RSNA News™

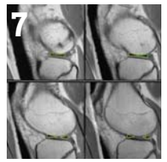
May 2010 Volume 20, Number 5

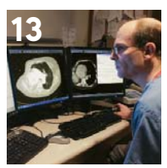
Radiologists Respond to Seismic Need in Haiti

ALSO INSIDE:

CELEBRATING 20 YEARS

RSNA News proudly celebrates 20 years of providing high-quality, timely coverage of radiology research and education and critical issues in private and academic practice, along with comprehensive information about RSNA programs, products and other member benefits.





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ESR Honors Dignitaries

2009 RSNA President Gary J. Becker, M.D., was named an honorary member of the European Society of Radiology (ESR) at the European Congress of Radiology in Vienna, Austria. Dr. Becker is the executive director of the American Board of Radiology and a professor in the interventional section of the Department of Radiology at the University of Arizona College of Medicine in Tucson.

Also receiving honorary ESR membership:

Willi A. Kalender, Ph.D., a professor and director of the Institute of Medical Physics at the Friedrich-Alexander-University Erlangen in Nürnberg, Germany; Ji Qi, M.D., Ph.D., a professor of radiology and chief of the Radiology Department at First Central Hospital, Tianjin Medical University in China; and Donald L. Resnick, M.D., a professor of radiology and chief of osteoradiology at the University of California in San Diego and the 2006 RSNA Outstanding Educator Award recipient.

Andy Adam, M.D., a professor of interventional radiology at the University of London and president of the Royal College of Radiologists, was awarded the ESR Gold Medal.

(clockwise from top left) **Becker, Kalender, Adam, Resnick, Qi.**

FDA and Health Canada Approve Use of Mo 99 from Polish Reactor

The U.S. Food and Drug Administration (FDA) and Health Canada have approved the Maria Research Reactor in Poland as a site to irradiate targets for production of Molybdenum 99 (Mo 99) to be processed in a Covidien facility in Petten, the Netherlands. Covidien reported that with these approvals, it will now be able to use Maria-produced Mo 99 in Technetium 99m (Tc 99m) generator manufacturing in the U.S. as well as in Petten. Hospitals in Europe received Tc 99m generators as a result of the test production from Maria Mo 99 in early March.

Adding the Maria Research Reactor is expected to help Covidien meet the needs of more than one million additional patients in just the first six months after the reactor begins supplying Mo 99, according to the company.

Dillehay Receives CRS Gold Medal

Recognized for his many years of service to radiology and nuclear medicine, Gary L. Dillehay, M.D., a professor of radiology at the Northwestern University Feinberg School of Medicine in Chicago, was awarded the Chicago Radiological Society (CRS) gold medal at its annual meeting in April. Past-president of CRS, Dr. Dillehay is president-elect of the Illinois Radiological Society and serves as state councilor to the American College of Radiology.

Dr. Dillehay has served on both the RSNA Scientific Program Committee (SPC) and the *RadioGraphics* editorial board and chaired the SPC Nuclear Medicine Subcommittee.

New Guidelines to Encourage Appropriate Imaging in Developing Nations

Radiologic societies around the globe, including RSNA, the International Society of Radiology and International Society of Radiographers and Radiologic Technologists, are calling for development of referral guidelines for appropriate imaging use in developing nations.

Leading the effort to draft the new guidelines is a working group formed last year by the International Radiology Quality Network (IRQN). The IRQN group includes RSNA Board Liaison for Education Richard L. Baron, M.D., and Ramin Khorasani, M.D., chair of the Radiology Informatics Subcommittee of the RSNA Education Exhibits Committee. Leading the IRQN Referral Guidelines Working Group are Michael Kawooya, M.B.Ch.B., M.Med., general secretary of the African Society of Radiology and Martin Reed, M.D., chair of the Guidelines Working Group for the Canadian Association of Radiology.

It can be challenging for many referrers to keep up with new diagnostic imaging techniques and technologies, according to the IRQN, and well-developed and evidence-based referral guidelines are needed to help these referrers decide if imaging is indicated. The working group will modify and harmonize available referral guidelines and adapt them to the healthcare settings of developing nations.

In addition, The World Health Organization (WHO), under its Global Initiative on Radiation Safety in Health Care Settings, hosted a consultancy on "Referral Guidelines for Appropriate Use of Radiation Imaging" in March. Besides IRQN working group members, representatives of numerous radiology societies from around the globe attended the consultancy and identified issues that must be addressed in developing the guidelines, such as different terminologies used in various countries and medical-legal implications. More information on the WHO meeting is available at *www.irqn.org*.

My Turn

Educating Patients More Important Than Ever

While patients always have wanted information about their medical care, tests and treatments, that need has been made all the more critical by healthcare headlines and the proliferation of information available via the Web. As physicians, we want to provide information but are often time constrained. That's where the public information Web site *RadiologyInfo.org* can help. *RadiologyInfo.org* follows through on its compelling promise to medical professionals—"Assure your patients … Save your time"—by offering healthcare consumers more thorough descriptions of radiology procedures than their providers have time to explain.

James S. Donaldson, M.D., is the RSNA representative co-chair of the RSNA-ACR Public Information Web Site Committee. **Christoph Wald, M.D., Ph.D.,** is the ACR representative co-chair.

Commemorating 10 years of growth in content, features and online visitors, *RadiologyInfo.org*—co-sponsored by RSNA and the American College of Radiology (ACR)—recently launched a refreshed and reorganized site. The "facelift" followed a formal usability study that gave the site high marks for the usefulness, understandability and trustworthiness of its content but also indicated a need for an updated look and more intuitive, patient-directed navigation. The redesigned site offers visitors simpler, more direct paths to the information they're seeking.

Launched in 2000 with 18 common radiology procedures, *RadiologyInfo.org* now covers more than 100 diagnostic, interventional, nuclear medicine and radiation therapies. We've also added printable patient handouts, videos, patient safety information and news about important developments in radiology.

RadiologyInfo.org is available in English and Spanish and user feedback has always been overwhelmingly positive. The award-winning site averages more than 550,000 visits per month and consistently appears in the top 10 on search engine results, yet many of our own colleagues aren't aware of or using the site to its full potential.

While the primary mission of *RadiologyInfo.org* is to provide patients with understandable descriptions of complex radiology procedures, another crucial purpose is to provide radiologists, referring physicians and other medical professionals with turnkey patient communications tools.

I urge you to visit *Radiology Info.org* to see its new look, then tell your patients, colleagues and referring physicians about the site. You can also link your practice's Web site to this free, ready-made tool and send your comments to us at *RadiologyInfo@rsna.org*.

Read more about the new look of *RadiologyInfo.org* on Page 23.

