ABR “Exam of the Future” Sharpens Focus on Images

**ALSO INSIDE:**
- DECT, MR Hold Vast Potential in Pulmonary Imaging
- Radiology Cares Campaign Combats ‘Invisibility’ Factor
- Ultrasound, MR Breast Imaging Studies Spark Debate
- Novel Imaging Tool Could Improve Prostate Cancer Therapy
A Charitable Gift Annuity: How It Works

Through a simple contract, you agree to make a donation of cash, stocks or other assets to RSNA R&E Foundation. In return, we agree to pay you (and someone else, if you choose) a guaranteed fixed amount each year for the rest of your life.

YOU ALSO RECEIVE THESE BENEFITS:

- Your initial gift is partially income tax-deductible.
- Your charitable gift annuity payments are partially income tax-free.
- Your capital gains taxes may be reduced if you use appreciated stock to make a gift.

Sample Fixed Annuity Rates

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<td>65</td>
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<td>75</td>
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“A Charitable Gift Annuity is a wonderful way to continue to receive income, yet provide a lasting contribution to the Research and Education Foundation.”

– Marilyn A. Roubidoux, M.D. and N. Reed Dunnick, M.D.

Contact Liten DeNaut at 1-630-368-374 or ldenaut@rsna.org to learn more.

RSNA.ORG/PLANNEDGIVING
The American Association for Women Radiologists (AAWR) has announced its 2012 award recipients:

- Parvati Ramchandani, M.D., section chief of geniourinary radiology and professor of radiology and surgery at the Perelman School of Medicine at the University of Pennsylvania Medical Center, received the Maria Sliwinska-Curie Award. Dr. Ramchandani is a member of the ACR's Public Information Committee, the Public Information Advisors Network and the Genitourinary Radiology Subcommittee of the Scientific Program Committee.

- Elta D. Pisano, M.D., vice-president for medical affairs, dean of the College of Medicine and professor in the Department of Radiology at the Medical University of South Carolina (MUSC), received the Alice Ettinger Distincted Achievement Award. Dr. Pisano is a member of RSNA's Public Information Advisors Network and is a past-president of the Association of University Radiologists.

- Noriko Salamon, M.D., Ph.D., is a professor of radiology at the University of California, Los Angeles (UCLA) David Geffen School of Medicine, was honored with the Women in Neuroradiology Leadership Award.

- Gayatri Joshi, M.D., a fourth-year radiology resident at MUSC, received the Lucy Frank Squire Distinguished Resident Award in Diagnostic Radiology.

- Michelle M. Kim, M.D., a fourth-year radiation oncology resident at the University of Texas MD Anderson Cancer Center in Houston, was honored with the Eleanor Montague Distinguished Resident Award in Radiation Oncology.

Thrill Steps Down as Radiologist-in-Chief at MGH; Brink Fills Position

James H. Thrall, M.D., has stepped down as radiologist-in-chief at Massachusetts General Hospital (MGH), in Boston, effective February 1. He was succeeded by James A. Brink, M.D., previously chair of the Department of Diagnostic Radiology at Yale University.

In 1988, Dr. Thrall became the first person to receive the Juan M. Taveras Professorship of Radiology at the Harvard Medical School and was appointed radiologist-in-chief at MGH, positions he has held since then. A renowned researcher, Dr. Thrall's clinical interests include nuclear cardiology, PET scanning and skeletal scintigraphy. Dr. Thrall has lectured internationally on radiology in medicine, and is considered a preeminent authority on the subject worldwide. He is also a nationally recognized expert in radiology and economics.

Dr. Thrall has served as president of the American Roentgen Ray Society and as Chairman of the Board of Chancellors and President of the American College of Radiology (ACR). Dr. Thrall was awarded the RSNA Gold Medal in 2007 and served on the RSNA Research & Education (R&E) Foundation Board of Trustees from 2002 to 2008. He has served as Perspectives Editor for Radiology. Dr. Thrall will continue to serve on the National Advisory Council for Biomedical Imaging and Bioengineering of the National Institute of Biomedical Imaging and Bioengineering (NIBIB), a component of the National Institutes of Health, implements a wide variety of biomedical imaging and bioengineering programs to foster the development of innovative medical technologies to improve healthcare.

Tell a Colleague—Renew Now

RSNA members who did not renew their membership by Dec. 31, 2012, ceased receiving their RSNA publications, including RSNA News. Know someone who hasn’t renewed? Encourage them to retain all the benefits of RSNA membership by renewing today at RSNA.org/renew.

- In addition to subscriptions to RSNA News, Radiographics and Radiology, RSNA benefits include:
  - Free advance registration to the annual meeting
  - Free education tools to maximize learning and earn CME
  - Networking opportunities with radiology professionals from across the globe
  - myRSNA which lets you build your own personal online workspace
  - Members who are transitioning into practice from training pay reduced rates for their first and second years. For more information, contact membership@rsna.org, 1-877-RSNA-MEM (776-2636) or 1-630-571-7873 (outside the U.S. or Canada).

Radiology Introduces “Fast-Track” for Journal Submissions

Responding to the need for more rapid processing of “high interest” manuscripts, Radiology recently introduced a fast-track option for journal submissions.

While all authors can request fast-track processing, the journal is particularly interested in articles involving rapidly developing, competitive areas such as molecular imaging, PET/CT, PET/MRI imaging and cardiovascular imaging, according to Radiology Editor Herbert Y. Kressel, M.D. The goal is to publish fast-track articles online within two months of manuscript submission.

For example, “Submillisievert Median Radiation Dose for Coronary Angiography with a Second-Generation 320-Slice Detector Row CT Scanner in 107 Consecutive Patients,” was published online January 23, 2013, about six weeks after submission.

Authors are required to include a letter documenting the reasons that their manuscript is appropriate for fast-track processing at the time of online submission through ScholarOne and send a copy of the letter to Radiology editorial office at radiology@rsna.org. The author will receive a determination within two working days of submission.

