RSNA News™

March 2017 Volume 27, Issue 3

Image courtesy of the Chicago Zoological Society

Advanced Imaging Brings New Standard of Care to Zoos

ALSO INSIDE:

QIBA Profiles Included in Cancer Moonshot Initiative

The Roots and Growth of Interventional Oncology

Research Targets MRI Claustrophobia, Sedation

Tools for Communicating, Connecting with Patients

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RSNA MISSION

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

AAWR Presents Honors During RSNA 2016


Macura


Rosado de Christenson


Penner


Chapman

The American Association for Women Radiologists (AAWR) announced award recipients during RSNA 2016.

Katarzyna J. Macura, MD, PhD, received the Marie Sklodowska-Curie Award. She was recognized with RSNA Honored Educator Awards in 2012 and 2014. Dr. Macura is a past manuscript reviewer for *Radiology* and *RadioGraphics*, has served on the RSNA Publications Council and is a member of the RSNA Public Information Advisors Network.

Melissa L. Rosado de Christenson, MD, received the Alice Ettinger Distinguished Achievement Award. Dr. Rosado de Christenson was recognized with an RSNA Honored Educator Award in 2012. She has served on the editorial boards for *RadioGraphics* and the RSNA *Daily Bulletin* and is a past member of the RSNA Committee on International Radiology Education.

Rebecca Rakow-Penner, MD, PhD, received the Lucy Frank Squire Distinguished Resident Award in Diagnostic Radiology. Dr. Rakow-Penner serves as a member of the RSNA Research Development Committee and received an RSNA Research Resident Grant in 2015.

Christina H. Chapman, MD, received the Eleanor Montague Distinguished Resident Award in Radiation Oncology.

Go to *RSNA.org/News* for full biographies of the award winners.

Roentgen Nominations Now Open

Nomination Deadline
April 1

Nominations are now being accepted for the RSNA 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.*

Hahn to Serve on ACGME's Radiation Oncology Residency Review Committee


Hahn

Stephen M. Hahn, MD, has been selected to represent the American Board of Radiology (ABR) on the Accreditation Council for Graduate Medical Education (ACGME) Radiation Oncology Residency Review Committee (RRC), effective July 2017.

Dr. Hahn, an ABR trustee for radiation oncology, is head of the Division of Radiation Oncology and chair of the Department of Radiation Oncology, University of Texas, MD Anderson Cancer Center, Houston. Dr. Hahn is president of the Society of Chairmen of Academic Radiation Oncology Programs. He delivered the Annual Oration in Radiation Oncology at RSNA 2011. Dr. Hahn is a 1999-2000 RSNA Research Scholar Grant recipient.

The ACGME accredits sponsoring institutions and residency and fellowship programs, confers recognition on additional program formats or components, and dedicates resources to initiatives addressing areas of import in graduate medical education.

Advanced Level Quality Certificates Awarded

Five physicians were awarded RSNA Advanced Level Quality Certificates in 2016, bringing the total number of recipients to 16 since the first certificates were awarded in 2014. Earning the certificate requires successful completion of Quality Essentials Certificate Courses in each of the four domains: Quality Improvement in Your Practice, Staff and Patient Safety, Customer Satisfaction, and Radiologist Performance Improvement, as well as exhibition of a Quality Storyboard at an RSNA Annual Meeting.

Name	Institution	Quality Storyboard Title
Cyrillo R. Araujo, MD	University of Mississippi Medical Center	Management of Critical Imaging Result Communication in an Academic Setting: Assuring Timely and Accurate Communication Using a PACS-Integrated Notification System
Richard K.J. Brown, MD	University of Michigan Health System	Direct, In-Person Communication between Subspecialty Radiologists and Acute Care Surgeons Leads to Significant Alterations in Clinical and Surgical Decision-Making
Matthew S. Davenport, MD	University of Michigan Health System	Direct, In-Person Communication between Subspecialty Radiologists and Acute Care Surgeons Leads to Significant Alterations in Clinical and Surgical Decision-Making
Ella A. Kazerooni, MD	University of Michigan Health System	Reducing Variability in Orthogonal Reformatted Image Quality from Long Z-axis CT Angiography Studies Using Multi-vendor 3-D Post-Processing Toolkits
Prabhakar Rajiah, MBBS, MD	University of Texas Southwestern Medical Center	A Comprehensive CT Radiation Dose Reduction and Protocol Standardization Program in a Complex, Tertiary Hospital System Using Iterative Phantom and Clinical Testing and a Novel Web-based Information Distribution System

To see these Quality Storyboards, and learn more about the RSNA Advanced Level Quality Certificate Program and other Quality Improvement offerings from RSNA, go to *RSNA.org/Quality*.

Next RSNA Spotlight Course Coming to Colombia in May 2017

The second RSNA Spotlight Course, "MSK Interactivo con Casos," (MSK Interactive with Cases) will be held May 18 to 20, 2017, in Bogotá, Colombia. The course will be presented in Spanish.

Attendees will have the opportunity to explore how radiology learning can become dynamic and interactive within the classroom.

The highly interactive 2 ½-day course features 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, interact with distinguished speakers and network with colleagues.

RSNA SPOTLIGHT COURSE

Early registration rates end on Feb. 28. For more information and to register visit *RSNA.org/Spotlight*.

Andrews, Robey Receive RANZCR Honors

Matthew W. Andrews, MBBS, received the 2016 Roentgen Medal and **Geoffrey R. Robey, MBBS,** received the Clinical Radiology Educational Service Award at the recent Royal Australian and New Zealand College of Radiologists (RANZCR) annual meeting held at the Gold Coast, Australia.

Dr. Andrews, who served as RANZCR president in 2010, is director of medical imaging at Cabrini Brighton Hospital in Victoria, Australia. The Roentgen Medal is awarded to fellows of the college who have made a valuable contribution over a significant period of time.

Dr. Robey recently retired from working as an associate radiologist at Perth Radiological Clinic, Western Australia. The Educational Service Award acknowledges an outstanding level of commitment, participation and leadership in training and education in clinical radiology over an extended period of time.

Andrews

Robey

Renew Image Wisely® Pledge for 2017

Now is the time to renew your Image Wisely® pledge for 2017 to continue your commitment to safe imaging at *ImageWisely.org*.

In 2016, the Image Wisely pledge was converted to an annual renewal, which means all pledges for individuals, facilities and associations expired on Dec. 31. To date in 2017, more than 17,000 individual pledges have been made — and numbers continue to climb. Another 600 facilities and 60 associations or educational programs have also pledged.

The change from a one-time pledge to an annual renewal is intended to provide individual pledgees with dated certificates that can be used as tangible evidence of their awareness of and commitment to the Image Wisely campaign's mission to increase awareness about adult radiation protection. Facilities with current pledges can download the Image Wisely logo to advertise their participation in the campaign.

The Image Wisely website includes a news section with regularly updated headlines regarding radiation safety and Image Wisely campaign items including select RSNA education exhibits, a "What We're Reading" section with links to newly available articles, and a section on regulations and standards updates among many other resources.

The Image Wisely campaign is a joint partnership of RSNA, the American College of Radiology, the American Society of Radiologic Technologists and the American Association of Physicists in Medicine.

To continue your commitment to safe imaging, renew your pledge for 2017 at *ImageWisely.org*.

Numbers in the News

3,500

Number of animals in the care of the Brookfield Zoo, home to one of the most advanced veterinary imaging suites in the world. Read more about veterinary radiologists and the work they are doing in zoos on Page 12.

9.1

Number of times — in millions — that RSNA-created content was seen during RSNA 2016 by users across four platforms: Twitter, Facebook, LinkedIn and Instagram. Read more about RSNA's expanding social media presence on Page 25.

2

Number of RSNA's Quantitative Imaging Biomarker Alliance (QIBA) Profiles that were recently added to the federal Cancer Moonshot initiative's website. Read more about the role of quantitative imaging in cancer research on Page 7.

THIS MONTH IN THE *RSNA NEWS* ONLINE VERSION

View video interviews with Randall Flick, MD, MPH, and Shreyas S. Vasanawala, MD, PhD, discussing their research showing MRI techniques that may reduce the need for anesthesia in children at *RSNA.org/News*.

