The National Clinical Trials Network Continues to Survive—and Thrive

Despite what appear to be countless challenges to its existence, the National Clinical Trials Network (NCTN), continues to thrive as it attempts to improve treatment for the 1.6 million Americans diagnosed with cancer every year.

By Mike Bassett

“Both the cockroach and the NCTN survive—and even thrive despite a multi-billion dollar industry fighting its existence, and despite the fact that there are new antitodes to its existence every year, and despite its lowly status in its domain,” Dr. Curran said.

The NCTN was formed just two years ago when NCI’s previous national clinical trials program—the Cooperative Groups—was reorganized.

“These cooperative groups, despite the enthusiasm for them, were not a high priority for several National Cancer Institute directors,” Dr. Curran said. “And that paved the way for some transformation.”

Back in 2010 the Institute of Medicine (IOM) took a look at the groups and asked some questions about their future. For example, Dr. Curran said, there were questions about whether these groups should even be continued because of the amount of private research activity being done by entities such as pharmaceutical companies.

Arguments for keeping the system, Dr. Curran said, included the fact that it was cost effective—it cost only about $150 million a year.

And a publicly supported network of research helps the radiology oncology community in other ways, such as getting newly approved agents integrated into standard regimens.

“The pharmaceutical industry will often study an agent in order to get FDA approval, but there may or may not be an appetite for that company to then look at how it is integrated into a standard regimen with chemotherapy, radiation, and surgery for other stages of other disease,” he said.

Additionally, this kind of system provides opportunities for multi-modality trials testing surgery, radiation and imaging—something, Dr. Curran said, industry would be less likely to support. These groups provide avenues for researching therapies on less common cancers.

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Baron is RSNA President

RICHARD L. BARON, M.D., is RSNA President for 2016. Dr. Baron is professor of radiology at the University of Chicago Medical Center, where he has been since 2002, serving as chair of the Department of Radiology from 2002 to 2011 and dean for clinical practice from 2011 to 2013.

At the University of Pittsburgh, he served as chair of the Department of Radiology from 1992 to 1999, and as founding president and CEO of the University of Pittsburgh Physicians from 1997 to 2002.

As president, Dr. Baron will place a priority on fostering the development of new research by radiologists, and facilitating education into the daily practices of RSNA members. Bringing together RSNA members and participants from around the world to maximize their educational opportunities and experiences will be an important emphasis.

“My former position as board liaison for education and international affairs afforded me the opportunity to interact with a large number of members worldwide and to understand the important role these volunteers hold in ensuring that the RSNA remains an essential component of radiologic science and education development and communications,” he said. “I look forward to representing the RSNA worldwide with our extensive membership and with other national and international radiology organizations. Building bridges among radiology communities, based on providing collaborative opportunities, education, and resources, is an important role for the RSNA.”

In 1972, Dr. Baron graduated cum laude from Yale University and earned his medical degree in 1976 at the Washington University School of Medicine in St. Louis, Mo., where he was elected to Alpha Omega Alpha. He was board certified in diagnostic radiology in 1980.

Dr. Baron’s research interests are in abdominal imaging, body imaging and radiation therapy.

CONTINUED ON PAGE 13A

Rao Named Board Chair

VIJAY M. RAO, M.D., is chair of the RSNA Board of Directors for 2016. A global authority on head and neck imaging and also recognized for her health services research in radiology, Dr. Rao has remained on the faculty at Thomas Jefferson University since completing her residency there in 1978. She was appointed associate chair for education in 1989 and vice chair for education in 2000. In 2002, she became the first woman chair of a clinical department in the university’s history. She is a Trustee of the Thomas Jefferson University Hospital System/TJUH, Inc.

As chair of the RSNA Board, Dr. Rao brings her expertise in health services and policy matters to bear in a shifting healthcare landscape of increasing complexity and declining reimbursements.

“RSNA is recognized for innovation in informatics and information technology. As chair, I will work with the Board to advance patient care initiatives, focusing on quality, safety and efficiency in a patient-centered model of care through implementation of IT tools, in partnership with industry. I will also work with Society leadership to find ways to leverage IT tools to provide educational resources of the RSNA at point of care for radiologists,” Dr. Rao said.

Dr. Rao has published more than 200 papers, 250 abstracts in medical literature, and a dozen book chapters, and she co-edited MRI and CT Atlas of Correlative Imaging in Otolaryngology. She is a sought-after lecturer and educator and has given nearly 200 invited lectures.

CONTINUED ON PAGE 13A

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Power Doppler ultrasound can be used to image low-flow shallow vessels because it is independent of flow direction and angle.

Changes allow radiologists to better integrate certification. 10A

Large study analyzes the MR contrast agent. 12A
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Virtual Reality Prototype Shows Potential for Diagnostic Imaging

By Felicia Dechter

U sing a high-resolution mobile virtual-reality (VR) prototype, Vasilios Moustakas, M.D., of Evangelismos Hospital in Athens, Greece, and colleagues investigated whether VR visualization of Digital Imaging and Communications in Medicine (DICOM) images could be used without compromising image stability or quality, enabling its use for diagnostic imaging. A secondary purpose was to verify that remote diagnosis of complete CT examinations performed elsewhere, using a mobile VR system, was feasible.

