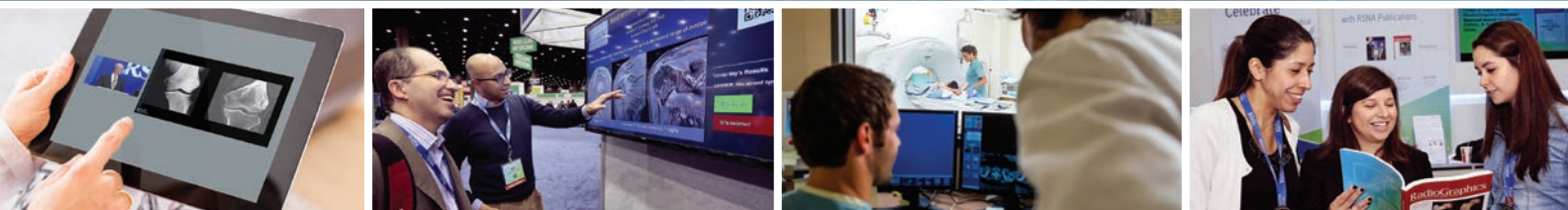


RSNA Image Contest Yields Stunning Array of Art

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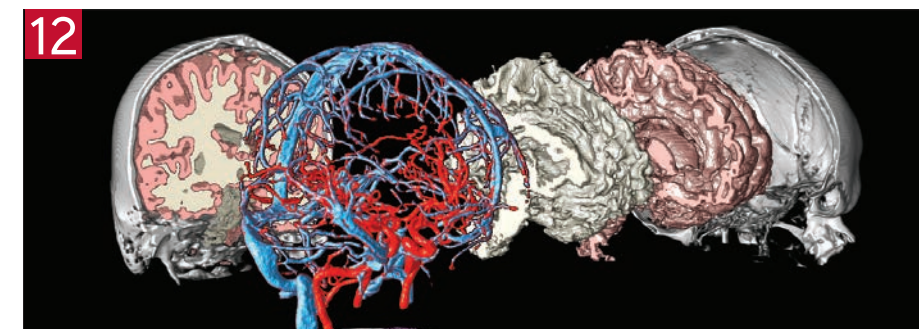
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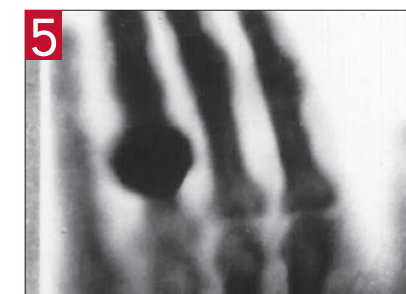
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Radiology's Evolving Role in Precision Medicine



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Darge Named Radiology Chair at Children's Hospital of Philadelphia

Kassa Darge, MD, PhD, was recently named chair of the Department of Radiology and Radiologist-in-Chief at Children's Hospital of Philadelphia (CHOP).

An internationally renowned pediatric radiologist, Dr. Darge served as chief of the Division of Body Imaging in the Department of Radiology at CHOP and a professor of radiology at the University of Pennsylvania Perelman School of



Darge

Medicine since 2006. He currently holds the John W. Hope Endowed Chair for Radiology Faculty Development at CHOP. He is also an honorary professor of radiology at Addis Ababa University in Ethiopia.

An RSNA honored educator award recipient in 2016, Dr. Darge has served as a member of the refresher course faculty at multiple RSNA annual meetings and is a past advisor for the RSNA Scholar Advisor Panel.

Nomination Forms Now Available for 2017 IRIYA Program

Application deadline is April 15

Nominations are now being accepted for the RSNA Introduction to Research for International Young Academics (IRIYA) program to be offered at RSNA 2017. The four-day seminar held at each RSNA annual meeting encourages young radiologists from outside the U.S. and Canada to

pursue careers in academic radiology. Successful candidates receive complimentary registration, shared hotel accommodations for the duration of the program, and a stipend to help defray travel expenses. The application deadline for the 2017 program is April 15. More information about IRIYA is available at RSNA.org/IRIYA.



Michael F. Regner, MD, with Scientific Advisor Jody Tanabe, MD

Roentgen Nominations Now Open

Nominations are now being accepted for the RSNA

Nomination Deadline April 1

Roentgen Resident/Fellow Research Award, recognizing residents and fellows who have made significant contributions to their departments' research efforts as evidenced by presentations and publications of scientific papers, receipt of research grants or other contributions.

Nominations are limited to one resident or fellow per program in radiology, radiation oncology or nuclear medicine per year. The program director or department chair selects the nominee for each program.

The RSNA Research & Education (R&E) Foundation provides an award plaque for the department to display and a personalized award to present to the selected resident or fellow. The deadline for nominations is April 1. Learn about the nomination process and see a list of past recipients at RSNA.org/Roentgen_Research_Award.aspx.



"Think A-Head" Campaign Aims to Improve Use of Head CT Scans in Children

The Image Gently Alliance, American Academy of Pediatrics (AAP), American College of Emergency Physicians (ACEP), American Association of Neurological Surgeons (AANS)/Congress of Neurological Surgeons (CNS) Joint Section on Pediatric Neurosurgery and allied medical organizations recently launched the "Think A-Head" campaign to help providers appropriately obtain and perform CT scans in children with minor head injuries. The effort will also equip providers and parents with resources to help them communicate effectively when CT scans may (or may not) be the best option to gain proper diagnosis.

The "Think A-Head" campaign provides tools and resources to:

- Help providers ensure ordering patterns comply with latest evidence-based medical guidelines.
- Help providers explain to parents/caregivers why an imaging scan is (or is not) necessary.
- Help parents ask questions to better inform decision making if their child is prescribed a head CT scan.
- Help imaging professionals use appropriate exam radiation dose.

Go to ImageGently.org for more information.



Apply Now for RSNA Editorial Fellowships

Applications are being accepted for the RSNA William R. Eyler Editorial Fellowship and the RSNA William W. Olmsted Editorial Fellowship for Trainees.

Both fellowships offer the opportunity to work with *Radiology* Editor Herbert Y. Kressel, MD, in Boston, and *RadioGraphics* Editor Jeffrey S. Klein, MD, in Burlington, VT. The Eyler fellowship lasts

three weeks and the Olmsted fellowship lasts one week.

Each fellow will also visit the RSNA Publications Department at RSNA Headquarters in Oak Brook, IL. The Eyler Fellow will work with the *RadioGraphics* editorial team at RSNA 2017.

Apply by May 1 to be considered for the William R. Eyler Editorial Fellowship

Radiology RadioGraphics

and April 1 to be considered for the William W. Olmsted Editorial Fellowship for Trainees.

To learn more and to apply, go to RSNA.org/RSNA_Editorial_Fellowships.aspx.

IN MEMORIAM

Frederick J. Bonte, MD



A pioneer in nuclear medicine, Frederick J. Bonte, MD, passed away on Nov. 28, 2016, at age 94. Dr. Bonte was professor emeritus of radiology at the University of Texas Southwestern Medical Center, Dallas, where he established one of the nation's first academic nuclear medicine laboratories.

Dr. Bonte and his colleagues received national attention for innovations linking computers with isotope scanning to measure blood flow.

Dr. Bonte discovered a nuclear scanning technique that allowed the viewing and imaging of a heart attack, which played an important role in the growing field of nuclear medicine. Along with Robert W. Parkey, MD, who succeeded Dr. Bonte as chair of radiology, he was instrumental in developing technetium-99m stannous pyrophosphate imaging, a technique to detect acute myocardial infarction.

His distinguished career spanning more than seven decades furthered the clinical use of numerous radiologic tools and techniques including single-photon emission CT (SPECT) to identify a characteristic sign of Alzheimer's disease. He authored a study that was the first to pinpoint damage inside the brains of veterans suffering from Gulf War Syndrome. In 1971, he helped establish the American Board of Nuclear Medicine, serving as the organization's chair and president from 1977 to 1980.

After graduating from Case Western Reserve University School of Medicine, Cleveland, Dr. Bonte attended the Army School of Roentgenology at Fort Sam Houston, served as captain and chief of x-ray at the U.S. Army Air Corps and Colorado's Lowry Air Force Base and completed fellowship training in nuclear medicine in the U.S. Atomic Energy Commission's Atomic Energy Research Project.

Dr. Bonte served as an advisory editor on the *Radiology* Editorial Board.

Numbers in the News

477

Number of entries in the RSNA 2016 Image Contest. View some of the top entries and read about the artists on [Page 12](#).

29

Percentage of RSNA's membership comprising non-North Americans. Read more about the full roster of RSNA's international resources on [Page 25](#).

650

Number of educational programs in RSNA's eLearn online library. Read more on [Page 23](#).

RSNA Board of Directors Report

The RSNA Board of Directors met at RSNA 2016 to review the many accomplishments of the year and plan for the future.

RSNA 2016 Looked Beyond Imaging

More than 52,000 people attended RSNA 2016 discovering new innovations through the Eyes of Watson machine learning demonstration, learning about the growing role of 3-D printing in imaging at the 3-D Printing in Medicine exhibit, and enjoying presentations and live music in the redesigned Connections Center.