RSNA Receives Longest Possible CME Accreditation Term

RSNA has been awarded a six-year accreditation by the Accreditation Council for Continuing Medical Education (ACCME), the longest term awarded by ACCME.

During the yearlong reaccreditation process RSNA demonstrated how it has implemented ACCME's 2006 Updated Accreditation Criteria, how the Society's educational planning and programming result in measurable outcomes and how CME plays an integral role in RSNA's collaborative relationships and practice improvement initiatives.

A feature article explaining the impact of the accreditation and detailing all the CME opportunities offered by RSNA will appear in the June issue of RSNA News.

Numbers in the News

14

Percentage of emergency department visits in 2007 during which MR imaging or CT or PET scanning was ordered—four times as often as in 1996—according to a recent report from the National Center for Health Statistics of the Centers for Disease Control and Prevention.

250

Pediatric patients seen in five days by an American radiologist as she provided medical aid in Haiti after the devastating earthquake. (Read "Radiologists Respond to Seismic Need in Haiti," beginning on Page 5.)

172,000,000

Smartphones sold in 2009, according to a recent report from Gartner Inc. (Read "Handheld Devices Show Potential in ER Diagnosis" beginning on Page 11.)

5,000,000,000

Current value, in dollars, of the molecular imaging market, according to a new report from Espicom Business Intelligence.

Pisano First Woman Dean at MUSC

Mammography expert **Etta D. Pisano, M.D.,** has been named dean of the College of Medicine at the Medical University of South Carolina (MUSC) in Charleston, becoming the first woman to hold that position and one of only about a dozen female deans of medical schools in the U.S.

Dr. Pisano previously served as vice-dean for academic affairs at the University of North Carolina's School of Medicine at Chapel Hill. Dr. Pisano was the principal investigator on a landmark 2005 study that demonstrated the advantages of digital mammography for detecting breast cancer in younger women. Earlier this year, Pisano was elected to the Institute of Medicine of the National Academy of Sciences.

A frequent contributor to *Radiology* and *RadioGraphics*, Dr. Pisano is also a member of RSNA's Public Information Advisor Network.

Giger, Pettigrew Elected to NAE

Roderic I. Pettigrew, M.D, Ph.D., and **Maryellen L. Giger, Ph.D.,** have been elected to the National Academy of Engineering.

Dr. Pettigrew, director of the National Institute of Biomedical Imaging and Bioengineering (NIBIB), was recognized for the use of MR imaging in human blood-flow studies and leading advancements in bioengineering research and education as the initial director of NIBIB. Dr. Pettigrew delivered the Eugene P. Pendergrass New Horizons Lecture at RSNA 1989, "4D Cardiac MR Imaging: Diagnostic Procedure of the Future."

A professor and vice-chair in the Department of Radiology at the University of Chicago Medical Center, Dr. Giger's research includes finding new ways to use computers to help radiologists obtain information more effectively and efficiently from mammography, ultrasonography and MR imaging, among other tests. Also chair of the university's Committee on Medical Physics, director of the Graduate Program in Medical Physics and a professor in the Comprehensive Cancer Center, Dr. Giger is a prior third vice-president of RSNA.

RSNA and ABR Foundation Collaborate on Professionalism Training

RSNA is assisting the American Board of Radiology Foundation (ABRF) in its production of Web-based instructional modules on professionalism issues. The "ABRF 21st Century Education Project—Ethics/Professionalism Modules, in joint sponsorship with RSNA" will be free to ABR diplomates and residents, fellows and students, as well as RSNA members.

Each module will contain three case studies—one specific to ethical issues facing diagnostic radiologists, another especially for radiation oncologists and a third tailored to radiologic physicists—and will employ video clips, animations, pop-ups and other media to present the material. Topics include physician-patient and physician-colleague relationships, conflicts of interest, research principles and misconduct, and human subject research.

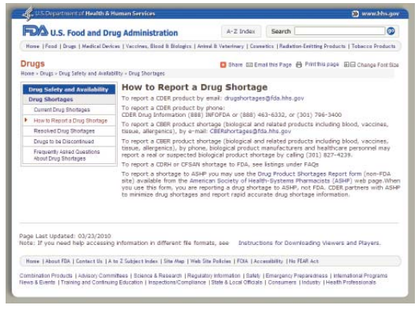
The modules are to be developed this year and released in 2011. CME credit will be offered and the modules will also qualify as self-assessment modules (SAMs) to fulfill ABR maintenance of certification (MOC) requirements.

More information on the summit is available at *www.abrfoundation.org.*

SOLUTION SOUGHT FOR ETHIODOL SHORTAGE

The Society of Interventional Radiology (SIR) is encouraging radiologists to register a shortage of Ethiodol (Lipiodol) with the U.S. Food and Drug Administration (FDA) by going to *www.fda.gov/Drugs/DrugSafety/DrugShortages/ucm142398.htm.*

SIR reported that Savage Laboratories®, a division of Nycomed and the sole U.S. supplier of Ethiodol, stopped production in February 2010. Ethiodol is a product of Guerbet, headquartered in Villepinte, France. Ethiodol continues to be widely available in the rest of the world, according to SIR.



SIR is working with Guerbet USA, FDA and Congress to find a reliable and permanent new source of Ethiodol. More information will be available at *www.sirweb.org.*

RSNA Board of Directors Report

At its March meeting, the RSNA Board of Directors continued preparations for RSNA 2010, appointed members to new committees and approved the Society's 2010–2013 strategic plan.

New Format for *RSNA Meeting Program* at RSNA 2010

The format of the printed *RSNA Meeting Program* is changing starting with this year's annual meeting. The big, 1,200-page book is being replaced with a "mini program." The biggest change is that abstracts and learning objectives will not be published in the printed program but will instead be available online only. The mini program will list titles for all presentations and author names and include other meeting information such as honoree biographies and RSNA Research & Education Foundation activities.

The online *RSNA Meeting Program* was completely revamped in 2009. In addition to including all presentation abstracts and course learning objectives, the online program is easier than ever to search and enables customized downloads of content and personal schedules to mobile devices.

A change to the Lakeside Learning Center schedule at RSNA 2010 means more informal discussions of posters and education exhibits during the lunch hour. Discussions will be scheduled for 12:15 p.m. – 12:45 p.m. and 12:45 p.m. – 1:15 p.m., effectively doubling the number of potential presentations compared to previous years.

At its March meeting, the Board also reappointed members and appointed new members to the Education Exhibits Awards Committee, an anonymous panel that judges the content and design of education exhibits accepted for presentation at the annual meeting.