For more information on the fast-track processing, see Dr. Kressel’s January 2013 Radiology editorial, “Changes for Changing Times,” at radiology.rsna.org/content/266/1/3.full.

New York Roentgen Society Celebrates 100 Years

Founded in April 1912, the New York Roentgen Society (NYRS) celebrated its 100th anniversary during its October annual meeting. NYRS is the second oldest radiology society in the U.S. and the only American society from which Wilhelm Roentgen accepted an honorary membership.

A gala dinner was held during the centenary celebration honoring all NYRS past-presidents including 2011 RSNA President Baron P. Drayer, M.D., and 2010 RSNA President Hedvig Hricak, M.D., Ph.D., Dr. h.c.

NIBIB Appoints New Advisory Council Members

Three new members have been appointed to the National Advisory Council for Biomedical Imaging and Bioengineering of the National Institute of Biomedical Imaging and Bioengineering (NIBIB):

- Sohla Rastegar, Ph.D., director of the Office of Emerging Frontiers in Research and Innovation at the U.S. National Science Foundation, Directorate for Engineering.
- Bruce Tromberg, M.D., director of the Beckman Laser Institute and Medical Clinic and a professor of Biomedical Engineering at Surgery at the University of California, Irvine.
- Sheldon Weinbaum, Ph.D., a distinguished professor of biomedical and mechanical engineering at the City College of the City University of New York.

NIBIB, a component of the National Institutes of Health, implements a wide variety of biomedical imaging and bioengineering programs to foster the development of innovative medical technologies to improve healthcare.

COMING NEXT MONTH

We offer a glimpse into the radiology room of the future and discuss the growing importance of lighting, noise control, room design and other factors central to improving workplace ergonomics.
IN MEMORIAM

Bertram R. Girdany, M.D.

Bertram R. Girdany, M.D., a pioneer in the field of pediatric radiology, passed away July 31, 2012. He was 93. In 1950, Dr. Girdany was hired by Children’s Hospital of Pittsburgh to establish its radiology department. He went on to become chair of the Department of Radiology at the University of Pittsburgh Medical Center and taught at the University of Pittsburgh School of Medicine. His work in pediatrics and radiology in the 1950s and 1960s led to significant strides in documenting injuries caused by physical abuse and underscoring battered child syndrome. Dr. Girdany was a charter member of the Society for Pediatric Radiology.

IN MEMORIAM

Philip W. Ralls, M.D.

Ultrasound expert Philip W. Ralls, M.D., passed away September 23, 2012. He was 64. Dr. Ralls was vice-chair of the Department of Radiology Academic Affairs and a professor of radiology at the Keck Medical Center of the University of Southern California. Dr. Ralls served as president of the Society of Radiologists in Ultrasound from 2007 to 2009 and as president of the ultrasound section of the Los Angeles Radiological Society from 1986 to 1986.

2012 RSNA Outstanding Researcher A. James Barkovich, M.D., was awarded the 2012 American Society of Neuroradiology (ASNR) Gold Medal. Dr. Barkovich is a professor of radiology and biomedical imaging, neurology, pediatrics and neurosurgery and chief of pediatric neuroradiology at the University of California, San Francisco. Dr. Barkovich helped pioneer the use of MR imaging to search for evidence of injury or abnormal development in the brains of newborns. His research significantly contributed to the decreased frequency of neonatal brain injury and the improved outcomes of injured neonates over the past 20 years.

My Turn

Be an Agent of Change: Take the Pledge

If someone told me years ago that someday I would help launch a social marketing campaign to raise awareness about adult radiation protection, I would have asked, “what’s a social marketing campaign?” Loosely stated, such a campaign addresses social problems using commercial marketing techniques. When change is needed on a large scale over a broad period of time, social marketing can effectively raise awareness and modify behavior.

In June 2009 RSNA and the American College of Radiology (ACR) established the Joint Task Force on Adult Radiation Protection, which recommended a social marketing campaign targeting adult medical imaging with ionizing radiation. Building upon the success of the Image Gently campaign for children, the Task Force named its new initiative “Image Wisely.” They also recognized the importance of widening the circle to include medical physicists and imaging technologists, as represented by the American Association of Physicists in Medicine (AAPM) and American Society of Radiologic Technologists (ASRT), respectively.

The Image Wisely campaign launched at RSNA 2010 and initially focused on CT. From 2011 to 2012 the second phase was completed, targeting nuclear medicine. Planning for the third phase is under way, targeting radiography and fluoroscopy. More than 17,000 individuals have pledged to adhere to the principles of Image Wisely:

• Put patient’s safety, health and welfare first by optimizing imaging examinations to use only the radiation necessary to produce diagnostic quality images.
• Convey the principles of the Image Wisely Program to the imaging team in order to ensure that our facility optimizes its use of radiation when imaging patients.
• Communicate optimal patient imaging strategies to referring physicians, and be available for consultation.
• Routinely review imaging protocols to ensure that the least radiation necessary to acquire a diagnostic quality image is used for each examination.

I have a healthy respect for social marketing and its power to heighten awareness about adult radiation protection, I would have asked, “what’s a social marketing campaign?” When change is needed on a large scale over a broad period of time, social marketing can effectively raise awareness and modify behavior.

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Years in the making, the new ABR Core Examination in Diagnostic Radiology is a comprehensive review of diagnostic radiology and physics concepts as they relate to imaging. It is highly standardized and tests clinical reasoning and management at a much greater level of analysis than in the past. “Some felt that parts of the previous exam were esoteric and that the questions lacked clinical relevance,” said ABR Trustee Duane G. Mzeza, M.D., professor and chair of diagnostic radiology and molecular imaging at Oakland University/William Beaumont School of Medicine in Rochester, Mich., and a faculty advisor to the RSNA Resident and Fellow Committee. “We developed a new structure that is much more relevant to daily clinical practice.”

To set up for the first year, the ABR Core Examination will be administered as a qualifying exam to third-year radiology residents in lieu of the traditional written examinations in both physics and diagnostic radiology. Residents on the new schedule will take the ABR Certifying Exam 15 months after completing a four-year radiology residency, replacing the oral examination traditionally given during the fourth year of training. The first certifying exam will be offered in 2015.

