Borgstede Named to RSNA Board

James P. Borgstede, M.D., an accomplished clinician and educator whose experience and expertise in radiology economics, quality and safety, and healthcare politics have made him a voice for the specialty, is the newest member of the RSNA Board of Directors. Dr. Borgstede will assume the position of Board Liaison for International Affairs as Richard L. Baron, M.D., becomes chair of the Board of Directors.

Dr. Borgstede's career has included service, clinical operations and leadership of numerous national and local radiologic and medical organizations. Dr. Borgstede served on many American College of Radiology (ACR) committees and task forces before becoming ACR chairman of the Board of Chancellors in 2004 and president in 2006. Since his presidency he has continued to work with ACR in capacities such as the Committee on International Service, with which he traveled to Grace Children's Hospital Port au Prince as part of the Haiti Radiology Project.

Coronary CTA Administered at Lower Radiation with Iterative Reconstruction

Iterative image reconstruction allows coronary CT angiography (CTA) to be administered at lower radiation exposure and with less iodine than conventional filtered-back projection reconstruction, and with no loss of image quality, according to a prospective study of more than 200 patients at several imaging centers.

Presented Tuesday afternoon by Bin Lu, M.D., the research, “Effect of Reduced X-ray Tube Voltage, Low Iodine Concentration Contrast Medium and Iterative Reconstruction on Image Quality and Radiation Dose at Coronary CT Angiography: A Prospective Multicenter Study,” was conducted at nine hospitals in China and spearheaded by researchers at Fuwai Hospital, Beijing, and the Chinese Academy of Medical Sciences.

Dr. Lu and colleagues compared image quality for two CTA protocols. The first protocol used a tube voltage of 120kVp, a contrast agent of 370mg/ml iopromide and filtered back projection reconstruction; the second used 100kVp, a contrast agent of 270mg/ml iodixanol and sinogram affirmed iterative reconstruction (SAFIRE). The two groups, 115 in the reduced dose group and 116 in the control group, were comparable in size, age, body mass index and contrast volume.

Images were read by radiologists who had attended training sessions to enable them to assign image quality scores consistently. Image quality scores in the two groups were comparable, and there were no continued on page 4a

Tip of the Day

If using an FDA approved app for viewing patient images on a mobile device, be sure to follow the recommended guidelines for the app for ambient lighting and screen luminance.

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The Daily Bulletin online edition features stories from our main news section and is offered in a mobile-optimized format for smartphones and other mobile devices. Read news on the go, access additional information and share via social media. Go online now by using your smartphone to scan the QR code or go to RSNA.org/bulletin.
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Wednesday at a Glance

12:15–1:15
Scientific Informal (Poster), Quality Storyboard and Education Exhibit Presentations (Lakeside Learning Center and Subspecialty Campuses)

1:30–2:00
Essentials of Chest Imaging

1:45–2:45
BOOST: Bolstering Oncoradiologic and Oncoradiotherapeutic Skills for Tomorrow: Case-based Review—Genitourinary

2:30–4:00
Informatics Courses

2:30–4:15
(BOOST) Bolstering Oncoradiologic and Oncoradiotherapeutic Skills for Tomorrow: Case-based Review—Genitourinary

3:30–5:00
Essentials of Breast Imaging

3:30–5:00
Essentials of Breast Imaging

4:00–5:45
Resident and Fellow Symposium: Career 102: Survival Skills for Your Job

4:15–6:00
Resident and Fellow Symposium: Career 102: Survival Skills for Your Job

4:45–6:00
BOOST: Bolstering Oncoradiologic and Oncoradiotherapeutic Skills for Tomorrow

5:00–6:00
ASRT@RSNA2013: The Patient Experience—Our Shared Journey
Virtual Hysterosalpingography is Effective in Gynecologic Disorder Evaluation

Combining the benefits of multidetector CT with traditional hysterosalpingography, virtual hysterosalpingography (V-HSG) provides a more detailed modality for evaluating the reproductive system.

In many cases, one study is enough for the physician to determine which treatment to use, or to determine how well treatment is going.

2006 have allowed her to make substantial progress. Since 2006, the technique has upgraded from using 64-row multislice CT to 128- and 256-row, cutting scanning time from 3.6 seconds to 1.3 seconds. The technology also reduced the radiation dose from 0.9 mSv to 0.3 mSv.

Unlike conventional modalities, V-HSG does not require cervical clamping, which can cause bleeding and irritation. In the 10,000 cases Dr. Carrascosa studied, there were no complications reported and 80 percent of the patients said they experienced mild or no discomfort during the procedure. “There are no complications, no rash or infection, because of the noninvasive nature,” Dr. Carrascosa said.