George S. Bisset III, M.D.
Chairman, 2010 RSNA Board of Directors

Residents Named to New Committee

The new RSNA Residents and Fellows Committee will be chaired by RSNA Liaison for Science N. Reed Dunnick, M.D. The Board named 21 first-, second- and third-year residents to the committee, which will advise the Board on the need for and effectiveness of RSNA programs for members-in-training and develop relevant programming for those members at the annual meeting. Committee members will also provide input on the Society's other resources for residents and fellows, such as social networking tools, and author relevant articles for RSNA publications. Duane G. Mezwa, M.D., and Jocelyn D. Chertoff, M.D., will serve on the committee as faculty advisors.

New Task Force to Create Professionalism Curriculum

The Board appointed members to the new RSNA/ACR Joint Task Force on a Core Curriculum for Professionalism and approved the task force's charge—to develop a curriculum on professionalism for radiology residents and promote a culture of professionalism, ethics and volunteer service among radiologists. Leonard Berlin, M.D., and R. Nick Bryan, M.D., Ph.D., will serve as RSNA and ACR co-chairs for the task force, respectively.

Green Effort Encourages Online Journal Use

As part of its effort to be an eco-friendly, "green" organization, RSNA will offer members the choice to save paper by "opting out" of the print versions of *Radiology* and *RadioGraphics* and accessing them online only. The online versions of the journals include content that does not appear in print, such as image and data supplements, videos and podcasts. Watch for your membership renewal, to be mailed later this year, to take advantage of the new online-only option.

Society Goals Unchanged in New Strategic Plan

The 2010-2013 strategic plan approved by the Board keeps in place RSNA's goals to shape and advance the future of radiology, meet members' educational and continuing professional development needs, promote high quality science and research, offer a preeminent annual meeting, foster excellence in publications and work productively with other domestic and international organizations. The Society's strategic plan will get a complete overhaul in 2011.

George S. Bisset III, M.D.
Chairman, 2010 RSNA Board of Directors

Question of the Month

Q What is the best way to ensure I am optimizing dose versus image quality for CT exams?

[Answer on page 18.]

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Radiologists Respond to Seismic Need in Haiti

When the massive January 12 earthquake rocked the flimsy infrastructure of Haiti's largest cities and surrounding towns, radiologists were among the throngs of medical personnel who quickly mobilized to aid the millions left suffering in the devastation's wake.

Those who responded said there was no question whether they would act—it was simply a matter of when and how. Whether leveraging existing relationships with aid organizations and Haitian-based hospitals or tapping individual reserves to remotely aid patients from home, radiologists, technologists and other physicians wasted no time reaching out to aid the battered survivors.

"I was in a place where I had the ability to help," said Barb Tomasini, R.T.R., C.V., R.C.I.S., of St. Alphonsus Regional Medical Center in Boise, Idaho, and a long-time volunteer at St. Damien Hospital, the only free pediatric hospital in Haiti. "If you are able, cross that line and start helping. My door was opened in 1997 when Project Haiti of the Saint Alphonsus Foundation asked for my assistance."

"I Saw 250 Kids in Five Days"

One radiologist who has also frequently traveled to Haitian medical facilities in recent years was actually scheduled to be in Port-au-Prince the day the quake hit.

"I was supposed to be in a hospital that actually collapsed," said Gia DeAngelis, M.D., an associate professor of clinical radiology at the University of Virginia in Charlottesville.

Instead, Dr. DeAngelis arrived in Haiti a few days after the earthquake as part of a previously planned trip to continue her work with Doctors Without Borders training Haitian medical staff to use ultrasound equipment.

Dr. DeAngelis immediately began treating the injured and conducting clinics in remote areas closest to Cap Haitien, the country's second largest city located about 80 miles from Port-au-Prince, which took the biggest hit from the quake.

"Cap Haitien doubled its population," Dr. DeAngelis said. "The mayor was busing in people from Port-au-Prince.

"It was amazing that people found us," Dr. DeAngelis continued. "The injured found the clinic on their own. If patients had fractures, we set them. One girl's fibula was sticking out, so we cleaned it and she got further treatment at a local hospital. I saw 250 kids in five days."

The vast need for basic services was overwhelming at times, Dr. DeAngelis said.

"If patients had open fractures, we poured in water along with a small amount of betadine and kept doing that," she said. "Then we set the fracture by hand and kept it in traction. Very few of those people ended up with an infection. That was the greatest need during the first days of the earthquake.

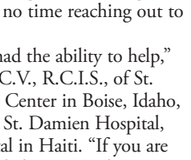
"Aid was coming in, but if we had 1,000 Boy Scouts trained in basic First Aid, we could have only done so much," she concluded.

Reliable Images a Rarity

For Daniel D. Ivankovich, M.D., an orthopedic surgeon at Rush Presbyterian-St. Lukes Hospital in Chicago, getting reliable images of the injuries presented a challenge during the first few days he spent on the ground.

After arriving in Haiti on January 21, Dr. Ivankovich began working 20-hour days to aid victims. He dropped off supplies at a Port-au-Prince hospital and then drove to remote areas miles from the capital city hub, finding and treating patients with spinal cord injuries.

> "Aid was coming in, but if we had 1,000 Boy Scouts trained in basic First Aid, we could have only done so much."
>
> **Gia DeAngelis, M.D.**



ON THE COVER
Using a flatbed truck as a makeshift ambulance, Thomas Rosen, PA-C, prepares to transport spinal cord and head injury patients for airlift to the USNS Comfort, the floating U.S. Navy hospital just off the coast of the Haitian capital of Port-au-Prince.

Clockwise, from top left: **The helicopter view of a Haitian Tent City taken while airlifting spinal cord injury patients to the Port-au-Prince airport; Daniel Ivankovich, M.D., evaluates a spinal cord injury patient; the Haitian capital building left in ruins by the earthquake; patients being evacuated from a Tent Hospital for transfer to the University of Miami Hospital; one of the many Port-au-Prince homes reduced to rubble; Dr. Ivankovich and Colleen O'Connell, M.D., arrive at Midway Airport in Chicago with patients bound for Northwestern Memorial Hospital & Rehabilitation Institute; Haitians line up for water, food and supplies distributed by the United Nations in downtown Port-au-Prince.**

"A lot of our diagnostics were made in the field, localized by clinical exam," Dr. Ivankovich explained. "Half the patients were X-rayed, but the image didn't include the spine injury. I was happiest on the day we got the C-arm working so we could actually scan patients' bodies for fractures and injuries because the X-rays we had weren't adequate."

For Tomasini, the tragedy offered a first-hand look at the impact—and good fortune—of her previous volunteer work at St. Damien.