For third-year residents preparing for the first ABR Core Examination, the new test represents uncharted territory. They are the pioneers; there is no one to give them feedback and advice based on previous tests. “As we get closer to the date, it’s becoming a little more stressful,” said Joshua Kuban, M.D., a third-year radiology resident at Baylor College of Medicine in Houston. “Time will tell whether this will become an issue when applying for jobs,” she said. The people who are hiring will have to know that certification is expected to come later.”

Exam Emphasizes Images, Practical Clinical Issues To gain firsthand experience of the breadth of material and familiarity with the exam centers, Dr. Annam recommends that eligible residents take the Core Examination 15 months after completing a radiology internship. She completed a pilot version of the test and believes the exam meets its intended goals. “The questions did not deal with esoteric minutiae, but rather, relevant practical matters like how to reduce radiation dose or fix an artifact on an exam,” she said. “The exam covers 18 categories: breast, cardiac, gastrointestinal, interventional, musculoskeletal, nuclear medicine, pediatric, reproductive/endocrinology, thoracic, genitourinary, vascular, CT, MR, radiography/fluoroscopy, ultrasound, physics and safety.

As ABR representatives to the RSNA Resident and Fellow Committee, John Krol, M.D., and Monique Meyer, M.D., relay new information about the exam to committee members. “Prior tests included few images, so it’s nice to know this exam will have lots of images, which is the core of radiology,” said Dr. Krol, a third-year resident at the University of Kentucky College of Medicine in Lexington.

ABR Resources Prepare First Class of Residents To that end, ABR is providing a variety of resources for residents including a study guide and a 100-item practice exam on its website. (See Sidebar.) The organization is also inviting the inaugural class to participate in one of two Core Pilot Examinations administered to be conducted at both the Chicago Test Center and the Tucson Test Center on June 20-21 (first administration) and June 24-25, 2013 (second administration). “This class will be the best prepared in ABR history,” Dr. Mezwa said. For third-year residents, however, the practice exam could mean added travel and expense during a year in which they are slated to participate in the four-week American Institute of Radiology Pathology (AIRP) course in Maryland. “I wish the ABR Core Pilot Exam was available locally,” Dr. Kuban said. “Between AIRP and two trips to Chicago for testing, the third year is going to be very expensive.”

ABR moved the Core Examination to the third year partly to enable residents to subspecialize during the fourth year without the pressure associated with studying for the ABR certifying oral examination, a period often dubbed “board frenzy.”

Historically, some programs in diagnostic radiology allowed residents time off from clinical duties to study for the oral exam. However, the new ABR exam structure provides an opportunity to reevaluate this practice. A position statement issued by the Association of Program Directors in Radiology (APDR), published in the November 2012 issue of the Journal of the American College of Radiology, describes the rationale behind a recommendation of no time off from clinical service before the ABR Core Examination. “At Baylor, we’re trying to set up a curriculum to take advantage of the fourth year,” Dr. Kuban said. “We’ll have six months that are service-oriented and six months of mini-fellowships and electives.”

The fourth year will allow residents to gain an area of focus before taking the Certifying Exam,” Dr. Mezwa added.

The new timeline also means that most residents will graduate as U.S.-board eligible rather than board certified, Dr. Annam said. “Time will tell whether this will become an issue when applying for jobs,” she said. “The people who are hiring will have to know that certification is expected to come later.”

PREPARE FOR ABR EXAMS WITH IPAD-COMPATIBLE APPS

Tablet computers such as iPad and compatible apps are ideal preparation tools for the ABR exams. There are more than 3,000 articles and practice questions in the ABR’s iPad-based, image-rich certification exams, according to Soheiben Dhand, M.D., a third-year resident at Northwestern Memorial Hospital in Chicago. Dr. Dhand saw the potential of the iPad as a radiology education tool from the time he got his first tablet in 2010. He exchanged e-mails with Steve Jobs, the late founder of Apple, setting a chain of events in motion culminating in Northwestern offering iPad availability to all radiology residents in September 2011. “At Northwestern, we’ve loaded more than 45,000 articles on the iPad,” he said. “As new content is automatically updated for residents,” he said. “At an RSNA 2012 session, Dr. Dhand and colleagues reviewed iPad-compatible apps that could help residents prepare for the ABR Core Examination. Many such apps are available on the iTunes store for free or less than $10. “There’s no single dedicated app for the new Core Exam,” Dr. Dhand said. “It’s more a matter of finding what’s available and applying it to your preparation.”

Dr. Dhand recommends Elsevier Casework as a comprehensive source. Each of the five different apps cost $19.99 on iTunes (Radiology Assistant $19.99) is another useful app, Dr. Dhand said. Developed by the Radiological Society of the Netherlands, the app includes a good selection of articles on all the major anatomical regions. And for reading all those radiology articles, Dr. Dhand suggests downloading GoodReader for the iPad for $4.99.

DECT, MR Hold Vast Potential in Pulmonary Imaging

Dual-energy CT (DECT) and MR are destined to play a much larger role in pulmonary imaging in the not-so-distant future, according to researchers who are investigating new applications for the technologies.

“We are clearly modifying our way of scanning patients,” said Martine Rémy-Jardin, M.D., Ph.D., head of the Department of Thoracic Imaging, the University Hospital, Lille, France, who presented new findings on emerging thoracic applications at RSNA 2012. “There is no longer just a single energy source and one way to administer contrast material. There are new ways to use CT technology.”

Six years of clinical investigation using DECT led Dr. Rémy-Jardin to a number of new insights about the technology. She said DECT offers major advantages in material decomposition and the elimination of artifacts; for example, DECT can be used to suppress image artifacts around the superior vena cava due to iodine-containing contrast agents during chest CT.

“High-energy CT will suppress these artifacts, improving our ability to analyze the lymph nodes when staging cancer,” Dr. Rémy-Jardin said. “Alternatives will use low-energy CT to increase the level of attenuation in the vessels. This allows us to use less iodine, which is especially useful for patients with renal impairment.”