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My Turn:

An Investment in Radiology

BY N. REED DUNNICK, MD

We can all be proud of the role medical imaging and image-guided therapy play in healthcare today. Computed tomography (CT) and magnetic resonance imaging (MRI) are ranked among the most important advances in all of medicine. Ultrasound has advanced from "A mode" to color and power Doppler imaging and now adds elastography and contrast enhancement to its suite of capabilities. An increasing array of unique radiopharmaceuticals interrogate at the cellular level, and we use dramatically improved intravascular contrast media. At the same time, we are learning to image patients more safely, with reduced levels of ionizing radiation.

Dunnick

The advances are not limited to diagnostic studies, but include the applications of imaging to the procedures done by interventional radiologists and radiation oncologists. Imaging helps assess the progress being made during an interventional procedure. Radiation oncologists employ these advances in imaging to improve the quality of care they deliver. By better defining the precise extent of a tumor, a higher dose can be delivered to the tumor while sparing normal tissue. These techniques, including stereotactic body radiation therapy (SBRT), intensity-modulated radiation therapy (IMRT), and 4-D conformal radiation therapy are now the standard of care.

As we recognize that tumors are heterogeneous, with some parts behaving aggressively and others more indolently, we are able to target the most active portion of a tumor with greater precision. This is helpful not only to assure biopsy of the most aggressive part of the tumor, but also to direct treatment most appropriately.

Of course, these advances would not be possible without our colleagues in medical imaging physics. Their research and their participation in the daily practice of radiology and radiation oncology are essential to our field.

How can we ensure the continuation of these advances in medical imaging and their applications to image-guided therapies? The single largest source of funding for medical research is the National Institutes of Health (NIH). Its budget of more than $32 billion is by far the largest medical research budget in the world. If radiologists, radiation oncologists and medical physicists are to be successful in conducting impactful research, NIH funding will be essential. However, with pay lines approaching single digits, NIH funding is not easy to secure. This is where investment in the RSNA Research & Education (R&E) Foundation plays a critical role. A grant from the R&E Foundation is the first step in the research journey for many. An R&E grant affords investigators critical protected time to define their research goals, pursue hypotheses and gather data needed to jumpstart their efforts and validate their research.

The radiologic community generously supports the R&E Foundation, and donations from individuals, private practice groups and corporations through the Inspire – Innovate – Invest Campaign have increased our endowment and enabled the Foundation to award a record-setting $4 million to 101 grant recipients in 2016.

I consider my contributions not only as support for the society's mission, but also as an investment in the future of radiology with a demonstrated return. You will be very pleased to know that every dollar awarded by the R&E Foundation results in over $40 dollars of additional funding as principal or co-investigator from sources such as the NIH. By supporting the Campaign and contributing to the Foundation, we are making a wonderful investment in our future!

N. Reed Dunnick, MD, is the Fred Jenner Hodges Professor of Radiology at the University of Michigan Health System in Ann Arbor. Dr. Dunnick is chair of the RSNA Research & Education (R&E) Foundation Board of Trustees and served as RSNA president in 2014.

Experts Advise on Alternative Sources for Research Funding

BY MICHAEL HART AND PAUL LaTOUR

Money has never been tighter for early-career investigators looking for ways to fund their research into cutting-edge radiology technology, according to presenters of a special interest session at RSNA 2016. The National Institutes of Health (NIH) offers fewer funding opportunities every year. Grant-application success with the NIH reached an all-time low of 16.8 percent in 2013.

"NIH funding is essentially flat, especially if you consider inflation. The issue is how do we take great ideas from radiologists to fruition?" said Ronald L. Arenson, MD, chair of the Radiology and Biomedical Imaging Department at the University of California, San Francisco, and former RSNA president.

Daily Bulletin* coverage of RSNA 2016 is available at *RSNA.org/Bulletin.

Dr. Arenson believes it is time for university researchers to mine the resources of the marketplace rather than turning to more traditional funding sources. But it's not an easy path.

Much like participants of the popular ABC-TV reality show "Shark Tank," in which would-be entrepreneurs pitch their investment ideas to a panel of industry titans, participants in the session "Preparing Radiologists to Jump Into the Shark Tank" pitched ideas to a panel of experts.

T. Rockwell Mackie, PhD, pitched his idea for a radiology advancement – an equine CT imaging scanner called Asto CT – to panelists including Dr. Arenson, Navid Alipour, co-founder of Analytics Ventures, and Scott A. Penner, an attorney specializing in intellectual property protection with Foley & Lardner LLP.

The panelists offered five important tips for researchers looking for paths to research funding in the marketplace.

First, protect your intellectual property. Make sure you and your university have the correct patents in place before you schedule the first meeting with a venture capitalist.

"Intellectual property is a valuable asset for your company and sometimes the only asset you have at start-up time," Penner said. "It needs to be treated as such."

Next, prepare a good elevator speech. Researchers may not always think about how they would explain what they're doing to anybody besides those who speak their own language.

Third, understand where your product fits into the market. When you talk to potential investors, they want a good idea of what the return on their investment would be and why your proposal would be the big hit they're looking for.

Fourth, decide what your role will be. How much time do you plan to devote to this project you're asking somebody to invest in? Will you hire staff to take on some of the responsibilities?

And finally, know how much money you will need.

Following these steps will show potential investors you are prepared and serious about taking your idea to market. But keep in mind, being fully prepared doesn't mean the money will come easily.

"As venture capitalists, in every situation we're looking for a reason to say no," Alipour said, adding that it is important to see that a researcher is invested in his own idea.

The session was organized by the Academy of Radiology Research, which has proposed a new initiative with the goal of educating imaging investigators about how best to present translational research and technology development ideas to industry and other non-governmental funding sources.

Presenters (*left to right*): Scott A. Penner, Navid Alipour, T. Rockwell Mackie, PhD, and Ronald L. Arenson, MD.

> *"...how do we take great ideas from radiologists to fruition?"*
>
> RONALD L. ARENSON, MD

Federal Cancer Moonshot Initiative Includes RSNA QIBA Profiles

BY PAUL LaTOUR

Two of RSNA's Quantitative Imaging Biomarkers Alliance (QIBA) Profiles relevant to cancer have been referenced and supported by the federal Cancer Moonshot initiative to increase efforts to prevent, diagnose and treat cancer.

Quantitative Imaging Biomarkers Alliance RSNA

Headed by former Vice President Joe Biden, the 2016 initiative is designed to eliminate cancer by dramatically accelerating the pace of research.

QIBA, which aims to improve the value and practicality of quantitative imaging biomarkers by reducing variability across devices and time, has created profiles that define universal standards of operation. Specifically, the profiles establish comprehensive, systems-engineering, technical standards for image acquisition and processing.

Added to the Cancer Moonshot website this month, the two completed QIBA Profiles relevant to cancer studies and treatments describe methods for obtaining accurate and reproducible ^{18}F-fluorodeoxyglucose (FDG) PET/CT measurements and CT tumor volume measurements.

"Having the QIBA process and QIBA Profiles recognized by the Moonshot initiative provides considerably greater exposure for the QIBA concepts and products," said Daniel C. Sullivan, MD, QIBA external relations liaison and professor emeritus in the Department of Radiology at the Duke University Medical Center, Durham, NC.

Dr. Sullivan co-authored the blog, "Standards for Quantitative Imaging Biomarkers to Advance Research and Outcomes as part of the Cancer Moonshot," posted on the Cancer Moonshot website describing how QIBA Profiles further a strategic goal of the initiative to unleash the power of data and enhance data sharing.

Sullivan

"Use of these QIBA Profiles for standardized quantitative imaging will contribute significantly to improvements in the quality of cancer care, and to the development of more effective therapeutics in oncology," Dr. Sullivan wrote in the blog co-authored by Roderic Pettigrew, PhD, MD, director of the National Institute of Biomedical Imaging and Bioengineering (NIBIB); Richard Cavanagh, PhD, director of the special programs office at the National Institute of Standards and Technology (NIST); and Shadi Mamaghani, PhD, scientific advisor to the NIBIB office of the director.