The lightweight mobile VR system is powered by a high-tech Smartphone with an ultra-high-definition 550-ppi display. Using the system is like being in front of a 175-inch mega screen while enabling visualization at 360 degrees. Dr. Moustakas said. Once the DICOM images are downloaded, the user wears the device and can scroll through the images, viewing up to 56 at any time—all while being on the move.

“Once the files are downloaded it takes less than a minute to wear the VR device and start viewing the CT images. The fact that it’s also mobile is crucial, because this technique can be used for remote diagnosis, avoiding the limitations of the relatively small displays of normal mobile devices.”

Even if the VR system can be used for DICOM images, researchers opted to test the device using CT images due to the modality’s heavy use in emergency departments. Once the VR system was ready, 271 exams were reviewed by a consultant radiologist in the hospital and by another radiologist using remote VR in another area who had contact to the first doctor. The two independent, double-blinded reports were compared using standardized reporting systems to assess imaging quality of the VR system in comparison to the hospital’s workstation.

The outcome was promising. In 97.27 percent of the results, complete inter-observer agreement was demonstrated. The few (2.73 percent) contracting results were limited to evaluations which also often present discrepancies between different physicians on the same monitor. In most of the evaluated parameters, good inter-observer agreement showed that the use of the VR system did not affect image quality and therefore did not alter the diagnosis.

“The main drawbacks until now were mobility and display resolution, but our system resolves both,” said Dr. Moustakas.

But the potential advantages are boundless, she said.

“Mobile virtual reality can make it easier for radiologists who want to have access to their examinations, even when they are on the move and away from their hospital workstation,” Dr. Moustakas.

Studies Investigate Significance of Follow-up Head CT, MRI

Patients with isolated small brain hemorrhages may not benefit from the repeat head CT scans that are now the treatment norm for any intracranial hemorrhage, according to a study presented Wednesday.

By Elizabeth Gardner

I n “Utility of Repeat Head CT in Mild Traumatic Brain Injury (mTBI) Patients Presenting with Small Isolated Falxine or Tentorial Subdural Hematoma (SDH),” a study team at UCSF Medical Center sought to evaluate the common practice of ordering CTs at six-hour intervals for mild traumatic brain injury patients with small, deep brain hemorrhages that can’t be decompressed surgically.

Only three out of 90 patients studied had any increase in bleeding evident on follow-up CT, and the three had impaired clotting ability, due to either medications or underlying blood conditions. For the other patients, the hemorrhages either were stable or decreased in size on a follow-up scan.

“Nothing much happens to these patients—they stay the same,” said radiologist resident Kavi Devulapalli, M.D., who presented the findings. If they are confirmed by additional studies, Dr. Devulapalli said the standard of care may—and should—shift to doing follow-up CT scans only on patients who have issues with anticoagulation. The presence of intracranial hemorrhage might prompt starting the patient on an anti-seizure medication or changing their anticoagulant medication, but follow-up CT might not be worth the time, expense or extra radiation exposure for the patient, he said.

The study examined images from all patients presenting to UCSF’s Level 1 trauma center from January 2013 through March 2015 undergoing initial and short-term follow-up head CT with initial findings positive for isolated subdural hemorrhages along the falx and/or tentorium. Patients with penetrating trauma, other sites of intracranial hemorrhage, brain contusion or depressed skull fractures were excluded. An electronic health record review provided information including gender, age and history of anticoagulation.

Intraventricular hemorrhage on initial CT

A second study presented on Wednesday looked at whether midline subarachnoid hemorrhages detected on CT could predict severe diffuse axonal injury and be used as a marker for referring patients for follow-up MRI. The study received a 2015 RSNA Trainee Research Prize.

Intraventricular hemorrhage (IVH) on initial CT has been reported to predict diffuse axonal injury in the corpus callosum or brain stem on subsequent MRI. Presenter Daddy Mata Mbemba, M.D., and colleagues at Tokohu University in Sendai, Japan, tested a hypothesis that midline subarachnoid hemorrhages (SAH), commonly associated with IVH on initial CT, could have a similar clinical value in predicting severe diffuse axonal injury (DAI).

Researchers studied 270 head trauma patients who underwent CT within 24 hours and MRI within 30 days. Six CT findings were studied as potential predictors of DAI: status of basal cistern, status of midline shift, epidural hematoma, IVH, SAH, and volume of hemorrhagic mass. The SAH findings were further analyzed based on six locations, two of which, interhemispheric and perimesencephalic, were classified as midline. Based on MRI results, the patients were divided in two groups: DAI present (77 patients) and DAI absent (193 patients).

The presence of midline SAH on CT turned out to be a better predictor than IVH for severe DAI, Dr. Mbemba said. Sensitiv-ity was 60.7 percent, specificity was 81.8 percent, positive predictive value was 43.6 percent and negative predictive value was 90 percent.

While the finding may not be strong enough to change the overall utilization of follow-up MRI for patients without midline SAH, especially when MRI capabilities are in the same building or nearby, Dr. Mbemba said it could potentially serve as a useful screening indicator in locations where obtaining a follow-up MRI might entail transferring an unstable patient to a distant location.
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Overuse of Peripheral Arterial Disease (PAD) Testing Likely

Tests for peripheral arterial disease (PAD)—including the use of duplex ultrasound of lower extremities—are probably being overused, according to a study presented Wednesday.