When St. Damien received funds several years ago to purchase a digital X-ray machine and PACS station, Tomasini was asked to help design the hospital's new radiology department. Because lead sheeting for the X-ray department was too expensive, she asked the builders to consider using cinder block filled in with concrete. The radiologic equipment survived the earthquake within the department's 8-inch thick concrete walls.

"It was meant to serve as radiation protection but it ended up being earthquake protection," she said. "It not only saved lives, it saved the digital X-ray equipment. Casualties from the earthquake were being imaged within an hour of the disaster."

The solid infrastructure also kept the radiation department running.

Teleradiology Offers Lifesaving Link

After Allen Rothpearl, M.D., of Westbury, N.Y., heard about the functioning radiology services at St. Damien, he contacted Tomasini and offered teleradiology services to the physicians at the Haiti hospital.

As CEO of Complete Radiology Reading Services (CRRS), Dr. Rothpearl said he was eager to donate the company's human and technological resources to create a link between the overwhelmed physicians in Haiti and his radiology center in New York.

Dr. Rothpearl explained, "It turned out that Viztek, the company that makes the PACS used by St. Damien, is one we use at CRRS and we know the engineering staff quite well," he said. "It was a Saturday and I said, 'Let me give them a call and see if I can get some help setting this up.' I got an engineer on the line and we spent all day Saturday and into the night working, and we eventually set up the link. I was very excited. At midnight we actually sent the first case over."

Continued on Page 16

FUND CONTINUES TO AID HAITI

Launched by the American College of Radiology (ACR) Foundation, the Haiti Radiology Relief Fund is helping supply health care facilities in Haiti with necessary radiologic support—including radiology equipment, supplies and materials as well as physician and medical physicist volunteers. Proceeds will be used to purchase radiology equipment, materials and supplies or will be used to assist volunteer efforts in Haiti.

For more information, go to *www.acr.org.*

Meniscus-focused Algorithm Could Lead to Osteoarthritis Biomarker

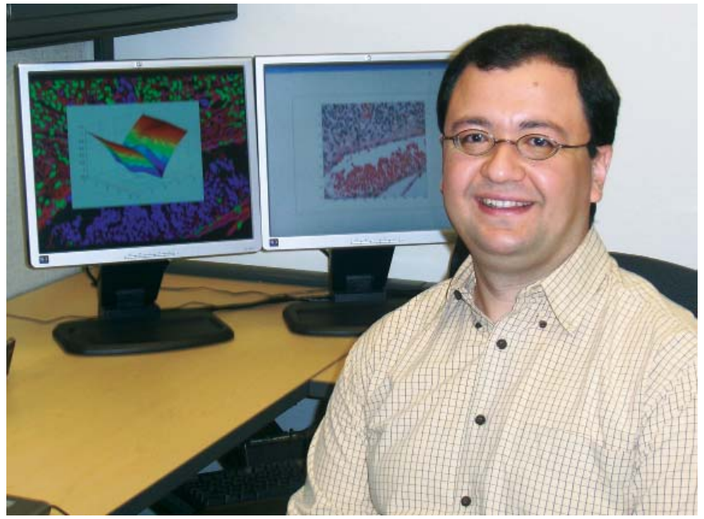
Automating measurement of the meniscus could lead to its use as a biomarker for predicting who is at risk for developing osteoarthritis, according to new research.

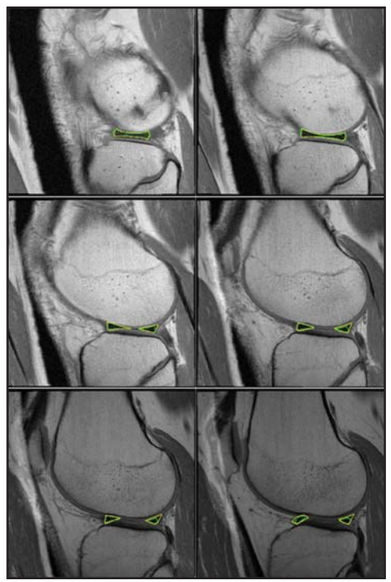
Although osteoarthritis research has primarily focused on cartilage, Metin N. Gurcan, Ph.D., and colleagues at The Ohio State University in Columbus examined the structure adjacent to cartilage. "There are always several signs of a disease, so I started 'thinking outside the cartilage,'" said Dr. Gurcan, an assistant professor of biomedical informatics at the university and principal investigator on the study published in the November 2009 issue of *Osteoarthritis and Cartilage.*

When Dr. Gurcan noted changes in the meniscus, he deduced that it must contribute to osteoarthritis as well.

Because manual segmentation is time-consuming and prone to intra- and inter-reader variability, Dr. Gurcan began to explore the potential for developing a semi-automated system to characterize the meniscus in an efficient way and reduce reader variability.

"We need similar views of changes in structures to develop a biomarker to predict who is at risk for developing osteoarthritis," said Dr. Gurcan, who tapped his engineering background and recent research on lung and breast cancer in developing the system.





Although radiologists have traditionally measured parts of an image manually, Metin N. Gurcan, Ph.D., above, and colleagues developed a computer algorithm that highlights the meniscus, which is visible in the MR imaging sequence at left. The manual segmentation and computer output are highlighted in green and yellow, respectively. The similarity of the colors demonstrates the effectiveness of the meniscus segmentation algorithm, which could lead to a biomarker for predicting osteoarthritis.

Nationwide Study Provides Data

Using imaging data from the Osteoarthritis Initiative (OAI), a nationwide study sponsored by the National Institutes of Health, Dr. Gurcan and colleagues developed and tested new programming designed to semi-automate radiologic measurements.

Researchers used MR images of 10 subjects with no evidence of osteoarthritis and 14 subjects with established osteoarthritis enrolled in the OAI.

Using scans of the knees of study participants, researchers developed an algorithm that highlighted the meniscus, allowing the team to observe its volume and thickness, as well as any tears.

If changes in the meniscus correlate with the degree of ultimate progression of osteoarthritis, the structure could become a biomarker for prevention and treatment of the disorder, researchers noted.

Computer Segmentation Proves Accurate

Although radiologists have traditionally measured parts of an image manually, that process takes seven to 20 minutes. In Dr. Gurcan's research, the radiologist marked start- and end-points and the computer automatically segmented several MR imaging views of the meniscus in two to four minutes, with no loss of accuracy. These images can be repeated and compared over a period of time to look for degeneration.

Future research will examine the medial meniscus and its different geometry, said study co-author Thomas Best, M.D. *(right)*, discussing a case with Rob Poley, M.D., at The Ohio State University Sports Medicine Center.

"Everything we do with this computer system is intended to help the radiologist, not to replace him or her," Dr. Gurcan said. "This is true synergy with the help of computers."