"Having the post co-authored by senior members of the NIBIB and NIST adds external credibility to QIBA concepts and profiles," Dr. Sullivan said.

Former President Barack Obama announced the Cancer Moonshot during his 2016 State of the Union Address, calling on Biden to lead the $1 billion initiative with a stated mission "to achieve a decade's worth of progress in five years."

A task force was created to unite the federal government "in achieving the Moonshot's mission through a focused effort to leverage federal investments, targeted incentives, private sector efforts, and patient initiatives, among other mechanisms," according to the task force report.

Read the full article by Dr. Sullivan and colleagues and get more information about the Cancer Moonshot initiative at *medium.com/cancer-moonshot.*

Former Vice President Joe Biden is leading the Cancer Moonshot initiative to accelerate cancer research.

MRI Techniques May Reduce Need for Anesthesia in Children

BY RICHARD DARGAN

As evidence grows that anesthesia can adversely affect a child's cognitive development, researchers suggest that radiologists could significantly reduce the time and discomfort associated with pediatric MRI through a variety of measures before and during scanning.

Although MRI is an effective alternative to CT in pediatric imaging that eliminates the risks associated with ionizing radiation, it often requires sedation or general anesthesia to help keep young patients calm and motionless for the exam.

Though risks of immediate complications from anesthesia or sedation are generally well appreciated, there is a growing concern about potential risks related to neurotoxicity stemming from anesthetic agents. This toxicity is thought to carry the greatest risk when anesthesia is performed at a particularly young age, for prolonged times and for repeated procedures, said Randall Flick, MD, MPH, an anesthesiologist with the Mayo Clinic in Rochester, MN.

"In the past 10 to 15 years, a growing body of evidence, primarily from animal studies, shows that the anesthetic agents used in the operating room or sedation suites puts a developing brain at risk for injury," Dr. Flick said, during a Controversy session at RSNA 2016.

Studies on animals suggest that anesthetic agents can affect apoptosis — the process in which cells undergo programmed death as a normal part of brain growth.

"When you expose an animal to anesthetic agents, the number of brain cells that die off becomes much greater, causing deficiencies in the cognitive behavioral ability of those animals," Dr. Flick said.

While the effects of anesthesia on developing brains in animals are well characterized, the data on children are less clear, Dr. Flick said.

Studies have produced mixed results, although the Mayo Anesthesia Safety in Kids study led by Dr. Flick and currently in the data analysis stage, appears to support the association between anesthesia exposure and brain damage.

"These new findings confirm some results that we've seen showing an increased incidence of learning disabilities and attention deficit hyperactivity disorder in children who were exposed to anesthetic drugs more than once prior to age two," Dr. Flick said.

Flick

Vasanawala

MRI Techniques May Reduce the Need for Anesthesia

The idea that pediatric patients must be exposed to either radiation from CT or MRI-related anesthesia represents a false dichotomy, according to co-presenter Shreyas S. Vasanawala, MD, PhD, of Stanford University in Stanford, CA. Certain MRI techniques can provide a viable alternative to CT while reducing or even eliminating the need for sedation and anesthesia in pediatric patients, Dr. Vasanawala said.

Efforts should begin in the pre-scanning stage. The MRI suite can be made more child-friendly and a child-life service may be available to help prepare children for the procedure.

Dr. Vasanawala suggests avoiding intravenous contrast administration, if possible, as the process of accessing a vein is often the most difficult part of the experience for the child. During scanning, silent MRI techniques and distraction devices like DVD goggles may reduce or eliminate the need for sedation.

New and improved MRI approaches produce diagnostic quality images while significantly reducing the time children need to spend in the MRI scanner, Dr. Vasanawala said. For instance, free-breathing protocols can provide vital information about the state of the pediatric heart in just 10 minutes. In the abdomen, single MRI shots do an excellent job in suspected appendicitis cases, showing pus and edema and revealing alternative diagnoses like pancreatitis.

Volumetric acquisitions have numerous applications in musculoskeletal imaging, Dr. Vasanawala said, as he demonstrated that a single, six-minute volumetric scan of the pediatric knee revealed findings like meniscal tears almost as well as images from a 30-minute acquisition.

"The quality of the imaging is quite good for the diagnostic purposes at hand," Dr. Vasanawala said. "Some of these techniques may reduce the depth, duration and frequency of anesthesia."

WEB EXTRAS

View video interviews with Randall Flick, MD, MPH, and Shreyas S. Vasanawala, MD, PhD, discussing their research at *RSNA.org/News*.

Pre-MRI Questionnaire Helps Identify Claustrophobia

BY RICHARD DARGAN

Pre-screening questionnaires and optimized acquisition techniques are among the measures shown to reduce or eliminate the need for sedation in patients with MRI-related anxiety — including in the pediatric population — according to leading experts in the field.

A pre-examination questionnaire on claustrophobia proved to be an effective tool for screening patients before MRI, according to a study published in the Nov. 25, 2016, online issue of *Radiology*.

Patients with claustrophobic anxiety are more likely to experience a feeling of confinement inside the scanner's narrow bore. For these patients, completing the examination may require conscious sedation and additional sequences, adding cost, risk and time to the procedure.

"The workflow may be interrupted if additional staff are needed to cope with the patient's claustrophobic event and/or because of the delay for the next examination," said study last author Marc Dewey, MD, vice chair and Heisenberg Professor in the Department of Radiology at Charité University Hospital in Berlin.

Previous research by Dr. Dewey and colleagues determined that, on average, 2.3 percent of all patients scheduled for MRI suffer from claustrophobia. With more than 80 million MRI procedures performed every year worldwide, this means that approximately 2 million MRI procedures may be affected.

Dewey

Added costs associated with claustrophobic events per procedure can range from 100 €, or slightly more than $100, for additional staff and slight delays, to about 400 €, or almost $420, in cases where the examination needs to be prematurely terminated, Dr. Dewey said.

Non-sedation Coping Methods are Useful Tools

In his *Radiology* research, Dr. Dewey and colleagues explored the potential of a 26-item claustrophobia questionnaire (CLQ) as a screening tool in hospitalized patients scheduled for an MRI exam. Before undergoing MRI, patients were questioned on their fear of restriction and suffocation and were asked to rank their responses on a scale of 0 to 4.

"A question for restriction is, for example, how afraid patients would feel in a small dark room," said first author Adriane E. Napp, MSC, biologist and project manager in the Department of Radiology at Charité. "For suffocation, a typical question asks how afraid patients would be in a crowded cinema."

Out of 6,520 patients in the study group, 4,288 patients completed the CLQ before MRI, while 2,232 patients underwent imaging without having completed the questionnaire. Staff members recorded the number of claustrophobic events and compared them between the two groups.

Claustrophobic events occurred in 640 of the patients in both groups, or 9.8 percent. The CLQ mean score in patients with claustrophobic events was 1.48 — significantly higher than the 0.6 average for the group without claustrophobic events.

The results suggest that the CLQ is a suitable screening tool for the absence of a subsequent claustrophobic event. In addition, not all patients at risk for claustrophobic events need or request sedation, the results show.

"Half of the patients said they prefer non-sedation coping methods like prism glasses, music or an escort into the scanner room," Dr. Dewey said. "This is a very interesting and unexpected finding of our study."

Patients in the study who suffered from claustrophobia were thankful for the questionnaire, saying they appreciated being offered help and having their concerns taken seriously, Dr. Napp added.

"This is why we were able to include so many patients in the study since the patients were so appreciative," she said.

In addition, radiologists and staff who may have been skeptical of the process at first were convinced of its effectiveness, Dr. Dewey said.

"Initially they thought that filling out the questionnaire would take too much time and might upset some of the patients," he said. "Yet, the patients filled the surveys out in 10 minutes and were glad to participate."

Dr. Dewey concluded that further funding is needed to better understand which interventions might reduce claustrophobic events.

WEB EXTRAS

Access the *Radiology* study, "Analysis and Prediction of Claustrophobia during MR Imaging with the Claustrophobia Questionnaire: An Observational Prospective 18-month Single-Center Study of 6,500 Patients," at *RSNA.org/Radiology*.

