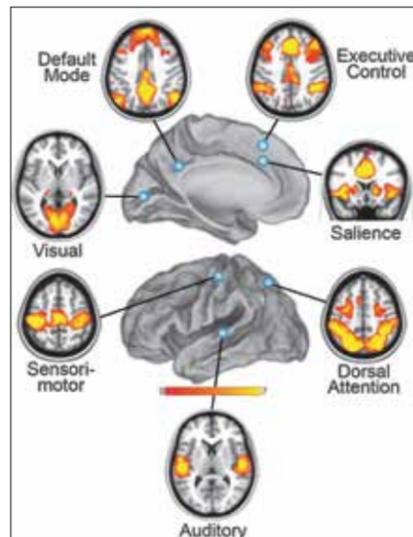
Resting-state (RS) functional MR imaging has proven to be a very rich source of brain connectivity data, which can be obtained within 10 minutes of scanning and offer an unprecedented new window into the brain.

RS functional MR imaging identifies alterations in functional connectivity in many neurologic and psychiatric diseases, even in neonates and in patients with coma or dementia. In an article in the July issue of *Radiology* (RSNA.org/Radiology), Frederick Barkhof, M.D., Ph.D., of the Neuroscience Campus Amsterdam, VU University Medical Centre, the Netherlands, and colleagues discuss RS functional MR imaging in terms of:

- Data acquisition and analysis techniques
- Brain development and normal aging
- Consciousness, pain and anesthesia
- Drugs and addiction
- Dementia and neurodegenerative diseases
- Developmental disorders and psychiatry
- White matter disease

Although RS functional MR imaging is gaining substantial traction in the neuroscience community and several clinical applications are starting to emerge, "... better understanding of physiologic and pharmacologic effects and confounds are needed before clinical application can be established," the authors conclude.

This article meets the criteria for *AMA PRA Category 1 Credit™*. SA-CME is available online only.



Typical RS functional connectivity networks in healthy controls. Mean RS functional MR imaging networks shown in axial view and 3D reconstructions. Colors represent percentage BOLD signal change, overlaid on the average anatomic images in standard space.

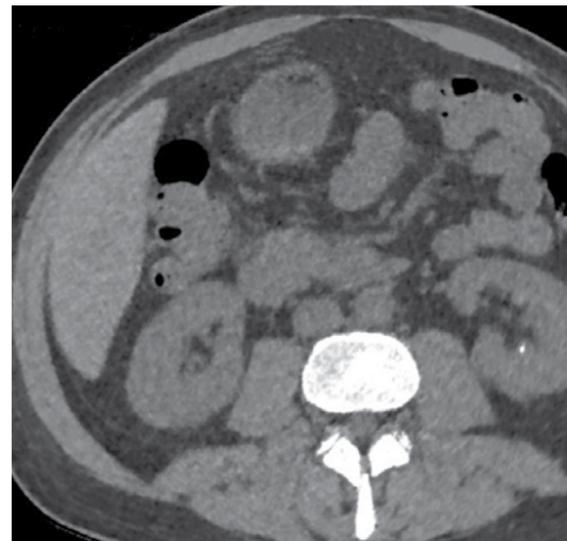
(*Radiology* 2014;272:1:29-49)
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Methods for Clinical Evaluation of Noise Reduction Techniques in Abdominopelvic CT

Existing noise reduction strategies for dose reduction have a substantial impact on lowering the radiation dose at CT. To preserve the diagnostic benefit of CT, thoughtful utilization of these strategies must be based on the inherent lesion-to-background contrast and the anatomy of interest.

In an article in the July-August issue of *RadioGraphics* (RSNA.org/RadioGraphics), Eric C. Ehman, M.D., of the Mayo Clinic, Rochester, Minn., and colleagues provide an overview of existing noise reduction strategies for low-dose abdominopelvic CT, including analytic reconstruction, image and projection space denoising and iterative reconstruction. The authors also review qualitative and quantitative tools for evaluating these strategies and discuss the strengths and limitations of individual noise reduction methods.

Methods are needed for quantitating contrast-dependent spatial resolution, conducting observer performance studies for a variety of diagnostic tasks (and developing tools to facilitate the rapid completion of these tasks) and predicting the lowest dose



CT images (2-mm thickness) obtained at a standard dose of 7.9 mGy with FBP show a stone at the tip of the left renal calyx. Note the improved noise reduction and improved stone conspicuity with use of MBIR compared with FBP and ASIR. Improved image quality with iterative reconstruction and other denoising techniques is generally best achieved with use of thinner images.