In assessing normal menisci in mild to moderate osteoarthritis, computer segmentation proved as accurate as two radiologists reviewing the images and in many cases more accurate than a single radiologist, according to researchers. With further research, Dr. Gurcan and colleagues hope the segmentation of the meniscus will help predict not only who is likely to get osteoarthritis, but also when the disease will strike.

Because careful, precise measurements require a great deal of time and a large number of patients, it traditionally has been difficult to quantify changes with MR imaging, said Eliot Siegel, M.D., who has conducted similar research. By mining pixel data to find the meniscus, Dr. Siegel said researchers can begin to compare patient weight, gender, activity level, amount of disease, other diseases and medication use with changes in meniscal size, shape and signal intensity.

"Orthopedic surgeons use conventional radiographs to see changes in the bones," said Dr. Siegel, a professor and vice-chair of information systems in the Department of Radiology at the University of Maryland School of Medicine and chief of radiology and nuclear medicine at the VA Maryland Health System. "With MR imaging, you can detect changes in the cartilage and meniscus that are invisible in conventional radiographs. If we can quantify these, then MR becomes a biomarker for osteoarthritis."

> "We need similar views of changes in structures to develop a biomarker to predict who is at risk for developing osteoarthritis."
>
> **Metin N. Gurcan, Ph.D.**

With advance knowledge of osteoarthritis, doctors could better monitor patient response to treatments such as physical therapy, medication and surgery, Dr. Siegel said.

Quadriceps Could be Key in New Research

Although this study focused on the lateral meniscus, future research will examine the medial meniscus and its different geometry, said Thomas Best, M.D., Ph.D., another researcher on the study.

Studying the quadriceps could also help researchers identify risks for osteoporosis, said Dr. Best, a professor and Pomerene Chair in Family Medicine and director of the division of Sports Medicine at Ohio State. "Those who have osteoarthritis have muscle atrophy," he said. "We need to find which comes first, the muscle atrophy or the osteoarthritis. Prevention of osteoarthritis is the goal."

For more information on the study cited in this article, go to *rsnanews@RSNA.org.*

NIH Adopts Radiation Exposure Tracking Policy

Patient concern about repeated radiation exposure has prompted a National Institutes of Health (NIH) plan to require all makers of CT and other radiation-producing scanners used at NIH clinics to have software to track a patient's radiation dose and log it into an electronic medical record (EMR).

Although the policy impacts only vendors for NIH clinics, the organization strongly encourages all medical imaging facilities to adopt similar requirements, according to Ronald D. Neumann, M.D., and David A. Bluemke, M.D, Ph.D., who outlined the proposal in the February 2010 issue of the *Journal of the American College of Radiology (JACR).*

While patient record keeping "by itself is insufficient to provide needed answers regarding low-dose radiation exposure and increased cancer risk, it is nonetheless a necessary first step toward achieving that goal," wrote Drs. Neumann and Bluemke, both from Radiology and Imaging Sciences at NIH in Bethesda, Md.

Systems needed to record the data are readily achievable because EMRs are in place and because CT and PET/CT scanners already output the information, according to Dr. Bluemke.

"The information has simply never been recorded and tabulated in the radiology information systems and hospital information systems," he said. "Currently, the public, the FDA and Congress have a high level of interest in this issue, and radiation tracking can be simply accomplished."

NIH clinics number 7,000 inpatient admissions and 100,000 outpatient visits each year.

In addition, NIH will now require vendors to make sure that radiation exposure can be tracked by patients in their own personal health records—an approach consistent with the American College of Radiology's view that "patients should keep a record of their X-ray history," Dr. Bluemke said.

David A. Bluemke, M.D, Ph.D.
National Institutes of Health

Shella Farooki, M.D.
Columbus Radiology Corporation

ably record radiation doses," said Shella Farooki, M.D., with Columbus Radiology Corporation in Columbus, Ohio, who explored the connection between radiation exposure and epigenetics in the February 2010 issue of *JACR.*

The study of epigenetics—heritable alterations in gene expression caused by mechanisms other than changes in the underlying DNA sequence—and how it may play a role in determining whether or not future trends of diseases can in fact be linked to utilization of CT is currently the focus of significant research, according to Dr. Farooki. "This should include radiation from all imaging devices and not just from CT scans."

In 2008, NIH earmarked $190 million for epigenetics research over the next five years.

"The effects of ionizing radiation have been demonstrated in neighboring cells—or non-targeted radiation—known as the bystander effect," Dr. Farooki said. "In addition, ionizing radiation effects have been shown to span generations, resulting in heritable defects in mice."

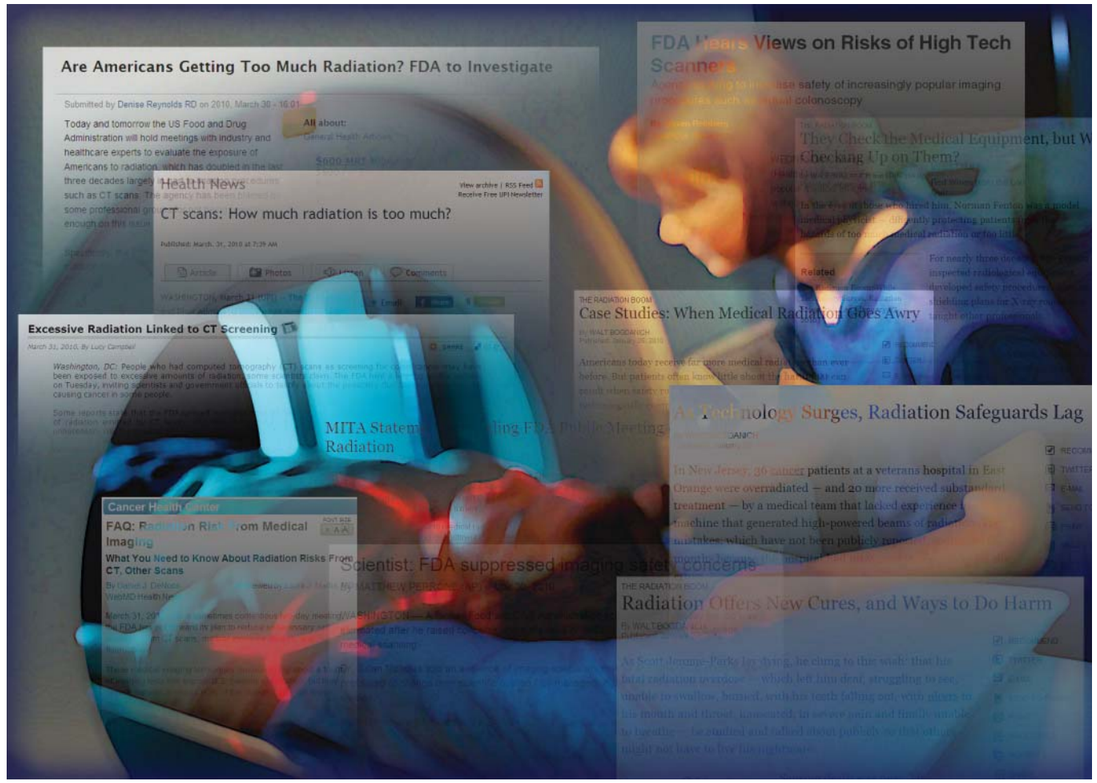
"Whether it is the field of epigenetics or not, it is only when we look globally at populations that we can detect cancers or other diseases related to the radiation we are delivering today," Dr. Farooki said. "The EMR is a tool that can help us achieve that goal."