In addition to the array of scientific sessions and educational courses offered at the meeting, a series of special interest sessions on Monday afternoon included new High Impact Clinical Trial presentations. Abstracts for late-breaking clinical trials were accepted from June 1 to Aug. 1 to be considered for inclusion in the program, and the three selected abstracts were presented at the meeting.

A growing number of members enhanced their experience by participating in the Virtual Meeting, and many registered for both RSNA 2016 and the Virtual Meeting.

Committees' Year in Review

The Board reviewed annual reports of RSNA officers and committees. Additionally, meetings were held with the Quantitative Imaging Biomarkers Alliance chairman, *Radiology* and *RadioGraphics* editors and the Academy of Radiology Research executive director to update the Board on activities. Committees' annual reports are posted online at RSNA.org/Leadership.aspx.

RSNA Launches 3-D Printing Special Interest Group

In response to breakthroughs in 3-D printing technology and its implications for radiology, RSNA introduced a 3-D Printing Special Interest Group (SIG) to promote the highest quality 3-D printing for medical applications via education, research and collaboration. The group, chaired by Jonathan M. Morris, MD, has grown to 75 members since its formation

in December. RSNA members in good standing may add 3-D Printing SIG participation to their membership for a fee of \$40 per year by contacting the RSNA Membership department.

In response to enthusiasm from industry, RSNA is creating a SIG Affiliate membership opportunity for individuals in industry who are interested in joining the SIG but are not otherwise qualified to be a member of RSNA. These individuals can affiliate with the SIG by paying an annual fee that is equal to the current dues for active RSNA members.

Planning underway for RSNA 2017

The Board is already looking forward to the 103rd annual meeting. RSNA President Richard L. Ehman, MD, has selected the theme, "Explore. Invent. Transform." to acknowledge the opportunity for radiology to lead research and innovation in health-care and significantly impact patient care. The Board also approved the Controversy and Hot Topics sessions for RSNA 2017.

Travel Awards

More than 400 Travel Awards were distributed to young investigators attending RSNA 2016. The program, introduced in 2016, awards \$500 to eligible presenters to help defray costs of attending the RSNA annual meeting. Eligibility requirements are available with the 2017 call for abstracts.

I am happy to report RSNA remains strong with 54,000 worldwide members. The Board of Directors and I look forward to a successful year for all of us.

Valerie P. Jackson, MD
Chair
RSNA Board of Directors



Jackson

Seven Vendors Complete RSNA Image Share Validation Program

RSNA and The Sequoia Project recently announced the first seven vendors to successfully complete the RSNA Image Share Validation program that rigorously tests the compliance of vendors' systems to accurately and efficiently exchange medical images. The approved vendors are: Agfa Healthcare, AMBRA Health (formerly DICOM Grid), GE Healthcare, Lexmark Healthcare, LifeImage, Inc., Mach7 Technologies and Novarad.

"Radiologists should insist that products they purchase have achieved the RSNA Image Share Validation Seal to ensure true interoperability. Anything less is not in the interest of our patients," said David S. Mendelson, MD, vice chair of radiology IT at the Mount Sinai Health System in New York.

Launched in 2016, the validation program encourages the adoption of image-sharing capabilities by imaging vendors and radiology sites, expanding access to medical images and reports whenever and wherever they are needed. All imaging vendors are invited to apply.

The program is open to vendors of imaging systems, such as Reporting Systems, RIS and PACS, that wish to enable those systems to connect to networks for sharing images with providers and patients or vendors of health information exchange systems seeking to enable their systems to exchange medical images and reports.

For more information, go to RSNA.org/Image_Share.aspx.



LOOK AHEAD

Radiology's Journey in Transparency

BY RICHARD DUSZAK JR., MD

"Volume is out; value is in. And delivering on that new value imperative requires a new way of thinking and a whole new kind of transparency."

RICHARD DUSZAK JR., MD

Embedded in the virtual retina of nearly every radiologist is that first and famous image of Anna Bertha Roentgen's hand. This enduring reminder of her husband's discovery of the x-ray in 1895 ushered in a whole new era in medicine — that of the transparent human body. Over the ensuing century, radiology's contributions to patient care have advanced at a dizzying pace. With medical imaging now rapidly moving toward more advanced functional and precision imaging, it is sobering to think that something as seemingly mundane as a hand radiograph started a cascade of innovation that has forever changed our healthcare delivery system.



Duszak

RICHARD DUSZAK JR., MD, is professor and vice chair for Health Policy and Practice in the Department of Radiology and Imaging Sciences at Emory University School of Medicine, Atlanta. Dr. Duszak joined Emory after serving as founding CEO of Harvey L. Neiman Health Policy Institute, established in 2012. Nationally recognized for his work in physician payment policy development, Dr. Duszak's research has focused primarily on health policy and practice management. He serves as associate editor for Health Services Research and Policy for the *Journal of the American College of Radiology*.

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Seeing that first radiograph of her own hand, Wilhelm Roentgen's wife reportedly exclaimed, "I have seen my death!" At first glance her outburst seems most peculiar, but remember the context. In the 19th century, the only time people saw human bones was when they viewed the dead — the long dead. The prospect of seeing one's own skeleton was not only unimaginable but also downright frightening.

Over the ensuing decades, our ability to see inside living bodies has accelerated. We now live in a world in which we can nearly instantaneously acquire anatomic information that,

back in Roentgen's time, could only be gleaned at autopsy. Bones are now easily distinguishable from soft tissue, muscles from fat, and tumors from normal organs. Today patients and providers not only take for granted the transparency of the human body, but have grown to expect it as a part of routine care.

If one of the legacies of healthcare over the last century has been the increasing transparency of the human body, then one of its legacies in the next century will be the increasing transparency of our delivery systems. Before long, patients will grow to

expect this too as part of their routine care.

Sure, when a patient returns to the emergency department for the third time in a week with chest pain, we can easily interrogate the smallest of pulmonary arteries yet again for clot. But should we? How do we ensure that such services are utilized most judiciously? As finite healthcare resources are increasingly scrutinized, questions like this must be answered. Physicians who facilitate answers — rather than simply preserve the status quo — will lead the profession forward.

William Roentgen's image of his wife Anna Bertha's hand ushered in the age of transparency in the human body. In the next century, patients will expect transparency in healthcare delivery systems as well.

Transparent Systems Will Increase Value for Patients

Over the last several decades, many radiologists have focused their efforts on generating an ever increasing number of reports at an ever increasing speed. Volume was, and continues to be, the priority for many. And that's no surprise, because it is how we have been financially incentivized. Moving forward, however, overwhelming societal forces are steering us in a very different direction, and so too are our payment systems. Like all other physicians, radiologists are increasingly charged with delivering higher quality care at a lower cost, and doing it all in a patient-centered manner. Volume is out; value is in. And delivering on that new value imperative requires a new way of thinking and a whole new kind of transparency.

Everyone talks about value these days, but what is it? Quite simply, it's quality divided by cost. So to increase the value of imaging we need to enhance its relevancy and impact, and reduce its overall costs — or ideally do both. As with beauty, however, value is in the eye of the beholder, and the stakeholders now doing that math are increasingly our patients. But information gradients — for both quality and cost — stand in the way of finding real value.

Defining Quality from the Patient's Perspective

How can radiologists transparently deliver higher quality? First, we need to understand what quality means from the patient's perspective and be willing to see our healthcare system through their eyes, and not just ours. Patients want more than just structured reports with quicker turnaround times. They want better outcomes — something hard for radiologists to quantify given the multitude of clinical confounders downstream from our interpretations. So we have some work cut out for us. Our patients also want better service and more engagement. Getting to the right diagnosis is important, but the journey matters, too. For example, when we deliberate the pros and cons of two diagnostic imaging modalities or the timing of a follow up study, how often do we involve our patients in those discussions? Sadly, it's not very often. So there are lots of ways we can do better.

With regard to the value equation's denominator, figuring out the cost of a service sounds pretty easy, but it's not.

Cost too is in the eye of the beholder — the one paying the bill. For the rare patients who have no co-pays and no deductibles, healthcare costs are usually hidden away as premium deductions in their paychecks every couple weeks. More and more patients, however, have high deductible plans, meaning that they pay as much as \$5,000 of each year's healthcare expenses out of their own pockets. In these situations, what our facilities charge for CT and MRI really matters. Those charges vary greatly from region to region, and from institution to institution, and they're rarely transparent. The way most people find out about the costs of a service is when they get their bill. That's not right.

The internet and social media have catalyzed a variety of healthcare transparency initiatives, which are now rapidly accelerating. The ultimate result will be a delivery system in which value is more readily defined and more widely promoted. But that transition could prove challenging for many radiologists. Yelp, HealthGrades and RateMDs are just a few of the multitude of digital forums available for patients to post information about their physicians. To date radiologists have been relatively invisible in these venues. When we are rated, however, our scores are usually extremely positive, but sometimes extremely negative. There is usually little in between. And the comments often seem highly subjective, reflecting the not uncommon disconnect between patients' priorities and our own. We can lament about an unfair or flawed system, but that won't stop this movement. Transparency means that some of us will look good, and some of us won't. Importantly, though, it will challenge us all to become better. The huge opportunity before us is to not just embrace this movement, but help lead it and develop metrics and platforms that provide real and meaningful information to our patients so that they know who we are and what we do.

