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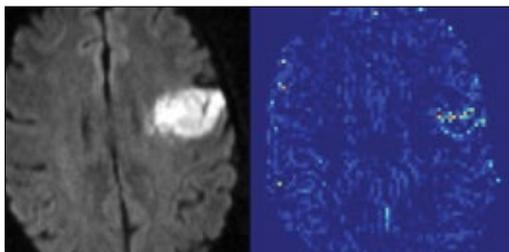
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The RSNA promotes excellence in patient care and healthcare delivery through education, research and technologic innovation.



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Mahoney is Board Liaison for Publications and Communications

Mary C. Mahoney, M.D., an accomplished breast imager and advocate of patient-centered radiology, is RSNA Board Liaison for Publications and Communications. Dr. Mahoney is a professor of radiology, vice-chair of research and the Eugene L. & Sue R. Saenger Chair of Radiological Sciences at the University of Cincinnati Medical Center, as well as director of Breast Imaging at Barrett Cancer Center in Cincinnati.

Dr. Mahoney served as interim liaison from April through December 2014, replacing William T. Thorwarth Jr., M.D., after he became executive director of the American College of Radiology.

A long-time member of RSNA, Dr. Mahoney was chair of the Public Information Committee from 2010 to 2012 and has served on numerous committees, including the Research & Education (R&E) Foundation Public Relations Committee.

Dr. Mahoney received her bachelor's degree from Brown University in 1979 and her M.D. from the University of Cincinnati College of Medicine in 1983. She began her residency training in diagnostic radiology at Montefiore Hospital in New York, and went on to complete her residency at the University of Cincinnati Medical Center, becoming chief resident of the Department of Radiology in 1987.



Mahoney



Haffty

Haffty Named to RSNA Board

Bruce G. Haffty, M.D., an international expert in breast radiation oncology known for his accomplishments in the clinic and classroom, as well as for his groundbreaking cancer research, is the newest member

of the RSNA Board of Directors. Dr. Haffty has assumed the position of Board Liaison for Science as Richard L. Ehman, M.D., has become chairman of the Board of Directors.

Since 2005, Dr. Haffty has served as professor and chairman in the Department of Radiation Oncology at Rutgers Robert Wood Johnson Medical School, Rutgers New Jersey Medical School and Rutgers Cancer Institute of New Jersey. He also serves as associate director of Rutgers Cancer Institute.

Dr. Haffty completed his medical school and residency training at Yale University School of Medicine in 1988 and spent the next 18 years specializing in breast and head and neck cancers in Yale's Department of Therapeutic Radiology. Dr. Haffty served on the Yale faculty from 1988 through 2005, rising to professor of therapeutic radiology in 2000, serving as residency program director from 1992 through 2004, and vice-chairman and clinical director from 2002 to 2005.

Dr. Haffty's research has focused on developing novel methods of delivering radiation therapy targeting breast cancer and exploring novel molecular targets that may enhance the effects of radiation.

In addition to editing the comprehensive *Handbook of Radiation Oncology*, Dr. Haffty served as co-editor of *The Cancer Journal* from 2005 to 2007 and is currently associate editor of the *Journal of Clinical Oncology*. He has served on the RSNA News Editorial Board since 2009.

Dr. Haffty's extensive RSNA involvement includes serving as third vice-president from 2013 to 2014 and as co-chair of the Bolstering Oncoradiologic and Oncoradiotherapeutic Skills for Tomorrow (BOOST) program. At RSNA 2009, he delivered the Annual Oration in Radiation Oncology. Dr. Haffty was named RSNA Outstanding Educator in 2013.

Arenson is RSNA President

Renowned diagnostic radiologist **Ronald L. Arenson, M.D.**, is RSNA president for 2015. Dr. Arenson is the Alexander R. Margulis Distinguished Professor and chair of the Department of Radiology and Biomedical Imaging at the University of California, San Francisco, where he has served since 1992.

As RSNA president, Dr. Arenson will focus on the importance of patient-centered care and radiology's evolution from volume- to value-based practice.

Arenson earned his medical degree in 1970 from New York Medical College in New York. He completed his internship at Beth Israel Medical Center in New York and his diagnostic radiology residency at Massachusetts General Hospital in Boston.

Dr. Arenson began his academic career in 1976 at the University of Pennsylvania (Penn) after serving in the U.S. Navy at the National Naval Medical Center in Bethesda, Md. Dr. Arenson held many posts at Penn, including associate chairman of clinical services in radiology, director of administrative services and interim vice-provost for information systems and computing for the campus.

He has served on the editorial boards of various journals including *Radiology*, *Investigative Radiology* and the *Journal of Digital Imaging*.

Dr. Arenson's research achievements include developing a catheter that can be steered in a magnetic field, allowing interventional radiologists to reach further into smaller blood vessels. Dr. Arenson and fellow researchers filed a patent on the invention in 2001.

A member of RSNA since 1974, Dr. Arenson has served on the Publications Council, Education Council, Public Information Advisors Network, Research Development Committee and the Radiology Informatics Committee (formerly Electronic Communications Committee), of which he served as chairman from 1999 to 2005. In 2007, he was elected to the RSNA Board of Directors and has served as the Liaison for Information Technology and Annual Meeting. He served as Board Chairman from 2012 to 2013, and President-Elect from 2013 to 2014.



Arenson

Ehman Named Board Chairman

Richard L. Ehman, M.D., is chairman of the RSNA Board of Directors for 2015. Dr. Ehman is a professor of radiology at the Mayo Clinic in Rochester, Minn., and served on its Board of Governors from 2006 to 2014 when he was elected as an emeritus member of the board.

As RSNA Board chairman, Dr. Ehman brings expertise in practice, education, research and leadership to support RSNA's mission promoting excellence in patient care through innovation in radiology.

Dr. Ehman is past-president of the International Society for Magnetic Resonance in Medicine, the Academy of Radiology Research, and the Society for Body Computed Tomography and Magnetic Resonance.

As an RSNA member, Dr. Ehman has served on the Refresher Course Committee, Scientific Program Committee, *Radiology* Editorial Board, Research Development Committee, and the Research & Education (R&E) Foundation Board of Trustees. In 2010, he was elected to the RSNA Board of Directors, served one year as Liaison-designate for Science and in 2011 became the Board Liaison for Science.



Ehman

Baron is President-Elect

Richard L. Baron, M.D., is RSNA president-elect. Dr. Baron is a professor of radiology at the University of Chicago Medical Center, where he has been since 2002, serving as chair of the Department of Radiology from 2002 to 2011 and dean for clinical practice from 2011 to 2013.

As president-elect, Dr. Baron will continue to place a priority on organization and optimization of RSNA's educational offerings, given that lifelong learning is now so essential to the radiology community. Bringing together the RSNA international members and participants to maximize their educational opportunities and experiences will be an important emphasis.

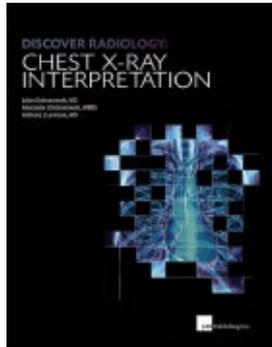


Baron

Dr. Baron has been principal investigator on a dozen research projects and has earned research awards from numerous national radiology societies, especially in the area of diagnostic imaging of liver disease. The RSNA has presented Dr. Baron with two Magna Cum Laude Awards and the American Roentgen Ray Society awarded him gold and silver medals for educational exhibits.

An RSNA member since 1978, Dr. Baron has served on numerous committees including the Scientific Program Committee, Public Information Advisors Network, Finance Committee and the Education Exhibits Committee, of which he served as chairman from 2006 to 2009. In 2008, he was elected to the RSNA Board of Directors and served as the Liaison for Education and then as the Liaison for International Affairs. He served as Board Chairman from 2013 to 2014.

Chest X-ray Book Earns First Place in Radiology at BMA Medical Book Awards



Authors Julian Dobranowski, M.D., Alexander J. Dobranowski, M.D., and Anthony J. Levinson, M.D., were honored by the British Medical Association (BMA) for their textbook, "Discover Radiology: Chest X-ray Interpretation," which was awarded first place in Radiology at the annual BMA Medical Book Awards ceremony in September. BMA awards books in 21 categories.

A comprehensive learning resource for medical students and doctors alike, the textbook teaches the basic skills necessary to accurately interpret chest X-ray examinations. The book also aims to improve patient care and outcomes by providing healthcare providers with performance support tools in the form of checklists and job aides and to engage learners through a vividly visual presentation of the core topics.

Judges award books for their applicability to audience, production quality and originality. One BMA reviewer wrote: "This is an authoritative exposition of the art of chest radiology."

ORIGIN OF NUCLEAR MEDICINE FOCUS OF EXHIBIT

The Bradbury Science Museum is hosting a temporary exhibition dedicated to the beginnings of nuclear medicine.

"Dr. Saul Hertz and the Origin of Nuclear Medicine," is being shown until Feb. 1, 2015, at the museum, which is operated by the Los Alamos National Laboratory in New Mexico.

Dr. Hertz is credited with spawning the use of medical radioisotopes to treat cancer when in 1936 he asked the president of the Massachusetts Institute of Technology, Karl Compton, "Could iodine be made radioactive artificially?" Materials for the exhibit are on loan from Barbara Hertz, curator of the Saul Hertz Archives.

For more information, go to lanl.gov/museum/events/happening-now.shtml.

IN MEMORIAM

Ronald G. Grainger, M.D.



Ronald G. Grainger, M.D., co-author of the seminal textbook "Grainger & Allison's Diagnostic Radiology" and an RSNA Honorary Member, died Aug. 22. He was 91.

Born in Leeds, England, Dr. Grainger completed his medical training at the University of Leeds School of Medicine in 1945, and earned his medical degree three years later, also from Leeds. He acquired his Membership of the Royal Colleges of Physicians of the United Kingdom (UK) diploma in 1951.

He began his radiology clinical career at United Sheffield Teaching Hospitals, where he held positions as a registrar, senior registrar and assistant radiologist from 1951-52. He became the

inaugural Kodak Professor in Diagnostic Radiology at the University of Sheffield in 1984, serving in that capacity until his retirement in 1987. He was also head of the Academic Sub-Department of Radiology at Sheffield from 1982 until his retirement.

First published in 1986, "Diagnostic Radiology" was long regarded as the standard general reference textbook in the field. Dr. Grainger served as editor with David J. Allison, M.D., for the first four editions. He and Dr. Allison became consulting editors for the fifth edition, which was released in 2008. A sixth edition was published in 2014.

In 1962, Dr. Grainger initiated the Radiological Visiting Club, which consisted of 30 selected consultant university radiologists who met annually throughout the U.K. Dr. Grainger served as chairman for the first 10 meetings of the club which is recognized as a leading radiological forum in the UK.