By Mike Bassett

The study, presented by David C. Levin, M.D., professor and chairman emeritus of the Department of Radiology at Jefferson Medical College and Thomas Jefferson University Hospital in Philadelphia, found that while the use of vascular ultrasound, as well as non-invasive physiologic testing (NPT), for PAD has flattened or even decreased since 2001, as of 2013 it was significantly higher than it was in 2001.

There has been some controversy surrounding the idea of screening for PAD. The U.S. Preventive Services Task Force has never recommended routine screening for PAD, while the Society of Interventional Radiology has long supported the idea of screening with its Legs for Life screening program.

According to Dr. Levin, one of the problems with this increased use of testing for PAD is that its prevalence in high-income countries is increasing at a relatively slow rate—about 1 percent annually. “So it’s not increasing very rapidly,” he said.

Dr. Levin also argued that there really is no need to treat asymptomatic patients with PAD. “If it’s gradually progressive disease,” he pointed out, “it doesn’t have sudden catastrophic consequences like coronary or carotid disease where patients can be pretty much asymptomatic and all of a sudden present with a myocardial infarction or a stroke.”

“So, it makes sense to try to screen patients [for those conditions like coronary or carotid disease] because you want to avoid those catastrophic conditions,” he added. “But you really don’t have to test anyone for PAD until they have a clinical story that tells you they have it.”

That clinical story, he said, would be claudication—pain in the legs caused by too little blood flow while walking or during exercise.

“If a patient doesn’t have leg pain when walking, he either doesn’t have PAD or has a very mild case of it,” Dr. Levin said. “The bottom line is that you really don’t have to overuse those tests.”

But when Dr. Levin and his colleagues analyzed Medicare Part B databases for 2001 through 2013 they found there had been sizeable increases in the use of these two tests. Exam volumes of lower extremity arterial ultrasound more than doubled (106 percent) during that time, while the number of NPTs increased by 79 percent.

And an analysis of use rates determined that lower extremity arterial ultrasound increased from 11.7 per 1000 in 2001 to 21.9 in 2013 (although it slightly decreased between 2010 and 2013).

Similar increases were seen with non-invasive physiologic tests (such as pulse volume recordings, segmental pressure measurements and ankle-brachial index tests). NPT volume increased from a rate of 21.0 per 1,000 in 2001 to a peak of 38.7 per 1,000 in 2010, before dropping back to 34.3 per 1,000 in 2013.

So the study provides both bad and good news, Dr. Levin said. “The bad news is that the utilization rates of both lower extremity ultrasound and non-invasive physiologic testing were quite a bit higher in 2013 than they had been in 2001. The good news is that since 2010 NPT utilization rates have actually gone down while ultrasound rates have basically stayed flat, so there is no more of that growth that we saw in earlier years.

“The overall takeaway?” At a time when the prevalence of PAD was increasing only very slowly, the use of these tests increased much more rapidly, said Dr. Levin. “And that raises concerns about the overuse of these tests.”

“Even if a patient doesn’t have a leg pain when walking, he either doesn’t have PAD or has a very mild case of it.”

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Simulation Effective in Gauging Residents’ Communication Skills

By Felicia Dechter

Simulation training is a promising method for teaching and assessing residents’ communication skills, according to the presenter of a Wednesday session.

“Simulation is a great way to teach and evaluate residents’ communications skills because prior studies have shown that training courses that allowed radiologists to practice delivering bad news significantly altered attitudes and beliefs about the importance of psychosocial issues and communication,” said Carolyn DeBenedectis, M.D., an assistant professor of radiology at the University of Massachusetts Medical School in Worcester, Mass.

In March, Dr. DeBenedectis conducted simulation training at the interprofessional Center for Experiential Learning and Simulation (iCELS) at UMass to develop a curriculum to teach radiology residents communication aptitude through simulation.

Using a validated instrument developed to assess communication skills, the Gap-Kalamazoo Communication Skills Assessment form (GKCS), she was able to obtain an objective measure of residents’ communication skills and identify specific areas needing improvement. Current first- and fourth-year radiology residents with no former communication skills training participated in six baseline scenarios with trained professional “actors.” The scenarios included error and apology, delivering bad news, canceling examination/procedure, radiation risk counseling, delivering results in pediatric imaging, and interactions with an angry referring physician. The GKCS form was used as a benchmark of resident performance by attending radiologists with prior communication skills training and the actors involved.

Activities were videotaped and the residents were immediately debriefed with several teaching points identified. Following a two-week washout period and additional training, residents participated in a second similar simulation.

These results showed that the average GKCS score for all the residents improved to 97 percent in Part 2 compared to 74 percent in Part 1. Fourth-year residents performed better on both Part 1 and 2 when compared to first-year residents.

The findings initially surprised Dr. DeBenedectis. She thought that first-year residents would have better communication skills given their recently completed internships which involve considerable patient contact and more opportunity to communicate with patients directly.

“In retrospect,” it does make sense that the fourth-year residents did better, as they have been practicing radiology-specific communication skills for the last four years of residency,” said Dr. DeBenedectis.

“In addition, the fourth-year residents may be more confident, given their increased experience in the field.”