Starting literally with just a few fingers, radiology's early innovators moved from one organ system to the next, and from one modality to another, to make the human body transparent in a way that no one could ever have imagined. If radiologists are to be as successful in the next century as we were in the last, then our next generation of innovators will need to make our delivery system equally transparent. **✕**

Radiology's Evolving Role in Precision Medicine

BY PAUL LATOUR

The goal of precision medicine is to integrate information in a seamless way so that treating physicians can make reasonable decisions for their patients.

To maximize its role in the process, radiology needs to move further toward creating an objective, standardized method to insert information into reporting systems, to broaden the specialty's focus to include therapeutic implications, and to learn to harness big data with imaging radiomics, according to presenters of the RSNA/American Association of Physicists in Medicine (AAPM) Symposium held at RSNA 2016.

"In general, medicine is becoming more of a science and less of an art," said presenter Daniel C. Sullivan, MD, who founded and chaired the RSNA Quantitative Imaging Biomarkers Alliance (QIBA) and currently serves as the QIBA external relations liaison. He is a former RSNA science advisor.

Until recently, radiology information systems did not facilitate structured reporting or standardization, which has been an obstacle for radiology.

"But that's changing. I've seen more evidence of that in the last couple years, particularly at RSNA 2016. A lot of the vendors were showing significant progress along those lines," Dr. Sullivan said.

But adopting standardization is only one way radiology can move toward precision medicine. The Precision Medicine Initiative (PMI), which former President

Obama announced during his State of the Union address in January 2015, will "pioneer a new model of patient-powered research that promises to accelerate biomedical discoveries and provide clinicians with new tools, knowledge, and therapies to select which treatments will work best for which patients," according to WhiteHouse.gov.

Symposium moderator Paul Kinahan, PhD, said the key phrase in the PMI is selecting "which treatments will work best for which patients."

"We as radiologists tend to focus more on the diagnostic side and how it connects to treatment," said Dr. Kinahan, vice chair of radiology research and head of the Imaging Research Laboratory at the University of Washington, Seattle. "It's such a major initiative that we need to understand what it means and how it's going to impact our field. But there's no question that precision medicine has a positive impact."

Focusing on Therapeutic vs. Diagnostic Implications

To optimize imaging for precision medicine, radiologists should strive to change their point of view regarding diagnosis, Dr. Sullivan said.

"The major focus in healthcare delivery,

particularly in precision medicine, is on appropriate therapy. I keep emphasizing that because for 100 years, radiologists have focused on diagnosis, which is understandable," Dr. Sullivan said. "That focus on therapy, and how our information affects therapy, is essential for radiologists to pay attention to as healthcare continues evolving."

One way radiologists can change their point of view is by creating reports that focus on the implications for choosing the optimal therapy. For an effective treatment to be considered precise, its efficacy must be correlated with validated biomarkers to distinguish the responder from the non-responder.

Because imaging can be done repeatedly, radiologists must also assess a patient's response to current therapy across serial studies. But Dr. Sullivan said many treating physicians believe there are insufficient imaging means for monitoring response to therapy and recurrence.

Harnessing Big Data is Key to Precision Medicine

Radiology can assuage the physicians' concerns by harnessing big data with imaging radiomics to create predictive models, said Maryellen Giger, PhD, also a symposium presenter.

"The major focus in healthcare delivery, particularly in precision medicine, is on appropriate therapy. I keep emphasizing that because for 100 years, radiologists have focused on diagnosis, which is understandable."

DANIEL C. SULLIVAN, MD



Adopting standardization in radiology reporting and harnessing big data with imaging radiomics are key areas radiology should focus on in precision medicine, said Daniel Sullivan, MD, and Maryellen Giger, PhD, speaking at the AAPM Symposium at RSNA 2016.



Creating predictive models involves receiving input from clinical data (including environmental data), radiology data, pathology data, protein data and gene testing data. But, as Dr. Giger points out, that is a lot of data to harness.

"It's basically information overload," said Dr. Giger, A.N. Pritzker Professor of Radiology, the Committee on Medical Physics and the College at the University of Chicago.

From a research perspective, Dr. Giger said a two-stage process is required to prevent overload — discovery and application.

The discovery stage involves looking at imaging data and the various '-omic' data (radiomics, pathomics, proteomics, genomics) to discover their relationship with each other. This stage is a multidisciplinary data-mining effort involving radiologists, medical physicists, statisticians, oncologists, computer scientists and other researchers.

Dr. Giger compared this to the way the genomics community approached the Cancer Genome Project.

"The radiologic community needs to continue to conduct robust collection, annotation, analysis and evaluation of images of large populations," she said.

Daily Bulletin coverage of RSNA 2016 is available at RSNA2016.rsna.org/dailybulletin/

The application stage is about developing predictive models for use in risk assessment, screening, detection, diagnosis, prognosis, therapeutic response and risk of recurrence.

However, measures must be established before the two-stage process can begin. This can be attained through robust radiomics or quantitative imaging phenotypes. Dr. Giger defined radiomics as the high throughput conversion of image sets into mineable data. With radiomics, a patient's tumor can be characterized quantitatively via virtual digital biopsies.

"We're not going to get rid of biopsies — we want to learn from them. We want to understand how the biopsy relates to what we're seeing in the image," Dr. Giger said.

Dr. Giger said radiomics does not leave out the human element. Ultimately, radiomics is a combination of conventional computer-aided diagnosis (CAD), deep-learning methods and human skills.

"Anybody who is worried about losing their job, I don't think that is necessary. Relating whatever we extract out of the image to what's actually going on in the patient is still part of the metric," she said. ❏

Embracing Population-based Health Management is Key to Radiology's Future

BY PAUL LATOUR

In the new era of population-based health management (PHM), radiologists will need to rethink certain roles and broaden their skill sets to successfully transition to a value-based healthcare payment system, according to two experts who spoke at RSNA 2016.

PHM is an approach by healthcare systems and physician groups to cope with reimbursement changes implemented as part of the American Recovery and Reinvestment Act of 2009 and the Patient Protection and Affordable Care Act of 2010, known as Obamacare.

The three aims of PHM are to create better health for the overall population, better care for individuals and to lower cost through healthcare improvement, said James A. Brink, MD, chief of radiology at Massachusetts General Hospital (MGH) and a professor of radiology at the Harvard Medical School, both in Boston, during the session on prospering in the era of healthcare reform.

"The goal is to keep a patient population as healthy as possible, minimizing the need for expensive interventions such as emergency department visits, hospitalization, imaging tests and procedures," Dr. Brink said.

Using the MGH Physician & Hospital Internal Performance Framework (IPF) system as a guideline, Dr. Brink said PHM requires all healthcare providers to develop new skill sets and a new infrastructure for delivering care. He added that the IPF was created to help manage MGH's at-risk contracts that are tied

to the health of the population managed by MGH for each payer.

The MGH framework defines the measures in which physicians will be held accountable and helps to redistribute savings earned from payments to the practitioners achieving results.

Performance is broken into categories for quality measures, medical expense trends and implementing population health quality and efficiency strategies. When he joined MGH three years ago, Dr. Brink said the hospital was focused on what specialists such as radiologists could do to help primary care physicians manage population health.

Strategies throughout MGH include having an active referral management and e-consult program, allowing for virtual follow-up visits for patients, guiding patients and physicians through common procedures by providing risk and benefit analysis, and enabling efficient care delivery for defined episodes of care through "care bundles."

Dr. Brink said he focused on another method — variation reporting and control — in which physicians and practices receive sufficient guidance and data on their lab, pharmacy and radiology ordering patterns to reduce practice variation.



McGinty



Brink

"It's practice variation that kills us. In terms of appropriate utilization, we really want to find that sweet spot where we provide a population health benefit at an appropriate cost," Dr. Brink said.

This process ties into the PHM goal of adopting automation to ensure that healthcare is feasible, scalable and sustainable. To that end, beginning Jan. 1, 2018, physicians will be required to consult government-approved, evidence-based appropriate-use criteria through a clinical decision support (CDS) system when ordering advanced diagnostic imaging exams.

CDS systems allow image-based care algorithms to be integrated directly into the dictation platform, enabling their use at point-of-care.

"If all radiologists apply the same algorithms to the same imaging scenarios,

variation in our reports — and more importantly, in what we recommend — will be reduced," Dr. Brink said. "It's critical that we leverage these things in order to keep radiology in the center of the process."

Personalized Care Yields Better Outcomes

To remain stewards of medical imaging, radiologists must embrace patient-centered care, said session presenter, Geraldine B. McGinty, MD, MBA.

"We have an opportunity to improve our patients' outcomes by making sure they get the imaging they need, and making sure they get the right imaging," said Dr. McGinty, assistant chief contracting officer and assistant professor of radiology at Weill Cornell Medicine, and assistant attending radiologist at New York-Presbyterian Hospital, both in New York.