Electronic Tools Connect Radiologists with Patients

BY FELICIA DECHTER

In this era of consumer-driven healthcare, patient portals, online health resources and social media, radiologists must use such tools to provide personal and patient-friendly services and use a variety of means to connect with patients.

Harnessing the power of the internet and social media to make radiology more patient centered was the topic of an RSNA Public Information Committee (PIC)-sponsored session at RSNA 2016.

Patient-centered care is not a new idea, but the principles were reinforced in the 2001 Institute of Medicine report, "Crossing the Quality Chasm: a New Health System for the 21st Century," said presenter Susan John, MD, chairman of Diagnostic and Interventional Imaging and professor of Diagnostic Imaging and Pediatrics at Memorial Hermann Hospital in Houston.

"Since then, the concept of customized patient care that honors the patient's values, preferences and needs has become the guiding principle of high-quality care in diagnostic and interventional imaging practices," said Dr. John, a PIC member. "Personalized interactions between members of the healthcare team, patients and families are what define patient-centered care."

These interactions can occur in many ways, depending on the type of imaging facility, the imaging procedure being performed and the desired outcome of the communication. For example, Dr. John's institution hosts an "Ask the Imaging Expert" website encouraging patients to post general questions about imaging procedures.

Key to creating a patient-centered culture is teaching medical students, residents and fellows the importance of communicating with patients compassionately and effectively.

In addition, the importance of accurate, well-written radiology reports has been elevated to a new level with the advent of patient portals through which patients can directly view their reports.

"Electronic communication tools are becoming increasingly valuable as methods of information transfer between patients and physicians," Dr. John said. "I anticipate that patient portals and facility websites will develop even more elegant ways to facilitate high quality patient experiences in radiology."

Susan John, MD, in a panel discussion on methods and tools for improving the patient interactions that define patient-centered care during an RSNA 2016 s ession. Other panelists, *(left to right)*: Max Wintermark, MD, Whitney Fishman Zember, MBA, and Elliot K. Fishman, MD.

Social Media Engages Patients

Using social media to strengthen radiology is critical, said Whitney Fishman Zember, MBA, managing partner of innovation and consumer technology at the New York City-based MEC, a leading advertising media planning agency with expertise in social media.

"Social media is a powerful tool for any brand or business when it comes to driving consumer engagement, relationships and conversation," Zember said. "It is no different for radiology practices seeking stronger relationships with their patients — and potential patients — and/or to market their services."

Social media allows practices and doctors to grow awareness of their offerings, engage in dialogue with patients and move from being simply a service to a trusted source or advisor. It is also an outlet where consumers go to find trusted help, as well as vent their frustrations, Zember said.

"Therefore, it will continue to be a platform radiology can use not only to monitor consumer sentiment and opinions, but also a place where doctors and practices can create sources for consumers to rely on, converse and connect with, and build relationships outside of the hospital or doctor's office," Zember said.

Websites and social media specific to radiology — including the RSNA/ACR public information website, *RadiologyInfo.org*, are key to staying patient-centered, said Elliot K. Fishman, MD, professor of radiology, oncology, surgery and urology at Johns Hopkins Hospital in Baltimore.

A good radiology website is one that knows its audience, Dr. Fishman said. For example, *RadiologyInfo.org* (see sidebar, Page 11) offers a library of resources for patients including information on how various imaging procedures are performed.

"The key to a good website is to know your target audience. Is it patients? Is it referring doctors? Is it other radiologists?" he asked. "Only when you know your intended audience can you make good content decisions."

Many websites can be used to engage patients, but Dr. Fishman emphasizes that users should only view those from a trustworthy source.

"Patients want accurate and unbiased data about different procedures and exams," he said. "Sites like *RadiologyInfo.org* are excellent."

WEB EXTRAS

View video interviews with Elliot K. Fishman, MD, and RSNA Public Information Committee (PIC) member Susan John, MD, and PIC Chair Max Wintermark, MD, at *RSNA.org/News*.

Survey Says: Referring Physicans Primary Source of Pre-exam Information

BY FELICIA DECHTER

More than 20 percent of patients are not receiving any information prior to a radiology examination, and the majority of information patients are getting about imaging exams is being provided by referring physicians — and patients prefer it this way.

These were among the findings of a multi-institutional U.S. survey presented during RSNA 2016 by Jay K. Pahade, MD, director of radiology quality and safety at the Yale Department of Radiology and Biomedical Imaging in New Haven, Conn.

Daily Bulletin* coverage of RSNA 2016 is available at *RSNA.org/Bulletin.

"The survey exposed that nearly 20 percent of patients/patient caregivers are not receiving information regarding their imaging exam, highlighting an opportunity to improve patient engagement and awareness before the radiology encounter," said Dr. Pahade, adding the results were somewhat surprising.

In early 2015, Dr. Pahade and co-lead investigator Andrew Trout, MD, chief of nuclear medicine in the Department of Radiology/Medical Imaging at the Cincinnati Children's Hospital, led a team that conducted a 24-item survey to assess what information patients find useful before their imaging exam, who they want to get the information from, and how preference varies based on demographics and patient-specific variables.

The survey comprising 1,542 patients, was conducted at three sites primarily caring for adult patients: Yale-New Haven Hospital, Massachusetts General Hospital and the University of Alabama at Birmingham; and at three sites primarily serving pediatric patients: Cincinnati Children's Hospital Medical Center, Indiana University Riley Children's Hospital and Stanford University Lucile Packard Children's Hospital. Results included responses from all facilities combined.

Key findings showed that 22 percent of respondents reported receiving no information regarding their radiology exam before presenting for imaging, Dr. Pahade said. Results also showed that the ordering provider was the most common source of information (65 percent) about a patient's radiology exam and that 72 percent of respondents said the referring physician was the preferred source for getting exam information.

Other significant results showed that half of the respondents independently tried to find information about their radiology exam, most commonly through the ordering provider and non-radiology websites. The findings were surprising to researchers, Dr. Pahade said.

"We were surprised by the proportion of patients who reported receiving no information on their radiology exams," Dr. Pahade said. "We were also surprised that while more than half of respondents reported trying to find information on their own, only 5 percent reported using a radiology-specific website to get information."

Exam Prep Information Aids Patients

Despite the emphasis on radiation awareness by the radiology community and press, patients surveyed ranked getting information about whether an alternative radiation-free exam could be utilized as least important, while information regarding exam preparation was ranked as most important, the survey showed.

Given that the survey showed that referring physicians are the most common and preferred source for information about imaging exams, referring physicians are an important group for educational outreach by the radiology community, he said.

Pahade

While researchers expected the ordering provider to be the most common source of information for radiology exams, they were surprised that such a small number of patients reported preferring to hear the information from the radiology center conducting the exam (21 percent) or from the providers directly involved in performing or interpreting the exam (9 percent), Dr. Pahade said.

"This is likely related to lack of awareness about radiology and the role of radiologists for most patients," Dr. Pahade said.

Results also highlight the importance of promoting radiology-specific sites such as the RSNA/ACR public information website, *RadiologyInfo.org* (see below), so patients can obtain accurate pre-exam information.

RadiologyInfo.org Offers Library of Resources for Patients

***RadiologyInfo.org*, the public information website produced by RSNA and ACR, provides a library of resources for patients including more than 200 procedure, exam and disease descriptions as well as a gallery of "Your Radiologist Explains" videos. Radiologists can refer patients to *RadiologyInfo.org* for information and/or distribute learning material from the website.**

Advanced Imaging Brings New Standard of Care to Zoos

BY FELICIA DECHTER

On a blustery January morning at the Brookfield Zoo, all is quiet inside the world-renowned zoo's 20,000 square-foot animal hospital. The beds are empty, save one where doctors are spaying a female rabbit. But with approximately 3,500 animals in their care, members of the zoo's veterinary team are well aware that the situation could change at any moment.