Some patients are allergic to the iodine used in the contrast, which includes 18 ml of saline solution and 2 ml of contrast, Dr. Carrascosa noted. If an individual suffers from an iodine allergy, the contrast can be made with gadolinium instead. “We don’t use gadolinium every day because of the noninvasive nature,” said Dr. Carrascosa.

Patricia M. Carrascosa, M.D., Ph.D.

The results demonstrated the variety of gynecologic disorders that can be discovered using V-HSG. In the cervical region, disorders included wall irregularities (25 percent), fold thickening (13 percent), cervical polyps (11 percent), cervical stenosis (8 percent), diverticulae (5 percent) and cervical synechiae (1 percent).

Findings in the uterus were divided into uterine cavity and uterine wall abnormalities. Uterine cavity findings included polyps (43 percent), synchieae (13 percent) and submucous myomas (12 percent). Uterine wall abnormalities included intramural and subserous myomas (7 percent), uterine malformations (6 percent), adenomyosis (4 percent) and C-section scars (8 percent).

Fallopian tube findings included unilateral hydrosalpinx (10 percent), bilateral hydrosalpinx (4 percent), tubal obstruction (5 percent) and tubal synechiae (1 percent).

“My people can be helped by this technique,” Dr. Carrascosa said. “We began with many limitations, but then with technology improvements we could begin modifying V-HSG into a very non-invasive technique with very low radiation dose.”

Coronary CTA Administered at Lower Radiation with Iterative Reconstruction

CONTINUED FROM COVER

Dr. Borgstede’s work with ACR also included testimony before the U.S. House of Representatives Ways and Means Health Subcommittee “Managing the Use of Imaging Services” hearing in 2005 and the U.S. House Rural Health care Caucus, “Utilization Rates of Medical Imaging Equipment” hearing in 2009.

A member of RSNA since 1976, Dr. Borgstede has been a familiar face as part of the annual meeting refresher course faculty for many years. Dr. Borgstede has served in numerous positions with the RSNA Research & Education (R&E) Foundation, including chair of the R&E Board of Trustees for the past year. He has also served on the RSNA Quality Committee from 2009 to 2011. He is currently the R&E liaison to the RSNA

Patricia M. Carrascosa, M.D., Ph.D.

The RSNA as an organization is visionary and outstanding in both education and research in imaging and image-guided therapies.

James P. Borgstede, M.D.
International Radiology Education Committee.

RSNA was the first organization he joined, Dr. Borgstede said, and he looks forward to helping the Society continue to extend its high-quality educational opportunities to people across the globe. “I joined during my first year of residency and I still remember how I was immediately captivated by the organization and the quality and breadth of the educational opportunities,” he said.

Dr. Borgstede served on the editorial board of the Journal of the American College of Radiology (JACR) from 2004 to 2008 and currently serves on the editorial advisory board of American Family Physician and as a reviewer for JACR. He is a past-president of the Colorado Physician Health Program, the Colorado peer assistance program for physicians, and a past-president of the Colorado State Board of Medical Examiners.

ACR has awarded Dr. Borgstede its William T. Thorwarth Award for Excellence in Economics and Health Policy and its gold medal. Dr. Borgstede received the first gold medal awarded by the Colorado Radiological Society.
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South Hall Booth 2511
Spectral CT Improves Image Quality, Reduces Radiation Exposure

Recent technological advances have contributed to the development of photon-counting detectors (PCD), which are now able to discriminate between photons based on energy level, providing information about the composition of an object in a single scan.

“PCDs ARE THE NEXT BIG THING IN CT,” said Radin A. Nasirudin, Dipl.-Ing., of the Department of Diagnostic and Interventional Radiology, Technische Universität München, Munich, Germany, in a presentation Tuesday.

Incorporating photon-counting detector technology into CT—a technique called spectral CT—not only relays this additional information in a single scan, but due to quantum efficiency, noise can be drastically reduced. This means that better image quality can be achieved with lower radiation dose, Nasirudin said. “Current estimates on dose reduction suggest a decrease by a factor of two or more.”

In his study, “Application of Photon-counting CT: Metal Artifact Reduction,” Nasirudin and colleagues investigated the advantages this technique provides in reducing metal artifacts.

“Artifacts caused by metal objects are common and can significantly reduce the diagnostic quality in daily clinical practice,” Nasirudin said. “Although there are many well-established methods for metal artifact reduction, most involve segmentation and thresholding for detection of the metal object, which is prone to reintroduce new artefacts.”

With this in mind, Nasirudin and colleagues developed an algorithm—spectral-driven iterative reconstruction (SPIR)—that utilizes spectral information to reduce metal artifact in CT.