The patient-centered care approach followed a period in which radiology was

hit hard by reductions in spending and utilization of medical imaging. In radiology, initiatives such as the RSNA Radiology Cares® campaign, which offers numerous resources for physicians, as well as the American College of Radiology's (ACR) Imaging 3.0®, help guide radiologists to build patient-centered practices.

Adding patients' voices to the discussion of their healthcare is key to this approach, Dr. McGinty said. She pointed to research showing that higher patient satisfaction resulted in lower 30-day readmission rates — information that also plays an important role in the evaluation and management of hospital performance.

She also encourages radiologists to be more visible and accessible to patients. As an example, Dr. McGinty cited the Weill Cornell Imaging Department's use of electronic signage to welcome patients and inform them of which radiologists are on duty.

"Being visible starts at the front door," Dr. McGinty said.

Interacting with patients also extends to payment policy. Dr. McGinty said the Centers for Medicare & Medicaid Services (CMS) now contacts ACR to proactively receive feedback to ensure proposed policies are meaningful for physicians.

"This will be an ongoing measure development process. So not only is it important for us to perform well on the metrics that are here already, it is vitally important for us to make sure we inform this process in a way that is meaningful for us," Dr. McGinty said.

Along with their patients, radiologists stand to benefit as well, according to Dr. McGinty. "Nothing is more energizing than connecting with your patients," she said. ❏

WEB EXTRAS

❏ James A. Brink, MD, discusses healthcare in a video interview at RSNA.org/News.

Enhance Your Patient-centered Practice through Radiology Cares®

RSNA's Radiology Cares® initiative offers a variety of resources designed to optimize the patient experience, including practice resources, an educational toolkit, PowerPoint presentations and "Patient Stories," videos illustrating how patient-centered radiology can impact patients. Go to RadiologyCares.org to access these resources and to explore the Radiology Cares Caring Quilt (right) highlighting patients' expressions of appreciation for the radiology professionals who went above-and-beyond in caring for them.



Messages from Our Patients

<p>"I cannot overstate my appreciation" Thomas S. Chang, M.D. Weinstein Imaging Associates PA, USA</p>	<p>"Your report was the most detailed and comprehensive" Paul Macchi, M.D. Choice Diagnostic Imaging FL, USA</p>
<p>"He took time to explain and answer my questions" Richard Redvanly, M.D. Charlotte Radiology NC, USA</p>	<p>"...only a really trained eye would have seen my stage 1 cancer" Michael Linver, M.D. Breast Imaging Center of X-Ray Associates of New Mexico, P.C. NM, USA</p>
<p>"You have saved my life and secured my family" A.M. Obaideen, M.D., DIS University Hospital Sharjah Sharjah, UAE</p>	<p>"He thoughtfully explained each step" Peter Chang, M.D. Charlotte Radiology NC USA</p>
<p>"Thank you for your time and patience" Michelle Gouveia, M.B.B.S., DMRD Goa Scan Centre Goa, IND</p>	<p>"I actually relaxed... certainly reflected trust in the radiologist" William Palmer, M.D. Massachusetts General Hospital MA, USA</p>
<p>"Our son would not be the happy, healthy little boy he is, if it weren't for you!" Mary Beth Moore, M.D. Arkansas Children's Hospital / UAMS AR, USA</p>	<p>"It's so nice to not be in pain" Brian S. Funaki, M.D. University of Chicago Medicine IL, USA</p>

"It's practice variation that kills us. In terms of appropriate utilization, we really want to find that sweet spot where we provide a population health benefit at an appropriate cost."

JAMES A. BRINK, MD

Outpouring of Voters Select Top Entries in RSNA Image Contest

BY MARY HENDERSON

Judging by the response from online visitors across the globe, the word is spreading quickly about the RSNA Image Contest. In its third year, the RSNA 2016 competition drew 477 submissions from around the world — including travel photography, fine art, software-manipulated diagnostic images, and unusual medical cases — and nearly 125,000 online votes. Last year’s contest drew just over 26,000 online votes.

“We can use art to capture the value of radiology and how we contribute to patient care.”

KARI VISSCHER, MD

Artists submitted images in four categories: Best Photo, Radiology Art, Most Unusual Case and Best Medical Image. Throughout October 2016, viewers perused contest submissions posted on the RSNA website and voted for their favorites once per 24-hour period. The top 25 vote-getting images were featured on a video screen in the Discovery Theater during RSNA 2016 and can be viewed online (see Web Extras).

Software, Segmentation, Tools for Artwork

Six of the entries by Charbel Mourad, MD, a radiologist at Hospital Libanais Geitaoui, Beirut, Lebanon, were among the top 10 vote-getters, including a pen and ink drawing in the Best Photo category that captured the most votes of any entry. Dr. Mourad also submitted several pieces of Radiology Art and a Most Unusual Case, “The largest stomach I have ever seen.”

“I saw a fluid-filled structure on ultrasound and then the patient proceeded to have a CT,” said Dr. Mourad, also a doctoral student at the Institut de Recherche Expérimentale et Clinique, Université Catholique de Louvain, Brussels, Belgium. “A large hernia had grown into and filled the stomach.”

Dr. Mourad used the software CTVox to add color and shadows to microCT images of the lunate, creating colorful artistic hearts that ranked fourth and fifth in the contest. Collectively, Dr. Mourad’s entries garnered a whopping 52,507 votes, all landing in the top 25.

“I have six brothers and sisters and colleagues in the U.S., Canada, Lebanon and Belgium who were all very enthusiastic about my entries,” he said. “They were very happy for me.”

Submitted by Madison Kocher, BS, the painting “Congestive Art Failure” was a top contender earning more than 9,000 votes.

A medical student at the Medical University of South Carolina, Charleston, who is pursuing a career in radiology, Kocher has painted since she was a child and gets regular requests for paintings from friends and colleagues. She whipped up her 2-by-3-foot acrylic on canvas painting of a chest x-ray, colorful tubes of paint and an artist palette in about four hours.

“I nearly wore out my hair dryer that weekend in an effort to speed up the paint drying process,” Kocher said.

A colorful 4-D CT segmentation of an acute stroke patient’s brain was the highest-ranking submission in the Best Medical Image category.

“We wanted to show that these type of segmentations are not exclusive to MR,” said Midas Meijs, MSc, of the Radboud University Medical Center in the Netherlands.

Meijs and a team used deep learning and pattern recognition to create the segmentations, which can be used for improved visualization and computer-aided detection of vascular occlusions and vessel malformations.

Three stunning landscape photos by Wendy Wai Man Lam, MD, chief of service, Department of Radiology at Queen Mary Hospital in Hong Kong, were among the top 25 images selected in the Best Photo category.

Her entries included a dreamy image of a fisherman under a starry night in Guilin, China, and a double rainbow in Iceland — both captured with her Canon 5-D Mark III, producing rich, color- and light-saturated images.

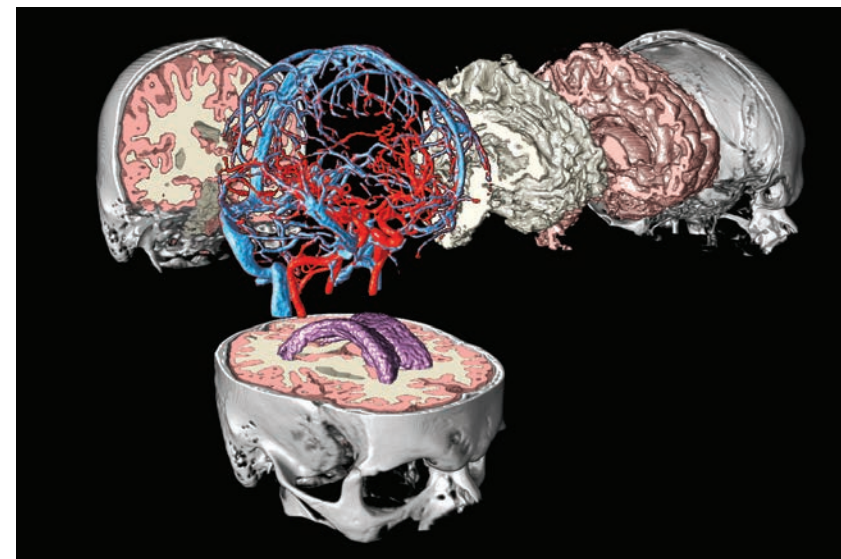
Images Translate to Patient Care

Entries to the RSNA Image Contest reflect not only the artistic talents of radiologists, but also their creative approach to patient care.