In 1981, Dr. Grainger was awarded RSNA Honorary Membership. From 1983 to 1985 he served as vice-president of the Royal College of Physicians, as well as the chairman of the Faculty Board of Radiodiagnosis.

Numbers in the News

17.5

Goal, in millions of dollars, of "Inspire-Innovate-Invest: The Campaign for Funding Radiology's Future®," recently launched by the RSNA Research & Education (R&E) Foundation.

Go to Page 15 to view a list of R&E donors and learn about the type of projects funded by the Foundation.

91

Number of years RSNA has continuously published the journal *Radiology*. In 2015, *Radiology* will feature 10-15 articles each month based on their significance to advancing the field of radiology. Learn more about the "Golden Oldies" feature on Page 19.

1915

The year RSNA was formed as the Western Roentgen Society. This year, watch the RSNA Centennial website at RSNA.org/Centennial for news on how RSNA is celebrating the 100th anniversary of its founding.

56,000

Approximate number of RSNA 2014 attendees. Check out photos from RSNA's 100th annual meeting on Pages 11 and 12.

My Turn

Gazing at the Road Ahead for Radiology

As I begin my year as RSNA President, I reflect over the past seven years on the Board of Directors with great satisfaction, pride and some sadness that my tenure will soon be ending. RSNA is simply an amazing organization with excellent leadership, staff and volunteers. As



Ronald L. Arenson, M.D., is 2015 RSNA President. Dr. Arenson is the Alexander R. Margulis Distinguished Professor and chair of the Department of Radiology and Biomedical Imaging at the University of California, San Francisco, where he has served since 1992.

we celebrate the 100th anniversary of the founding of RSNA and reflect on the past 100 years, I am already deep into 2015, a year when our organization turns its gaze forward to the next 100 years. As you well know, it is difficult to look ahead one or even five years, much less 100!

But I think there are some indicators of what is coming. First of all, technology, innovation and informatics have been at the heart of the progress made by RSNA and our specialty overall. I expect that kind of progress will not only continue but will in fact accelerate, spurred on by advancements in decision support, natural language processing, cloud technology and image processing and analysis. At the vanguard will be RSNA and its partners in academia and industry.

We can expect more efficient workplaces, better tools to aid us in diagnosis and treatment, and better ways to communicate with patients and physicians.

"Today's research is tomorrow's clinical care" is a slogan that several of us have been quoting for some time, emphasizing the importance of innovation that has been so important to our specialty. For this preeminence to continue, patient-centered care has to be as important as innovation; advanced information technology can

help in our efforts, but it is only part of a larger cultural shift.

Productivity-based payments will continue for some time but eventually we will find ourselves in a value-based (outcome-based) environment, with bundled services and population management responsibilities

and limited resources. We must be prepared to lead these paradigm shifts. The task before us is to determine what real value means to patients, insurers, hospitals, corporations, referring physicians and government leaders, and to deliver it!

One move in that direction—perhaps extreme—is something known as "integrated diagnostics," where radiologists, perhaps in partnership with pathologists, become the stewards of the available diagnostic resources and oversee the value stream of precision (personalized) medicine. The elimination of waste in the healthcare system worldwide is a key to global economic survival, better healthcare delivery, and greater efficiency, and that is an achievable goal in the next 100 years.

There is much we can learn through partnerships with our international colleagues and the many healthcare systems they represent, since healthcare reform is truly a global aim. RSNA is committed to this and also has made a conscious effort to increase resident and fellow participation in committees and other RSNA activities, because the vitality of our specialty depends on the trainees of today. They are tomorrow's leaders, and whatever the future holds, their actions will certainly shape the next 100 years!

Editor's Note

Talk To Us!

Did you know that RSNA now invites readers to leave comments at the end of *RSNA News* articles posted online? Our stories tell you what we know and think about the latest in radiology and RSNA programs and services; we want to know what you think, too.

Visit *RSNA News* stories online to make observations, ask questions, answer other readers' questions and/or simply let us know what you think of the topics we're selecting for *RSNA News*. We value your opinion.

THIS MONTH IN THE RSNA NEWS ONLINE VERSION

Get more of this month's news online at RSNA.org/News. Enjoy interactive features including video, audio, slide presentations and more. Go online to leave us a comment and easily share stories via social media as well.

As part of the *RSNA News* article, "Cost is Barrier to CT Lung Cancer Screening Programs," *RSNA.org/News* will feature video interviews with Phillip Boiselle, M.D., and Brady McKee, M.D., discussing their RSNA 2014 research and the value of lung cancer screening.



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Cost is Barrier to CT Lung Cancer Screening Programs

BY MIKE BASSETT

Although more and more of the country's leading academic medical centers are offering CT lung cancer screening, many still aren't screening large numbers of patients, according to a survey presented at RSNA 2014.

CONDUCTED IN MARCH 2014, the survey was emailed to thoracic radiologists at 21 academic medical centers identified from the 2012-2013 *U.S. News and World Report* listings of top hospitals, cancer centers and pulmonary medicine centers. The survey follows up on one conducted in March 2013.

Of the 20 survey respondents, 95 percent (19) have an active screening program, an increase from 79 percent in 2013. However, just five or fewer patients are scanned per week at 14 of the 19 sites, while only one site scans more than 20 patients per week, said presenter Phillip Boiselle, M.D., a radiology professor at Beth Israel Deaconess Medical Center in Boston.

"We expected that more programs would be screening, but it was a surprise that so few patients were being screened at individual sites," Dr. Boiselle said. "While we didn't address the question of why centers are reaching so few patients, I think a contributing factor was the lack of broad coverage at the time of the survey." For example, about half of the survey respondents reported that almost all of their patients were being screened on a self-pay basis, Dr. Boiselle said.

Daily Bulletin coverage of RSNA 2014 is available at RSNA.org/bulletin.

"I think cost has been a very important barrier to this test," said Dr. Boiselle, stressing that financial barriers might change now that the Centers for Medicare and Medicaid Services has issued a preliminary decision to cover low-dose CT lung cancer screening for eligible patients. "If, as anticipated, this proposal is approved, it will remove the important barrier of cost for seniors who meet eligibility requirements for screening," Dr. Boiselle continued. "When you couple that with forthcoming coverage from private insurers as mandated by the Affordable Care Act, we anticipate seeing a much larger number of patients being screened, not only at these sites, but also at other sites across the country."

Study Shows Value of CT Lung Cancer Screening

Brady McKee, M.D., a radiologist at Lahey Hospital & Medical Center in Burlington, Mass., presented a study suggesting that expanding the eligibility requirements for CT lung cancer screening could save thousands of additional lives.

When Lahey began its low-dose screening program in 2012, only one set of guidelines was available—those of the National Comprehensive Cancer Network (NCCN)—which recommend CT lung screening for patients in two high-risk groups. Group 1 is essentially the same population studied in the National Lung Screening Trial (NLST)—adults ages 55 to 74 years who have a 30 pack-year smoking history and currently smoke or have quit within the past 15 years. But the second high-risk group recommended for screening is younger and smoked less—50 years or older with a 20 pack-year history of



Boiselle



McKee

smoking. Group 2, however, is also defined as having one additional risk factor such as other lung disease or a family history of lung cancer. Lahey chose to screen both groups.

In their study, Dr. McKee and his colleagues retrospectively reviewed the results of all CT lung-screening exams from January through December 2012 and compared the demographic characteristics of and screening results for the 1,302 patients in Group 1 and 458 patients in Group 2.

"There were significant [demographic] differences between Group 2 and Group 1," Dr. McKee said, pointing out that the average patient in Group 2 was younger, smoked less, was less likely to be a current smoker, and if a former smoker, had gone a longer time without smoking than his or her Group 1 counterpart.

Despite these demographic differences, the screening results for the two groups were similar. For example, 28 percent of individuals in Group 1 had positive exams compared to 25 percent in Group 2; 6.1 percent in both groups had at least one clinically significant incidental finding; and 6.6 percent in Group 1 and 6.1 percent in Group 2 had findings suspicious for pulmonary infection. Six cases (1.8 percent) of lung cancer were diagnosed in in Group 2 and 17 (1.6 percent) cases were diagnosed in Group 1.

Since the screening results were similar for both groups, opening up screening programs to individuals from Group 2 could save thousands of additional lives each year, Dr. McKee said. At Lahey, a little more than a quarter of the individuals screened for lung cancer came from Group 2. "If we know there are something like 7 to 9 million people in the U.S. who meet the Group 1 criteria, it could mean there are 2 to 3 million who meet the Group 2 criteria," he said. "This at least provides a ballpark estimate about what opening up screening to this group would look like so that we can project how many additional lives can be saved." □

Robotic System for CT-guided Biopsies of Lung Lesions Shows Promise

Robot-assisted CT-guided biopsy of lung lesions can be used safely and accurately, particularly compared to conventional CT-guided biopsy techniques, according to new research presented at RSNA 2014.

WHILE CT-GUIDED LUNG BIOPSY has become the standard procedure for obtaining a diagnosis of pulmonary lesions that are suspicious for malignancy, the two ways in which this procedure is usually performed—the "step-and-shoot" and fluoroscopic techniques—have their limitations, said presenter Andrea Porfiri, M.D., of the Department of Radiological Sciences, Sapienza University of Rome.

According to Dr. Porfiri, the step-and-shoot technique relies on the operator's subjective assessment of needle path and positioning, which could result in longer procedure times with an increased risk of complications. On the other hand, the fluoroscopic technique is more accurate than the step-and-shoot technique when targeting smaller nodules, is of shorter duration and yields significantly lower complication rates. However, it is associated with a significant increase in radiation dose to both operator and patient.

"In both of these manual techniques, successful application depends significantly on the operator's manual skill and experience," Dr. Porfiri said. Consequently, he and his colleagues at Sapienza University wanted to assess the clinical performance of a dedicated robotic system compared to these conventional manual techniques.

For purposes of the study, 100 patients (63 males and 37 females between the ages of 48 and 88) who were referred for CT-guided lung biopsy of previously diagnosed lung lesions were randomly assigned to undergo a robot-assisted procedure or a conventional biopsy using the step-and-shoot technique.

According to Dr. Porfiri, the duration of the robot-assisted procedure ranged between 10 and 31 minutes—significantly less than the 18 to 42 minutes for the conventional procedure. Radiation dose was significantly reduced with the robot-assisted procedure, as well.

Dr. Porfiri and his colleagues determined that the diagnostic performance of robot-assisted procedure was similar to the manual procedure, with four patients requiring re-biopsy after the robotic procedure and three patients requiring re-biopsy after

the manual procedure. They also found that the complication rates were similar.