> *"Zoological and wildlife medicine has increasingly embraced advancements in technology, and diagnostic imaging is an enormous component of this progress."*
>
> MARINA IVANČIĆ, DVM, DACVR

***On the cover*: Marina Ivančić, DVM, DACVR, veterinary radiologist for the Chicago Zoological Society/Brookfield Zoo, makes a house call to Brookfield's Seven Seas to perform an ultrasound on one of the bottlenose dolphins.**

When an animal is ill or needs a preventive check-up, diagnostic imaging is of the utmost importance. Fortunately the zoo, located just outside of Chicago, houses not only a sophisticated advanced medical diagnostic imaging suite — equipped with one of the world's largest CT scanners — it is also the only zoo or aquarium in the world with a full-time radiologist on staff.

Marina Ivančić, DVM, DACVR, joined the staff in 2016, just before the zoo received a donation of a new large-bore 16-slice CT scanner from a local hospital. The equipment, a considerable upgrade from the zoo's previous scanner, is capable of imaging animals up to 660 pounds, such as adult gorillas, tigers or dolphins.

"I look at every type of imaging on every animal there is," said Dr. Ivančić, who also consults through teleradiology with veterinarians in zoos and aquariums across the globe. "We do CT scans of hundreds of varying species, ranging in size from a tiny 45-gram violet-backed starling to a 290-kilogram okapi. Some patients as small as 2-gram dart frogs undergo whole-body radiography using our dental unit!"

Along with the new CT scanner, the imaging suite is equipped with portable ultrasound units, two direct digital radiography units, dental radiography and a C-arm fluoroscopy unit, also added in 2016.

The zoo, which opened in 1934, has built its imaging suite over time. It has had a CT scanner since 2009, digital radiography since 2007 and ultrasonography since the early 1990s, Dr. Ivančić said.

All of the zoo's diagnostic imaging equipment is standard technology normally used by humans and is donated by area hospitals.

Imaging Aids Diagnostic, Preventive Care

An infinite number of conditions can be detected with diagnostic imaging, including pulmonary disease, kidney or bladder stones — a common issue in domestic cats and otters — and cancer. Procedures are commonly, but not always, performed under sedation.

"Some animals allow us to conduct diagnostic imaging evaluations without restraint or even sedation," Dr. Ivančić said. "We can perform voluntary ultrasound in animals such as dolphins, great apes and giant anteaters. We are able to monitor the health of a fetus during pregnancy, perform echocardiography to look for heart disease, and/or complete routine whole-body ultrasound to assess general health without the need for sedation, restraint or anesthesia."

For those that do need sedation, the zoo's new CT scanner drastically increases the speed of scanning, decreasing the time an animal needs to be sedated. During a CT scan under sedation, the animal is secured in place on the table and monitored closely by a veterinary anesthesiologist who is also board-certified in zoological medicine.

Dental procedures, which are performed under anesthesia, can be completed more precisely and quickly with CT guidance.

"With onsite CT, we can nearly instantaneously obtain critical measurements and describe anatomical variation to a dental specialist to help guide nerve blocks and endodontic procedures," Dr. Ivančić said.

For example, the veterinary teams used CT to help guide endodontic procedures in one of the zoo's sloth bears.

Imaging equipment can also be an enormous help as a preventive tool for any of the nearly 400 different species at the zoo.

Marina Ivančić, DVM, DACVR, (*above, right*), a full-time veterinary radiologist at the Brookfield Zoo, performs an ultrasound on a sea lion at the zoo's animal hospital. Image courtesy of the Chicago Zoological Society

At the San Francisco Zoo, animals receiving MRI and CT are placed on the gantry and slid into the scanner. *Left*: A komodo dragon lizard prepares for a CT exam. Image courtesy of the San Francisco Zoo

Marina Ivančić, DVM, DACVR, and Michael Adkesson, DVM, Dipl. ACZM, *(below)* vice president of clinical medicine of the Chicago Zoological Society, review CT images of a clouded leopard at Brookfield Zoo. Image courtesy of the Chicago Zoological Society

One recent example is Arie, a California sea lion unable to live in the wild who was taken in by the Brookfield Zoo. During a routine preventive CT scan in September 2016, the team noticed an unusual conformation — a swelling that was determined to be scoliosis of the spine. The CT scan also provided a baseline to monitor for associated degenerative arthritic changes in her spine.

"This helped us better understand why she was stranded in the wild and was unable to survive," Dr. Ivančić said. "We can now provide her with a safe environment, companionship with other sea lions, and decades of care."

In another case, ultrasonography was used to image an umbilical hernia in a pygmy hippo, facilitating diagnosis of intestinal entrapment, which allowed veterinarians to pursue emergency exploratory laparotomy and save the animal's life.

Four Decades of Imaging at the San Francisco Zoo

Another zoo leading the way in veterinary radiology is the San Francisco Zoo & Gardens, an urban oasis nestled against the Pacific Ocean.

Home to more than 1,000 exotic, endangered and rescued animals representing more than 250 species, the zoo has been offering onsite imaging care for its animals for more than 40 years.

Because the zoo's imaging volume is not high enough to warrant a staff radiologist, some clinical diagnostic imaging is done in-house while other exams are performed off-site at veterinary clinics, said Graham Crawford, DVM, chief of veterinary services at the zoo, which was established in 1929.

Dental procedures, which are performed under anesthesia, can be completed more precisely and quickly with advance CT guidance. *Above:* Graham Crawford, DVM, chief of veterinary services at the San Francisco Zoo, performs dental work on a tiger at the zoo. Image courtesy of the San Francisco Zoo

Veterinary Radiology a Blossoming Field

Veterinary radiology is a growing field, with more than 600 members in the American College of Veterinary Radiologists (ACVR), a nonprofit organization of veterinary specialists in radiology and radiation oncology founded in 1961.

Candidates must complete a doctor of veterinary medicine (DVM) degree in veterinary school and become board-certified through the ACVR, followed by a one- or two-year internship and multi-year residency under the supervision of an ACVR board certified radiology diplomate.

ACVR sponsors four specialty societies: the Veterinary Ultrasound Society, the Society of Veterinary Nuclear Medicine, the CT/MRI Society and the Large Animal Diagnostic Imaging Society.

For more information, go to *ACVR.org.*

"We use radiography and ultrasound on all animals, from frogs and birds to big cats, bears and large-hoof animals like giraffes," Dr. Crawford said. "We do not have in-house MRI or CT, so when the need arises, we can take animals out of the zoo to local specialty veterinary clinics that have that equipment."

For MRI and CT, animals are placed on the gantry and slid into the scanner, he said.

"We can fit animals up to the size of a 550-pound male lion or a 350-pound male gorilla onto our stationary radiology unit in the hospital," Dr. Crawford said. "For larger animals, like rhinos or giraffes, we have a mobile radiology unit that we can take into the exhibit."

Imaging Aids Animal Conservation

Over the years, both zoos have benefitted from substantial advancements in imaging the animals they house and care for — progress which will only continue as technology progresses.

"I've seen the advancement from analog to digital and wireless radiography and the standard use of ultrasound in general practice," Dr. Crawford said. "CT and MRI technologies are now readily available, but are generally found in specialty veterinary practices."

At Brookfield Zoo, which houses many rare and endangered species, the advanced imaging equipment also plays a role in the conservation of wildlife. Through its advanced medical imaging suite, the zoo has built a comprehensive database of normal medical images that serves as a global resource for zoos and wildlife medicine.

"We can glean an enormous amount of data about an animal's health in less than one minute, which is invaluable since data available for reference is limited with endangered and rare species," Dr. Ivančić said.

Imaging will continue to play a critical role in zoological medicine, which is on the cusp of other significant advancements.

"Zoological and wildlife medicine has increasingly embraced advancements in technology in the last several decades, and diagnostic imaging is an enormous component of this progress," Dr. Ivančić said.

The Roots and Growth of Interventional Oncology

BY PAUL LaTOUR

The group pictured above were among the attendees at a Gino's East pizzeria gathering more than 15 years ago that spurred the growth of interventional oncology.

As the field of interventional oncology continues to grow in acceptance and practice, its roots can be traced back to an off-site gathering at an iconic Chicago pizzeria during an RSNA annual meeting more than 15 years ago.

A group of radiologists met at Gino's East to pursue their collective curiosity and sense of exploration about the future of ablation, which laid the groundwork for what became interventional oncology.