DECT also improves upon routine CT scanning by providing more than anatomical information. “DECT scanning can provide both morphology and functional information based on the same data set,” Dr. Rémy-Jardin said.

DECT effectively generates perfusion and ventilation images similar to those produced by scintigraphy, which can be helpful in detecting acute and chronic pulmonary embolisms (PEs) and especially distal lesions, she added.

“DECT is especially helpful when looking for small clots that are difficult to see,” she said.

“Instead of looking for the clot, we look for the consequence of the occlusion by observing perfusion.”

MR Surpassing CT in Some Areas of Chest Imaging

While chest MR has played a very small role in routine clinical care up to now, it is “potentially a very powerful technique for chest imaging,” according to Jens Bremerich, M.D., a professor of radiology and head of cardiothoracic imaging at the University of Basel Hospital, Switzerland, who offered an update and new developments on thoracic MR imaging at RSNA 2012.

Technical limitations—including longer exam times and lower spatial resolution of MR compared to that of CT and the low-proton density of the lung—have historically limited the use of MR imaging in the chest. However, the latest generation of MR scanners is capable of overcoming a major limitation of MR: magnetic field inhomogeneities. “By using the variety of MR sequence options, from T1 and T2 to diffusion-weighted and fat-saturation, it’s possible to characterize masses in the chest, making pulmonary MR a viable alternative to nuclear medicine studies,” Dr. Bremerich said. He cited a January 2012 study in European Radiology demonstrating that diffusion-weighted MR imaging performed as well as PET/CT in pre-operative staging of non-small-cell lung cancer.

“PET/CT is the gold standard for detecting malignancies of the chest,” said Dr. Bremerich. “However, this study showed that diffusion-weighted MR performed equally well.”

MR also offers possibilities for evaluating lung function, including:

• Ventilation of the lung to characterize chronic obstructive pulmonary disease (COPD) and emphysema

• Pulmonary perfusion to detect pulmonary artery hypertension

• Evaluation of the lung to prior lobectomy

“Pulmonary MR offers the potential to cover several relevant aspects of the pulmonary evaluation in one examination,” said Dr. Bremerich. “Many radiologists still think pulmonary MR isn’t useful,” Dr. Bremerich said. “That has to change.”

Investigators researching new applications for dual-energy CT (DECT) and MR in pulmonary imaging presented their findings at RSNA 2012.

“A tumor can be demonstrated that is not visible on chest CT. This enables us to make a differential diagnosis.”

TSG News | April 2013

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Radiology Cares™ Campaign Combats ‘Invisibility’ Factor

By encouraging meaningful physician engagement in the patient experience, RSNA’s new Radiology Cares™ campaign offers an effective solution to a common problem radiologists often face: invisibility.

“Even though we actively participate in patient care, we’re relatively invisible to the eye of the patient,” said William T. Thorwarth Jr., M.D., a radiologist/partner at Catawba Radiological Associates in Hickory, N.C., and RSNA Board Liaison for Publications and Communications. “We need to be seen as we actually are: active participants in patient care.”

At RSNA 2012, RSNA launched the “Radiology Cares: The Art of Patient-Centered Practice” campaign—an initiative linked with the annual meeting’s patient-centered theme—challenging radiologists to play a more visible and active role.

To aid that effort, RSNA has put together a library of online tools at RadiologyCares.org. Online resources include PowerPoint presentations that can be customized for specific audiences and patient-centered literature from scientific journals, medical trade publications and mainstream consumer media. (See sidebar.)

Central to the campaign is the Radiology Cares pledge encouraging radiologists and other imaging professionals to commit to more meaningful engagement in the patient experience, with the goal of helping patients make better informed decisions regarding their healthcare. Those taking the pledge at RadiologyCares.org receive campaign updates and new materials as they are developed.

“This campaign is an outgrowth of the efforts of the RSNA Public Information Committee (PIC), which has made great strides in increasing public awareness about modern imaging technologies,” said Mary C. Mahoney, M.D., director of breast imaging at the University of Cincinnati Medical Center’s Barrett Cancer Center and chair of RSNA Patient-centered Radiology Steering Committee. “However, research has shown that many consumers are unaware of the role radiologists play in their healthcare.”

In addition, various market forces—from the growth of teleradiology and non-radiologists performing imaging exams to changes reimbursement models and healthcare reform—present both a threat and an opportunity within the specialty. As a result, experts say it is more critical than ever for radiologists to prioritize patient satisfaction and strengthen relationships with referring physicians, hospital administrators and insurers.

“The whole field will lose credibility and respect over time if we do not read images and are not engaged in the process,” Dr. Mahoney said. “We need to bring more to the table or we’ll become less relevant to clinicians and patients.”

Self-Assessment Critical to Patient-Centered Practice

To become more patient-centered, Dr. Thorwarth suggests that radiology practices conduct self-assessments addressing the entire continuum of care. “We need to be continually asking, ‘What are we doing well? Where do we need to improve?’” he said. “Every radiologist knows the value of making the patient experience more positive, from convenient parking to a comfortable waiting area to easy and timely access to results.”

While the Radiology Cares campaign suggests increasing face-to-face interaction, Dr. Mahoney said talking to patients and sharing results is just one small piece of the overall patient experience. Specific initiatives under- taken to improve that experience—and keep up with the pace of change—will vary from practice to practice.

“The whole field will lose credibility and respect over time if all we do is read images and are not engaged in the process.”

Mary C. Mahoney, M.D.

Launches at RSNA 2012, the Radiology Cares Campaign is designed to help radiology professionals become more comfortable interacting directly with their patients and to help patients become more comfortable with their radiology experiences. To aid that effort, RSNA has developed a library of online tools at RadiologyCares.org (above) where imaging professionals can also Take the Pledge to play a more visible and active role in patient care.

WEB EXTRAS

RadiologyCares.com offers features to access a wide variety of resources related to patient-centered care, including:

-[Education Toolkit]: Your index to literature about the movement to become patient-centered from experts, scientific journals, medical trade publications and mainstream consumer media.