“Simulation has great potential for training radiologists,” said the session’s final keynote speaker, Laura Fayad, M.D., of the Johns Hopkins University School of Medicine in Baltimore.

She explained that while conventional teaching with the “case conference” in radiology residency is a form of simulation, there are now more formalized and sophisticated simulation techniques available for education. These include computer-based techniques, the integration of 3-D imaging models, physical models, mannequin or cadaver models and hybrid simulation systems.

“The conventional philosophy of medical teaching was ‘see one, do one, teach one.’ However, our thinking has evolved with the availability of simulation tools,” said Dr. Fayad. “We can now give the trainee an opportunity to practice all aspects of a procedure, including the distracting aspects that are not directly related to the task at hand, such as interfacing with the nursing staff and equipment.”

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Testing for peripheral arterial disease (PAD), as well as non-invasive physiologic testing (NPT), has increased from 2001 to 2013, data shows.
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**CT Technique Shows Promise with Colonoscopies, Colon Cancer**

By Elizabeth Gardner

SING CT COLONOGRAPHY (CTC) TO SCREEN FOR large polyps in the colon, radiologists are finding that patients whose polyps have grown significantly over time are more likely to have advanced adenomas, and these patients are at higher risk of developing colorectal cancer.

The polyps were classified into baseline growth categories. Polyps that increased more than 30 percent in volume were classified as progressing, while those that decreased more than 30 percent were classified as regressing. Polyps whose volume changes fell in between those parameters were classified as stable. The 30 percent parameter was chosen because it exceeds the margin of error for measurements made using CTC, and therefore represents genuine changes, Dr. Nolthenius said.

Progressed growth was correlated with histopathological findings and other characteristics.

Out of 35 percent of the polyps progressed, while 38 percent remained stable and 27 percent regressed. However, out of 20 percent advanced adenomas of the group, 71 percent progressed and 30 percent remained stable. Out of 35 nonadvanced adenomas, only 37 percent progressed, and 46 percent remained stable.

There were no advanced adenomas among the polyps that regressed.

None of the polyps studied had progressed to colorectal cancer by the time of the study's end.

The presence of dense tissue is an independent risk factor for the development of cancer. The breast density notification laws are now in effect in 24 states, starting with Connecticut in 2009. But the laws lack consistency from state to state. Dr. Bahl said the notification laws put in place and can localize these polyps because we leave them in place and can localize them and measure them," she added.

"Our results suggest that radiologists downgraded breast density assessment immediately after law enactment, but then resumed pre-law reporting patterns shortly thereafter."

Dr. Bahl said two possible explanations could account for the study results. Radiologists who have wished to simply avoid the new requirements for reporting, or they downgraded assessments out of fear that facilities would be overwhelmed by an influx in women seeking supplemental screening.

"Reporting practices may have been returned to pre-legislation levels once we realized the new requirements didn’t pose significant burdens on individual- or facility-level workflow," Dr. Bahl said.

Although the topic is not without debate, breast density is considered to be important in two ways. First, dense tissue can mask abnormalities and therefore decrease the sensitivity of mammography for the detection of cancer. Second, the presence of dense tissue is an independent risk factor for the development of cancer.

The study looked at 78 participants who had one or two 6-9 mm polyps at an initial screening CTC and received surveillance CTCs, and measurements were taken with patients both prone and supine.

"Breast density on mammography is classified by the radiologist’s subjective assessment into one of four categories: almost entirely fat, scattered areas of fibroglandular density, heterogeneously dense, and extremely dense."

Breast density notification laws have had an immediate but not long-term impact on the reporting of dense breasts on mammography, according to research presented Wednesday.

"Breast density notification laws and their attendant public- and private-attention to the assignment and importance of breast density," said the study’s lead author Manisha Bahl, M.D., M.P.H., a breast imaging fellow at Duke University Medical Center. "Our results suggest that radiologists downgraded breast density assessment immediately after law enactment, but then resumed pre-law reporting patterns shortly thereafter."

Breast density on mammography is classified by the radiologist’s subjective assessment into one of four categories: almost entirely fat, scattered areas of fibroglandular density, heterogeneously dense, and extremely dense.

Trends in the percentage of mammograms reported as heterogeneously dense or extremely dense, beginning ten months before and continuing ten months after enactment of breast density notification laws. There was a statistically significant decrease in the percentage of mammograms reported as dense after law enactment compared to the month before (arrows).
MRI Technique Shows Link to Osteoarthritis in College Football Players

By Ed Bannon

Using delayed gadolinium-enhanced MRI of Cartilage (dGEMRIC) on knee cartilage shows that playing collegiate football for a longer period of time may lead to microstructural damage that is an indicator of osteoarthritis (OA), a researcher said at a Wednesday presentation.

The findings of the study demonstrate that dGEMRIC is capable of assessing glycosaminoglycan (GAG) loss within each individual articular cartilage region as well as the gradual changes related to the cumulative years of playing collegiate football, said presenter Wenbo Wei, Ph.D., of Ohio State University.

“This pilot study was important because we found the earliest indicator of OA,” Dr. Wei said. “The athletes are young, and they have something they can do about it.”

Dr. Wei scanned the knees of 13 college football players before and after each season, finding that small changes occurred during the season but greater micro-architectural changes occurred over the course of a few years.