(*RadioGraphics* 2014;34:849-862) ©RSNA, 2014. All rights reserved. Printed with permission.

that will allow adequate performance on specific CT systems, according to the authors.

"The full impact of noise reduction techniques on radiation dose and radiologist performance is in the early phases of realization, with great potential to benefit patients by decreasing the radiation dose they receive while undergoing CT," the authors write.

This article meets the criteria for *AMA PRA Category 1 Credit™*. SA-CME is available online only.



Listen to *Radiology* Editor Herbert Y. Kressel, M.D., deputy editors and authors discuss the following articles in the May issue of *Radiology* at RSNA.org/RadiologyPodcasts:

- "Radiation Dose Index of Renal Colic Protocol CT Studies in the United States: A Report from the American College of Radiology National Radiology Data Registry," Adam Lukasiewicz, M.S., and colleagues, and the editorial, "Radiation Dose Reduction in Renal Colic Protocol CT: Are We Doing Enough to Ensure Adoption of Best Practices?" by James A. Brink, M.D.
- "Carotid Artery Plaque Morphology and Composition in Relation to Incident Cardiovascular Events: The Multi-Ethnic Study of Atherosclerosis (MESA)," Anna E. H. Zavodni, M.D., and colleagues.
- "In Vivo 35Cl MR Imaging in Humans: A Feasibility Study," Armin M. Nagel, Ph.D., and colleagues.

The Value of Membership

RSNA Scan 2013: Year in Review

The RSNA Scan 2013, a collection of the finest RSNA scientific and educational content from the previous year accessible on a portable USB-device, allows users to take the best of RSNA with them anywhere.

The scan includes a cross-section of quality offerings from RSNA, including RSNA 2013 plenary sessions, Cases of the Day and award-winning education exhibits from the annual meeting. New this year: popular online refresher courses, most viewed online Cases of the Day and several RSNA 2013 Virtual Meeting courses.

Other highlights include:

- A selection of the most innovative and popular 2013 *Radiology* and *RadioGraphics* articles. Among them: *Radiology* features the Alexander R. Margulis Award-winning articles along with the accompanying RSNA 2013 video award presentations; *RadioGraphics* features the Magna Cum Laude-awarded RSNA 2013 education exhibits.
- Most viewed scientific abstracts—including the Science Trainee Research Prize—and popular education exhibits—including the Magna Cum Laude Award.
- RSNA 2013 plenary sessions including the RSNA Image Interpretation Sessions, Annual Oration in Diagnostic Radiology, New Horizons Lecture, RSNA 2013 President's Address and RSNA/AAPM Physics Symposium.
- Refresher courses on topics ranging from high-resolution CT to easily missed findings in emergency neuroimaging.

The cost is \$150 for members and \$225 for non-members. Visit RSNA.org/RSNA_SCAN to see a complete list of items included in the scan, and add this education collection to your library.

CME Credit Tracking Made Easy with the CME Gateway

CME Gateway—a tool developed by RSNA to help physicians track earned CME credits from multiple organizations in one central location—makes keeping track of your progress toward American Board of Radiology (ABR) Maintenance of Certification (MOC) easy.

Users can link their MyABR account to CME Gateway at www.cmegateway.org for automatic reporting of earned CME credits directly to ABR, eliminating the need to re-enter credits on the ABR website.

Users can register their CME Gateway account to link with any participating organization by inputting their society-specific username and password. After that, users can link their myABR account to CME Gateway for automatic reporting of credits to ABR. Users must be a member in good standing to successfully link to a participating society account with CME Gateway.

CME Gateway requests CME information by cross-referencing a member-specific user name and ID for each participating organization and compiling the data for easy retrieval. Users who have linked multiple society accounts will be able to view and



generate aggregate reports of CME earned with participating institutions for easy tracking and record-keeping.

For free signup to CME Gateway and more information, go to www.cmegateway.org.

Education and Funding Opportunities

RSNA/AUR/ARRS Introduction to Academic Radiology Program

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 November 30–December 4, 2014, during the RSNA Scientific Assembly in Chicago, or the ARRS Scientific Meeting in Toronto, Canada, April 19–24, 2015.

More information and the nomination form for this program are available at RSNA.org/ITAR.