Researchers used a Monte Carlo simulator to simulate spectral CT projection data of a jaw phantom consisting of bone, soft tissue, teeth and gold implants. The resulting spectral projection data were decomposed to determine the spatial location and density of the gold. That information was then incorporated into a penalized maximum likelihood iterative reconstruction algorithm.

“The results from our investigation into the reduction of metal artifacts are promising,” Nasirudin said. “The material decomposition technique is able to detect the metal implant from other components of the phantom.” When compared to a known shape, the error from detecting the implant by material decomposition is less than 2 percent, he said, which “strongly suggests” the technique is able to accurately detect the spatial location and density of any dental implant.

Use of the technique resulted in a reduction of streaking artifacts without compromising any other anatomical information, Nasirudin said.

When visually compared to other techniques like filtered-back projection or standard penalized maximum likelihood iterative reconstruction, “our method delivers superior image quality while preserving the details around the metal implant,” he said.

It’s significant that this technique works well with any shape of dental implant, he said. For example, researchers first used the technique with a jaw phantom that had a circle-shaped metal implant, but later tested the algorithm with more realistic dental implants that produced images with high diagnostic quality.

In addition, he said the parameters for the iterative reconstruction (such as number of iterations and the strength of the penalty) didn’t change from one shape to another, indicating that “our method can be extended to other parts of the body such as the lower extremity or the spine.”

The study demonstrates that information provided by spectral CT “will be a central key to overcoming image quality issues in current clinical CT,” Nasirudin said. “We foresee that the clinical introduction of spectral CT will lead to more clinically relevant applications while possibly reducing radiation exposure to the general population.”

Medical Ozone Improves Condition of Patients with Herniated Disks

Injections of medical ozone improve symptoms in almost 75 percent of patients with herniated disks in their lower backs, according to new research from Germany presented Tuesday.

Ozone is a structurally modified form of oxygen present in small amounts in the atmosphere. Research has shown that it has a destructive effect on substances called proteoglycans that make up a major component of the nucleus pulposus, the jelly-like substance in the middle of a spinal disk. The nucleus pulposus can be forced out of the intervertebral disc, or compressed on the nerve located nearby, leading to sciatica.

“The water binding capacity of the proteoglycans is the main force that holds water to the nucleus pulposus,” said study author Thomas Lehert, M.D., from the Department of Diagnostic and Interventional Radiology at the Goethe University in Frankfurt, Germany. “Destruction of the proteoglycans reduces the hold water and therefore diminishes the size of herniation.”

Ozone also has an effect on disk inflammation by altering the breakdown of arachidonic acid, a fatty acid found in tissues, to inflammatory prostaglandins.

“Therefore, by reducing the inflammatory components, there is a corresponding reduction of pain,” Dr. Lehert said.

Dr. Lehert and colleagues recently evaluated the effects of ozone on 371 patients with lumbar radiculopathy, a condition in which compressed nerves in the spine cause pain and numbness.

The patients received one injection of a 97-percent oxygen, 3-percent ozone mixture into the disk, and another perianally, or around a mass of nerve cells known as a ganglion. The ozone injections were performed under CT guidance and were followed by corticosteroid and anesthetic injections in the same session.

The researchers assessed clinical outcomes six months after treatment and used MR imaging to evaluate disk matrix and disk volume. Treatment was successful in 268 patients, or slightly more than 72 percent.

Among those patients, outcome was excellent in 133 patients (49.6 percent) and good in the remaining 135 patients.

“The ozone did not cause any complications in patients,” Dr. Lehert said.

MR imaging findings revealed that the majority of patients had a statistically significant reduction of volume in their herniated lumbar disks. On average, patients with excellent outcomes experienced a 20 percent reduction in disk volume, while those with good outcomes had a 7 percent volume reduction. This volume-reduction effect correlated negatively with the patient’s age and positively with initial disk volume.

“Our study shows that the combined intradiskal and periganglionic injection of medical ozone and periganglionic injection of steroids affects both the mechanical and the inflammatory components of pain caused by disk herniation,” Dr. Lehert said. “For this reason, oxygen-ozone injections are a therapy option for treating lumbar disk herniation that has failed to respond to conservative management, before recourse to surgery or when surgery is not possible.”

The ease of execution and noninvasiveness of medical ozone therapy make it a potentially useful tool for outpatient procedures, Dr. Lehert said. Because of its toxicity, medical ozone is currently approved only for research purposes in Europe and the U.S., though Dr. Lehert added that approval for clinical use may be only a few years away.
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Tuesday’s Press Conferences

New Research Shows Promise for Possible HIV Cure
Researchers have used radioimmunotherapy (RIT) to destroy remaining HIV-infected cells in the blood samples of patients treated with highly active antiretroviral therapy (HAART). HAART has transformed the outlook for patients infected with HIV. However, reservoirs of latently infected cells persist in the body after HAART, preventing the possibility of a permanent cure. In the study, researchers administered RIT to blood samples from 15 HIV patients treated with HAART. The researchers found that RIT was able to kill HIV-infected lymphocytes previously treated with HAART, reducing the HIV infection in the blood samples to undetectable levels.