“We think this is because during the season, they are just playing football games, but during off-season there is all sorts of training and exercise,” Dr. Wei said, adding that the study did not scan more frequently in order to minimize the test subjects’ dose exposure.

At the pre-season, first-year college football players averaged a 0.116 mM contrast concentration before the season and increased to 0.117 mM average post-season, with the higher concentrations indicating a greater GAG loss. In players with more years of experience, there was a 20 percent higher concentration. The average contrast concentration was 0.139 mM pre-season and 0.140 mM post-season.

“I’m not surprised by the finding. They train a lot and in football you have a lot of collisions,” Dr Wei said. “It’s reasonable that you would have some micro-architectural changes.”

The decreased GAG concentration may be indicative of a higher risk factor for articular cartilage degradation and potential development of OA. OA is of particular interest in sports medicine as studies have found that the condition impacts 36 percent of athletes compared to 5 percent of the general population, Dr. Wei said.

Although the study aggregated the concentration measurements into an average, the scan protocol measured several regions of the knee. The most significant differences between the single-year players and the multiple-year players were shown at the trochlea and carpometacarpal joint dislocation at the post-season, Dr. Wei said.

Dr. Wei used the dGEMRIC technique because it is considered the “gold standard in assessing GAG concentration in vivo.” Using a Gd-DTPA2 contrast agent is key to the technique because its negative charge is similar to the cartilage matrix and thus distributes more effectively into areas of cartilage that are depleted of GAG. Also, Gd-DTPA2 shortens the magnetic resonance relaxation time, he said.

Two musculoskeletal radiologists with eight and seven years of experience independently evaluated athletes’ articular cartilage for any focal lesions. Cartilage lesions were graded on the Outerbridge classification system.

Dr. Wei acknowledged the study’s small sample size (seven were one-year players and six had played two-to-four seasons), but feels he demonstrated that OA risk factors can be found in college-age athletes. He plans to collect more data, but the next research stage will focus on college-age students who are not athletes in order to establish a control group.

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MOC Changes Enable Easier Integration of Certification

Changes in the Maintenance of Certification (MOC) program from the American Board of Radiology (ABR) will enable radiologists to better integrate certification into their busy schedules, according to presenters at a session Wednesday.

By Richard Dargan

A

almost a decade has passed since the full implementation of all four parts of ABR’s MOC Program. While the program has generally been well received by ABR diplomates, portions of it needed improvement to make MOC requirements more relevant to practice and reduce the dedicated cost and time required of participants, said presenter and ABR President Milton J. Guiberteau, M.D., from St. Joseph Medical Center in Houston.

“There is near universal support for underlying goals of MOC,” he said. “However, fleshing out the specific requirements to meet those goals has been a work in progress.”

Using input from MOC Advisory Committees and survey responses from diplomates, ABR announced two MOC improvements in September. The first, effective immediately, is focused on Part 4 of the program, Practice Quality Improvement (PQI). ABR announced expanded options for satisfying Part 4 requirements, including credit for activities that diplomates are performing as part of their practices or voluntary professional efforts.

“This effort is not to de-emphasize PQI but to create greater flexibility and give people credit for things they’re already doing,” said ABR Board of Governors member Vincent P. Mathews, M.D., from the Medical College of Wisconsin in Milwaukee.

The second improvement, simplified attestation, will become available on the myABR website portal on Monday, January 4, 2016. With simplified attestation, diplomates will only need to attest to the fact that each of the requirements for Parts 1 through 4 of MOC have been met. Entering detailed data will not be required each year; however, diplomates will need to retain this information in the event of an audit.

For each diplomate who is currently enrolled in MOC, continuous certification will automatically replace the old 10-year MOC cycle. The policy change encourages diplomates to engage in continuous professional development and meet their MOC requirements in a timelier manner. Starting in 2016, there will be a look-back period every March for review of credits earned in the previous three years.

New Certifying Examination Yields Strong Results

ABR Trustee Dennis Balle, M.D., from the Washington University School of Medicine in St. Louis, discussed early returns on the new Certifying Examination. The test debuted in October and has been administered five times, with an impressive 89 percent pass rate. Chief complaints among test takers include travel to the test centers in Chicago and Tucson, the timing of the test and the non-interpretive skills module.

“The non-interpretive skills came in for a lot of heat for being largely irrelevant to practice,” said Dr. Balle. “The ABR task force is going to take a look at that and make it more practical.”

In 2013, ABR moved the Core Examination for residents from the second to the third year, partly to enable residents to subspecialize during the fourth year rather than being constrained by studying for the oral examination. Although the change meant that most residents would graduate as U.S. board eligible rather than board certified, it has not harmed job prospects, according to ABR Executive Director Valerie J. Jackson, M.D., R.S.A Board of Directors Liaison for Education.

Despite all the gloom and doom, the job market opened up earlier this year and radiologists are having no trouble getting jobs, even though some of them are not yet board certified,” she said.

ABR Board of Governors member and incoming RSNA Board member Matthew A. Mauro, M.D., of the University of North Carolina School of Medicine in Chapel Hill, N.C., reviewed the timetable for the new Interventional Radiology/Diagnostic Radiology (IR/DR) Certificate. The first integrated IR program launches in 2016, and independent programs are slated to begin in 2020, the same year that the IR fellowship is scheduled to end.