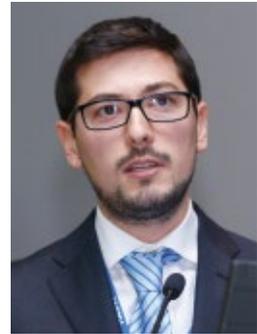
"The result of our study demonstrates that the robot-assisted lung biopsy is accurate and safe, and the robot-assisted procedure can also reduce procedure duration and radiation dose compared to the conventional approaches," Dr. Porfiri said.

"Our study was performed by two operators (with 2 and 8 years experience performing CT-guided lung biopsies), and although a statistical analysis has not been performed to evaluate differences between the two operators, what impressed us was the reduction in time needed by both operators to complete the procedure in the robot-assisted approach, compared to the unassisted technique," said Michele Anzidei, M.D., also of the Department of Radiological Sciences, Sapienza University, and the study's lead author.

While he expected to see that reduction in time for a less experienced operator, he was surprised to see a reduction in time for the experienced operator as well.

"Future research should be aimed at evaluating how operators with different levels of experience may benefit from robot assistance in daily clinical routine, and to assess potential differences in the clinical performance of robot-assisted procedures between expert and non-expert radiologists," Dr. Anzidei said.

"While we obtained encouraging results, these should be verified and reproduced on a larger number of patients, preferably in a multi-centric study," Dr. Anzidei concluded. □



Porfiri

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

RSNA JOURNAL EDITORS GIVE INPUT ON SEMINAL CARDIOPULMONARY IMAGING RESEARCH

Editors of the RSNA peer-reviewed journals *Radiology* and *RadioGraphics* were among 30 international cardiopulmonary imaging leaders asked to select the most influential *Journal of Thoracic Imaging (JTI)* article published in the last 30 years in celebration of the journal's 30th anniversary. RSNA 2014 presenter Phillip Boiselle, M.D., is the editor of *JTI*.

In one example, Alexander A. Bankier, M.D., Ph.D, deputy editor of *Radiology* and a professor of radiology at Harvard Medical School, selected the 1996 article "Anatomic distribution and histopathologic patterns in diffuse lung disease: Correlation with HRCT," by Thomas Colby, M.D., and Steven Swensen, M.D.

RadioGraphics' Editor Jeffrey S. Klein, M.D., a radiology professor at the University of Vermont, selected a 1999 article by Chaan Ng, M.B.B.S., and colleagues, "A CT Sign of Chronic Pulmonary Arterial Hypertension: The Ratio of Main Pulmonary Artery to Aortic Diameter."

Collected responses are available online at thoracicimaging.com.

Radiologists Should Take the Lead on Radiation Safety

BY ELIZABETH GARDNER

As the gatekeepers of imaging, radiologists worldwide need to take a leading role in educating patients, referring physicians and the public about the issues surrounding radiation safety, according to a panel of experts from across the globe gathered for the International Trends meeting held at RSNA 2014.

AT THIS YEAR'S MEETING, focusing on "Radiation Safety Regulations and Impact on Patient Care," presenters gathered to assess the current state of radiation safety regulations and discuss how radiologists can have an impact. Each year the International Trends meeting is held on a topic of global importance to the profession to bring radiology organizations together to share ideas and best practices.

"We can all remember coming to this meeting when ultrasound was the hot topic, and then CT and then MRI, but right now there are no new technologies and quality and safety are the hottest topics," said James P. Borgstede, M.D., RSNA Board Liaison for International Affairs, who co-moderated the meeting with RSNA International Advisory Committee Chair Byung Ihn Choi, M.D., Ph.D. "If we don't take the lead here, someone else will."

Radiation Education, Awareness Lacking

A survey conducted among participants before the meeting showed that while most think their countries do a reasonably good job of regulating radiation exposure, a majority think that neither their country's referring physicians nor their patients are well-educated on the issue. Respondents also said their governments were the most influential factor in determining how radiation exposure is regulated, while educational institutions are perceived to have the least influence.

Radiation exposure from all sources has increased in the past decade, partly due to greatly expanded use of CT scans, said presenter Marilyn J. Goske, M.D., Corning Benton Endowed Chair for Radiology Education, professor of radiology and pediatrics at the University of Cincinnati College of Medicine and staff radiologist at Cincinnati Children's Hospital Medical Center. Dr. Goske founded and chairs the international Image Gently® campaign which promotes using kid-sized imaging for children to reduce their exposure to radiation.

"There has been an alphabet soup of international agencies working toward radiation protection for years, but now the con-



Radiology experts from over 25 countries gathered to discuss radiation safety during the International Trends meeting at RSNA 2014.

versation has really moved into the medical field, where there's greater awareness of the need for optimizing dose," Dr. Goske said.

While awareness of radiation exposure has grown, that awareness is by no means universal, even among medical personnel said Omolola Atalabi, M.B.B.S., of Nigeria, where there are fewer than 1,000 radiologists serving a country of 170 million people. Dr. Atalabi said that most radiological exams in Nigeria are carried out by thousands of radiology assistants with no formal training. In the U.S., Dr. Goske said the Image Gently campaign recently expanded its outreach to include the nation's 143,000 dental hygienists who collectively take no formal position on radiation exposure, despite being responsible for millions of dental X-rays annually.

Without a clear understanding of the risks of radiation exposure weighed against the advantages of imaging studies, non-radiologists can make a host of unreasoned decisions, said Ulrich Bick, M.D., professor of radiology and vice-chair in the Department of Radiology at the The Charité – Universitätsmedizin Berlin, who discussed the issue of appropriate use. In Germany, the law gives radiologists the ultimate say in determining whether a study is appropriate by giving them the authority to overrule a referring physician.

All the same, "appropriate use looks easier than it is," Dr. Bick said. Practice guidelines disagree and sometimes payers may refuse to cover an exam if they think it's too expensive. For new modalities or types of exams, payers demand the highest level of evidence, a randomized controlled trial, before they'll cover

"If we don't take the lead here, someone else will."

JAMES P. BORGSTED, M.D.

College of Medicine and staff radiologist at Cincinnati Children's Hospital Medical Center. Dr. Goske founded and chairs the international Image Gently® campaign which promotes using kid-sized imaging for children to reduce their exposure to radiation.

"There has been an alphabet soup of international agencies working toward radiation protection for years, but now the con-



It is critical that radiology take the lead in education and awareness of radiation safety issues, according to the more than 30 attendees representing major radiology organizations across the globe at the RSNA 2014 International Trends session. Attendees discussed the current state of radiation safety regulations and how radiologists can make an impact.

WEB EXTRAS

For more information on RSNA's international programs, fellowship and grants, go to RSNA.org/International_Programs.

the cost, Dr. Bick said. "It's ridiculous, because those trials are usually not available and it delays access to new tests."

Attendees agreed that physicians in general ought to know more about

imaging and radiation risk in particular. Without accurate information on the risks and benefits of imaging procedures, medical groups may lend their support to regulatory initiatives that are counterproductive.

The RSNA International Radiology Education Committee sends teams of visiting professors to developing countries at the request of their national radiological societies to instruct radiology residents on specific modalities or organ systems. Committee Chair Teresita Angtuaco, M.D., suggested RSNA incorporate instruction in radiation protection, and she recommended that RSNA either encourage or outright require that instruction as part of the program. "Medical physicists have been waiting to spread the word," Dr. Angtuaco said.

A Call for Action in Radiation Safety

Stressing the need for collaboration among all stakeholders, Dr. Goske presented an ideal model for implementation of radiologic protection for patients worldwide.

Referencing the "Call for Action," presented in 2012 in Bonn, Germany, at the International Conference on Radiation Protection: Setting the Scene for the Next Decade, Dr. Goske discussed a multi-pronged approach to realizing the model.

Solutions include adhering to the three As: awareness, appropriateness and audit, which are seen as tools likely to facilitate and enhance justification in practice. Dr. Goske suggested developing harmonized, evidence-based criteria to strengthen the appropriateness of clinical imaging, implementing clinical imaging referral guidelines globally, and strengthening the application of clinical audit in relation to justification, ensuring that justification becomes an effective, transparent and accountable part of normal radiological practice.

Other solutions include strengthening manufacturers' role in contributing to the overall safety regime, increasing the availability of improved global information on medical and occupational exposures and improving prevention of medical radiation incidents and accidents.

Dr. Goske also addressed the need for shared responsibility among all medical imaging professionals and stakeholders to work together to improve patient care worldwide.

"There is a need to strengthen collaboration in relation to education and training among education providers in healthcare settings with limited infrastructure, as well as among these providers and international organizations and professional societies," Dr. Goske said. □

Daily Bulletin coverage of RSNA 2014 is available at RSNA.org/bulletin.

ELIZABETH GARDNER is a writer based in Chicago specializing in medical technology and health IT issues.

With or Without Obamacare, Value-Based Payment Model is the Future for Radiologists

BY PAUL LATOUR

A panel of healthcare policy experts urged radiologists to accept and take action toward transitioning from a fee-for-service payment model to a value-based one during an RSNA 2014 session, “The Affordable Care Act: What Does it Mean for Radiologists and Radiology?” The panel echoed the message David C. Levin, M.D., expressed during the RSNA 2014 Annual Oration in Diagnostic Radiology.

IN FACT, THE DEMISE of the fee-for-service payment model may be the only thing politicians and policymakers agree about related to the Patient Protection and Affordable Care Act (ACA), also known as Obamacare, experts said. “The idea that fee-for-service is unsustainable for the long term is a commonly held belief among all policy makers regardless of their political party identity,” said Cynthia Moran, executive vice-president of American College of Radiology (ACR) and an expert in government relations, economics and health policy.

“We don't know quite where we are going, but we do know that Congress and policymakers—regardless of who is in the White House—are going to make it more and more uncomfortable to stay in a fee-for-service, volume-driven payment scheme,” Moran said.

Moran noted that attempts at a full repeal of ACA by Republicans would fail due to the veto power of President Obama, despite the party's upcoming majority in the House of Representatives and Senate in the 114th Congress. Certain areas are ripe for repeal, however, especially those in which there is some support from Democrats such as the elimination of the Independent Payment Advisory Board (IPAB), which decides how Medicare can save money without affecting coverage or quality. “If you lost that ability to interact with Congress on health-policy decisions, I think that would be a travesty that would very much disenfranchise the American College of Radiology, its members, and radiologists in general,” Moran said.

Daily Bulletin coverage of RSNA 2014 is available at RSNA.org/bulletin.

Empowering Radiologists with Data is Goal

Discussions involving the shift to value-based payment models aren't something for the future—they are happening now, emphasized Ezequiel Silva, III, M.D., vice-chair of the ACR Commission on Economics and an advisor to the Relative-Value Scale Update Committee (RUC), which has worked to quantita-



Thomas Greeson, J.D., and Cynthia Moran.

tively define value with some critical claims-based data measure. “The challenge to get that data into the hands of radiologists has never been greater, and it's something the college (ACR) takes very seriously,” Dr. Silva said, adding physicians want to adapt the new payment model without financially crippling their practices. “It puts physicians from a physician-payment perspective into an awkward middle ground,” he said.