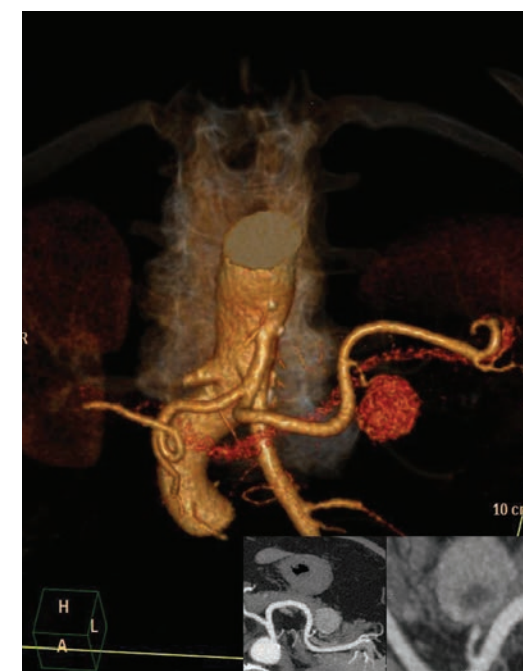
Inspired in part by the 2015 contest, the Radiology Department at Queen Mary

Continued on Page 14

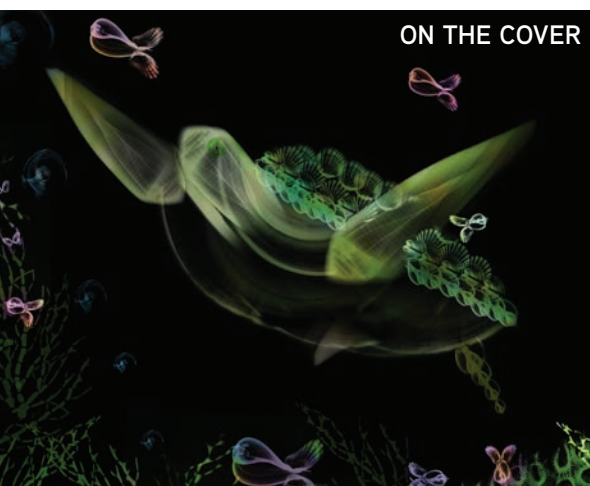
In the 2016 RSNA Image Contest, viewers voted for their top 25 favorites on RSNA’s website. Below are the top vote-getters in their respective categories.



Best Medical Image
 “Expand Your Mind:
 The Possibilities of Tissue Segmentation in 4-D CT”
 Midas Meijs, MSc



Most Unusual Case
 “The Feeding Artery of Pancreatic
 VIPoma, the Cystic Change and
 the Abundant Blood Supply of the
 Tumor”
 Yan Wang

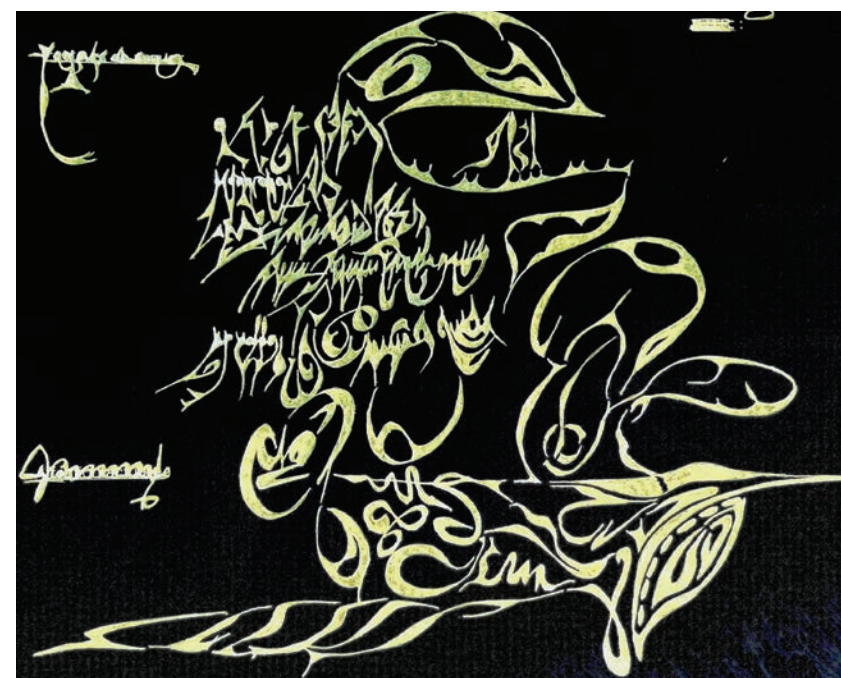


ON THE COVER

Radiology Art

“When Turtle Meets Butterflies”

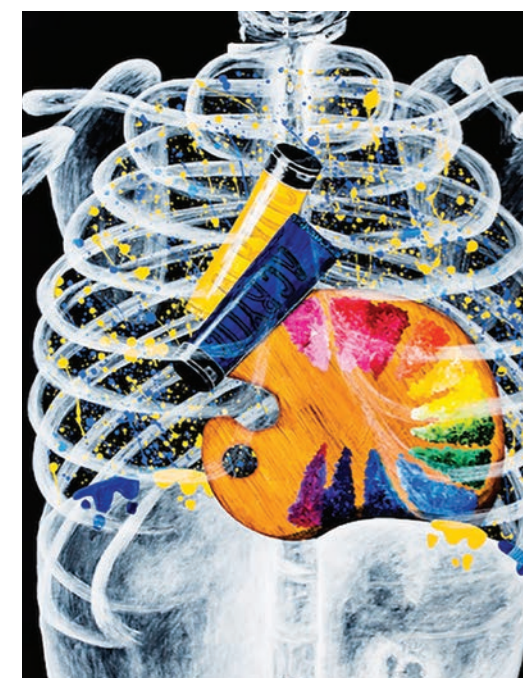
Anna Mak



Best Photo

“A Panda Drawing for his Queen”

Charbel Mourad, MD



Radiology Art

“Congestive Art Failure”

Madison Kocher

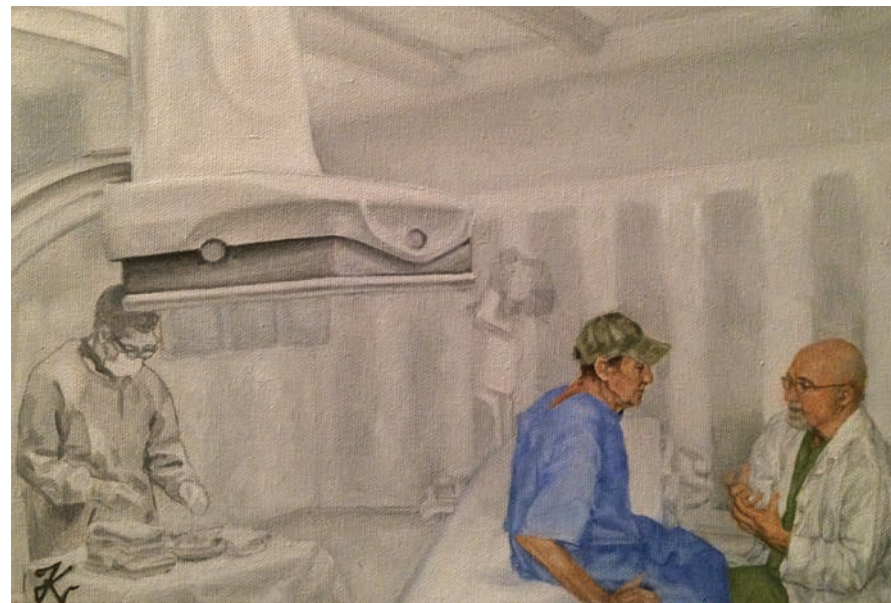
Continued from Page 12

Hospital formed an artistic team to create poster-sized images for its newly renovated waiting area. The team created the colorful and ethereal, “When Turtle Meets Butterflies” (see Page 12) and “Teddy in Nuts and Shells,” which each received more than 6,000 votes.

“We created imagery of nature using x-ray images of flowers, plants and seashells,” said Anna Mak, senior radiographer. “A lot of patients appreciate our passion toward imaging and nature and are happy to be in the environment we created for them.”

An oil painting on canvas, “The IR Consultation” by Kari Visscher, MD, of London, Ontario, was another standout among the top 25 vote-getters. The majority of the painting, including the equipment and technician preparing for an IR procedure, are in grayscale, while the patient and radiologist conversing in the foreground are in color.

Using her training as a medical illustrator, Dr. Visscher is creating a series of 12 paintings to provide a visual representation of radiologists and patients in real scenarios. For each scenario, she takes reference photographs of actual radiology cases at the University of Western Ontario,



“The IR Consultation”
Kari Visscher, MD

Radiology Art

Canada, including a child undergoing an upper GI, a woman having an MRI-guided breast biopsy and a radiologist dictating in front of a diagnostic image.

“Many people don’t know what radiologists do because they can’t see us,” Dr. Visscher said. “We can use art to capture the value of radiology and

demonstrate how we contribute to patient care. I want to use the series to educate and empower patients.” ❏

WEB EXTRAS

View all images submitted for the RSNA 2016 Photo Contest at RSNA.org/Image-Contest.

Imaging Industry Joins Discussion at RSNA 2016 International Trends Meeting

BY BETH BURMAHL

Communication is essential to advancing the critical, but complicated, relationship that exists between researchers, radiologists and the imaging industry throughout the world.

To that end, a group of radiology leaders from across the globe met during the International Trends meeting at RSNA 2016 to discuss some of the issues that are central to strengthening that relationship among all stakeholders — including those in developing countries.