Final Call to Apply: RSNA Advanced Course in Grant Writing

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, National Sciences Foundation or equivalent grant application. The course, to be held at RSNA Headquarters in Oak Brook, Ill., will consist of four two-day sessions: October 10–11, 2014; January 30–31, 2015; March 13–14, 2015; and May 1–2, 2015.

For more information and to download an application, go to RSNA.org/AGW.

Medical Meetings

July–September 2014

JULY 17-18

Association of Educators in Imaging and Radiologic Sciences (AEIRS), Annual Meeting, Providence Biltmore, Providence, Rhode Island
• www.aeirs.org

JULY 20-24

The American Association of Physicists in Medicine (AAPM), 56th Annual Meeting, Austin Convention Center, Austin, TX
• www.aapm.org

AUGUST 10-13

The Association for Medical Imaging Management (AHRA), 42st Annual Meeting and Exposition, Gaylord National, Washington DC
• www.ahraonline.org

AUGUST 15-17

Interamerican College of Radiology (CIR), Interamerican Congress of Radiology, Cartagena, Columbia
• www.webcir.org
*Visit the RSNA Booth

AUGUST 25-28

Canadian Association of Radiation Oncology (CARO), Canadian Organization of Medical Physicists (COMP), 2014 CARO Annual Scientific Meeting, Delta St. John's Hotel & Conference Center, St. John's, Newfoundland
• www.caro-acro.ca

SEPTEMBER 3-6

Sociedad Mexicana de Radiología e Imagen/ Mexican Society of Radiology and Imaging (SMRI), XIII Curso Annual de Ultrasonido, 13th Annual Ultrasound Course, World Trade Center, Mexico City
• www.smri.org.mx

SEPTEMBER 4-7

The Royal Australian and New Zealand College of Radiologists (RANZCR), Australasian College of Physical Scientists & Engineers in Medicine (ACPSEM), and Australian Institute of Radiography (AIR), 2014 Combined Scientific Meeting, Melbourne Convention and Exhibition Centre, Australia
• www.csm2014.com

SEPTEMBER 8-10

Royal College of Radiologists (RCR), Annual Scientific Meeting, The Barbican, London
• www.rcr.ac.uk

SEPTEMBER 9-12

International Society of Radiology (ISR), 28th International Congress of Radiology (ICR), World Trade Center, Dubai
• www.icr2014.org

SEPTEMBER 10-13

American Society of Emergency Radiology (ASER), Annual Scientific Meeting and Postgraduate Course, Nine Hotel, Portland, Oregon
• www.erad.org

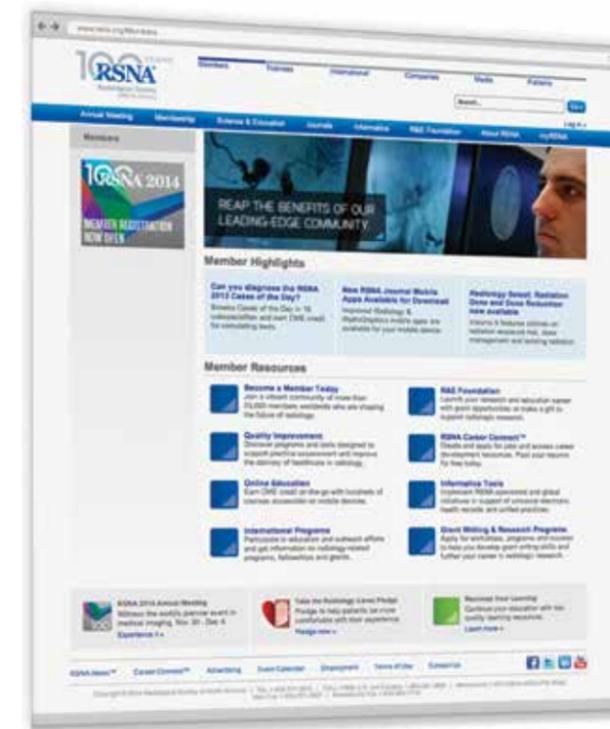
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RSNA.org

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COMING NEXT MONTH

We report on new research showing that digital tomosynthesis (DT) significantly outperforms chest X-ray in the detection of potentially dangerous lung nodules while also improving decisions about patient management.

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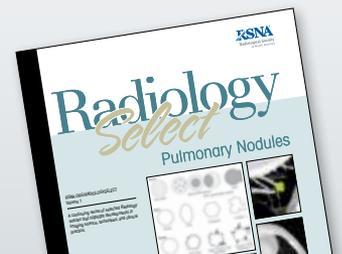
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