"I'm emotionally attached to that meeting because that was truly the start of a new chapter of medicine," said Riccardo A. Lencioni, MD, now one of the world's foremost interventional oncologists and founder of the European Conference on Interventional Oncology (ECIO).

At the time of the gathering, the term interventional oncology hadn't yet been coined. Using radiofrequency ablation for liver tumors was in its embryotic stage, though it was used more frequently in Europe than in North America.

"The specialty has gone in a few directions I didn't anticipate back then," said Matthew R. Callstrom, MD, PhD, a consultant in the Division of Diagnostic Radiology at Mayo Clinic and a professor of radiology at Mayo Clinic College of Medicine in Rochester, MN.

Dr. Callstrom pointed to kidney ablation as an area in which he didn't anticipate growth. At the start, interventional oncologists focused on liver ablation because that was where the technique was first employed.

"Kidney ablation was just starting to come online when we met, so people didn't know if it was going to be a significant area," Dr. Callstrom said. "But it has turned out to have climbed the ladder of clinical acceptance the fastest."

Minimally Invasive Approach Takes Hold

Interventional oncology saw rapid growth as the image-based, minimally invasive approach to tumor treatment became more widely accepted as an alternative to surgery. Some of the newer technologies include radioembolization, microwave ablation, tumor cryoablation, focused ultrasound, light-activated therapy and ultrasound-mediated drug delivery.

Eventually, the informal meetings became more structured and led to the creation of symposiums at the Society for Interventional Radiology (SIR) and the Cardiovascular and Interventional Radiological Society of Europe (CIRSE).

The World Conference on Interventional Oncology, created as an annual U.S. conference, recently established the Society of Interventional Oncology to support the growing field.

SIR's membership now stands at 6,500 practicing interventional radiology physicians, scientists and clinical associates. CIRSE has also expanded from 1,500 members in 2005 to more than 6,500 today.

According to the online publication *Interventional Oncology 360*, the expansion of interventional oncology is spurring the creation of programs and educational opportunities for radiologists. Fellowships in interventional oncology are emerging at various institutions around the United States.

Interventional oncology has yet to achieve recognition as a subspecialty separate from interventional radiology/diagnostic radiology by the American Board of Medical Specialties (ABMS). ABMS certification for interventional radiology/diagnostic radiology began in 2012. However, expectations are that interventional oncology will be considered for ABMS certification as interest in the field continues to grow.

The field's burgeoning growth is also evident through the interventional oncology multisession series at RSNA's annual meeting, which developed as the original group of 20 continued to meet over the years. The series began at RSNA 2005 and eventually developed into the five-day symposium it is now.

Many of the original group served as moderators or presenters of the symposium. They've earned international renown as their careers progressed and ablation gained wider clinical acceptance.

"RSNA, because of its wide-reaching international interest, was the perfect opportunity at that time to bring together experts from various countries," said Damian E. Dupuy, MD, director of tumor ablation at Rhode Island Hospital and a professor of diagnostic imaging at Brown Medical School in Providence, RI. "It allowed the meeting at Gino's to occur. Without the RSNA annual meeting, the growth of interventional oncology might not have happened as easily or as organically."

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Near-Infrared Spectroscopy (NIRS) to Predict Neurologic Outcome in the Comatose Patient

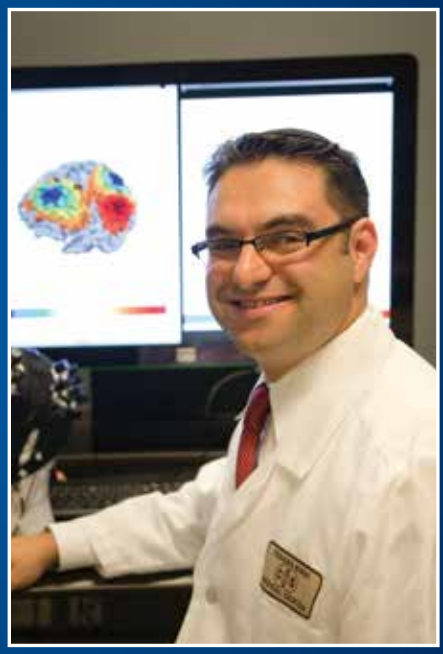
Despite ongoing advances in neurocritical care, there is no readily available clinical tool for objective measurement of brain activity in comatose patients.

Using a 2016 RSNA Research Resident Grant, **Allen Ardestani, MD, PhD**, of the Department of Diagnostic Radiology, Cedars-Sinai Medical Center, Los Angeles, will investigate the use of near-infrared spectroscopy (NIRS) – a functional-imaging modality that quantifies cerebral oxygenation based on its optical rather than magnetic properties – to quantify neural network connectivity in unconscious patients.

Quantitative assessment of neural activity and its correlation with subsequent neurologic outcome may provide a diagnostic and prognostic methodology for the objective assessment of neural injury following an injury to the brain.

"This novel approach combines the advantages of a safe, inexpensive and portable functional-imaging modality with an easily administrable resting-state paradigm to assess neural integrity in unresponsive patients," Dr. Ardestani said.

By substantiating a methodology with prognostic potential in such patients, these findings could significantly impact decision-making in intensive care.



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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 1 ½-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 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.*

Registration for CORE Workshop Opens April 1

Register by August 15

The 2017 Creating and Optimizing the Research Enterprise (CORE) workshop runs from Oct. 20 to 21 at RSNA Headquarters in Oak Brook, IL. The free workshop focuses on strategies for developing and advancing imaging research programs in radiology, radiation oncology and nuclear medicine departments. New sessions include "Big Data and AI; the Role for Radiology and How to Get Involved" and "Developing Clinician Scientists in Radiology." The CORE program features a combination of presentations, case studies and group discussions. For more information, go to *RSNA.org/CORE.*

RSNA 2016 Award-Winning Quality Storyboards Now Available Online

RSNA invites submissions of quality storyboard abstracts that describe quality assessment and improvement initiatives in the field of radiology, designed to improve patient care. Following a rigorous peer-review process, a number of the submitted abstracts are selected for development into quality storyboards and are displayed at the RSNA annual meeting.

Quality storyboard awards were presented for the first time in 2016 to four projects that were exceptional in regard to the rigor with which they were conceived, executed and reported. Award-winning storyboards are featured on the quality storyboard webpage along with links to all 2016 storyboards at: *RSNA.org/Quality-Storyboards*.

Demonstrate Your Leadership Skills:

Earn an ARLM Certificate of Achievement

Radiologists looking to build career leadership skills can earn an Academy of Radiology Leadership and Management (ARLM) Certificate of Achievement.

Earn the certificate by completing ARLM-approved courses, both in-person and online. Several new courses were added to the online catalog at *RadLeaders.org*.

Each ARLM-approved course meets one or more of the elements of identified key learning domains, representing an integral part of a well-rounded leadership curriculum. Participants must earn a minimum of 50 education credits — at least 30 credits in-person — within a three-year period. A minimum of three credits in each of the core learning domains is required.

SPRING 2017 MEETINGS WITH ARLM-APPROVED COURSES (IN-PERSON)

American Roentgen Ray Society (ARRS) 2017 Annual Meeting
April 30–May 5
Hyatt Regency New Orleans, New Orleans
• *ARRS.org*

Association of University Radiologists (AUR) 65th Annual Meeting
May 8–May 11
The Diplomat Beach Resort, Hollywood, FL
• *AUR.org*

American College of Radiology (ACR) 2017 Annual Meeting
May 21–May 25
Marriott Wardman Park Hotel, Washington, DC
• *ACR.org*

The *Essentials of Radiology* Collection at Your Command

Conveniently packaged on a single USB, the immensely popular *Essentials of Radiology* courses from the RSNA Scientific Assembly and Annual Meeting provide an ideal educational opportunity for general radiologists and residents who want to explore multiple subspecialties. With over 14 hours of content featuring 31 speakers and 10 courses, this comprehensive collection includes:

- Breast imaging
- Cardiac imaging
- Chest imaging
- Genitourinary imaging
- Musculoskeletal imaging
- Neuro imaging
- Non-interpretive skills
- Pediatric imaging
- Postoperative gastrointestinal imaging
- Ultrasound

The fee is $175 for members; $250 for non-members.
For more information, go to *RSNA.org/Education.*

For Your Calendar

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

MARCH 10–11
Writing a Competitive Grant Proposal
RSNA Headquarters
Oak Brook, IL
• *RSNA.org/CGP*

APRIL 7–8
Advanced Grant Writing Session IV
RSNA Headquarters
Oak Brook, IL
• *RSNA.org/AGW*

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
Bogotá, Colombia
• *RSNA.org/Spotlight*

FIND MORE EVENTS AT *RSNA.org/Calendar*

Journal Highlights

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

MR Imaging of Perianal Crohn Disease

Pelvic MRI plays a key role in successful management of perianal Crohn disease (CD) by enabling accurate detection and characterization of perianal fistulas and associated abscesses or extensions (which may be surgically occult or need drainage prior to immunosuppressive treatment), and its use has been shown to lower rates of recurrence.