Breast Tomosynthesis Increases Cancer Detection and Reduces Recall Rates
Using digital breast tomosynthesis (DBT) led to reduced recall rates and an increase in cancer detection in a large breast cancer screening program. The researchers compared imaging results from 15,633 women who underwent DBT beginning in 2011 to those of 10,753 patients imaged with digital mammography the prior year. Compared to digital mammography, the average recall rate using DBT decreased from 10.40 percent to 8.78 percent, and the cancer detection rate increased from 3.51 to 5.24 (per 1,000 patients).

Breast Cancer Risk Related to Changes in Breast Density as Women Age
A new study compared breast density and cancer risk between younger and older women and analyzed how the risk relates to changes in breast density over time. The study group included 282 breast cancer cases and 317 healthy control participants who underwent full-field digital mammography, with breast density measured separately using an automated volumetric system. Breast cancer patients showed higher mammographic density than healthy participants up to the age of 50, as well as considerably more variability in density regression with age.

International Study Finds Heart Disease Similar in Men and Women
An analysis of data from an international multicenter study of coronary computed tomography angiography (CCTA) reveals that men and women with mild coronary artery disease and similar cardiovascular risk profiles share similar prognoses. Researchers identified 11,462 patients from the CONFIRM registry, matched for age, risk factors and extent of coronary artery disease. Controlling for all cardiovascular risk factors, non-obstructive coronary artery disease conferred a similar adverse risk of death or heart attack in both men and women. Conversely, the absence of plaque on CCTA conferred a good prognosis for both men and women.

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Wednesday Plenary Session: Crossing the Threshold in Radiation Therapy
Advancements in tumor visualization, tracking and treatment is the topic of today’s lecture.

ANNUAL ORATION IN RADIATION ONCOLOGY
Beneficial Liaisons: Imaging and Therapy

Not long ago, external anatomy and plain X-rays served as the primary guide for radiation therapy. Broad field design was the prevailing paradigm with the knowledge that the tumor surely resided within. Collateral normal tissue damage was a necessary accompaniment of treatment and tumor dose was largely limited by normal organ tolerance.

Today, ablative radiation doses are delivered to complex 3D tumor shapes virtually anywhere in the body, says Paul M. Harari, M.D., who will present the Annual Oration in Radiation Oncology, “Beneficial Liaisons: Imaging and Therapy.” Sharp dose gradients are created between tumor and critical normal tissues and high precision is sought for daily treatment across thousands of patients.

We are poised to move well beyond “see the tumor, treat the tumor,” Dr. Harari says, as we cross the threshold of unparalleled visualization within tumors, tracking individual tumor cells, developing therapeutic agents to simultaneously image and treat, and harnessing early response profiles to shape more personalized and effective future therapies.

Dr. Harari is the Jack Fowler Professor and chair of the Department of Human Oncology at the University of Wisconsin School of Medicine and Public Health. Early career development awards from the American Cancer Society and the RSNA Research & Education (R&E) Foundation helped launch Dr. Harari’s career as a physician scientist.

His clinical and laboratory research focuses on treatment advances for head and neck cancer patients with emphasis on the interaction of molecular growth inhibitors combined with radiation. His clinical work emphasizes the highest quality imaging for cancer patients and the advancement of new imaging modalities that enhance our ability to assess both tumor anatomy and biology.

Oration Dedicated to Ang
RSNA is dedicating this year’s Annual Oration in Radiation Oncology to the memory of K. Kian Ang, M.D., Ph.D., a renowned expert in radiation oncology research. Dr. Ang was to deliver the Annual Oration in Radiation Oncology at RSNA 2013.

Dr. Ang was the Gilbert H. Fletcher Distinguished Memorial Chair and a professor in the Department of Radiation Oncology at The University of Texas MD Anderson Cancer Center in Houston. Dr. Ang was responsible for establishing numerous new cancer treatment regimens, particularly for head and neck cancer. His research focused on developing novel therapy strategies through various in vitro and xenograft models and using specimens collected from patients enrolled into prospective phase II-III trials. His latest studies included the role of inhibitors of the epidermal growth factor receptor or other signaling pathways in selective enhancement of tumor radiation response in preclinical models. As chair of the Head and Neck Committee of the Radiation Therapy Oncology Group between 1999 and 2012, Dr. Ang introduced several new regimens—such as radiation plus chemotherapy or Cetuximab, resulting from laboratory studies into clinical trials—which established several standard treatments.