-[Presentation Toolkit]: Customizable PowerPoint presentation decks to help you convey the importance of radiologists being patient-centered to your colleagues and communities.

-[RadiologyInfo.org]: Direct your patients to RadiologyInfo.org for information on radiology procedures, treatments and therapies.

-[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 other healthcare providers. The page posts a current tally of pledges to date.

-[Video Series]: The page also features an entertaining, three-episode series, “Radiology Cares: The Untold Future,” illustrating why you want to become more visible to your patients.
In the first study, investigators discovered that supplemental handheld screening breast ultrasound offered to women in the general population with dense breasts aided in detecting small mammographically occult breast cancers, although the overall positive predictive value was low. The other study demonstrated high accuracy achieved by a dedicated breast MR imaging system. Both studies appeared in the October 2012 issue of Radiology. Authors by Regina Hooley, M.D., an assistant professor of diagnostic radiology at the Yale University School of Medicine, New Haven, Conn., and colleagues, the first study examined the effectiveness of a 2009 Connecticut law requiring providers to alert women with dense breasts and offer supplemental ultrasound screening.

Conducted at five states including Texas, Virginia, New York and California that now have mandatory breast density notification laws. Similar bills are pending in more than 30 other states. In addition, a federal Breast Density Information Bill (HR 3102) has been introduced. Opponents of the mandate say the role of supplemental ultrasound as a screening modality is unanswered and additional screening doesn’t improve detection enough to justify the cost or the risk of false positives that lead to unnecessary biopsies.

Experts also stress that patients must be aware that ultrasound screening is not only as supplemental to mammograms—not a replacement. According to the American College of Radiology, there are no scientific data to show screening mammograms are more effective than breast self-exams. In June 2012, the study retrospectively reviewed the records of 935 women with dense breasts at mammography who subsequently underwent supplemental handheld ultrasound screening and/or whole-breast ultrasound. A majority (65.7 percent) were at low risk, 15.9 percent were at intermediate risk and 8.3 percent were at high risk for breast cancer. The ultrasound examinations found 187 (20 percent) results classified as BI-RADS category 3 and 47 (5 percent) classified as BI-RADS category 5. Out of 63 biopsies and aspirations performed based on the ultrasound exam results, three were malignant, one in each risk group. All three were solid masses, smaller than 1 cm, in postmenopausal women.

“This study shows that radiologists can provide supplemental breast screening successfully,” Dr. Hooley said. “We had a lot of patients who wanted this test, although we didn’t offer it before the law went into effect. We found we could provide it efficiently by allowing technologists to perform exams and this proved cost effective to physician-performed exams. We can detect small invasive mammographically occult cancers.”

Dr. Hooley said some physicians refer only their high-risk patients—who have risk factors in addition to dense breast tissue—for additional screening, while others routinely refer all of their patients who have dense breasts. “We’re doing a study now trying to determine physician referral patterns,” she says. Most women in the screening study were of average risk, and Dr. Hooley said the results could be different if only high-risk patients were studied.

Breast Imaging Experts Question Research Outcomes

Dr. Hooley’s research, originally published online in Radiology in June 2012, is generating controversy among breast imaging experts who contend that the data do not represent the established definition of “screening” and that the role density plays in the risk of breast cancer is still unclear.

In an editorial in the October 2012 issue of Radiology, Carl J. D’Orsi, M.D., and Edward A. Sickles, M.D., stress that universally accepted definitions of “screening” and “diagnostic” for breast imaging are critical in ensuring valid comparisons of breast imaging technologies and assessing whether their greatest impact would be in a screening or diagnostic setting or both.

The authors also discuss the potential impact of Dr. Hooley’s research on the legal mandates concerning breast density that increasing number of states are poised to pass into law. “The lack of separation between screening and diagnostic examinations in the report of Hooley et al. (2012) has considerable relevance as a potential indicator of future benchmark performance, given that the reported data skew the outcomes expected from true screening ultrasound to falsely appear more favorable than they really are,” the authors write. “These data may be used to affect the decisions of lawmakers who are considering similar legislation in other states. In our opinion, such government mandates are premature.”

In addition, experts caution that the false positive rate is associated with supplemental ultrasound screening is excessively high, much so as to limit its acceptability.

Dedicated Breast MR Imaging Yields Promising Results

The second study evaluating the effectiveness of a dedicated breast MR system analyzed patients without regard to breast tissue density, although patients in all screening cases had risk factors for breast cancer that included breast tissue density. Lead researcher Steven Harms, M.D., a radiologist at the Breast Center of Northwest Arkansas in Fayetteville, a clinical professor of radiology at the University of Arkansas for Medical Sciences in Little Rock, and colleagues evaluated a breast-specific MR imaging system developed by Aurora Imaging Technology, North Andover, Mass., which underwrote the study. The design, conduct, and analysis of the study were performed by American College of Radiology (ACR) Image Metrix, Philadelphia, an independent imaging contract research organization, which also oversaw the writing of the manuscript under contract to Aurora Imaging Technology.

Researchers analyzed results from 937 screening and diagnostic breast MR images from four sites using the specialized device. Biopsy data from cancer cases and one-year follow-up information from negative cases were available. The negative predictive value was 98.9 percent for diagnostic cases and 100 percent for screening cases. The false positive rate was 11.2 percent overall, but only 4.9 percent for screening cases. The analysis showed no difference in performance relative to breast density. A remaining challenge is to reduce the cost per exam, said Dr. Harms, medical director of Aurora Imaging Technology and a stockholder in the company. He noted that the Aurora system costs about $1 million and the cost per study varies from $590 to $1,200 depending on demographics and available insurance coverage. The machines perform two studies an hour compared with four or five for a digital mammography system.

“We have to be judicious in how we use the resource, but if it were cheaper, we would recommend it all the time,” Dr. Harms said. “The interesting thing is that all of our MR studies were done the same way. We might be able to develop a screening MR study with lower cost and faster throughput.”