The ACA has presented radiologists and all physicians with a new landscape in which to provide their services, which was going to happen with or without the ACA, said Thomas Greeson, a healthcare regulatory lawyer and former general counsel for ACR. That landscape includes programs such as the Medicare Shared Savings Program (MSSP), the Hospital Quality Efficiency Program (HQEP) and the Physician Quality Reporting System (PQRS).

“We don't know quite where we are going, but we do know that Congress and policymakers—regardless of who is in the White House—are going to make it more and more uncomfortable to stay in a fee-for-service, volume-driven payment scheme.”

CYNTHIA MORAN

Radiologists must do everything they can to build their relationship with hospitals to demonstrate their value, Greeson said. "You want them to be your ally when they are working on those payment negotiations," said Greeson, a partner with Reed Smith, LLP in Falls Church, Va.

Radiologists Need to Provide "Real Value" to Patients

During his lecture, Dr. Levin said radiologists must be willing to take meaningful action to transform and improve the way they practice in order to make a successful transition from volume-based to value-based practice.

"We need to become better doctors—real doctors, if you will—who provide real value to our patients, our referring doctors and our hospitals," said Dr. Levin, professor and chairman emeritus of the Department of Radiology at Jefferson Medical College and Thomas Jefferson University Hospital in Philadelphia. "We've let ourselves become the invisible doctors and that is something none of us are happy about."

Dr. Levin continued, radiologists have plenty of opportunities to show they add real value to the patient-care process. To accomplish that, radiologists can act more like true consulting physicians by supervising and monitoring every advanced imaging exam, bolstering their input with guidelines such as American College of Radiology Appropriateness Criteria. Being a true



Radiologists need to provide real value to patients and prove their value to the patient-centered process, said David C. Levin, M.D., during the RSNA 2014 Annual Oration in Diagnostic Radiology.

consulting physician also means giving patients access to results, either verbally or via an electronic portal, he said.

Developing and tracking internal quality metrics—and then publicizing them—also adds value, Dr. Levin said. To prove value, you have to prove quality, he said. "You can't just beat your breast and proclaim to the rest of the world that you provide high-quality imaging," he said. "Everybody says that. So those words don't mean a damn thing." □

PAUL LaTOUR is an *RSNA News* staff writer.

Tool That Pulls Patient Information from EHR Streamlines Workflow

BY ELIZABETH GARDNER

AS A RULE, many clinicians don't enjoy entering data into an electronic health record (EHR) system, but once the information is in there, it should make life easier in other ways. A research project at Bridgeport Hospital, Connecticut, tested this principle on pre-procedure documentation practices, and found that residents saved time and produced more accurate documentation when they used forms that had been populated with relevant information from the patient's EHR.

First, the study audited pre-procedure documentation for 29 ultrasound-guided procedures. The information was collected by residents using a standard form. A paltry eight percent of the forms adhered to American College of Radiology (ACR)/Society of Interventional Radiology (SIR) guidelines, which include the plan for each procedure to be performed, the indication for the procedure and a brief history, findings of targeted physical examination, lab results and other findings, risk stratification and documentation of informed consent.

After the audit, the residents met to figure out why their performance was so poor. "They didn't have enough time during the busy ultrasound rotation, and they weren't aware of the guidelines," said Daichi Hayashi, M.B.B.S., Ph.D., a resident in diagnostic radiology at Bridgeport Hospital, during a presentation of a Quality Storyboard on Wednesday.

Because much of the required information is already in the hospital's Epic EHR system, the research team used the ven-

dor's "smartphrase" tool to create a pre-procedure form—a "proforma"—that appears in the residents' "favorites" list when they log into the EHR. The proforma automatically pulls all relevant available data from the patient's record and uses it to populate the procedure form according to the ACR/SIR specifications. Some data, such as documentation of consent, must still be added manually, but the data entry burden is substantially reduced.

After refining the form several times and putting it into the daily workflow so that residents could get used to using it, researchers tried it out with three residents, whom they presented with more than 30 hypothetical cases. Each resident did the documentation twice: once by searching the EHR manually for the relevant data and once using the pre-populated form. The two efforts were separated by several weeks so that memorization wasn't a factor.

Using the pre-populated form reduced the median documentation time per case from seven or eight minutes to two or three, and increased guideline adherence to 100 percent.

"Epic has been time consuming for physicians due to the extensive need for documentation, but this type of tool might streamline workflow, leaving more time for bedside patient care," Dr. Hayashi said.

The burden still falls on the resident to confirm the accuracy of the information from the EHR with the nurses who have most recently taken care of the patient.

While the sample is too small to draw any conclusions, he credits the pre-populated form for preventing him from starting one procedure where there was no signed consent on file—a piece of information that he says he might have been overlooked in the old form. □

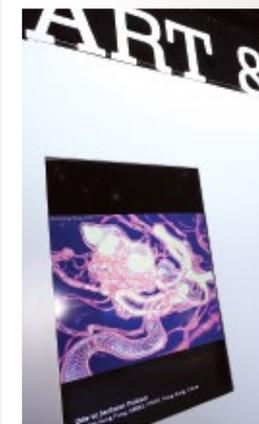
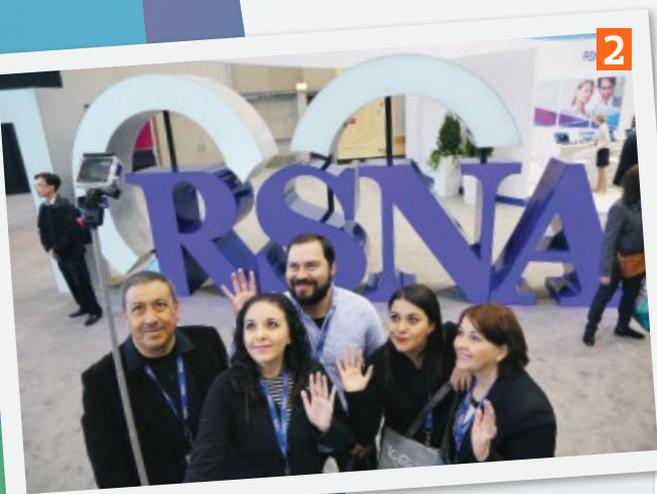
ELIZABETH GARDNER is a writer based in Chicago specializing in medical technology and health IT issues.

Picture This: RSNA Centennial Celebration Brings History to Life

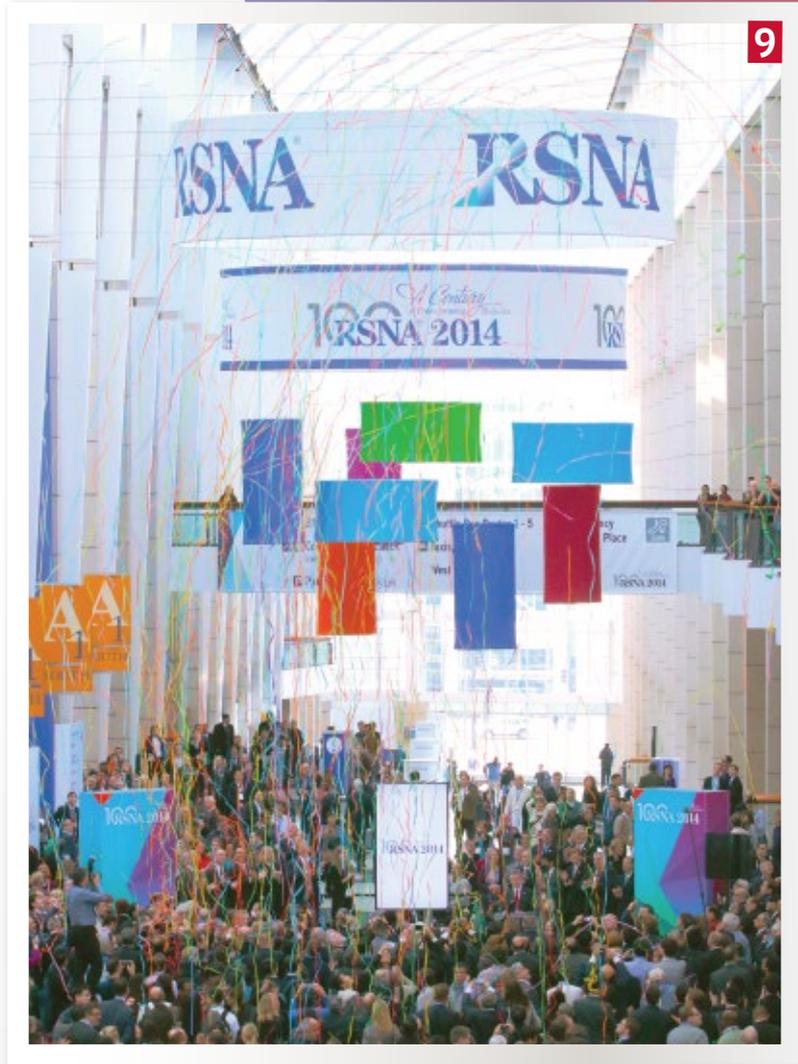
Along with the usual array of world-class medical imaging science, education and technology, RSNA 2014 was infused with one central theme: the Society's 100th annual meeting. Attendees visiting the Centennial Showcase—a museum-style exhibit filled with historical displays including early radiology equipment, "Cases of the Century" and interactive timelines depicting RSNA progress in numerous areas—were greeted by a virtual Wilhelm Roentgen recounting his discovery of the X-ray. Cannons fired streamers and flags dropped from the ceiling as the RSNA Technical Exhibits were opened in grand style, celebrating 100 years of technological advancements. Attendees continue to take advantage of RSNA's ever-expanding arsenal of digital resources—including the RSNA 2014 Meeting app—and stopped by the Mobile Connect booth to get answers to their technical questions from RSNA experts. Other RSNA 2014 high points included a Mock Jury Trial, an impressive lineup of world-renowned plenary speakers and an appearance by Chicago Mayor Rahm Emanuel. Attendees snatched up commemorative copies of the *Daily Bulletin* featuring Centennial coverage that kept the meeting—and social media—buzzing throughout the week.



In his President's Address on Sunday, N. Reed Dunnick, M.D. (1) kicked off the weeklong Centennial Celebration that included special activities such as photo opps for attendees (2) and a lively Sip & Savor social (3) featuring drinks, music and food from 18 Chicago restaurants.



RSNA's history-making annual meeting started with a bang during the Technical Exhibits grand opening ceremony (9), and included a full week of memorable highlights. Along with a standing room only Special Lecture by Francis Collins, M.D., Ph.D., (7), attendees flocked to the Centennial Showcase—an onsite experience featuring attractions such as historical equipment (6), a virtual Wilhelm Roentgen welcoming visitors and sharing his account of the birth of radiology (5), and an Art & Science Gallery featuring cutting-edge artistic medical images (4), (8).