The changes were made to better prepare IR for the present and future, according to Dr. Mauro.

“We’ve already received over 800 applications for the first year,” he said. “We’re very encouraged by how enthusiastically programs have joined in this.”

Social Media Takes RSNA 2015 by Storm

RSNA 2015 is taking center stage on Twitter, Facebook and Instagram this week, reporting record posting levels on all social media outlets.

Tweets using the #RSNA15 hashtag exceeded 22,000 as of Tuesday. The total number of tweets for 2014 was 17,228. The number of Twitter users is up as well, climbing from 1,029 in 2014 to 3,771 in 2015. And the handle is trending nationally, according to RSNA Director of Marketing Adrienne Glowski.

On Twitter, use #RSNA15 for the latest updates on annual meeting happenings, to connect with colleagues and share your favorite meeting moments. Like us on Facebook (Facebook.com/RSNAfans) and follow us on Twitter (@RSNA) and Instagram (@RSNAagram) to participate in social media throughout the week.

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Contrast Agent Ferumoxytol Safe for MR Imaging in Children.

In the largest study of its kind, researchers have found that ferumoxytol is safe to use as an MR contrast agent in children, according to a presentation Wednesday. The findings are critical for the development of new ferumoxytol-based MR imaging techniques with better image quality and less toxicity, researchers said.

By Richard Dungan

Contrast studies with MRI are often performed with gadolinium-based agents, but concerns persist about the toxic gadolinium ion’s retention in the body. Recent studies found gadolinium deposition in the brains of people with normal kidney function, raising concern about potential long-term effects, especially in the pediatric population, said study author Anne Muehe, M.D.

“The pediatric population is particularly vulnerable as they are still growing and we really don’t know the effects of gadolinium in growing organisms,” she said.

Dr. Muehe, a postdoctoral fellow in the laboratory of Heike E. Daldrup-Link, M.D., associate professor of radiology at Stanford Medicine in Stanford, Calif., recently assessed the safety profile of ferumoxytol as an intravenous MRI contrast agent in pediatric patients. Ferumoxytol is approved by the U.S. Food and Drug Administration (FDA) as a treatment for anemia.

“Ferumoxytol is not excreted through the kidneys like gadolinium,” said Dr. Muehe. “Instead, it’s taken up by bone marrow, liver and spleen, where it is utilized by the body to produce red blood cells.”

For the collaborative study between researchers at Stanford’s Lucile Packard Children’s Hospital and Oregon Health Sciences University, Dr. Muehe, Dan Feng, Ph.D., a medical student at Stanford, and colleagues enrolled 49 pediatric patients, ages five to 18, between September 2009 and February 2015.

The patients received either a single dose of ferumoxytol or two to four doses of ferumoxytol at a lower iron concentration, and the researchers observed them closely for adverse events. “Iron can cause hypotension, so we followed a rigorous protocol and monitored the patients’ blood pressure after contrast injection to see if there were any changes,” said Dr. Daldrup-Link, co-author of the study.

“Building on decades of experience with the clinical use of iron oxide nanoparticles in Europe, we actually obtained the exact safety parameters, which the FDA recommended to users recently,” Dr. Muehe said.

Out of 65 ferumoxytol injections in 49 pediatric patients, the researchers observed only one episode of an immediate adverse event: a case of nausea. Evaluation of vital signs revealed two episodes of mild hypotension without related clinical signs or symptoms. “Two patients had drops in blood pressure but had concomitant sedation because they were so young,” Dr. Muehe said. “After the sedation wore off, their blood pressure returned to normal.”

Analysis of weekly blood tests within one month of injection revealed no significant changes in the patients’ kidney or liver function. “The results confirmed our hypothesis that ferumoxytol is generally safe as a contrast agent in children,” said Dr. Muehe. “Larger prospective studies are needed to determine the incidence and frequency of severe anaphylactic reactions in comparison to traditional gadolinium-based contrast agents.”

Dr. Muehe’s work on ferumoxytol won her a 2015 RSNA Trainee Research Prize—the same prize that Dr. Daldrup-Link won in the late 1990s after she finished a fellowship at the University of California, San Francisco. Like Dr. Muehe, Dr. Daldrup-Link traveled to the United States from Germany to become a physician-scientist.

“The research prize is a wonderful way to recognize the work of these young people,” Dr. Daldrup-Link said. “Positive feedback and encouragement are extremely powerful ways to seed excitement for research and create better imaging technologies for our patients.”

Dunnick is R&E Foundation Chair-elect

N. Reed Dunnick, M.D., is the chair-elect of the Research & Education (R&E) Foundation.

D. Dunnick is the Fred Jenner Hedges Professor of Radiology at the University of Michigan Health System in Ann Arbor, Mich., where he has been on the faculty since 1992. Dr. Dunnick is a strong advocate of the Foundation’s mission to improve patient care through the financial support of research and education in radiology. He has been a member of the Foundation Board of Trustees since 2013.

Dr. Dunnick has been an active member of RSNA since 1987, serving on the Board of Directors from 2006 to 2014, and as president in 2014. He served on several committees, including the Scientific Program Committee, Research Development Committee, Education Council and the Grants Program Committee.