“One of the key issues I see for ACR Imaging Metrics is to help companies like Aurora evaluate their products for special attributes that, if the research is positive, can help differentiate them in the marketplace,” said study author Bruce Hillman, M.D., ACR Imaging Metrics founder and chief scientific officer, and the Theodore E. Kean Professor of Radiology and Public Health Sciences at the University of Virginia in Charlottesville.

While investigators concluded that high accuracy was achieved using a dedicated breast MR imaging, they cite limitations to the research, including the retrospective design of the study and a patient sample that was heavily weighted toward diagnostic, rather than screening, examinations. Moreover, they are concerned about the study’s generalizability to other settings. “As Dr. Harms noted, ‘MR imaging was performed at dedicated breast centers with expertise in breast imaging. However, the comparison studies were all from subspecialized radiologists in academic centers who used rigorous diagnostic criteria in their research setting. It is unlikely that these findings are totally caused by interpretation skills alone.’”

WEB EXTRAS

To access the full study by Regina J. Hooley, M.D., and colleagues, go to radiology.rsna.org/content/266/3/997.full?sid=cb83c334-0970-4535-8d3a-9e64f27db3fd.

To access the full study by Regina J. Hooley, M.D., and colleagues, go to radiology.rsna.org/content/265/1/9.full.

To access the Radiology editorial on that research, “To Seek Perfection or Not? That is the Question,” at radiology.rsna.org/content/265/1/55.

To access Dr. Hooley’s response to the editorial and additional letters on the issue in the March 2013 issue of Radiology at radiology.rsna.org/content/264/3/797/full.

To access the study “Diagnostic Performance of a Dedicated 1.5-T Breast MR Imaging System” at radiology.rsna.org/content/262/5/551.

To For more information on the ACR Imaging Metrics, go to www.acrimagemetrix.com.

This study shows that radiologists can supply supplemental breast screening successfully.

Regina Hooley, M.D.
To that end, in 2009 one researcher parlayed a $30,000 Bracco Diagnostics/RSNA Research Resident Grant into a project to develop a novel imaging tool that seeks to overcome those limitations and ultimately improve image-guided radiation therapy. That project, an additional American Cancer Society (ACS)-funded research on the subject.

"Improved imaging can help with management decisions and disease targeting with image-guided radiation therapy," said William Rockey, M.D., Ph.D., an assistant professor of radiation oncology at the University of Iowa (UI) Hospitals and Clinics in Iowa City. "Many groups are doing exciting work using different approaches to address this need, but current U.S. Food and Drug Administration (FDA)-approved options for targeted imaging of prostate cancer are limited."

In 2013, the National Cancer Institute estimates 238,590 new cases of prostate cancer in the U.S. and approximately 31,720 deaths from the disease. Currently the only FDA-approved targeted imaging agent for prostate cancer is capromab pendetide (trade name ProstaScint®), an antibody tethered to a single-photon emitting radionuclide. The imaging agent has been successful in imaging localized prostate cancer and larger lymphatic metastases but is less effective in detecting non-necrotic prostate tumors and smaller metastases. Because capromab is directed against a receptor expressed on prostate-specific membrane antigen (PSMA), ProstaScint can only bind to necrotic cells present in large tumors, which reduces its sensitivity. In addition, the imaging agent can remain in the body up to one week, which reduces its sensitivity. In addition, the imaging agent can remain in the body up to one week, which reduces its sensitivity. In addition, the imaging agent can remain in the body up to one week, which reduces its sensitivity. In addition, the imaging agent can remain in the body up to one week, which reduces its sensitivity. In addition, the imaging agent can remain in the body up to one week, which reduces its sensitivity. In addition, the imaging agent can remain in the body up to one week, which reduces its sensitivity. In addition, the imaging agent can remain in the body up to one week, which reduces its sensitivity.

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Findings: Possible Therapeutic Benefit

One particularly exciting outcome was the development of a new aptamer sequence with improved affinity over a previously described aptamer to PSMA. "We showed that this aptamer sequence inhibits PSMA’s enzymatic activity, which has been linked to carcinogenesis," Dr. Rockey said. "These findings could potentially have therapeutic benefit."

In addition, researchers were able to conjugate a near-infrared (NIR) fluorophore to the aptamer. "Targeted NIR imaging may in the future have potential clinical use for intraoperative evaluation of tumor margin status, extent and lymph node involvement," Dr. Rockey said.

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IRE and nanoparticle technology can be integrated to create a better electroporation (IRE) or radiofrequency ablation. “This RSNA Seed Grant has made it possible to study the unique properties of IRE and nanoparticle technology, which can be integrated to create a better treatment platform for live tumors, providing the critical information needed to translate this research concept into clinical trials,” Dr. Tada said.
Breast Reconstruction: Review of Surgical Methods and Spectrum of Imaging Findings

Regardless of the reconstruction technique used, breast cancer can recur at the mammectomy site and may be recognized at an earlier stage by radiologists who are familiar with the spectrum of imaging findings. According to an article in the March-April issue of Radiographics (RSNA.org/Radiographics), by Fanny Maud Pinnel-Giroux, M.D., of the Centre Hospitalier de l’Université de Montréal, Canada, and colleagues, radiologists must be familiar with the range of normal and abnormal imaging appearances of reconstructed breasts, including features of benign complications as well as those of malignant change. Along with describing breast reconstruction based on the use of prosthetic implants and various kinds of autologous tissue flaps, the authors:

- Provide detailed descriptions of normal findings, benign changes and recurrent cancers seen at imaging in reconstructed breasts
- Present data culled from a retrospective analysis of the clinical records of 119 women who underwent a breast reconstruction procedure after mastectomy and breast reconstruction

Evidence in the existing literature is insufficient to support routine mammographic screening in women after autologous breast reconstruction, the authors write: “Although our patient sample was too small to allow definitive recommendations regarding the most appropriate method for monitoring breast health in women after mastectomy and breast reconstruction, the results of our retrospective analysis suggest that systematic follow-up with breast MR imaging might benefit women with a high risk for breast cancer recurrence due to factors such as a histologically aggressive primary tumor type or a genetic susceptibility,” they write.