MR Imaging Technique May Improve Stroke Assessment

BY ED BANNON

A new MR imaging technique that quantifies blood-brain barrier (BBB) damage may expand treatment for acute ischemic stroke (AIS) patients by more precisely determining risk factors associated with a common blood-clot busting drug treatment, new research shows.

RESEARCHERS AT JOHNS HOPKINS UNIVERSITY School of Medicine used the novel MR imaging technique to determine with 95 percent statistical certainty a leakage amount associated with the side effects of tissue plasminogen activator (tPA) treatment, which breaks down blood clots. Currently, tPA is the only FDA-approved treatment for ischemic stroke.

Published online May 2014 in the journal *Stroke*, the research could be a first step in refining the almost 20-year-old FDA protocol requiring that tPA treatment be administered within a three-hour window after a stroke, said Richard Leigh, M.D., lead author, who served as an assistant professor of neurology and radiology at Johns Hopkins during the research.

More recent guidelines, including criteria from the European Cooperative Acute Stroke Study (ECASS), recommend tPA use within 4.5 hours of a stroke in some patients. ECASS guidelines are not FDA-approved.

"The study highlighted an important data point that we aren't using," said Dr. Leigh, who is now an assistant clinical investigator with the National Institute for Neurologic Disorders and Stroke (NINDS) at the National Institutes for Health. "The hope is that, based on MRI scans, we can treat patients who are not currently eligible for tPA. That's really the next big question."

Researchers analyzed the data of acute ischemic stroke patients provided by the Stroke Imaging Repository and Virtual International Stroke Trials Archive. The images were then divided into three groups according to ECASS criteria: no hemorrhage, hemorrhagic infarction and parenchymal hematoma. Next, researchers developed an algorithm that uses an arrival time correction quantitatively to remove the effects of blood flow and dispersion from the recorded signal, allowing an index related to BBB permeability to be estimated.

The analysis quantified a threshold of BBB damage after which tPA treatment harms a patient. "When a mean permeability was elevated to 20 percent, then that was associated with the larger hemorrhages," Dr. Leigh said.



Leigh

Another key finding: the study quantified that not all BBB damage is the same, Dr. Leigh said. The detail provided by MR imaging scans enabled researchers to classify the severity of BBB damage. "Mild blood-brain-barrier damage was not necessarily a bad thing according to our analysis, which is a little counterintuitive because it is currently thought of as all bad," Dr. Leigh said. The idea of "mild blood-brain barrier damage" points to the need for further study, he said.

MR May Provide Biomarkers to Guide Treatment

Expanding the tPA treatment population is significant considering that less than 10 percent of stroke patients receive the treatment, according to Max Wintermark, M.D., a professor of radiology and chief of neuroradiology at Stanford University and stroke expert who serves as chair of the imaging working group of the NINDS-funded stroke clinical trial network (StrokeNET).

The Johns Hopkins study provides an "exclusionary approach" by showing which patients should not receive tPA treatment even within the three-hour treatment window, Dr. Wintermark said. He said he is also encouraged that the study explores the role of MR imaging in providing bio-

"This study provided a new piece of data that will help us in our goal of treating as many stroke patients as safely as possible."

RICHARD LEIGH, M.D.

markers to guide treatment. "Sometimes patients wake up with their symptoms, so we don't know when they started. In those situations, imaging plays an important role," he said.

Nevertheless, the technique could have limitations. In an already time-critical situation, an MR scan adds more time to the process as opposed to a CT scan, which is currently recommended under the American College of Radiology (ACR) Appropriateness Criteria for Cerebrovascular Disease for determining whether tPA treatment should be administered.

WEB EXTRAS

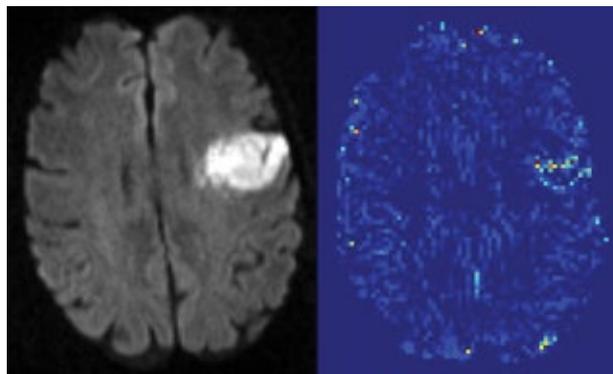
Access an abstract of the study, "Pretreatment Blood-Brain Barrier Damage and Post-Treatment Intracranial Hemorrhage in Patients Receiving Intravenous Tissue-Type Plasminogen Activator," at stroke.ahajournals.org.

on a workstation, but that adds more time," Dr. Leigh said.

Even if some MR imaging protocols last only 6 minutes, Dr. Wintermark pointed out that the routine does not include the permeability analysis required by this new technique. "You have to work on all the other logistic issues in a real-time hospital setting," he said.

Next, Dr. Leigh hopes to verify his research in another population and conduct clinical trials. "It would be good to validate

Dr. Leigh acknowledges the time considerations but said the technique is "not technically difficult" once the appropriate software has been put in place. Implementation in a clinical setting would require an MR imaging manufacturer to include the technique within the technology's analysis functions. "You could pull images off the scanner and analyze them



Shown are two different MRI images of the same part of the brain of the same patient. The image on the left shows the stroke (bright area), and the image on the right is the permeability image showing blood-brain barrier damage in the area of the stroke.

these findings in another population treated in different time windows, which will require more retrospective analysis," he said.

Dr. Leigh agrees on the need for more biomarkers, adding that this study provided "a new piece of data that will help us in our goal of treating as many stroke patients as safely as possible. But it's really one piece of data that is part of the larger puzzle." □

ED BANNON is a Chicago-based freelance writer.

Margulis Award Presented to MRI Study of Plaque

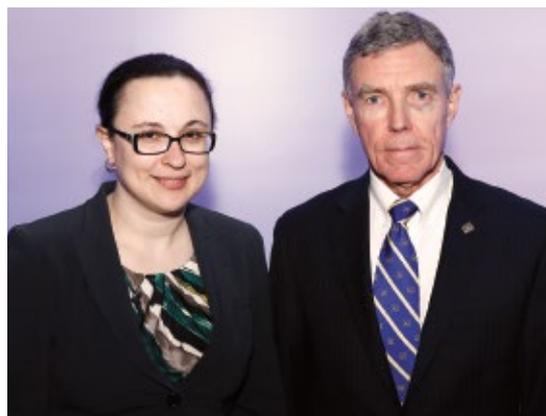
The RSNA Alexander R. Margulis Award for Scientific Excellence was presented Monday to Anna E.H. Zavodni, M.D., and colleagues, for the article, "Carotid Artery Plaque Morphology and Composition in Relation to Incident Cardiovascular Events: The Multi-Ethnic Study of Atherosclerosis (MESA)," published in Radiology in May 2014.

NAMED FOR ALEXANDER R. MARGULIS, M.D., a distinguished investigator in the science of radiology, the award recognizes the best original scientific article published in a particular year in *Radiology*. The Margulis Award Nominating Committee and the Margulis Award Selection Committee review published manuscripts based on their novelty, quality, importance, and potential scientific and clinical impacts.

The study investigated the predictive value of a number of MRI features in determining the risk of subsequent cardiovascular events in an asymptomatic population. A total of 946 participants in the Multi-Ethnic Study of Atherosclerosis (MESA) were evaluated with MRI. Patients were followed for an average of 5.5 years to determine the subsequent occurrence of major cardiovascular disease, including fatal and non-fatal myocardial infarction and cerebrovascular disease.

The paper was the first population-based, prospective study to determine if vulnerable plaque features shown on MR images add to the risk of a cardiovascular event beyond the traditional risk factors and adds to the growing body of information on biomarkers that may be used to determine the risk of major cardiovascular disease in asymptomatic individuals.

Cardiovascular events occurred in 59 of the patients in the study. Abnormal thickening of the carotid artery wall and the presence of a lipid core and calcium in the internal carotid artery on MRI were significant predictors of subsequent events. A lipid core was present in almost half of the patients who had an event, compared with only 17.8 percent of those who did not have an event. □



Anna E.H. Zavodni, M.D., and 2014 RSNA President N. Reed Dunnick, M.D.

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3D Ultrasound of Infant Hips

With an RSNA Research Seed Grant, **Jacob L. Jaremko, M.D., Ph.D.**, will investigate the use of 3D ultrasound as an inexpensive and easily performed modality for detecting Developmental Dysplasia of the Hip with sufficient accuracy to warrant cost-effective infant screening worldwide.



The principles developed with this grant may be applicable to 3D ultrasound imaging in other musculoskeletal structures, tumors and internal organs.

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Drayer is R&E Foundation Chair



2011 RSNA President Burton P. Drayer, M.D., is the new chair of the RSNA Research & Education (R&E) Foundation Board of Trustees.

Dr. Drayer is CEO of the Mount Sinai Doctors Faculty Practice and Dean for Clinical Affairs, The Icahn School of Medicine at Mount Sinai. Dr. Drayer also serves as the Dr. Charles M. and Marilyn Newman Professor and System Chairman of the Department of Radiology, Icahn School of Medicine, and as Executive Vice President for Risk, The Mount Sinai Health System.

Dr. Drayer formerly served as President, The Mount Sinai Hospital and Executive Vice President for Hospital and Clinical Affairs, The Mount Sinai Medical Center.

An RSNA member since 1980, Dr. Drayer served as first vice-president in 2003 and as RSNA President in 2011. His RSNA involvement includes chair of the Public Information Committee, the Public Information Advisors Network and the R&E

Foundation's Public Relations Committee. Dr. Drayer was elected to the RSNA Board of Directors in December 2003, was Liaison for the Annual Meeting and Technology until 2008, and served as President-Elect of the Board in 2010.

Dr. Drayer is a longtime R&E Foundation Presidents Circle donor. He has served on the R&E Foundation Board of Trustees since 2009 and served as the R&E Treasurer and Finance Committee Chair from 2012 to 2013.

Brian S. Kuszyk, M.D., and Carolyn C. Meltzer, M.D., were appointed as new R&E Foundation trustees, and trustee Michael N. Brant-Zawadzki, M.D., was reappointed for a second term. The new secretary of the R&E Foundation Board of Trustees is Richard D. White, M.D. and Gregory C. Karnaze, M.D., was reappointed treasurer.

Learn more about the Foundation, including "Inspire-Innovate-Invest: The Campaign for Funding Radiology's Future®," at RSNA.org/Foundation.