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Fun Run Raises Almost $27,000
Thanks to the more than 650 people who registered for the RSNA 2013 5k Run, which raised $26,960 for the RSNA Research & Education Foundation. The run along the Lake Michigan shore started Tuesday at 6:30 a.m. in Arvey Field at Chicago’s South Grant Park, where the temperature was a brisk 40 degrees.

CONGRATULATIONS TO THE TOP FINISHERS:

Female  
1. Kara Waters  
2. Kathleen Anderson  
3. Tanya Tivorsak  

Male  
1. Haakon Hjemly  
2. Roque Oca  
3. David Palma

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• ASRT Booth 1532, South Hall A  
• RadiologyInfo.org Booth, RSNA Services, Level 3, Lakeside Center Ballroom

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Code Bundling Among Factors Driving Decrease in Utilization

Utilization rates for CT, MR imaging and nuclear medicine have leveled off since experiencing rapid growth in the early part of the 2000s that drew concern due to cost, potential overuse and, in the case of CT, the cancer risk associated with radiation dose.

David C. Levin, M.D., presented “Nationwide Medicare Data Show the End of Growth in Utilization Rates of Advanced Imaging” during a scientific session Tuesday at RSNA 2013. Dr. Levin, professor and chairman emeritus of the Department of Radiology at Thomas Jefferson University, led a team in using the Medicare Part B Physician/Supplier Procedure Summary Master Files for 2000-2011 to examine utilization rates. According to the study, the CT utilization rate per 1,000 beneficiaries skyrocketed from 325 in 2000 to its peak of 637 in 2009, a 96 percent increase. The nuclear medicine rate per 1,000 rose from 193 in 2000 to 320 in 2006, a 66 percent increase. Meanwhile, the MR rate per 1,000 jumped from 95 in 2000 to 185 in 2006, a 95 percent increase.

“Imaging was the most rapidly growing of all physician services,” Dr. Levin said. “That led to a lot of concern, and that was partially responsible for the reimbursement cuts that have followed since then.”

The results of Dr. Levin’s study, however, showed that the rates began leveling off from 2009 until 2011, the most recent year with available data. CT dropped a small amount to 626 in 2010, and took a dramatic plunge to 500 in 2011, mostly the result of code bundling for CT of the abdomen and pelvis. Nuclear medicine also saw a gradual decline to 303 by 2009, then a sharp decline to 135 in 2010, again largely due to code bundling for primary myocardial perfusion imaging and its two add-on codes for left ventricle wall motion and ejection fraction. In 2011, the number fell again, to 128.

MR imaging rates remained steady since 2006, hitting 184 in 2011. MR imaging experienced no code bundling. Despite code bundling appearing to have a dramatic effect on the trend lines for utilization rates, Dr. Levin said even without that development the growth had ended. He attributed the drop off to a variety of factors beyond code bundling, including higher co-pays for patients and the growth of radiology benefits management companies (RBMs). Among other factors are reimbursement cuts and physician concerns about costs and radiation, and appropriateness criteria. The recession was also a factor, though the slowdown began before the recession hit.

All factors contributed to the leveling off, but Dr. Levin said RBMs played a major role. “RBMs have basically changed the way a lot of the ordering physicians think about ordering imaging,” Dr. Levin said. “They know they’re going to have to go through this preauthorization process. That has probably discouraged a lot of inappropriate use.” Dr. Levin said it’s too soon to predict what the 2012 data will show, but he doesn’t believe the rates will increase.

“There might be a little bit of growth, but it’s not going to be near the rate we saw in the early 2000s,” he said. “In fact, there may be no further growth.”

Today in Mobile Connect

In the presentation theaters in Mobile Connect, RSNA staff will discuss how to get the most out of RSNA and other mobile apps, and some exhibitors of mobile technology will demonstrate their products:

9:00 A.M.
- IOS 7 Overview; RSNA Staff
- MITK Pocket—The Lightbox to Go; mbida

9:45 A.M.
- Transforming Financial Data into Actionable Insights with Mobile Business Intelligence; McKesson

10:00 A.M.
- Health Apps; RSNA Staff
- iPaxera; Paxeramed

10:30 A.M.
- Travel Apps; RSNA Staff

11:00 A.M.
- VixeView—Accessing Images on Your Tablet; Vital, A Toshiba Medical Systems Group Company

11:15 A.M.
- Faster Study Comparison and Quality Patient Communication with Volume Alignment in Mobile Apps; Blackford Analysis

12:46 PM.
- 3D Printing—DICOM Utilization of HTML5 on Your Mobile Device; Vizu

1:30 P.M.
- Health Companion; DR Systems

2:00 P.M.
- RSNA Mobile; RSNA Staff

2:15 P.M.
- Diagnose on the Go: Quickly, Confidently and Securely; Calgary Scientific

3:00 P.M.
- Productivity Apps; RSNA Staff
- Fast, Simple, Secure Image Share; Carestream Health
- Lightning Bolt Mobile App; Lightning Bolt Solutions
Arenson Named RSNA President-Elect
Renowned diagnostic radiologist Ronald L. Arenson, M.D., is RSNA president-elect.