During his career he has lent his leadership and expertise to a number of other medical societies and organizations, including the American Board of Radiology Foundation and the American College of Radiology, where he served as vice president from 2008 to 2009. He is past-president of the American Roentgen Ray Society (ARRS), Society Chairmen of Academic Radiology Departments and several other medical organizations.

Dr. Dunnick’s leadership in the radiology community has been recognized through honors including gold medals awarded by the ARRS, Society of Uroradiology, Association of University Radiologists and the Michigan Radiological Society. He received the William F. Barry Jr. Award for Teaching Excellence from Duke University in 1984. Dr. Dunnick supports the Foundation as a Presidents Circle and Platinum Visionary Donor.

The R&E Foundation also appointed new trustees Ronald L. Arenson, M.D., Thomas M. Grist, M.D., and Mitchell D. Schnall, M.D., Ph.D. The board reappointed Richard D. White, M.D., as secretary and Gregory C. Karmaz, M.D., as treasurer.

To learn more about the Foundation and its Inspire-Innovate-Invest Campaign visit RSNA.org/Foundation.
Archaeological Find of Heart Disease

Preserved hearts dating back to the late 16th century or early 17th century were examined using modern imaging techniques. Using MRI and CT, researchers were able to identify different heart structures, such as chambers, valves, and coronary arteries. Once the tissue was rehydrated, researchers were better able to identify myocardial muscles with MRI. Classic techniques, such as dissection, external study, and histology, were also used to examine the heart tissues. Plaque and atherosclerosis were found on three of the preserved hearts, leading researchers to believe that present-day health conditions existed in the past.

CT and 3-D Printing Aid Surgical Separation of Conjoined Twins

For the first time, CT imaging and 3-D printing technology were combined to help plan the surgical separation of conjoined twins. Researchers performed volumetric CT imaging on both twins to view vital structures and plan how to separate them. To prepare for the separation surgery, doctors performed volumetric CT imaging with a 320-detector scanner, administering intravenous contrast separately to both twins to enhance views of vital structures and help plan how to separate them so that both could survive. The 3-D models proved to be an excellent source of information, as there were no major discrepancies between the models and the twins’ actual anatomy and the surgery was a success.

Researchers Find Link Between Early-Stage Brain and Heart Disease

Data were analyzed from participants in the Rotterdam Study, a prospective, population-based study designed to investigate chronic diseases in an aging population. Participants in the study underwent brain MRI and blood testing to measure levels of a type of peptide that provides information on early cardiac dysfunction. The researchers evaluated the brain MRI results for markers of early brain disease, including a loss of brain volume, micro- structural changes and white matter lesions, which indicate areas of cells that have been damaged by injury or disease. Analysis revealed that higher levels of this peptide were associated with smaller total brain volume and larger white matter lesion volume. The study implies that the heart and brain are intimately linked in the development of disease.

Study Suggests Breast Density Alone Not a Risk Factor for Cancer

Contrary to recent reports, a new study found that high breast density was not a strong independent risk factor for breast cancer. Researchers looked at data from 52,962 mammography exams performed on women ages 50 to 69 over five years. Of 230 detected breast cancers, almost half were from the group with the lowest ranked breast density, while slightly less than 3 percent came from women in the highest breast density category. The study did not find a strong association between higher mammographic densities and a higher risk of breast cancer among postmenopausal women.

RSNA 2015 press releases are available online at rsna.org/press15.

Baron is RSNA President

Dr. Baron has authored or co-authored 118 peer-reviewed scientific articles, one book, 53 book chapters and review articles, and numerous scientific and educational exhibits. He has presented hundreds of invited lectures. He has served on the editorial boards and as manuscript reviewer for multiple journals, including Radiology, American Journal of Roentgenology, Journal of Computer Assisted Tomography, Liver Transplantation, Gastroenterology and European Radiology. He served as an associate editor of Radiology from 1991 to 1996 and Liver Transplantation from 2004 to 2009. During his career, Dr. Baron has been an active member of several medical societies and organizations, including the American College of Radiology and the American Roentgen Ray Society (ARRS), and he is a past president of the Society of Gastrointestinal Radiologists and the Society of Computed Body Tomography and Magnetic Resonance. Dr. Baron served on the Board of Directors of the UPMC Healthcare System from 1997 to 2002 and on The Joint Commission Professional Technical Advisory Committee from 2007 to 2011. Over the years, Dr. Baron has been principal investigator on a dozen research projects and has earned research awards from numerous national radiology societies, especially in the area of diagnostic imaging of liver disease. The RSNA has presented Dr. Baron with two Magna Cum Laude Awards, and the ARRS awarded him gold and silver medals for educational exhibits. The European Society of Gastrointestinal and Abdominal Radiology awarded Dr. Baron honorary fellowship in 2008. The Asian Oceanian Society of Radiology awarded Dr. Baron its gold medal in 2014. An RSNA member since 1978, Dr. Baron has served on many committees, such as the Scientific Program Committee, Public Information Advisors Network, Finance Committee and the Education Exhibits Committee, where he served as chair from 2006 to 2009. In 2008, he was elected to the RSNA Board of Directors and served as the Board liaison for education and international affairs. He served as Board chair from 2013 to 2014, and president-elect from 2014 to 2015.