In a review article in the March issue of *Radiology* (*RSNA.org/Radiology*), Shannon P. Sheedy, MD, of the Mayo Clinic in Rochester, MN, and colleagues summarize clinically relevant anal sphincter anatomy, imaging methods, classification systems and treatment objectives. Authors also describe the MR appearance of healing perianal fistulas and fistula complications.

In the illustrative review, authors highlight difficult imaging tasks including the assessment of rectovaginal fistulas and ileoanal anastomoses cases and discuss available, emerging innovative treatments for perianal CD that promise to better control sepsis and maintain fecal continence. Different treatment modalities are selected based on fistula anatomy, patient factors and management goals (closure vs. sepsis control).

"The importance of a multidisciplinary collaboration between radiologists, gastroenterologists and surgeons cannot be overstated when managing perianal CD. Radiologist familiarity with treatment options, key imaging findings that influence therapeutic choices, and open lines of communication with referring clinicians are necessary for pelvic MRI to have maximal patient benefit," the authors write.

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

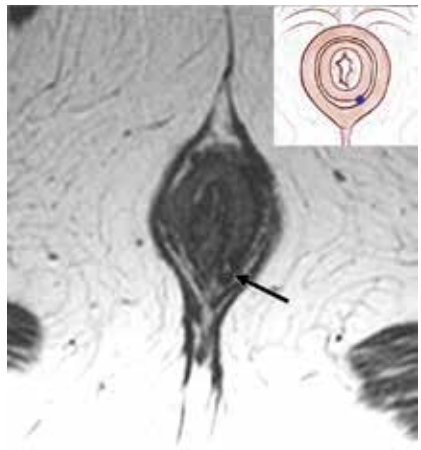


Image in a 32-year-old man with CD proctocolitis and perianal fistula. Axial T2-weighted fast spin echo image without fat saturation demonstrates a low-lying and unbranching intersphincteric fistula (*arrow*). The blue dot in the inset image shows the location of the fistula. The patient was treated with an increasing dose of azathioprine and the fistula clinically resolved.

(*Radiology* 2017;282;3:628–645) ©RSNA 2017. All rights reserved. Printed with permission.

ITMIG Classification of Mediastinal Compartments and Multidisciplinary Approach to Mediastinal Masses

Accurate identification and characterization of mediastinal masses is necessary for formulating differential diagnoses and developing treatment plans. Therefore, it is important for radiologists to be familiar with the new International Thymic Malignancy Interest Group (ITMIG) classification of mediastinal compartments based on multidetector CT and to understand multidisciplinary algorithms for approaching abnormalities localized to specific compartments.

In the January-February issue of *RadioGraphics* (*RSNA.org/RadioGraphics*) Brett W. Carter, MD, of MD Anderson Cancer Center in Houston, and colleagues describe the new ITMIG mediastinal compartment classification system based on cross-sectional imaging that can be used to accurately localize and characterize mediastinal lesions and assist in the formulation of focused differential diagnoses and management strategies.

Specific approaches to evaluation of abnormalities in the prevascular, visceral and paravertebral compartments are presented and are primarily based on multidetector CT.

"The new mediastinal division scheme developed by ITMIG is designed to enable precise identification of mediastinal abnormalities at cross-sectional imaging by radiologists and consistent communication between healthcare providers. It is anticipated that this system will improve lesion localization, help generate a focused differential diagnosis, and assist in tailoring biopsy and treatment plans," the authors write. This article is accompanied by an Invited Commentary by Paul E. Van Schil, MD, PhD, and Stijn Heyman, MD, both of the University Hospital of Antwerp, Belgium.

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

International Thymic Malignancy Interest Group classification of mediastinal compartments shown on an axial multidetector CT image at the level of the left atrium. Note that the prevascular compartment (purple) wraps around the heart and pericardium, which are located in the visceral compartment (blue). Yellow = paravertebral compartment, green line = visceral-paravertebral compartment boundary line.

(*RadioGraphics* 2017;37;2:413–436) ©RSNA 2017. All rights reserved. Printed with permission.


Radiology PODCASTS

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

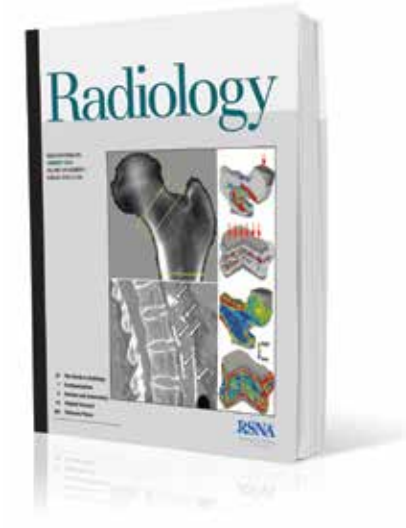
- "Effect of an Institutional Triaging Algorithm on the Use of Multidetector CT for Patients with Blunt Abdominopelvic Trauma over an 8-year Period," Arthur H. Baghdanian, MD, and colleagues.
- "Colorectal Findings at Repeat CT Colonography Screening after Initial CT Colonography Screening Negative for Polyps Larger than 5 mm," Perry J. Pickhardt, MD, and colleagues..
- "Predictors of CT Radiation Dose and Their Effect on Patient Care: A Comprehensive Analysis Using Automated Data," Rebecca Smith-Bindman, MD, and colleagues.

Radiology in Public Focus

Media Coverage of RSNA

In November, 1,202 RSNA-related news stories were tracked in the media. These stories reached an estimated 529 million people.

Coverage included Yahoo! Finance, *Daily Mail* (UK), *Today.com, The Arizona Republic*, KTLA-TV (Los Angeles), KCAL-TV (Los Angeles), WMAQ-TV (Chicago), KING-TV (Seattle), Medscape, ScienceDaily, *Healthcare Business News, Auntminnie.com* and *Diagnostic Imaging.*



March Public Information Outreach Activities Focus on Colorectal Cancer

To highlight National Colorectal Cancer Awareness Month in March, RSNA is distributing radio public service announcements (PSAs) encouraging listeners to get screened for colorectal cancer.

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 how early detection and improved treatment have put colorectal cancer deaths on the decline.

New on *RadiologyInfo.org*

Visit *RadiologyInfo.org*, the public information website produced by RSNA and ACR, to read new content posted to the site, including Small Bowel Follow-Through and Fistulogram/Sinogram.