Drayer

Education and Funding Opportunities

USB Refresher Courses Now Available

Introduced at RSNA 2014, RSNA's refresher courses on USB were a hit with attendees. Now you can build on your own learning library by purchasing them online. RSNA's USB refresher courses topics span all subspecialties and include the opportunity to earn CME credit. Refresher course collections are also for sale on USB, with up to three courses designed to focus on a specific area of expertise and CME credit offered for each course.

Features of RSNA USB refresher courses include: built-in slide navigation; transcript, keyword and full audiovisual presentation; an automatic bookmarking feature allowing users to resume where they left off in the presentation; and an easy-to-use search feature. The lightweight, compact design of the USB, combined with no need for an Internet connection, makes RSNA's USB refresher courses the perfect travel companion for long flights.

Mac and Windows compatible, RSNA's refresher courses offer a complete audiovisual experience and the plug-and-play technology is perfect for sharing with colleagues. Each USB includes up to 3GB of additional storage for personal use. Available at RSNA.org/library, USB refresher courses are \$55 for members and \$80 for non-members. Topical collections range from \$80 to \$120. For more information, contact ed-ctr@rsna.org.



Writing a Competitive Grant Proposal Program

March 6-7, 2015
RSNA Headquarters,
Oak Brook, Ill.

Registration is open for the Writing a Competitive Grant Proposal workshop, designed for researchers in radiology, radiation oncology, nuclear medicine and related sciences

who are interested in actively pursuing federal funding.

Limited slots are available for this 1 1/2-day intermediate-level program. Using a combination of didactic and small-group interactive sessions, radiologic researchers will learn how to apply the key components of writing a competitive grant proposal. Topics

to be covered include the National Institutes of Health grant review process, developing specific aims and funding opportunities. Guided by a faculty of leading researchers with extensive experience in all aspects of grant applications and funding, the program will focus on developing compelling specific aims and will provide tools for getting started.

The course fee is \$175. Register online at RSNA.org/CGP. Contact Rachel Nelson at 1-630-368-3742 or rmelson@rsna.org for additional information.

Medical Meetings January-March 2014

JANUARY 15-17

American Gastroenterological Association (AGA) Institute, the American Society of Clinical Oncology (ASCO), the American Society for Radiation Oncology (ASTRO) and the Society of Surgical Oncology (SSO), Co-sponsored Gastrointestinal Cancers Symposium, Moscone West Building San Francisco
• <http://gicasymp.org>

JANUARY 22-25

Society of Nuclear Medicine and Molecular Imaging (SNMMI), 2015 Mid-winter Meeting, Grand Hyatt San Antonio, San Antonio
• www.snmmi.org

JANUARY 26-30

Integrating the Healthcare Enterprise (IHE®) North American Connectathon, Cleveland Convention Center and HIMSS Innovation Center, Cleveland
• www.ihe.net/Connectathon

JANUARY 29 – FEBRUARY 1

Indian Radiological & Imaging Association (IRIA), 68th Annual Congress, Hotel Le Meridien, Kochi, Kerala
• www.iria.in/68th_annual_conference.php

FEBRUARY 5-8

American Society of Spine Radiology (ASSR), Annual Symposium, Caesar's Palace, Las Vegas
• www.theassr.org

FEBRUARY 18-21

Sociedad Mexicana de Radiología e Imagen / Mexican Society of Radiology and Imaging, XXVII Encuentro Nacional de Residentes y Radiólogos / XXVII National Meeting of Residents and Radiologists, Mexico City
• www.smri.org.mx
Visit the RSNA Booth

FEBRUARY 21-26

International Society for Optics and Photonics (SPIE), Medical Imaging 2015, Renaissance Orlando at SeaWorld, Orlando, Florida
• www.spie.org

FEBRUARY 28 – MARCH 5

Society of Interventional Radiology (SIR), 40th Annual Scientific Meeting, Georgia World Congress Center, Atlanta
• www.sirweb.org

MARCH 2-6

American Physical Society (APS), March Meeting, Henry B. Gonzalez Convention Center, San Antonio
• www.aps.org

MARCH 4-8

The European Society of Radiology (ESR), European Congress of Radiology (ECR), Vienna
• www.ecr.org
Visit the RSNA Booth

MARCH 6-8

Society for Brain Mapping and Therapeutics (SBMT), 12th Annual World Congress of SBMT on Brain, Spinal Cord Mapping, and Image Guided Therapy, Los Angeles Convention Center
• www.worldbrainmapping.org

MARCH 14-15

Asian Musculoskeletal Society (AMS), 17th Annual Meeting, Hyderabad International Convention Centre, Hyderabad, India
• www.asianmsk.org

MARCH 15-18

Society of Thoracic Radiology (STR), Thoracic Imaging 2015, Park Hyatt Aviara, Carlsbad, California
• www.thoracicrad.org

MARCH 21-25

American Institute of Ultrasound in Medicine (AIUM), Annual Convention and host of The World Federation for Ultrasound in Medicine and Biology Congress (WFUMB), Walt Disney World Swan & Dolphin Resort, Lake Buena Vista, Florida
• www.aium.org

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Journal Highlights

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

Diffusion-weighted MR Imaging of the Pancreas: Current Status and Recommendations

Advances in image quality over the past few years, mainly due to refinements in hardware and coil systems, have made diffusion-weighted (DW) MR imaging a promising technique for the detection and characterization of pancreatic conditions. DW MR imaging can be routinely implemented in clinical protocols, as it can be performed relatively quickly, does not require administration of gadolinium-based contrast agents, and enables qualitative and quantitative assessment of tissue diffusivity (diffusion coefficients).

In an article in the January issue of *Radiology* (RSNA.org/*Radiology*), Matthias Barral, M.D., of Hôpital Lariboisière in Paris, and colleagues discuss acquisition parameters, postprocessing and qualification methods applied to pancreatic DW MR imaging. They also discuss the limitations of the technique, and future directions for DW MR imaging.

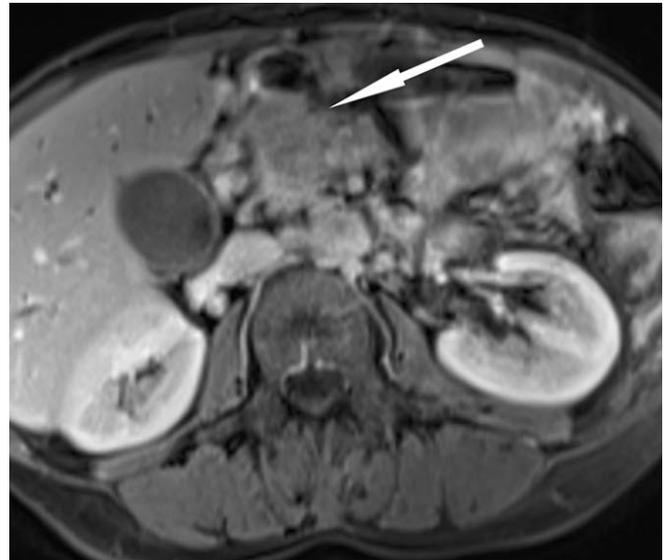
In particular, the authors discuss the following points:

- The lack of standardization in DW MR imaging acquisition is a limitation for valid interstudy comparison.
- The major limitation of DW MR imaging is the inability to distinguish between mass-forming pancreatitis and ductal adenocarcinoma owing to an overlap of apparent diffusion coefficient (ADC) values.
- DW MR imaging has no clear added value in diagnosing acute pancreatitis and for the characterization of cystic pancreatic lesions.
- DW MR imaging can be used for evaluating chronic pancreatitis and autoimmune pancreatitis and detecting foci of malignancy in cystic tumors with malignant potential.
- ADC measurement can help differentiate between disease-free pancreas and chronic pancreatitis.

"It must be acknowledged that promising results were obtained from a limited number of studies," the authors write. "However, there is no doubt that DW MR imaging of the pancreas will have an expanded role in the evaluation of patients with pancreatic disease because technological refinements continue to improve the quality of clinical DW MR imaging and more sophisticated postprocessing softwares are becoming available."

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

Radiology



Images in 63-year-old woman with moderately differentiated pancreatic adenocarcinoma of the pancreatic head. Axial T1-weighted fat-suppressed three-dimensional volume interpolated breath-hold (3D VIBE, Siemens Healthcare, Erlangen, Germany) (8.1/1.69) MR image obtained at 1.5 T after intravenous administration of a gadolinium chelate shows hypointense mass of the pancreatic head (arrow).

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(Image courtesy of J. M. Lee.)

Radiology features "Golden Oldies" Throughout 2015

Beginning in January, *Radiology* will begin featuring 10-15 articles each month based on their significance to advancing the field of radiology in "Golden Oldies," which will run throughout 2015. The online-only articles will be available to RSNA members and *Radiology* subscribers.

Dating from 1923 to the present, the articles encompass all subspecialties and were chosen by an ad hoc committee of more than 200 specialists. *Radiology* Editor Herbert Y. Kressel, M.D., and deputy editors then narrowed the list to those that appear in the journal. January, for example, will feature the 1927 article, "What Every Radiologist should Know about Bone Tumors," that illustrates plain film appearances.

For more information, go to RSNA.org/Journals.



Radiology
GOLDEN OLDIES



Listen to *Radiology* Editor Herbert Y. Kressel, M.D., deputy editors and authors discuss the following articles in the November issue of *Radiology* at pubs.rsna.org/page/radiology/podcasts:

- ▶ “Effect of Radiologists’ Diagnostic Work-up Volume on Interpretive Performance,” Diana S.M. Buist, Ph.D., M.P.H., and colleagues.
- ▶ “CT Screening for Lung Cancer: Alternative Definitions of Positive Test Result Based on the National Lung Screening Trial and International Early Lung Cancer Action Program Databases,” Rowena Yip, M.P.H., and colleagues.

US of Gastrointestinal Tract Disease

The impression that ultrasonography (US) has a questionable role in bowel assessment is related to the operator-dependent nature of the modality, the technical challenges of performing bowel US examinations, and the lack of familiarity of radiologists and technologists with the US appearances of normal and abnormal bowel.

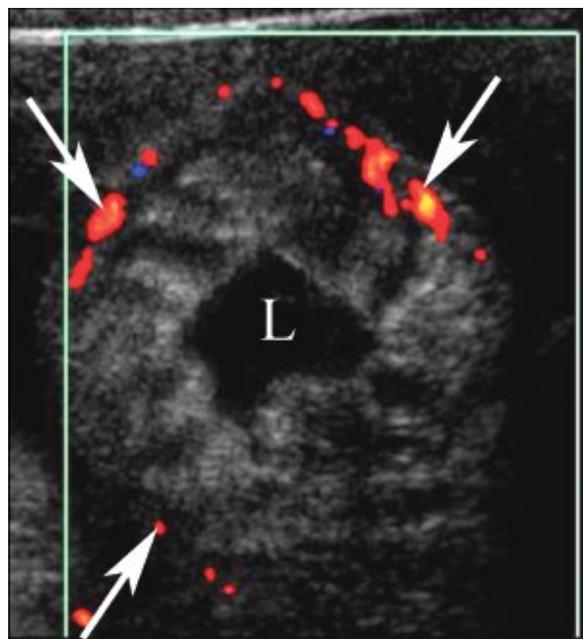
In an article in the January-February issue of *RadioGraphics* (RSNA.org/RadioGraphics), Derek Muradali, M.D., and Deborah R. Goldberg, M.D., of St. Michael’s Hospital in Toronto, discuss the US appearances of normal and abnormal bowel, with emphasis on a variety of benign and malignant pathologic conditions and potential errors at imaging interpretation.