As the effort moves forward, Dr. Farooki said she is optimistic that a standardized unit of measurement and method of embedding the information into records will be determined.

NIH Invests in Epigenetics Research

One radiologist applauds the NIH effort not only as an important first step in developing robust EMRs, but as a critical move toward protecting future generations from radiation delivered today. "In my opinion, we should all be taking these steps toward developing processes for our radiology practices to accurately and reli-

> "Currently, the public, the FDA and Congress have a high level of interest in this issue, and radiation tracking can be simply accomplished."
>
> **David A. Bluemke, M.D, Ph.D.**



Mounting concerns over radiation exposure have kept the issue front and center in the national media, prompting a recent U.S. Food & Drug Administration meeting on unnecessary radiation exposure and a new requirement from National Institutes of Health (NIH) that all makers of CT and other radiation-producing scanners used in NIH clinics track a patient's radiation dose.

"As EMRs become more prevalent in our radiology practices, they can evolve to incorporate more sophisticated data analysis," she said. "For example, a medical center's EMR could record radiation dose for patients so that the entire patient population of that medical group could be studied."

"Ultimately, it would be very helpful to have radiation dose information accumulated in a national medical record," Dr. Bluemke said. "Patients have medical radiation exposure at multiple facilities, and there is a need to integrate this information across facilities."

Dose Tracking 'Easily Achievable'

After speaking with vendors, Dr. Bluemke said the goals of the NIH are considered to be easily achievable and the organization encourages all medical imaging facilities to adopt similar requirements.

"All major manufacturers have already bid on radiation-producing radiology equipment at NIH and all have agreed they could meet the NIH tracking requirements," Dr. Bluemke said. "Thus, there is no reason that manufacturers can't do this for all hospitals if requested."

Dr. Bluemke said he believes that presenting radiation dose information to providers will have an immediate effect on ordering radiology tests which could lead to lower doses of radiation for patients.

"If the accumulated radiation dose is high, there may be an alternative test such as MR imaging or ultrasound, that could provide similar information without radiation," he said. "In addition, this may reduce the frequency of testing or help reduce redundant testing."

For more information on the study cited in this article, go to *rsnanews@RSNA.org.*

Aviation Offered as Example for Radiation Reduction Efforts

Those looking to reduce unnecessary radiation exposure from medical imaging should take a page from the aviation industry playbook, according to a radiology safety expert.

"Aviation errors have been greatly reduced through transfer of data from flight data recorders to a central registry," explained James R. Duncan, M.D., Ph.D., an associate professor in the Interventional Radiology Section of the Mallinckrodt Institute of Radiology at Washington University School of Medicine in St. Louis. "Airlines and the Federal Aviation Administration analyze that data and use that knowledge to improve their processes." Dr. Duncan serves as the department's chief quality and safety officer.

Dr. Duncan participated in a recent meeting convened by the U.S. Food and Drug Administration (FDA), "Device Improvements to Reduce Unnecessary Radiation Exposure from Medical Imaging." More than 100 representatives from radiology practice, academia, industry and the government met to discuss steps device manufacturers can take to reduce unnecessary patient exposure to ionizing radiation during CT and fluoroscopic procedures.

Recommendations included visual and/or audio alerts for excessive radiation exposure and improved mechanisms for transmitting dose data to local electronic medical records and national dose registries.

"A mechanism similar to the FAA model has been conceived for radiation optimization with medical imaging, whereby data regarding radiation use is continually captured and collected in a national registry," said Dr. Duncan, who serves on RSNA's Quality Improvement Committee and the structured reporting subcommittee of the RSNA Radiology Informatics Committee. "Analysis of that data will provide guidance on how to continually improve performance in radiology."

James A. Brink, M.D., chair of diagnostic radiology at the Yale University School of Medicine in New Haven, Conn. and co-chair of the RSNA-ACR Joint Task Force on Adult Radiation Protection, also participated in the FDA meeting. He said that while the various constituents represented may differ on the best approach, all applaud the FDA's Initiative to Reduce Unnecessary Radiation Exposure from Medical Imaging. The initiative, announced earlier this year, calls for promoting safe use of medical imaging devices, supporting informed clinical decision making and increasing patient awareness.

Handheld Devices Show Potential in Emergency Room Diagnosis

Handheld devices such as personal digital assistants (PDAs) and the iPod Touch show promise in emergency teleconsultation for detecting basic orthopedic injuries and intracranial hemorrhage, according to a recent study in the *American Journal of Radiology (AJR).*

While researchers say it's premature to consider the technology for clinical use, results show the emergency department potential is significant.

"For diagnosis of fresh bleeds in CT brain slices and of distal radial fractures on plain X-rays, performance on a Dell PDA and the iPod Touch was comparable to performance on a standard, off-the-shelf LCD monitor," said lead author Rachel Toomey, B.S.c., of the University College Dublin School of Medicine and Medical Science in Ireland.

"In fact, the PDA actually demonstrated statistically significantly better performance for CT images than the monitor," Toomey said. "Although their physical characteristics, such as spatial resolution, may seem inferior to those of more conventional displays, such handheld devices are potentially useful—at least for some image types—in an emergency situation where an opinion is required from an expert remote from the site."