RadiologyInfo.org
For patients

Annual Meeting Watch

RSNA 2017 Online Abstract Submission Now Open

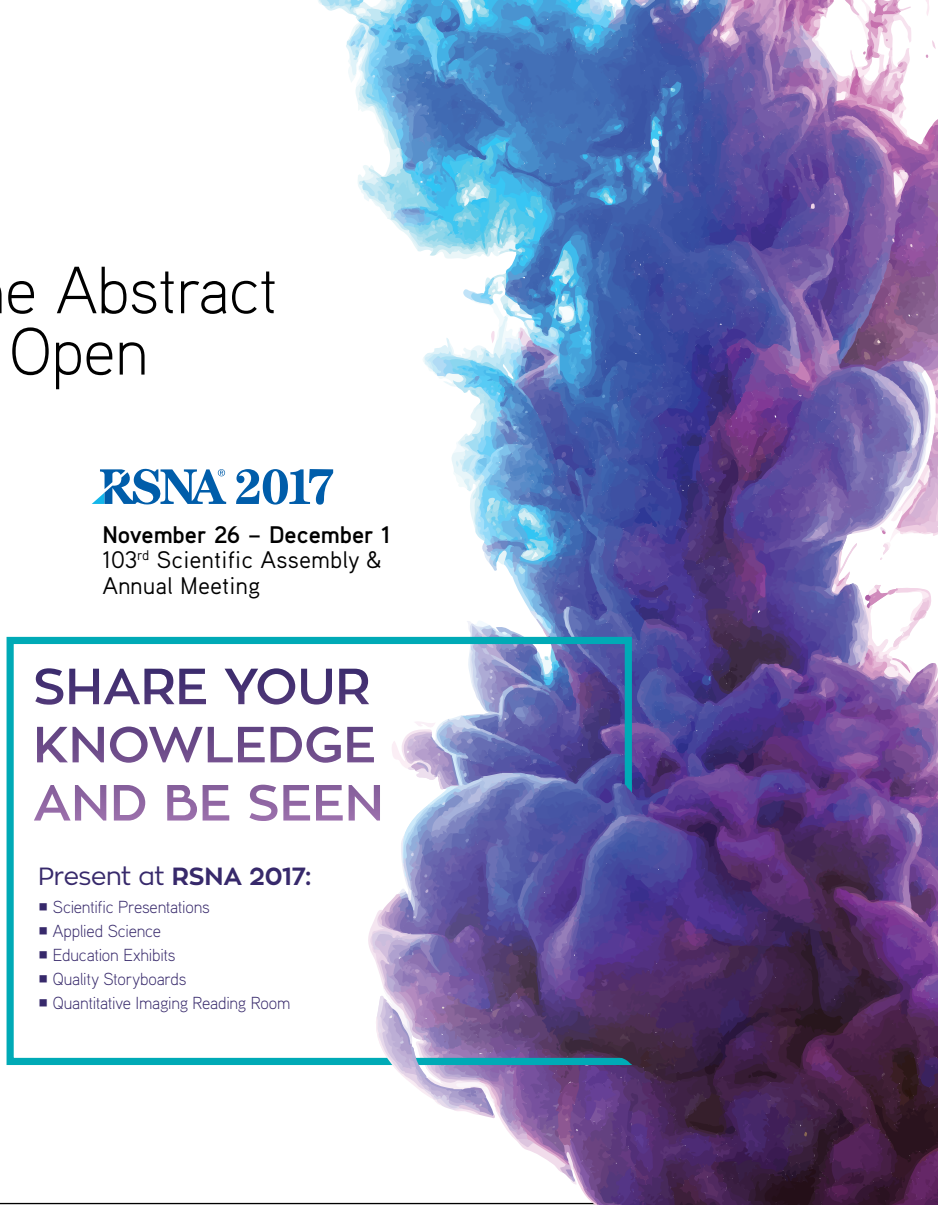
The online system to submit abstracts for RSNA 2017 is open. The submission deadline is noon Central Time (CT) on Wednesday, April 12. Abstracts are required for scientific presentations, education exhibits, applied science, quality storyboards and quantitative imaging reading room showcases.

To submit an abstract, 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.



Important Dates for RSNA 2017

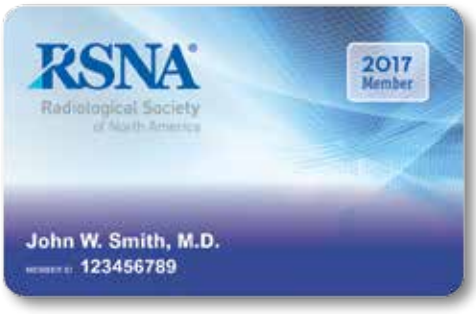
Wednesday, May 3
Member Registration and Housing Open
10:30 a.m. CT

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

RSNA Offers Affordable Membership as Residents Transition into Practice



Residents and fellows transitioning into practice will find a strong incentive for maintaining their RSNA membership: reduced rates.

While members-in-training receive free RSNA membership, members transitioning from training qualify for greatly reduced rates during the first and second years of practice — just $100 in year one and $200 in year two. It is not until the third year of practice that transitioning members pay standard membership dues.

The RSNA benefit gives transitioning members time to settle into the profession before paying the full membership fee. Transitioning members receive all the benefits of full membership, including subscriptions to *Radiology*, *RadioGraphics* and *RSNA News*, free admission (with advance registration) to the RSNA annual meeting and free access to online CME opportunities.

For more information, contact *membership@rsna.org* or 1-877-RSNA-MEM (1-877-776-2636) or 1-630-571-7873 outside the U.S. and Canada.

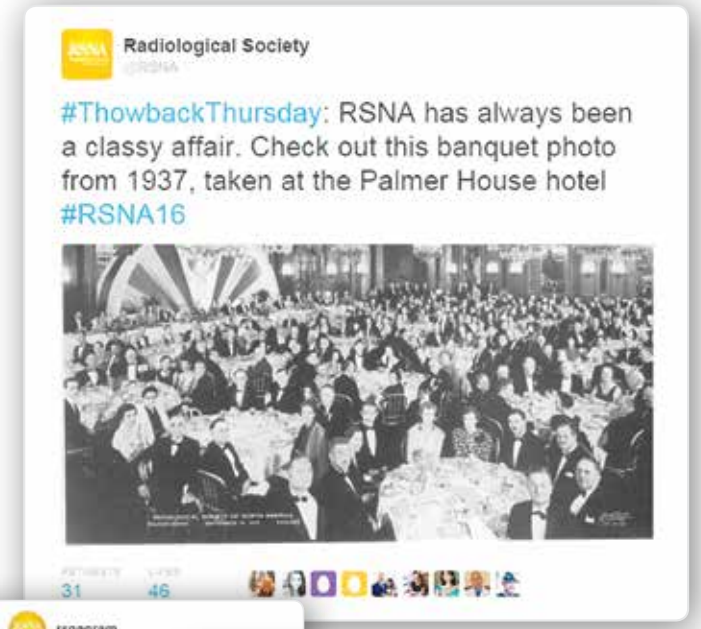
RSNA's Expanded Social Media Presence Pays Off at RSNA 2016

RSNA's social media presence grew at RSNA 2016, and the response was enthusiastic.

On Twitter alone, the official #RSNA16 hashtag was used in 37,888 tweets and received 191 million impressions, an 81 percent increase over 2015. During the meeting, RSNA-created content was seen more than 9.1 million times by users across four platforms — Twitter, Facebook, LinkedIn and Instagram.

RSNA expanded its social media presence during RSNA 2016 by including live-streamed video, increasing live tweeting, and offering two in-person tweet-ups — one for all attendees and one for residents and fellows. RSNA also introduced the Walking Challenge — a Twitter-based contest in which participants tracked their total steps and tweeted the results each day during the meeting. Five randomly selected participants were awarded prizes.

Stay informed about RSNA happenings and news throughout the year by connecting with RSNA on all its social media platforms.



Visit *Facebook.com/RSNAfans* and like the RSNA page. Follow @RSNA on Twitter, @RSNAgram on Instagram and Radiological Society of North America (RSNA) on LinkedIn.

COMING NEXT MONTH

Next month, *RSNA News* reports on the effectivness of Prostate Imaging Reporting and Data System (PI-RADS), version 2, in detecting prostate cancer.

STAY ON THE CUTTING EDGE WITH eLEARN ONLINE EDUCATION FROM RSNA

RSNA eLEARN RESOURCES AVAILABLE FREE OR AT REDUCED RATES TO RSNA MEMBERS

Browse quality online CME education at ***RSNA.org/eLearn***, including a full range of education resources and tools to advance your career, earn CME credits, and put you on the cutting edge of radiology's future.

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- Cases of the Day
- Supplemental Online Education Modules
- *RadioGraphics* and *Radiology* CME Tests
- *Radiology* Select Online Educational SA-CME Editions
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