RadioGraphics

Unlike CT and MRI, US provides a widely available, noninvasive, inexpensive method for evaluating the gut without the use of ionizing radiation. These factors are of particular importance in young patients and those who require recurrent follow-up imaging. Because US is performed with real-time imaging, the modality also allows the sonographer to view and assess the motility properties of the bowel, a feature that has not been previously used to its full potential.

“Although there may be initial skepticism regarding the use of US to diagnose and monitor bowel-related disease, with the development of scanning expertise and an overall appreciation of the different appearances of gut-related pathologic conditions by radiologists and technologists, US can become a routine modality for bowel evaluation,” the authors write.

This article is accompanied by an Invited Commentary by Stephanie R. Wilson, M.D., Clinical Professor of Radiology, Clinical Professor of Medicine, Division of Gastroenterology, University of Calgary.



Intramural hemorrhage in a 27-year-old woman with systemic lupus erythematosus. Transverse color Doppler US image shows preservation of blood flow at the periphery of the thickened loop of jejunum (arrows). L = lumen

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Radiology in Public Focus

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

Acromial Apophysiolysis: Superior Shoulder Pain and Acromial Nonfusion in the Young Throwing Athlete

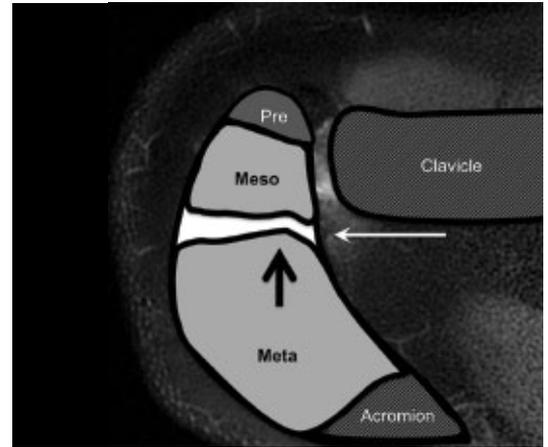
Repetitive stress is likely the cause of acromial apophysiolysis, characterized on MR images as edema and incomplete fusion at the acromial apophyses in patients younger than 25 years of age, new research shows. Throwing more than 100 pitches per week is a significant risk factor for developing acromial apophysiolysis.

Johannes B. Roedel, M.D., Ph.D., of Thomas Jefferson University Hospital in Philadelphia, and colleagues conducted a retrospective report review of 2,372 consecutive patients between 15 and 25 years of age who underwent shoulder MR imaging for shoulder pain. The majority of the patients, which included both males and females, were baseball pitchers.

Patients with edema at the acromial apophyses and no other abnormalities on MR images were included. Association of acromial edema with incomplete fusion, pitching and clinical findings was determined in the study group and in an age- and sex-matched control group, with both univariate and multivariate binary logistic regression analyses. Association with the development of an os acromiale and rotator cuff tears later in life was assessed with follow-up imaging after age 25 years.

Edema at the acromial apophyses was found in 2.6 percent (61 of 2,372) of patients and was associated with incomplete fusion of the acromial apophyses (x^2 , $P < .001$) and superior shoulder tenderness ($P < .001$). The entity was named acromial apophysiolysis. A pitch count of more than 100 pitches per week was shown to be a risk factor for acromial apophysiolysis (odds ratio [OR] = 6.5, $P = .017$). Follow-up imaging showed that acromial apophysiolysis was significantly associated with the development of an os acromiale (OR = 138, $P < .001$) and rotator cuff tears (OR = 5.4, $P = .015$) after age 25 years.

"The clinical presentation of superior shoulder pain and tenderness over the acromion has been reported in prior investigations and was confirmed in our study with a larger patient population. We also confirmed that edema at the acromial apophysis is one of the MR imaging findings of the painful acromial apophysis," the authors write.



Acromial apophyses (ossification centers) on MR image with overlay drawing. The three apophyses including meta-acromion, meso-acromion, and pre-acromion are depicted in an axial plane through the acromioclavicular joint. Clinically most relevant are the two largest apophyses, the meta-acromion and the meso-acromion. Edema and incomplete physal fusion between these two apophyses in patients younger than 25 years is termed acromial apophysiolysis in the study. When nonfusion persists beyond the age of 25 years, the term os acromiale has been used in the literature. Fusion of the acromial physis (white area) progressed from medial to lateral (white arrow) and from posterior to anterior (black arrow). Fusion was categorized as stage 0 with nonfusion, stage I with only 25% or less of the physis fused (both in posteroanterior and mediolateral dimensions), stage II with more than 25% and 75% or less fused, and stage III with more than 75% fused.

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Detection of Extracolonic Pathologic Findings with CT Colonography: A Discrete Choice Experiment of Perceived Benefits versus Harms

Patients and healthcare professionals are willing to tolerate high rates of false-positive diagnoses with CT colonography in exchange for diagnosis of extracolonic malignancy, new research shows. The actual specificity of screening CT colonography for extracolonic findings in clinical practice is likely to be highly acceptable to both patients and healthcare professionals.

Andrew A. Plumb, M.A., M.R.C.P., of the University College Hospital in London, and colleagues recruited 52 patients and 50 healthcare professionals to undertake two discrete choice experiments where they chose between unrestricted CT colonography that examined intra- and extracolonic organs or CT colonography restricted to the colon, across different scenarios. The first experiment detected one extracolonic malignancy per 600 cases with a false-positive rate varying across scenarios from 0 to 99.8 percent. One experiment examined radiologic follow-up generated by false-positive diagnoses while the other examined invasive follow-up. Intracolonic performance was identical for both tests. The median tipping point (maximum acceptable false-positive rate for extracolonic findings) was calculated overall and for both groups by bootstrap analysis.

The median tipping point for radiologic follow-up occurred at a false-positive rate greater than 99.8 percent (interquartile ratio [IQR], 10 to 99.8 percent). Participants would tolerate at least a 99.8 percent rate of unnecessary radiologic tests to detect an additional extracolonic malignancy. The median tipping-point for invasive follow-up occurred at a false-positive rate of 10 percent (IQR, 2 to .99.8 percent). Tipping points were significantly higher for patients than for healthcare professionals for both experiments (>99.8 vs. 40 percent for radiologic follow-up and >99.8 vs. 5 percent for invasive follow-up, both $P < .001$).

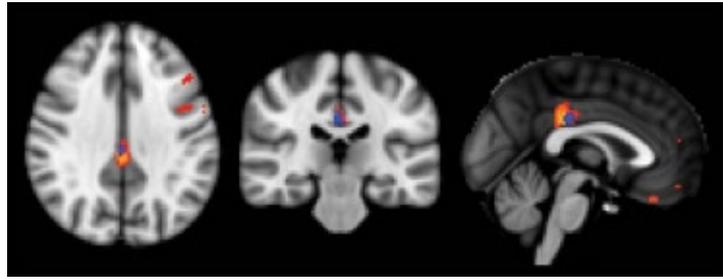
"(B)y using discrete choice experiments we found that both patients and healthcare professionals believe diagnosis of extracolonic malignancy with screening CT colonography greatly outweighs the potential disadvantages of subsequent radiologic or invasive investigation precipitated by false-positive diagnoses," the authors write.

Arterial Spin Labeling May Contribute to the Prediction of Cognitive Deterioration in Healthy Elderly Individuals

Reduced arterial spin labeling (ASL) in the posterior cingulate cortex (PCC) at baseline is associated with the development of subsequent subtle neuropsychological deficits in healthy elderly control subjects, new research shows. At a group level, ASL patterns in subjects with deteriorated cognitive function (dCON) are similar to those in patients with mild cognitive impairment (MCI) at baseline, indicating that these subjects may initially maintain their cognitive status via mobilization of their neurocognitive reserve at baseline; however, they are likely to develop subsequent subtle cognitive deficits.

Aikaterini Xekardaki, M.D., of University Hospitals in Geneva, Switzerland, and colleagues conducted a prospective study with a total of 148 consecutive control subjects, 75 of whom had stable cognitive function (sCON) (mean age, 75.9 years \pm 3.4 [standard deviation]; 43 female) and 73 of whom had dCON at 18-month clinical follow-up (mean age, 76.8 years \pm 4.1; 44 female). An additional 65 patients with MCI (mean age, 76.2 years \pm 6.1; 25 female) were also included. Two-dimensional pulsed ASL was performed at the baseline visit. Statistical analysis included whole-brain voxelwise analysis of the ASL relative cerebral blood flow (CBF) data, receiver operating characteristic (ROC) curve analysis of the PCC and voxel-based morphometry analysis of gray matter.

The voxelwise comparison of ASL revealed decreased relative CBF in the dCON group compared with that in the sCON



Voxelwise comparison of partial volume-corrected ASL revealed decreased relative CBF in dCON compared with sCON (blue) in the PCC. MCI versus sCON (orange) had decreased relative CBF, again notably in the PCC and to a lesser degree in the bilateral superior and middle frontal gyrus. Comparison of dCON with MCI revealed no significant difference. Voxelwise comparison ($P < .05$, familywise error corrected) superimposed onto the Montreal Neurologic Institute standard brain in axial, coronal, and sagittal planes.

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group and slightly more pronounced relative CBF in the MCI group compared with that in the sCON group, most notably in the PCC ($P < .05$ corrected). Comparison of the dCON group with the MCI group revealed no significant differences. ROC analysis of relative CBF in the PCC enabled discrimination of dCON ($P < .001$; area under the ROC curve, 0.66). There was no confounding focal gray matter atrophy.

“ASL has the potential to serve as a biomarker in the very early diagnosis of preclinical dementia. Structural MR imaging is routinely performed in many centers during the work-up of cognitive decline; thus, operator-independent ASL might simply be added to an existing investigation,” the authors write.

RadiologyInfo.org Content Review Program

RadiologyInfo.org, produced by RSNA and the American College of Radiology, is dedicated to being the trusted source of information for the public about radiology and the unique role of radiologists in their healthcare.