Submillisievert Median Radiation Dose for Coronary Angiography with a Second-Generation 320-Detector Row CT Scanner in 107 Consecutive Patients

The combination of a gantry rotation time of 275 milliseconds, wide-volume coverage, iterative reconstruction, automated exposure control, and a larger X-ray power generator of the second-generation CT scanner provides excellent image quality over a wide range of body sizes and heart rates for low radiation doses, according to new research.

Maeuc Y. Chen, M.D., of the National Institutes of Health, Bethesda, Md., and colleagues performed contrast-enhanced coronary CT angiography (CCTA) with a second-generation 320-slice CT system on 107 adult patients (mean age, 55.4 years) and compared radiation exposure and image quality to those of CCTA exams previously performed on 100 patients using a first-generation 320-slice scanner. Effective radiation dose was estimated by multiplying the dose-length product by an effective dose conversion factor and reported with size-specific dose estimates (SSDE). Image quality was evaluated by two independent, blinded readers. The median radiation dose was 0.93 millisievert (mSv) with the second-generation unit and 2.67 mSv with the first-generation unit. The median SSDE was 6.0 milligray (mGy) with the second-generation unit and 3.9 mGy with the first-generation unit. Overall, the radiation dose was less than 0.5 mSv for 23 of the 107 CTA examinations (21.5 percent), less than 1 mSv for 58 (54.2 percent), and less than 4 mSv for 103 (96.5 percent).

All studies were of diagnostic quality with most having excellent image quality. “Minimizing radiation exposure while maintaining diagnostic-quality scans is clearly feasible with this new second-generation 320-detector-row CT scanner,” the authors write: “The low dose achieved during CTA could be used to optimize overall radiation dose to the patient or to enable additional types of imaging (e.g., perfusion imaging) within reasonable radiation doses.”

Possible Contraindications to Radiation Imaging

Among young adults undergoing body CT, risk of death from underlying morbidity is more than an order of magnitude greater than death from long-term radiation-induced cancer, according to new research.

Robert L. Zondervan, M.S., of Massachusetts General Hospital, Boston, and colleagues analyzed imaging records of patients 18 to 35 years old who underwent chest or abdominopelvic CT exams between 2003 and 2007 at one of three university-affiliated hospitals in Boston.

Researchers accessed records from 22,000 patients, including 16,851 chest and 24,112 abdominopelvic CT scans. During the average 5.5-year follow-up period, 7.1 percent of young adults who underwent chest CT and 3.9 percent of those who had abdominopelvic CT died: figures that were much greater than the 0.1 percent long-term risk of death from radiation-induced cancer predicted by statistical models in both groups.

Radiation reduction efforts should also focus on patients who are very rarely scanned rather than exclusively on those who are scanned repeatedly, according to the authors: “When consulting on radiation concerns, the radiologist should counsel that the underlying medical morbidity, rather than CT-induced cancer, is the much greater driver of a potentially adverse patient outcome,” the authors write.

Obstructive coronary CT angiogram, arrows

Obliterative coronary CT angiogram of proximal portion of obtuse marginal branch and left anterior descending coronary artery (LAD) is present in the invasive angiogram. Estimated effective radiation dose was 0.90 mSv (dose-length product, 64.1 mGy · cm; CTDI, 5.2 mGy; SSDE, 6.16 mGy). Radiology 2013;267:In Press–E8854A. All rights reserved. Printed with permission.
RSNA Clinical Trials Methodology Workshop

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

- Principles of clinical study design
- Statistical methods for imaging studies
- Design and conduct of multi-institutional studies
- Sponsorship and economics of imaging trials
- Regulatory processes
- Undertaking a competitive selection process for course entrance

RSNA/AUR/ARRS Introduction to Academic Radiology Program

Sponsored by RSNA, the American Roentgen Ray Society (ARRS) and AUCsion of University Radiologists (AUR), the Introduction to Academic Radiology program:

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

Successful applicants will be assigned to either a seminar held during the RSNA Scientific Assembly in Chicago, December 26-29, 2015, or the AARS Scientific Meeting in San Diego, May 4-9, 2014.

Medical Meetings

April-May 2013

APRIL 22-24
British Nuclear Medicine Society (BNMS), 41st Annual Meeting, Brighton, United Kingdom
www.bnms.org.uk

APRIL 25-27
Canadian Association of Radiologists (CAR), 76th Annual Scientific Meeting, Centre Sheraton, Montreal, Quebec
www.car.ca/en.aspx

APRIL 25
www.americanradiology.com

MAY 2-5
The Radiological and Diagnostic Imaging Society of St. Paulo (SRP), 43rd Sao Paulo Radiological Meeting (UPR 2013), 94th World Congress of the World Federation for Ultrasound in Medicine and Biology (WFTUMB 2013) and the XIII Congress of the Latin American Federation for Ultrasound (FLAUS 2013), Transamerica Expo Center, Sao Paulo
www.srp.br/en/2013

MAY 4-8
American College of Radiology (ACR), 90th Annual Meeting and Chapter Leadership Conference, Washington Hilton Hotel, Wash., D.C.
www.acr.org

MAY 9-11
Collegio Interamericano de Radiologia/Interamerican College of Radiology (CIR), Ier Curso de Actualizacion en Radiologia First Refresher Course in Radiology, Cancun, Mexico
www.wenvor.org

MAY 12-15
International Diagnostic Course (IDIC), 3rd IDIC Intensive Course in Hong Kong, Diseases of the Chest and Heart, Hong Kong Convention and Exhibition Centre
www.idic.org

MAY 12-14
Society for Brain Mapping and Therapeutics (SBMT), 10th Annual World Congress of SBMT on Brain, Spinal Cord Mapping and Image Guided Therapy, Baltimore Convention Center
www.worldsrmapping.org

MAY 14-17
Iranian Society of Radiology (ISR), 29th Iranian Congress of Radiology (ICR), Olympic Hotel, Tehran, Iran
www.isr.org

FIND MORE EVENTS AT RSNA.org/calendar.aspx

More information and application/nomination forms for these programs are available at RSNA.org/Research/education_courses.cfm. Questions can be directed to Fiona Miller at CIRE@rsna.org. For more information e-mail CARE@rsna.org.