Rao Named Board Chair

Dr. Rao has led numerous courses and sessions at RSNA annual meetings and served on the Health Services Policy & Research subcommittee of the RSNA Scientific Program Committee. She has served the RSNA Research & Education (R&E) Foundation in a number of roles, including as a member of the Board of Trustees since 2008. Dr. Rao has held committee or leadership positions in a number of major radiologic organizations, including the American Society of Neuroradiology and American College of Radiology, and regional organizations. She has served as president of the American Society of Head and Neck Radiology, the American Association for Women Radiologists and the Association of Program Directors in Radiology, which bestowed on her its Distinguished Achievement Award in 2006. She is also the 2014 recipient of the gold medal award, presented by the Association of University Radiologists, and the Marie Sklodowska-Curie Award, presented by the American Association for Women Radiologists.

Dr. Rao was also honored in 2005 by the Philadelphia Business Journal as one of 25 Women of Distinction throughout the region. She has been chosen numerous times by her peers as a Top Doctor in Radiology, listed in Philadelphia Magazine.
MRI Effective in Detecting Adverse Reactions Around Arthroplasties

MRI is the most accurate means by which to detect adverse local tissue reaction (ALTR), tissue damage and bone loss around arthroplasties, according to presenter Hollis G. Potter, M.D., during her musculoskeletal keynote address on Wednesday.

“It’s been shown to be the most sensitive test of all the other radiologic tests we have to really detect the magnitude of ALTR around implants,” said Dr. Potter, chair of the Department of Radiology and Imaging and Coleman Chair in MRI Research at Hospital for Special Surgery (HSS) in New York City.

Dr. Potter began using MRI for arthroplasty around the turn of the millennium. At the time she said it was considered “crazy.”

“The idea of putting something metal, like a joint replacement, into a very large magnet seemed crazy,” Dr. Potter said. “There was concern that it would harm the patient. What we found was not only was it safe, it is also very efficacious.”

ALTRs occur with all fixed- or mobile-bearing constructs in symptomatic and asymptomatic patients. Arthroplasties generate a small amount of metallic debris, which in most cases does not affect the patient.

But in a small percentage of people, the immune response generated by the host reacts to the particles and debris, which in most cases does not affect the patient. What we found was not only was it safe, it is also very efficacious.”

Using MRI has benefits beyond the patients—it can create a new revenue stream for radiology. She said she scans about 10-to-15 arthroplasties a day at HSS as part of her practice, aside from her research duties.

“It’s opened up a whole new market for the business of imaging,” Dr. Potter said in an interview before the presentation. “It’s something that was nontraditional. Many people feel uncomfortable using these new areas of imaging,” Dr. Potter said. “It’s opened up a whole new market for the business of imaging.”

She added the orthopedic community already recognizes MR imaging as an effective tool for which to assess adverse reactions to the arthroplasty. While it isn’t yet widespread in radiology, more places are seeing the value in utilizing it, including Dr. Potter’s institution.

At HSS, patients with painful implants receive a radiograph exam to determine if there is an obvious fracture. After that they go directly for MR.

“MR is the accepted means by which they evaluate any kind of component — whether a shoulder or knee or hip — for patients that are dissatisfied with their implants but the clinician can’t explain the cause,” Dr. Potter said. “It has revolutionized the field.”

Dr. Potter’s research also determined that differences reflect variable host-mediated response to mount discernable synovitis patterns on MRI; maximum synovial thickness is highly correlated with a diagnosis of aseptic lymphocytic vasculitis-associated lesions (ALVAL) in patients with a modular head-neck and neck-stem implant; MRI/ultrasound protocols must allow for thickness measurements to be clear; and radiographic measurements, clinical symptoms or serum ion levels alone do not predict the presence and extent of wear-induced synovitis.

The National Clinical Trials Network Continues to Survive—and Thrive

CONTINUED FROM COVER

The IOM report found that while the groups were doing some critical work, changes were necessary, particularly in terms of getting trials from the concept stage to activation.

As a result the National Cancer Institute consolidated the nine groups that conducted clinical trials on adult cancer patients into four groups.

The new system—the NCTN— consists of four adult groups—the Alliance for Clinical Trials in Oncology, the ECOG-ACRIN Cancer Research Group, NRG Oncology, and SWOG—as well as the Children’s Oncology Group.

One of the major gains with the new system is that it is more timely and efficient, Dr. Curran said. One drawback, though, is that the NCTN budget is less than what was hoped for and that the number of patients enrolled in trials has dropped, as have the number of trials.

Dr. Curran also argued that decreasing the number of groups runs the risk of reducing the participation of certain stakeholders such as surgeons and radiologists.

NCTN Continues Cutting-Edge Research

Yet, despite these challenges, the NCTN is involved in some exciting work, he said, referring to a series of trials showing that “the genomic variability among tumors is being ascertained earlier and is determining what therapies will be tested for a patient.”

One such trial is NCI-MATCH (Molecular Analysis for Therapy Choice) analyzes patients’ tumors to determine whether they contain genetic abnormalities for which a targeted drug exists, and assigns treatment based on the abnormality.

This trial has created so much interest within the oncology community that it is expected it will complete enrollment of 3,000 patients in 2016.

Returning to the cockroach-NCTN analogy, the “reality is there is no alternative [to the NCTN] in its niche,” Dr. Curran said. “And natural history, for both of these entities, will celebrate their success.”
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