“Our relationship with industry is very important,” said James Borgstede, MD, RSNA Board liaison for international affairs, during the session’s opening comments. “We have to facilitate an environment that will allow products to get to the market so they can flourish.”

Moderated by Maximilian F. Reiser, MD, of Germany, the session included radiology leaders from Uganda, China, the Netherlands, and the U.S., as well as industry representative Thomas N. McCausland, BSEE, MBA, former CEO of Siemens Medical Solutions, and past member of the RSNA Research & Education (R&E) Foundation Board of Trustees.

Attendees from radiological societies in Korea, Canada, Brazil and many other countries joined in a group discussion later in the session.

From an industry standpoint, McCausland stressed that research is the cornerstone of product development and that radiologists are critical to the progress of research.

“Radiologists are essential to developing new technology, which helps to ensure clinical efficacy for the imaging technology and products a company develops,” McCausland said. “Developing a product in a vacuum is inefficient.”

While industry isn’t usually directly involved in research, imaging companies closely monitor research that shows promise and often become more involved as a product moves closer to the translational phase, he said.

But the closer a product gets to clinical application, the more caution needs to be exercised between industry and the end user, said Anne G. Osborn, MD,

Distinguished Professor, University of Utah School of Medicine, William H. and Patricia W. Child Presidential Endowed Chair in Radiology. “The process needs to be clear and transparent,” Dr. Osborn said.

McCausland and Dr. Osborn agreed that one of the best ways to ensure transparency is through nonprofit societies such as RSNA, which provides millions of dollars in funding to investigators across the world through its Research & Education (R&E) Foundation.

“Organizations like the R&E Foundation put a mechanism between industry and the end user,” said Dr. Osborn, a past chair of the R&E Foundation Board of Trustees and a 2006 RSNA Gold Medal recipient. “The process is transparent and unbiased.”

Public-private partnerships — such as the Innovative Medicine Initiative (IMI) in Europe — offer another model for advancing research, according to Gabriel P. Krestin, MD, PhD.

The IMI, a public-private partnership between the European Union and the pharmaceutical trade industry (represented by the European Federation of Pharmaceutical Industries and Association), brings together universities, industries, small and medium-sized enterprises, patient organizations and regulators in collaborative research projects, including imaging research.

“This is one example of how the public and private entities can collaborate to generate successful products,” said Dr. Krestin, a professor of radiology and chair of the Department of Radiology at Erasmus University Medical Centre Rotterdam, the Netherlands, who was named an RSNA Honorary Member in 2013. “Imaging plays a critical role in this initiative.”

Training, Education Critical in Developing Nations

While fostering technology that moves patient care forward is critical, radiology



Radiologists from across the globe met to discuss the relationship between researchers, radiologists and the imaging industry at RSNA 2016.

leaders from Uganda and China also stressed the need for industry to create robust products that accommodate the unique environmental needs that exist in developing countries.

In Uganda, for example, users need technology and equipment capable of withstanding rugged terrain and a range of temperatures, said Michael Kawooya, MBChB, Mmed, PhD, director of the Earnest Cook Ultrasound Research and Education Institute, Kampala, Uganda.

Because experts aren’t always available to operate equipment, ease of use and access to training is also critical, he said. “Staff operating the equipment often don’t have the expertise necessary, which is why training is so important,” said Dr. Kawooya, also an honorary professor in radiology, Makerere University, Kampala, Uganda.

And although large countries like China have booming metropolitan areas, there is still a critical need for equipment that can adequately serve the outlying rural areas, said Xiaoyuan Feng, MD, professor and chairman, Department of Radiology, Huashan Hospital, Fudan University, Shanghai, P.R. China.

“China is a huge country, and we need simpler systems to serve our rural areas,” he said. “We need equipment that is high-performance, low-cost and easy to use by technicians.”

Drs. Kawooya and Feng stressed the need for industry to provide training and education to users so that technology can fully benefit the patients it was designed to serve.

That is also the goal of the imaging industry, McCausland said. “Industry has no desire to get equipment to market and not have it used properly,” he said.

Meeting attendees also mentioned the need for improvement of service from vendors and recognition of the many influencers and decision makers involved. ❏

Artists Create Mural Onsite at RSNA 2016

Radiology was also the inspiration for artwork created in a more traditional way at RSNA 2016. Below, left: A team of artists led by Nancy Pochis Bank spent three days creating a custom work of art onsite at RSNA 2016 that was displayed in the Connections Center. Below, right: The large canvas mural is now on display at RSNA headquarters in Oak Brook, IL.



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Multimodality Imaging-based Radiomics Research Targets Lung Cancer

2016 RSNA Research Medical Student Grant recipient **Angel Morán, BS**, will work with scientific advisor Tokihiro Yamamoto, PhD, and Megan Daly, MD, to investigate the utility of CT/¹⁸F-FDG PET multimodality imaging-based radiomics for personalized risk stratification of locally advanced non-small cell lung cancer (LA-NSCLC).

“If validated, this approach could potentially be utilized to personalize treatment for LA-NSCLC and improve clinical outcomes,” Morán said.



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Annual Meeting Watch**RSNA 2017 Online Abstract Submission Now Open**

The online system to submit abstracts for RSNA 2017 is open. The submission deadline is noon Central Time (CT) on Wednesday, April 12, 2017. Abstracts are required for scientific presentations, education exhibits, applied science, quality storyboards and quantitative imaging reading room showcases.

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

The top neuroradiology scientific paper as selected by the Scientific Program Committee will receive a \$3,000 award at RSNA 2017.

Students, clinical trainees and post-doctoral trainees are eligible to receive \$500 travel awards for top-rated abstracts accepted for presentation at RSNA 2017. Trainees are also eligible to receive a \$1,000 research prize.

Full eligibility requirements for all awards are available with the 2017 Call for Abstracts.

RSNA® 2017

November 26 – December 1
103rd Scientific Assembly & Annual Meeting

SHARE YOUR KNOWLEDGE AND BE SEEN**Present at RSNA 2017:**

- Scientific Presentations
- Applied Science
- Education Exhibits
- Quality Storyboards
- Quantitative Imaging Reading Room

Important Dates for RSNA 2017

Wednesday, May 3
Member Registration and Housing Open
10:30 a.m. CT

Wednesday, June 7
Non-member Registration and Housing Open at
10:30 a.m. CT

November 26–December 1
103rd Scientific Assembly & Annual Meeting

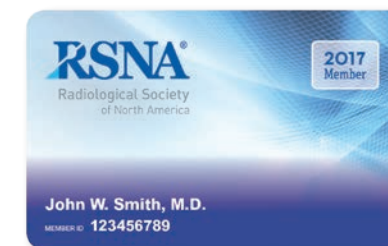
The Value of Membership**Renew Your Membership**

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For more information, including how to apply for retired status, contact membership@rsna.org or 1-877-RSNA-MEM (1-877-776-2636) or 1-630-571-7873 outside the U.S. and Canada.



Journal Highlights

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

Costing in Radiology and Health Care: Rationale, Relativity, Rudiments and Realities

While decisions influence the effectiveness of radiology in patient care on a daily basis, many radiologists struggle to harness the power of cost measurement and cost management as a critical path toward establishing their value in patient care. When radiologists cannot articulate their value, they risk losing control over how imaging is delivered and supported.

In a review article in the February issue of *Radiology* (RSNA.org/Radiology), Geoffrey D. Rubin, MD, MBA, of the Duke University Medical Center in

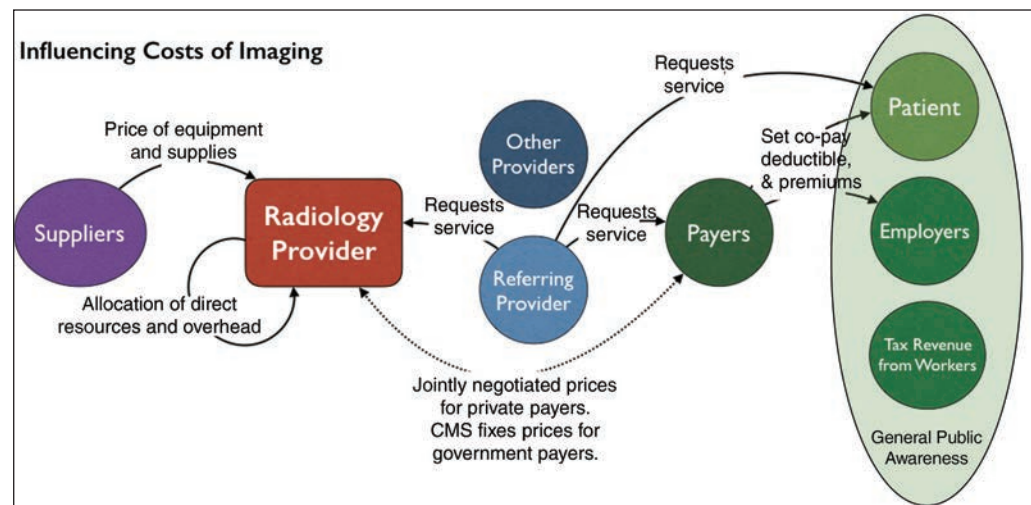
Radiology

Durham, NC, provides a basis for understanding and managing costs in support of effective decision making and advocacy within a complex health system.