R. Arenson is the Alexander R. Mar- culis Distinguished Professor and chair of the Department of Radiology and Biomedical Imaging at the University of California, San Francisco. As president-elect, Dr. Arenson will focus on the value and improvement of patient-centered care initiatives at the annual meeting and throughout the year. “As we enter an unprecedented period of change in healthcare, our system, radiology must adapt in fundamental ways,” he said. Having served in the past as RSNA Board Liaison for Information Technology and Annual Meeting, Dr. Arenson is committed to the use of information technologies to develop the future of patient service. “In addition to its usual roles in education and research, the RSNA is in a unique position to give practicing radiologists tools to improve the services we provide our patients and referring physicians,” Dr. Arenson said.

Dr. Arenson was a founding member of the Radiology Information System Consor- tium (RISC), now the Society for Imaging Informatics in Medicine (SIIM). He is past- president of the Association of University Radiologists, Society of Chairs of Academic Radiology Departments and the Academy of Radiology Research, and served on the National Advisory Council of the National Institute of Biomedical Imaging and Bio- engineering of the National Institutes of Health (NIH), as well as the NIH Council of Councils. Dr. Arenson’s research achievements include the development of 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. The patent was recently nominated for a national fair on technology, and Dr. Arenson is now working with faculty on the next stage prototype.

A member of RSNA since 1974, Dr. Arenson has served on numerous commit- tees, including the Publications Council, Public Information Advisors Network, Research Development Committee and the Radiology Informatics Committee (formerly Electronic Communications Committee), which he chaired from 1999 to 2005. He was elected to the RSNA Board of Directors in 2007 and served as Board chairman from 2012 to 2013.

Patient-centered Care Goes Beyond Image Interpretation
Practicing patient-centered radiology can show the healthcare industry—and, most importantly, patients—the value of a radiologist, according to speakers during a special interest session on Monday.

“I t’s not just about giving results to patients,” said Mary C. Mahoney, M.D., chair of RSNA’s Patient-Centered Radiology Steering Committee. “It’s about imagining and optimizing the entire patient experience.”

The committee sponsors the RSNA Radiology Cares246. The Art of Patient- centered Practice can make radiology more relevant for radiologists to reach further into the specialty, allowing interventional radiology procedures, and to get involved in the future of patient service.

One audience member responded that “patient-centered radiology involves more than delivering results, Dr. Mahoney emphasized. She presented a video clip of a referring physician saying she is pleased when a radiologist takes the time to call and question an order and make recom- mendations for a more appropriate procedure.

Scheduling, results reporting, billing and even the design of the reception room, along with interactions with the radiol- ogy team, have an impact on the patient experience, Dr. Mahoney said. Registrat- ion, scheduling and instructions should be a seamless process, she said, encouraging radiologists to consider options like Web- based scheduling.

“You can create a ‘patient lounge’ rather than a ‘waiting room,’” Dr. Mahoney explained. “There may be little difference in principle, but providing a comfortable experience can go a long way.

“For example, during peak times, radiol- ogy can create a concierge-like experi- ence with a greeter who could also handle issues like unanticipated delays and make sure the patients are comfortable, she said.

Radiologists Should "Own All Aspects of Medical Imaging"

Optimizing the entire patient experience means that radiologists need to go beyond image interpretation and get involved in the imaging process before and after exams, Dr. Allen said in his presentation, “Imag- ing 3.0: A Framework for Radiologists’ Future.” But for a number of reasons, most radiologists are not providing that full spectrum of care, he said.

“If we did that, the results would be improved patient safety and outcomes, more cost-effective care, and an increased relevance for radiologists in the healthcare system,” Dr. Allen said. “We would have a measurable role for radiologists in improv- ing population health and we would have a calculation of radiology’s value in reducing per capita cost.”

Session moderator William T. Thor- warth Jr., M.D., RSNA Board Liaison for Publications and Communications, observed, “We have the most sophisticated tools ever available to care for our patients, yet these tools make abnormalities so conspicuous and display them in such ana- tomic detail, that other specialties believe that they too can do what we do.”