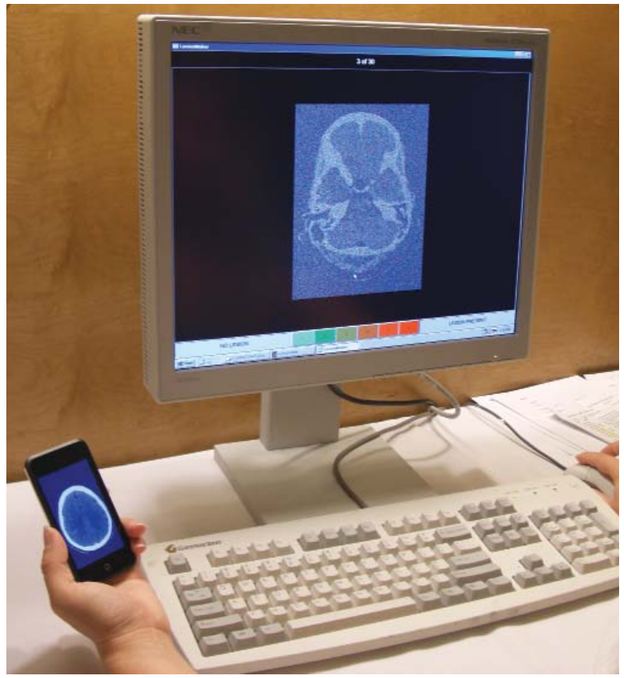
Researchers compared the diagnostic efficacy of a PDA and iPod Touch against that of secondary-class monitors for wrist radiographs and CT images of the brain. Using the Dorfman-Berbaum-Metz method of receiver operating characteristic (ROC) analysis, researchers examined 168 readings by American Board of Radiology-certified radiologists.

Some groups of readers performed better with a PDA than they did with a monitor for reading brain CTs, but no significant difference was found in comparing wrist images. Likewise, no significant difference was found when comparing the iPod Touch in either the brain CT or wrist image data, Toomey said.

"We can't say for sure why the PDAs performed better, but we can offer theories," Toomey said. "For instance, the display surfaces and luminance characteristics of the devices are different and moving the PDA while holding it may have allowed the observers to use ambient light in the room to alter the contrast of the image—in effect altering the window settings—more easily than with the iPod Touch or monitor."

Remote Consultations Possible

While the devices are already used with applications primarily geared toward teaching residents and organizing clinical commitments, Toomey said she envisions a time when a specialist could use the technology to consult on emergency cases from a remote location.



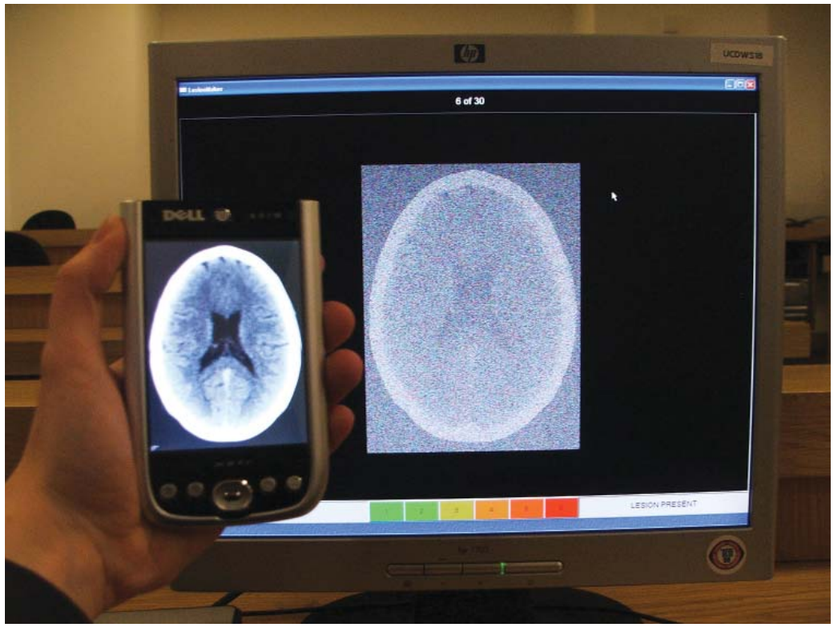
Researchers compared the diagnostic efficacy of a Dell PDA and iPod Touch against that of secondary-class monitors for wrist radiographs and CT images of the brain. Above: A radiologist is able to view images on the iPod Touch and mark the corresponding grayed-out "map" on the monitor for data recording purposes.

"For instance, a doctor might be traveling and unable to get to a computer, but would still be able to view the images on his handheld device," she said.

Because the technology could be especially effective when time is of the essence, the devices hold great potential for the emergency room, researchers said.

"In the ER, you often don't need the best quality image—you just need it quickly," said study author Dev Chakraborty, Ph.D., an associate professor in the Department of Radiology at the University of Pittsburgh. "By the time the radiologist interprets an X-ray in a digital format, there may be a time lag. We examined the most systematic manner and type of performance obtained using known-truth images."

> "In the ER, you often don't need the best quality image—you just need it quickly."
>
> **Dev Chakraborty, Ph.D.**



Some groups of readers performed better with a Dell PDA than with a monitor for reading of brain CTs, but no significant difference was found in comparing brain images.

Dev Chakraborty, Ph.D.
University of Pittsburgh

Rachel Toomey, B.S.c.
University College Dublin School of Medicine and Medical Science

Other possible applications include using a handheld device in disaster areas where high-specification reporting equipment is difficult to come by and for transmitting dental images for victim identification, Toomey said.

"The software available for handheld devices continues to develop, which I'm confident will continue to expand their uses," Toomey said.

Image Processing the Focus of Future Research

Researchers said they plan to follow up the study in two directions, beginning with gauging the impact of image processing.

"We would like to compare the perceptual process involved with reading images on handheld devices with those used with more conventional displays," Toomey said. "We have studied the impact of size. I'm very interested in image perception and would like to advance in that direction with the goal of investigating what physical and perceptual factors are most important in clinical decision making."

"Secondly, with more radiology software now available for these types of devices, we would like to further test their clinical efficacy with these tools available," she said.

While agreeing that more research is necessary, Daniel Rubin, M.D., assistant professor in the Department of Radiology at Stanford University and member of RSNA's Radiology Informatics Committee, said the study results show the technology's promise for specific applications.

"It's too early to talk about its role in mainstream radiology, but this technology certainly has promise for referring clinicians or curbside consults if you are nowhere near a display," Dr. Rubin said.

Pointing out the study's limitations—a relatively small number of cases and time constraints that made it impossible to recreate real-life clinical situations—Dr. Chakraborty stressed that results cannot be considered conclusive.

"This should be treated as a preliminary study which justifies a more full-scale investigation," Dr. Chakraborty said.

For more information on the study cited in this article, go to *rsnanews@RSNA.org.*

“Culture of Safety” Minimizes Risk

To effectively manage risk, radiology departments must not only put a rigorous system of measurement in place—they must also change their very culture, according to radiology quality improvement experts.