RadiologyInfo.org

The radiology information resource for patients

The website consists of approximately 200 procedure descriptions, diseases/conditions, screening/wellness and safety topics and receives nearly 500,000 monthly visitors.

At the beginning of each year, *RadiologyInfo.org* content is reviewed by physicians with expertise in various topics to ensure the public has access to the most up-to-date information. Advisors are recognized at *RadiologyInfo.org/Reviewers*.

If you are interested in contributing your expertise to patient-friendly content as a *RadiologyInfo.org* reviewer, send your curriculum vitae to Joshua Strong at jstrong@rsna.org, noting your area of expertise and interest.

Media Coverage of RSNA

In September, 563 RSNA-related news stories were tracked in the media. These stories reached an estimated 206 million people.

Coverage included *U.S. News & World Report*, *Chicago Tribune*, *Newsday*, WCBS-TV (New York), KTLA-TV (Los Angeles), WBBM-TV (Chicago), WDIV-TV (Detroit), Yahoo! News, *MSN.com*, *HealthDay*, *FOX-News.com* and *NBC-News.com*.



JANUARY PUBLIC INFORMATION OUTREACH ACTIVITIES FOCUS ON PATIENT MEDICAL RECORDS

In January, RSNA's 60-Second Checkup audio program, distributed to nearly 100 radio stations across the country, will focus on patients' use of RSNA Image Share to access their medical exams.

Annual Meeting Watch

RSNA 2015 Online Abstract Submission Opens late-January

The online system to submit abstracts for RSNA 2015 will be activated in mid-January. The submission deadline is noon Central Time (CT) on Wednesday, April 8, 2015. Abstracts are required for scientific presentations, education exhibits, applied science, quality storyboards and quantitative imaging reading room showcase.

To submit an abstract online, go to RSNA.org/abstracts.

The easy-to-use online system helps the Scientific Program Committee and Education Exhibits Committee evaluate submissions more efficiently. For more information about abstract submissions, contact the RSNA Program Services Department at 1-877-776-2227 within the U.S. or 1-630-590-7774 outside the U.S.



Important Dates for RSNA 2015

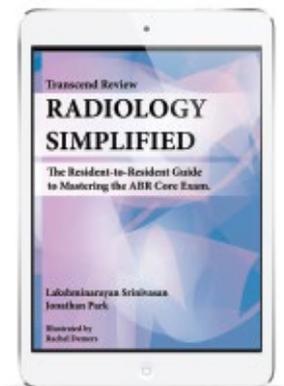
Wednesday, April 29	Member registration and housing open at 9 a.m. CT
Wednesday, June 3	Non-member registration and housing open at 9 a.m. CT
Wednesday, July 8	Course enrollment open at 9 a.m. CT
Friday, October 16	Deadline for international badge mailing
Friday, November 6	Final housing and discounted registration deadline at 5 p.m. CT
Wednesday, November 25	Deadline to guarantee a seat for all ticketed courses at 5 p.m. CT
November 29 - December 4	101st Scientific Assembly & Annual Meeting

Residents & Fellows Corner

Fellows Create Custom Resident Education

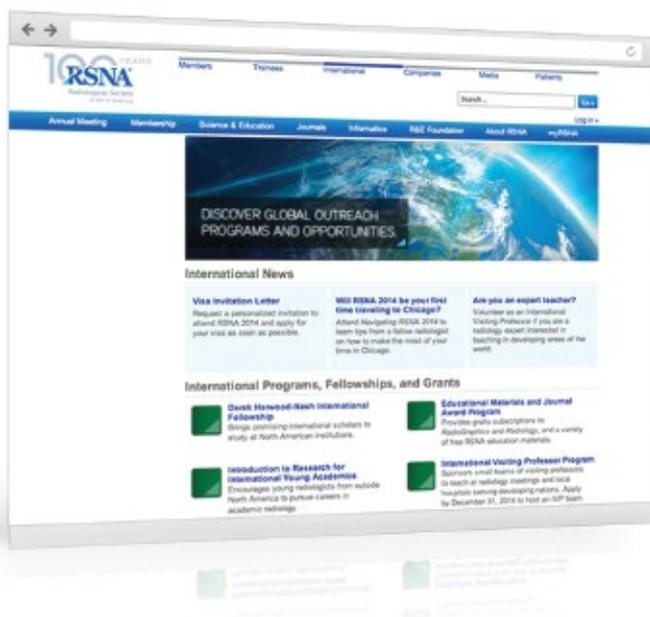
Custom eBook for ABR Core Exam Prep

Radiology Simplified, the first ABR review book made exclusively for the iPad, specifically highlights the *RSNA Physics Modules* and journals. When Ram Srinivasan, M.D., Ph.D., and Jonathan Park, M.D., studied for the new ABR core exam, they struggled with materials that had accumulated over the past decade for previous exams. In response, the two radiology residents wrote the book that they wished they had. Together with Los Angeles-based illustrator Rachel Demers, the authors fill the book with diagnostic-quality pinch-to-zoom imaging and beautiful diagrams to illustrate key concepts in physics. The physics chapters encourage readers to access the RSNA Physics Modules and also include links to key open-access articles in *Radiology* and *RadioGraphics* as part of comprehensive exam preparation. Readers are encouraged to offer suggestions that can be incorporated in free updates to all readers. Dr. Srinivasan is currently a neuroradiology fellow at Stanford, and Dr. Park is completing the interventional radiology fellowship at UCLA. Access the book at radiologysimplified.com.



Free Video Lecture Series

Dr. Srinivasan also developed a series of short video lectures called Core Physics Coach. "Many residents are audiovisual learners," he said. "These videos can be a great for residents who just want to lie in bed and watch a short video clip." He added that the videos are meant to complement, rather than replace, more comprehensive resources like the RSNA Physics Modules. "Knowing basic radiology physics can help us relate to our patients, referring physicians, technologists, vendors and hospital administrators with a holistic and authoritative approach to imaging," Dr. Srinivasan said. "In a small way, Core Physics Coach might help residents incorporate that learning into the comfort of their weekends." The videos are available at abrphysicsreview.com.



Explore RSNA's International Resources

As this month's feature on the annual "International Trends" session at RSNA 2014 clearly demonstrates, RSNA continues to serve members across the globe at the annual meeting and beyond.

To access the full scope of RSNA programs and opportunities, non-North American members—who make up about 29 percent of RSNA's more than 54,000 members—are invited to explore the International page on *RSNA.org* on the top menu above the search field.

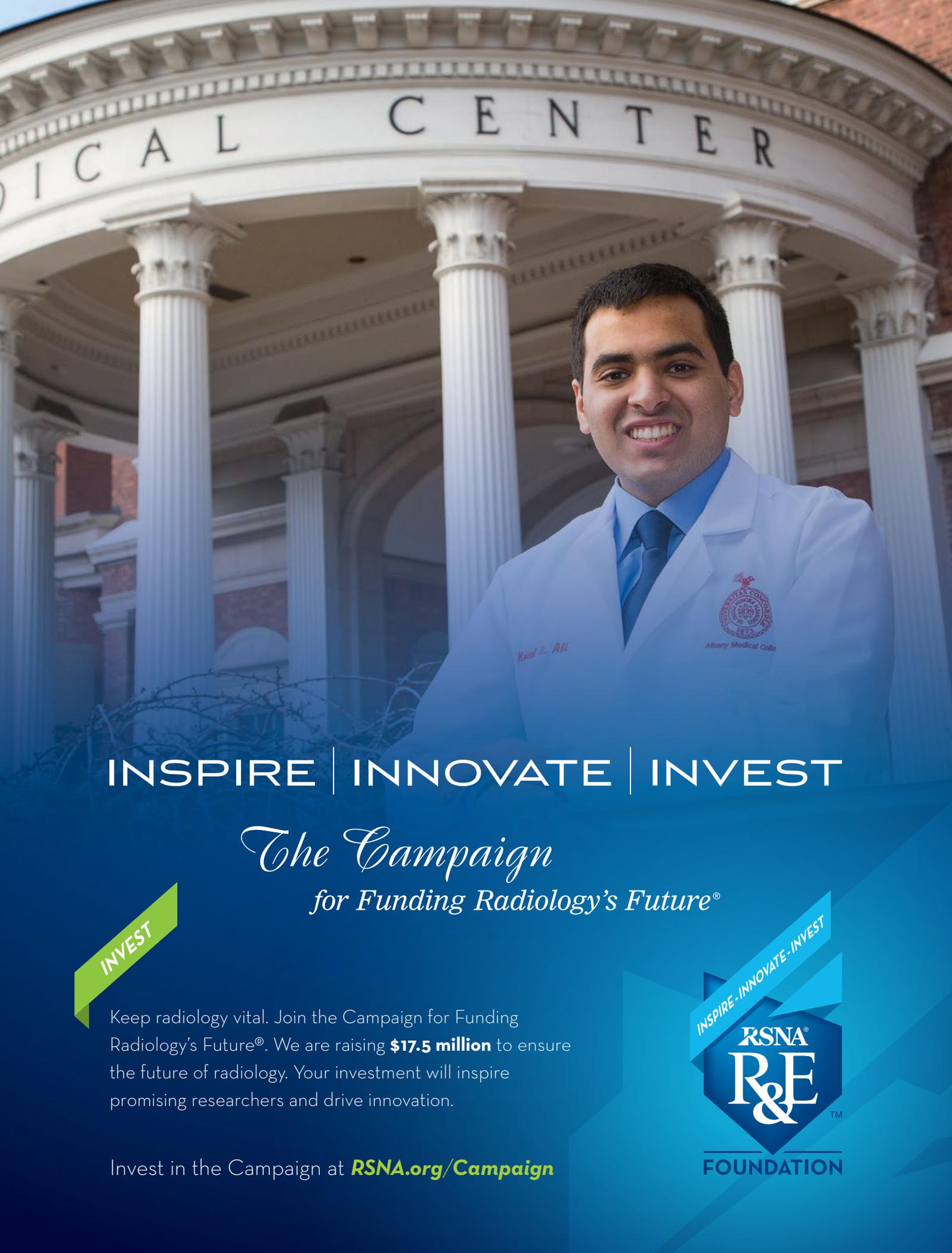
Access resources and programs that impact developing or newly developed countries, including the RSNA International Visiting Professor Program, the RSNA Derek Harwood-Nash International Fellowship and RSNA Introduction to Research for International Young Academics

Current members are encouraged to alert fellow colleagues about the benefits of RSNA membership including free advance registration to the RSNA annual meeting and subscriptions to the RSNA journals, *RadioGraphics* and *Radiology*. Membership is free for residents and fellows and includes all the same benefits.

Check the site regularly for updated news and information throughout the year.

COMING NEXT MONTH

Next month, we feature a story on the international mission of a team of radiologists led by Marc Kohli, M.D., of the University of Indiana, to provide mobile, digital X-rays from a truck in rural Kenya.



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