Dr. Allen added, “Radiologists need to own all aspects of medical imaging, provid- ing all care that is necessary and no care that is not.” He explained that “Imaging 3.0” is a blueprint for high-value care. “It goes beyond interpretations,” he said. “It’s about assuring appropriateness, document- ing the quality and safety radiologists provide, actionable reporting with evidence- based follow-up, and empowered patients.”

Dr. Mahoney encouraged radiologists to utilize resources that will improve the patient experience, like RadiologyInfo.org, the RSNA-ACR public information web- site that provides patients with easy access to understandable descriptions of complex radiology procedures, and to get involved in patient-focused projects like RSNA Image Share, which enables patients to take control of sharing their medical imaging reports via a cloud-based edge server.

Dr. Allen started Monday’s question-and-answer session with a challenge. “We more or less developed these ideas—Radi- ology Cares and Imaging 3.0—indepen- dently. We think this is a good vision for our specialty. But I’d like to ask you: Are we wrong? Is this the direction you’d like the specialty to take?”

One audience member responded that the ideas and the values are sound, but that at his institution there was “not much traction” for developing a value case for radi- ology. Dr. Allen acknowledged that institu- tional boundaries can make it difficult for radiologists to change their culture. To help spur change, radiologists must achieve the imperatives of healthcare reform, he said. He urged radiologists to avail them- selves of point-of-care IT tools like ACR Select, which can make standards-based recommendations within a report, helping radiologists deliver reports that result in measurable outcomes.
World Radiology Leaders Seek to Match Resources with Needs

CT scanners sometimes end up in remote areas of a developing nation, due to the ambitions of its government, the donations of well-meaning foreign philanthropists, or the tireless activity of vendor representatives. But unless those machines come with someone to operate and maintain them, and someone to interpret the images, they quickly turn into expensive doorstops.

“There is a huge need for education in those regions where the technology is coming very fast,” said Richard Baron, M.D., RSNA Board Liaison for International Affairs and co-chair of this year’s International Trends meeting, which took place Tuesday morning and focused on radiology education in developing nations. “The Internet lets them read about [the latest imaging technology]; economic development lets them buy it. In many ways we’ve been handing out loaves of bread and we have to teach them how to cook.”

The meeting was an international summit of professional radiology, and attendees included the heads of major professional societies: the Asian Oceanian Society of Radiology; the Interamerican College of Radiology; the European Society of Radiology and the International Society of Radiology.

The presidents of many individual countries’ societies attended as well, including Canada, Great Britain, China, France, Spain, Germany, Japan, Korea, the Netherlands, Italy, Australia and New Zealand. In addition to Dr. Baron, RSNA was represented by President Sarah S. Donaldson, M.D., President-elect N. Reed Dunnick, M.D., and Board Chairman Ronald L. Arenson, M.D. The co-chair was Byung Ihn Choi, M.D., of South Korea, chair of the RSNA International Advisory Committee.

Dramatic changes in radiology education are needed to bring adequate capabilities to developing nations. Meeting speakers focused on the needs of developing nations and the resources available in developed nations, and how the two might be aligned.

“No one has taken a step back to look at the library of opportunities out there, or to ask whether we’re duplicating efforts,” Dr. Baron said. “Do we have five teams going to the same small town while we ignore other areas? Do we know that the techniques we use to teach in the U.S. or Europe will work well in these countries? Have we asked them what they want?”

Gloria Soto, M.D., of Chile, president of the Interamerican College of Radiology, cautioned against regarding the “developing world” as a monolith. “Five billion people live in ‘developing nations,’ or 80 to 85 percent of the world population, and somewhere between 104 and 152 countries, out of 206, are developing or underdeveloped, depending on the definition,” she said. “They are not homogeneous. There are great differences in their infrastructure, their technologies, their work forces, their national policies. Any educational programs must be focused to specific needs and support local conditions.”

Presentations by speakers from developed areas made clear that every professional society already offers a variety of activities to help radiologists from less developed countries. Those include sending visiting professors to the countries, sponsoring fellowships for radiologists in training to study abroad and providing educational materials online.

The impact of these efforts is unclear, however said International Advisory Committee member Gabriel P. Krestin, M.D., Ph.D., of the Netherlands. “The needs of developing countries 10 to 15 years ago are the same as their needs today,” said Dr. Krestin, who on Monday received RSNA Honorary Membership. “I’m convinced that many young people profited a lot [from outreach efforts], but did we change anything in those countries or those regions? I don’t know if coordination would be helpful, because it might just add bureaucracy, but we should have unified metrics so we can measure what we’re providing.”

William Mayo-Smith, M.D., of Brown University, urged attendees to consider not only radiology societies, but also other medical specialty societies, hospitals and other institutions, non-government organizations and even individuals when trying to determine how best to organize outreach. “We must realize that we are a piece in the puzzle of medical care,” he said.
Digital Tomosynthesis Improves Lung Nodule Detection

Digital tomosynthesis (DT) is significantly more sensitive than conventional radiography at detecting lung nodules and its advantages are evident among general radiologists as well as thoracic radiologists, according to a study presented Tuesday.