Healthcare providers, particularly radiologists, must play a leading role in partnering with administrators and other staff to derive procedure-specific costs that accurately reflect resource utilization. Understanding how costs are allocated and shifted within and among clinical departments is critical to avoid costing misalignments that can mask both

under- and over-performance that lead to inefficient and lower value healthcare.

"Few episodes of care occur without medical imaging, and a rational healthcare system should define the distribution of revenue to radiology based on its value as derived from quality and costs. While the literature is replete with calls for radiologists to quantify the quality of their work, understanding and engaging in the process of costing are equally important. To define the value of radiology, radiologists must lead in the measurement and management of healthcare costs," the author writes.



Factors influencing the costs of imaging for the various links in the value chain illustrate the central role of the referring provider on upstream and downstream links, while they incur no costs themselves. Radiology providers, on the other hand, experience multiple external factors that affect imaging costs. But in an environment where prices are contractually set, radiology providers have relatively little direct influence on the downstream costs of imaging that are experienced by patients. And because the CMS sets prices for Medicare and Medicaid, radiology providers have little direct influence on government payer costs.

(*Radiology* 2017;282:2:333-347) ©RSNA 2017. All rights reserved. Printed with permission.

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

Download the RSNA Journal Apps

Radiology and *RadioGraphics* mobile apps are available in the App Store for the iPhone® and iPad® and in Google Play for Android® devices. The apps are free to download. Learn about features and functionalities here:



Genetic Syndromes Associated with Central Nervous System Tumors

Several genetic tumor syndromes have associated central nervous system (CNS) neoplasms. Recognition of individuals and families at risk for such tumors is critical to improving clinical care and optimizing proper genetic counseling. To contribute effectively, the radiologist should recognize the common varieties of tumors and characteristic neuroimaging manifestations seen in each familial syndrome.

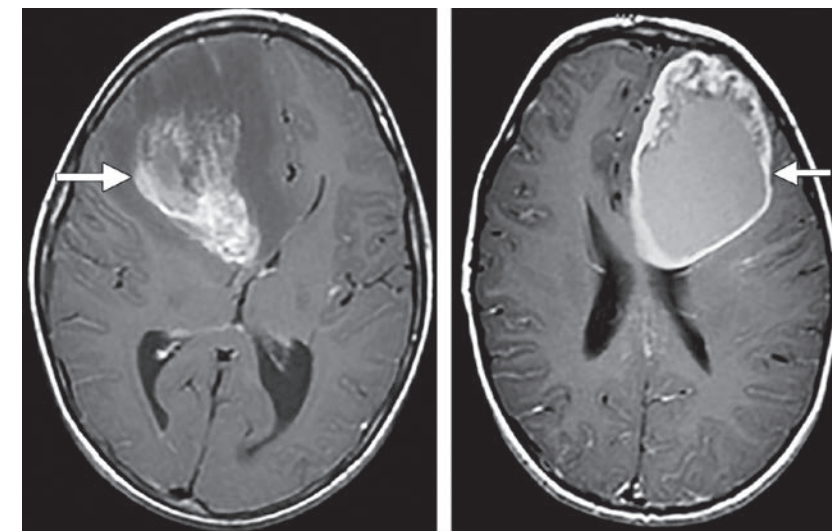
In the January-February issue of *RadioGraphics* (RSNA.org/RadioGraphics), Charmi Vijapura, MD, of the University of Iowa Hospitals and Clinics in Iowa City, and colleagues discuss the array of CNS tumors seen in these genetic syndromes, including the clinical and radiologic findings.

The spectrum of syndromes that have intracranial tumor manifestations includes ataxia telangiectasia, Cowden syndrome, familial adenomatous polyposis, hereditary non-polyposis-related colorectal cancer, Li-Fraumeni syndrome, Gorlin syndrome, neurofibromatosis types 1 and 2, multiple endocrine neoplasia type 1, tuberous sclerosis complex, von Hippel-Lindau disease and Turcot syndrome. Many of these disorders are inherited in an autosomal dominant fashion, and identification of the

associated genetic defects has led to improved understanding of the molecular pathways involved in tumorigenesis, helping pave the way to the emergence of molecularly targeted therapeutics.

"The radiologist plays a vital role in identification, surveillance and follow-up

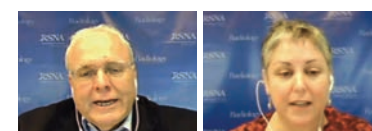
of CNS tumors seen in these genetic syndromes. They should be aware of the common familial syndromes that will require dedicated neuroimaging, potential complications and associated treatment-related changes that can be demonstrated at follow-up," the authors write.



Neurofibromatosis type 1 (NF1) and glioblastomas in 10-year-old identical twin boys. (a) Axial postcontrast T1-weighted image in twin 1 shows a large enhancing right frontal mass (arrow) with heterogeneous enhancement, with surrounding vasogenic edema and probable invasion of the right frontal horn at the foramen of Monro. (b) Axial postcontrast T1-weighted image in twin 2 shows a large left frontal mass (arrow) with central hemorrhagic necrosis and peripheral irregular enhancement.

(*RadioGraphics* 2017;37:1:258-280) ©RSNA 2017. All rights reserved. Printed with permission.

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



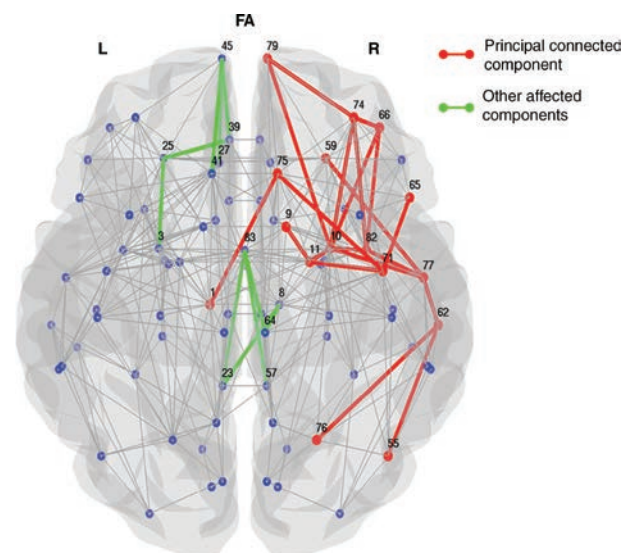
Listen to *Radiology* Editor Herbert Y. Kressel, MD, deputy editors and authors discuss the following articles from the December issue of *Radiology* at RSNA.org/Radiology-Podcasts.

- “Subconcussive Head Impact Exposure and White Matter Tract Changes over a Single Season of Youth Football,” Naeim Bahrami, PhD, and colleagues.
- “Changes in Physician Decision Making after CT: A Prospective Multicenter Study in Primary Care Settings,” Pari V. Pandharipande, MD, MPH, and colleagues.
- “Implementation of Synthesized Two-dimensional Mammography in a Population-based Digital Breast Tomosynthesis Screening Program,” Samantha P. Zuckerman, MD, and colleagues.

Radiology in Public Focus

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

Structural Brain Connectome and Cognitive Impairment in Parkinson Disease



Subnetworks show impaired structural connectivity (decreased fractional anisotropy [FA]) in patients with Parkinson disease (PD) with mild cognitive impairment (MCI) relative to matched patients with PD without MCI at $P = .05$.

(*Radiology* 2017;283:1:InPress);©RSNA 2017. All rights reserved. Printed with permission.

A disruption of structural connections between brain areas forming a network contributes to determining an altered information integration and organization and thus, cognitive deficits in patients with Parkinson disease (PD), according to new research.

Sebastiano Galantucci, MD, of the Vita-Salute San Raffaele University in Milan, Italy, and colleagues used deterministic diffusion-tensor tractography to obtain the individual structural brain connectome of 170 patients with PD (54 with mild cognitive impairment [MCI], 116 without MCI) and 41 healthy control subjects. A network-based statistic was used to assess structural connectivity differences among groups.

The study showed that patients with PD and MCI had a large basal ganglia and frontoparietal network, with decreased fractional anisotropy (FA) in the right hemisphere and a sub-network with an increased mean diffusivity (MD) bilaterally relative to control subjects. When compared with patients with PD without MCI, those with PD and MCI had a network with decreased FA, including basal ganglia and frontotemporoparietal regions bilaterally.

“These results provide novel information concerning the structural substrates of MCI in patients with PD and may offer markers that can be used to differentiate between patients with PD and MCI and patients with PD without MCI,” the authors write.

Heart Disease Protein Linked to Brain Damage

In community-dwelling middle-aged and elderly persons, subclinical cardiac dysfunction as reflected by serum N-terminal pro-B-type natriuretic peptide (NT-proBNP) levels is associated with global and microstructural MRI markers of subclinical brain damage, new research shows.