2013 CORE Workshop

The 2013 Creating and Optimizing the Research Enterprise (CORE) workshop will be held Friday and Saturday, Oct. 25 and 26, 2013, in Oak Brook, Ill. The workshop will focus on strategies for developing and/or expanding research programs in radiology, radiation oncology and nuclear medicine departments. The CORE Program features a combination of presentations, case studies and group discussions.

More information and registration is available at RSNA.org/CORE.

RSNA Derek Harwood-Nash International Fellowship

The Derek Harwood-Nash Fellowship Program supports international scholars pursuing a career in academic radiology to study at North American institutions. Accepted participants will receive a stipend of up to $10,000 from RSNA to be used toward travel, living expenses and educational materials for the 6- to 12-week fellowship period.

The application for this program is available at RSNA.org/Derek_Harwood-Nash_International_Fellowship.aspx. For more information e-mail CARE@rsna.org.

Eyler Editorial Fellowship

The Eyler Editorial Fellowship provides an opportunity for radiologists in mid-career to further their experience in radiologic journalism. Learn about manuscript preparation, peer review, manuscript editing, journal production, printing, and electronic publishing by working with Radiology Editor Herbert Y. Kessel, M.D., in Boston and Radiographics Editor Jeffrey S. Klein, M.D., in Burlington, Vt. Each fellow will also visit the RSNA Publications and Communications Division at RSNA Headquarters in Oak Brook, Ill., and will work with the RSNA editorial team at RSNA 2013. Learn more at RSNA.org/RSNA_William_R_Eyler_Editorial_Fellowship.aspx.

RadiotherapyInfo.org Posts New “Your Radiologist Explains” Videos

RadiotherapyInfo.org, the RSNA and American College of Radiology (ACR) public information website, will soon have 22 new video clips to help explain various radiology tests and treatments to patients. In addition, some of the videos will focus on explaining diseases or conditions that are either diagnosed or treated using radiology. These videos, which include topics such as cardiac CT, lung cancer, blood clots, pneumonia, brain tumors and more, are the latest in the “Your Radiologist Explains” series to provide website visitors with a unique format for learning about radiology procedures.

The videos feature PowerPoint presentations with images and narration. All presentations were created by members of the RSNA-ACR Public Information Website Committee. Visit RadiotherapyInfo.org vids.

April Outreach Activities Focus on Coronary Artery Disease

In April, RSNA is distributing the “60-Second Checkup” audio program to nearly 100 radio stations across the U.S. The segments focus on the use of CT scanning to depict racial differences in coronary artery disease.

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News about RSNA 2013

Advance Registration and Housing Open May 8
RSNA 2013 advance registration and housing open May 8 for RSNA and AAPM members. Non-member registration and housing open June 5. Advance Registration and Housing information is available at RSNA.org/Attendees.aspx.

RSNA 2013 Registration

How to Register
There are four ways to register for RSNA 2013:
1 Internet—Fastest way to register
Go to RSNA.org/register
2 FAX (24 hours)
1-888-772-0988
1-301-694-5124
3 TELEPHONE (Mon.-Fri. 8 a.m. – 5 p.m. CT)
1-800-650-7018
1-847-996-5876
4 MAIL
Experient/RSNA 2013
P.O. Box 4088
Frederick, MD 21705 USA

Registration Fees
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Important Dates for RSNA 2013
- May 8: Member registration and housing opens
- June 5: Non-member registration and housing opens
- July 10: Course enrollment opens
- October 25: International deadline to have full conference badge mailed
- November 8: Final housing and discounted registration deadline
- November 27: Deadline to guarantee a seat for all ticketed courses
- December 1-6: RSNA 99th Scientific Assembly & Annual Meeting

International Visitors
If you must apply for a temporary non-immigrant visa to attend RSNA, you are advised to apply as soon as travel to the U.S. is decided and no later than three to four months in advance of the travel date. RSNA offers a personalized official letter of invitation for RSNA 2013 attendees. Information is available at RSNA.org/International_Visitors.aspx.

The Value of Membership
Use Fellowship Connect to Find, Post Fellowship Positions
With RSNA’s online resource Fellowship Connect, residents and practicing radiologists can search for fellowship positions by specialty, location and institution. Users can read institutional profiles, find out if fellowship positions are available, get contact information and more.

Gaining access to Fellowship Connect:
RSNA Members: Using their member login, RSNA members can personalize their searches by entering key words such as the name of the institution, state or specialty. Fellowship Connect provides a print feature and save option that allows members to store search results for later viewing.
Institutions: After creating an account, institutions can post company profiles, available fellowship positions, contact information and website links. Each institution is responsible for keeping fellowship information current on the website. To access Fellowship Connect, go to fellowships.RSNA.org.

RSNA.org
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Whether you’re looking for that ideal radiology job or the perfect candidate to fill such a position, RSNA’s Career Connect™ is your one-stop online resource.
Accessible on the bottom of the RSNA.org page, the comprehensive job search site is tailored to fulfill all your staffing needs.
Job seekers can post resumes for free, create a Search Agent to filter out unwanted positions, and receive e-mails when the perfect job becomes available. Employers are updated daily with the latest job listings in the field.
Employers can post job positions, receive e-mail notification when someone applies to a job, and access a large resume database. Employers can also enhance their candidate search for a minimum fee by placing an ad in the Employer Spotlight that runs along the top of all job search results pages.
The site also features career-related news and updates, a list of FAQs, feedback/contact button and more.

Residents & Fellows Corner
Don’t Miss a Thing: Keep Your RSNA Profile Up-to-Date
Residents and fellows who will be moving to a new position in the coming months are encouraged to update their contact information with RSNA.
Log in at myRSNA.org and click Edit Profile to update your personal information. Having a current street and personal email addresses on file with RSNA means you won’t miss out on:
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