For the new study, Dr. Dobbins and colleagues had both thoracic and general radiologists assess DT and radiography referenced to CT for the detection of lung nodules. The study group included 158 subjects at three institutions in the U.S. and one in Sweden who were imaged by chest CT, two-view conventional radiography (CXR), dual-energy radiography (DE), and DT on a flat-panel imaging device.

Three experienced thoracic radiologists confirmed the presence and location of nodules by CT and determined the appropriate course of action using CXR alone, CXR plus DE, DT alone, and DT plus DE.

In all, 516 nodules were identified by CT. Overall detection sensitivity for all nodules was 3.8 percent for CXR, compared with 13.5 percent for DT. “The threefold improvement in sensitivity with tomosynthesis is consistent with previous studies,” Dr. Dobbins noted. “What’s unique about our study is that we’re including the role of dual-energy imaging and also looking at a broader range of expertise among radiologists.”

DT also outperformed CXR for determining the best course of action using Fleischner Society criteria. The addition of DE improved nodule detection when paired with CXR but not when paired with DT.

“Our results clearly demonstrate that tomosynthesis is far superior to conventional radiography for looking at lung nodules,” Dr. Dobbins said. “DT shows significantly improved clinical performance over CXR for pulmonary nodule detection and case management when evaluating nodules greater than three millimeters in diameter.”

The clinical role for DT is still evolving, Dr. Dobbins said, as researchers try to determine the best implementation strategy. One promising option for DT is as a problem-solving tool for suspicious findings on radiography.

“While DT has marginally higher radiation doses than two-view chest radiographs, it exposes the patient to considerably less radiation than the current generation of CT techniques,” Dr. Dobbins said.

A third, speculative application would involve using DT as a lower dose, lower cost lung cancer screening paradigm, he suggested. “We’ll need to demonstrate outcomes comparable with CT before that can happen,” he said.
Stereotactic Body Radiotherapy Effectively Manages Pain in Metastases

Using stereotactic body radiotherapy (SBRT) to treat soft tissue metastases is effective for pain management and local control, and is well tolerated by patients, according to research presented Tuesday.

According to presenter Reed Cope, a fourth-year medical student at the Oregon Health and Science University, skeletal muscle/soft tissue metastases are rare, representing 0.5 to 4 percent of all metastases. “These metastases are often very painful, so palliation of pain is an important component of their care,” Cope said. “They also carry a very poor prognosis, with the latest series to date reporting a mean overall survival of 5.7 months.”

SBRT may be a way of achieving symptom relief and effective local control, but Cope said that a literature search found very little about how to treat soft tissue metastases—not even information about institutional experiences with treating these metastases.

In this retrospective study, performed in conjunction with the Mayo Clinic in Rochester, Minn., Cope looked at nine institutional experiences with treating these metastases. “These metastases are, predominantly on radiologic imaging. Of the 12 skeletal muscle/soft tissue metastases treated, the most common tissue type was melanoma (33 percent), and the most common site treated was the psoas muscle (33 percent). More than half (58 percent) of the patients presented with pain at the time of SBRT treatment.

Of those seven patients who had the most painful lesions, five had substantial improvement—essentially complete resolution of pain,” Cope said. “That’s very encouraging.”

Most patients undergoing SBRT experienced grade 1 or 2 acute toxicity, said Cope, “basically fatigue and pain flare.” But there was no grade 3 or grade 4 toxicity associated with SBRT. “When we looked at toxicities, SBRT was tolerated very well, which is also encouraging,” he said.

According to Cope, local coverage with SBRT was “excellent,” ranging from 88.5 to 100 percent depending on the site, and there were no local recurrences in follow-up imaging. Five of the sites had a complete response, six of the sites a partial response, and one site didn’t receive follow-up imaging.

“Despite the excellent local control, all of the patients went on to develop distant metastases,” Cope said, with a median progression-free survival of 87 days and a median overall survival of 9.7 months from the time of SBRT administration.

“Using SBRT is a rational approach,” Cope continued. “It is a good option that should be considered, especially for painful metastases. These seem to respond very well and SBRT is well tolerated. If it’s being used as an attempt to control the disease, then you need to think long and hard about the patient’s overall prognosis.”

Cope concluded that more research is needed to compare SBRT with other therapies such as standard external beam therapy for soft tissue metastases. “A randomized control trial would be ideal, but it would be something that would be [difficult] considering how rare these metastases are,” he said, adding that such a trial would probably have to be multi-centered.

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