Radiology

Hazel I. Zonneveld, MD, of Erasmus MC University Medical Center in Rotterdam, the Netherlands, and colleagues measured serum levels of NT-proBNP in 2,397 participants without dementia or stroke and without clinical diagnosis of heart disease who were drawn from the population-based Rotterdam Study.

They found a higher NT-proBNP level was associated with smaller total brain volume and was predominantly driven by gray matter volume. A higher NT-proBNP level was associated with larger white matter lesion volume, with lower fractional anisotropy and higher mean diffusivity of normal-appearing white matter.

“Our findings suggest that the heart and brain are intimately linked, even in presumably healthy individuals. This is essential since cardiac dysfunction and subclinical brain damage are growing problems,” the authors write.

New Videos on RadiologyInfo.org

Visit RadiologyInfo.org, the public information website produced by the RSNA and ACR, to view new videos, including Linear Accelerator and Intravenous Pyelogram (below).

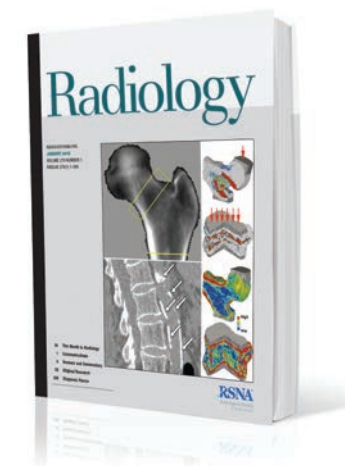
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For patients



Media Coverage of RSNA

In October, 1,236 RSNA-related news stories were tracked in the media. These stories reached an estimated 942 million people.

Coverage included Today, *The Huffington Post*, *TIME*, Yahoo! News, CNN, *Chicago Tribune*, WCBS-TV (New York), WNBC-TV (New York), WGN-TV (Chicago), Reuters, *HealthDay*, *The Washington Times*, *South Florida Sun Sentinel*, *CNN.com*, *WebMD*, *FoxNews.com*, *CBSNews.com*, *Philly.com*, *ABCNews.com*, *Atlanta Journal-Constitution* and *NBCNews.com*.



February Public Information Outreach Activities Focus on Heart Health

In recognition of American Heart Month in February, RSNA is distributing public service announcements (PSAs) focusing on heart disease and screening.

In addition, RSNA is distributing the “60-Second Checkup” audio program to nearly 65 radio stations across the U.S. The segments will focus on a range of cardiac screening examinations.

Education and Funding Opportunities

Start the New Year with RSNA eLearn Online Education

Make a resolution to achieve continuing education goals with valuable eLearn tools from RSNA. Visit the online library at RSNA.org/eLearn to filter and search comprehensive SA-CME education — many free or discounted for RSNA members.

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- **RadioGraphics and Radiology CME Tests**

Earn CME credit through RSNA's *RadioGraphics* and *Radiology* CME tests offered in an interactive online format. More than 300 *RadioGraphics* feature articles and a selection of *Radiology* feature articles are available with corresponding CME tests approved for 1.0 *AMA PRA Category 1 Credit™*. Free for RSNA members or \$25-\$35 for non-members, depending on the article.

- **Cases of the Day**

Each Case of the Day consists of one case per subspecialty area, as presented at past RSNA annual meetings. Cases of the Day are approved for *AMA PRA Category 1 Credits™* and are free to RSNA members or \$15 for non-members.

- **Refresher Courses**

Recorded at past RSNA annual meetings, each course includes a visual presentation, accompanying audio and transcripts. Refresher Courses are approved for *AMA PRA Category 1 Credit™* and free for RSNA members online or \$50 for non-members.

- **Supplemental Online Education**

Supplemental online education utilizes book chapters, educational exhibits and other learning modules in a wide variety of educational areas, including the Ethics and Professionalism and Leadership and Management series. Supplemental online education courses are approved for *AMA PRA Category 1 Credit™*. Free to members.

To learn more, visit RSNA.org/eLearn.

Education & Funding Continues on Page 24

Education and Funding Opportunities

RSNA/ASNR Comparative Effectiveness Research Training Program

Application Deadline
April 30

Applications are now being accepted for an interactive course in comparative effectiveness research (CER) training jointly sponsored by RSNA and the American Society of Neuroradiology (ASNR). The course, beginning in July, is targeted to junior faculty and senior trainees in the imaging sciences.

The goal of the CER training (CERT) program is to provide an introduction to the methodology and tools for performing CER. Led by a faculty of well-established leaders in the field, the CERT program will cover technology assessment, risk benefit analysis, cost-effectiveness evaluation, decision analysis, meta-analysis and systematic review delivered in a combination of online modules, a 1½-day, in-person workshop (Sept. 28-29), web-based didactic lectures and small group Web-based grant proposal review discussions, over the course of a year.

Accepted participants are responsible for travel expenses and onsite hotel accommodations. There is no fee for this course. For more information and to apply, visit RSNA.org/CERT.

Introduction to Academic Radiology for Scientists (ITARSc)

Application Deadline
July 1

RSNA has expanded its Introduction to Academic Radiology (ITAR) program to include postdoctoral fellows in the imaging sciences and biomedical engineering. Postdoctoral fellows and early-stage researchers in these specialties who received their degrees within the past six years are invited to apply for this opportunity to

participate in a dynamic program held during RSNA 2017.

The program consists of a combination of dedicated programming for ITARSc participants and shared sessions with participants of the ITAR program. Selected participants will receive a \$1,000 stipend to offset travel and hotel costs as well as free registration for the RSNA annual meeting. Application forms are available at RSNA.org/ITARSc.

Last Call for Writing a Competitive Grant Proposal Workshop

March 10–11
RSNA Headquarters
Oak Brook, IL

Applications are being taken for the Writing a Competitive Grant Proposal Workshop designed for researchers in radiology, radiation oncology, nuclear medicine and related sciences who are interested in actively pursuing funding from the federal government, societies or

foundations.

Participants will receive tools for getting started in the grant writing process and developing realistic expectations.

The course fee is \$225. Register online at RSNA.org/CGP. Contact Fiona Miller at dor@rsna.org or 1-630-590-7741 for more information.



For Your Calendar

FEB. 15–18
Mexican Society of Radiology and Imaging (SMRI)
Mexico City, Mexico
Visit the RSNA booth
• SMRI.org.mx

MARCH 1–5
European Congress of Radiology (ECR)
Vienna, Austria
Visit the RSNA booth
• MyESR.org

MAY 4–7
Jornada Paulista de Radiologia (JPR)
São Paulo, Brazil
Visit the RSNA booth
• www.jpr2017.org.br/en

MAY 18–20
RSNA Spotlight Course:
MSK Interactivo con Casos
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• RSNA.org/Spotlight

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RSNA Introduces Second Spotlight Course in Bogotá

RSNA is proud to host its second RSNA Spotlight Course: MSK Interactivo con Casos (MSK Interactive with Cases) in Bogotá, Colombia, from May 18 to 20. The course is presented in Spanish.

Attendees will have the opportunity to explore how radiology learning can become dynamic and interactive within the classroom. This course will not only test participants' knowledge, but will also engage them to think fast and answer questions presented by renowned musculoskeletal (MSK) leaders.

MSK Interactivo con Casos is a 2½-day course featuring leaders in musculoskeletal radiology who will share their expertise as attendees explore this important topic in daily practice. All course sessions will utilize RSNA Diagnosis Live™ technology, making this a one-of-a-kind

course in Latin America. Attendees will also take part in diagnosing the popular Cases of the Day, interacting with distinguished speakers and networking with colleagues.

Register before Feb. 28 to take advantage of discounted pre-booking rates. For more information and to register, visit RSNA.org/Spotlight.

To access the full scope of RSNA programs and opportunities, non-North American members — who comprise approximately 29 percent of RSNA's 54,000 members — are invited to explore the International Page at RSNA.org/International.

Access resources and programs

that impact low-resource countries, including the RSNA International Visiting Professor Program (IVP), the RSNA Derek Harwood-Nash International Fellowship and the RSNA Introduction to Research for International Young Academics (IRIYA).

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



COMING
NEXT
MONTH

Read about how a group of radiologists who originally met informally at an RSNA annual meeting two decades ago laid the groundwork for what is now interventional oncology.

SHARE YOUR KNOWLEDGE AND BE SEEN

Present at **RSNA 2017:**

- Scientific Presentations
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- Education Exhibits
- Quality Storyboards
- Quantitative Imaging Reading Room

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The RSNA Travel Award Program for Students

Up to 430 top-rated abstracts from current RSNA members will earn a \$500 travel stipend.

Kuo York Chynn Neuroradiology Research Award

The top scientific paper as selected by the Scientific Program Committee will earn a \$3,000 award recognition.

Visit RSNA.org/Abstracts for complete guidelines.

Submit online

beginning January 2017 at RSNA.org/Abstracts through Wednesday, April 12, 2017, NOON Chicago Time.

Questions?

Call 1-877-776-2227 (*within U.S.*)
or 1-630-590-7774 (*outside U.S.*)

Includes courses in joint sponsorship with the American Association of Physicists in Medicine

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