“It’s REALLY ABOUT developing a culture of safety within the department,” said C. Daniel Johnson, M.D., chair of the Department of Radiology at Mayo Clinic Arizona and a professor of radiology at the Mayo College of Medicine. “It means real commitment from departmental leaders, freeing up non-physician staff to help implement departmental plans and a regular drumbeat by the leadership at staff meetings about quality and safety issues.”

Establishing such a culture can take several years, noted Dr. Johnson, whose department has implemented a robust safety event reporting system that uses technology to measure performance and ensure the right people are notified when an error does occur.

“Any member of our department can enter safety events, near misses or good catches into the system,” he said.

Notifications of the events are automatically e-mailed to the radiology safety officer as well as the physician in charge of the department’s Quality Oversight Committee.

At Beth Israel Deaconess Medical Center in Boston, the radiology department uses PACS features that direct users to a reporting system for errors and miscommunications, peer-review processes and a system for directly communicating important but non-urgent abnormal results, said Jonathan B. Kruskal, M.D., Ph.D., chair of the department and a professor of radiology at Harvard Medical School.

“All of these components are actively managed by a quality improvement nurse who ensures that all loops are closed, recommendations for follow-up are adhered to and that important results are in fact communicated,” Dr. Kruskal explained. Dr. Kruskal serves on the *RSNA News* editorial board.

C. Daniel Johnson, M.D.
Mayo College of Medicine

Jonathan B. Kruskal, M.D., Ph.D.
Harvard Medical School.

Results are in the Numbers

Since implementing the system, Dr. Johnson’s department has seen dramatic results. In critical exam reporting, for example, performance has shot up nearly 87 percent.

“Exam results are considered critical for a patient when they require timely verbal notification and a written report—such as an unexpected pneumoperitoneum or some result that would require immediate change in patient care by the attending physician,” Dr. Johnson said. “We measured how well we were documenting calls to the physician and the time we talked to the physician. When we started, we were compliant with documentation only about 12 percent of the time.”

It took the facility a year to reach its target goal of 99 percent compliance with critical exam reports and it has hovered around that percentage since 2007, Dr. Johnson said.

A major component of the department’s success involves physician education and reinforcement at regular staff meetings, he said.

> “It’s really about developing a culture of safety within the department.”
>
> **C. Daniel Johnson, M.D.**

Beth Israel Deaconess Medical Center uses PACS features that direct users to a reporting system for errors and miscommunications, peer-review processes and a system for directly communicating important but non-urgent abnormal results. Left: Staff radiologist Robert Sheiman, M.D., interprets studies at a PACS workstation. The monitor on the left depicts a direct link to Dr. Sheiman’s personal peer review data while the PACS screen on right links to the online quality and safety reporting system and a peer review reminder and submission site.

Correction and Prevention Are Key

Once an error is reported, the next critical step is to determine how to resolve it and to ensure it doesn’t happen again. Dr. Johnson described a serious event that occurred at his facility—a steel oxygen tank inside the MR room—and the department’s pragmatic solution.

“We replaced all the steel tanks with aluminum throughout the clinic,” he said. “Everyone has to take a higher level of education before they’re allowed access to the scan room, and we have a physical barrier where people are checked for metallic devices.”

“When we identify a serious error, such as a sentinel event, we adhere to the protocol we defined in our manuscript in *RadioGraphics*,” said Dr. Kruskal, associate editor for the journal’s Quality Initiatives section (see sidebar on Page 16). “What has changed is that we now gather all involved personnel on the same day the event is identified and debrief all events surrounding the error.”

SpeakUp
How does the quality improvement program at your facility stack up? Vote in this month’s *RSNA News* reader poll at *rsnanews.org*

In addition to Joint Commission requirements, the department examines other issues relevant to the incident, Dr. Kruskal said.

“We need to look at all latent or systemic components that may have contributed to the error as well as factors such as the expertise and year of the trainees involved, available resources, patient factors and co-morbidities and others,” Dr. Kruskal said.

As an extension of their residents’ quality improvement rotation, the trainee involved is often asked to prepare a 20-minute presentation explaining the root causes of the event as well as the contributing factors.

“Our residents are trained to think of action items in terms of specific charges, responsible persons, timelines and outcomes metrics,” Dr. Kruskal said.

Digging Deep Can Be Necessary

The same type of honesty is critical when hospital errors make media headlines, Drs. Johnson and Kruskal emphasized.

“Recent radiation exposure cases have highlighted this fact,” Dr. Kruskal said. “Of course disclosure is always immediate and appropriate, but the public also wants to see exactly what practice changes were implemented afterwards.”

Such incidents might involve examining the issue in even greater depth to get to the root of the problem.

“Stating that from now onwards, CT scanners will have built-in dose-detection monitors to ensure that this doesn’t happen again is not, in my mind, adequate,” Dr. Kruskal said. “The question should be, ‘Why did CT scanners not previously have dose detection monitors in place, why did we need to wait for an adverse event to occur?’ This causes a huge loss of credibility for us and should engender a far closer link between vendors and radiologists.”

Financial Incentives Driving Change

Growth in risk management and performance improvement is predicted in two areas over the next few years: increased awareness within the specialty and boosted quality brought about by financial incentives, Dr. Kruskal said.

Continued on Page 16

ACCESS RSNA’S QUALITY IMPROVEMENT TOOLBOX

In addition to quality improvement courses and storyboards offered at annual meetings and online, RSNA provides a wealth of tools and resources for institutions beginning quality improvement projects. For more information, go to *RSNA.org/Quality*.

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Left to right: **Multiple crush injuries and extremity fractures treated by Daniel Ivankovich, M.D.; Sister Philomena Perreault X-rays a patient from a portable machine in Port-au-Prince.**

Radiologists Respond to Seismic Need in Haiti

Continued from Page 6

The remote hookup allows volunteer radiologists in New York to see all of the images—often numbering 40 to 50 per day—from St. Damien. Dr. Rothpearl said his company plans to continue the service for an indefinite period to fill in the gap left when non-local, on-site physicians from other countries leave the facility.

"I've seen crushed pelvises, horrible, horrible fractures and injuries that would be major surgical emergencies in the U.S.," Dr. Rothpearl said. "I'm amazed how they deal with that type of injury."

Tomasini said she is thankful she was able to serve as a conduit for Dr. Rothpearl, who had been frustrated in his efforts to connect with an organization willing to take advantage of his teleradiology services. In fact, he was turned down several times. To her it showed that perseverance wins against all odds.

"Dr. Rothpearl has shown that radiologists can contribute their time, talent and expertise without going to Haiti," Tomasini said.

"I think part of the problem is the huge bureaucracies people have to deal with," he said. "I basically did the link-up myself with the help of a Viztek engineer and a hospital liaison at St. Damien's. We had a common goal and we did it. Period. End of story."

Life-Defining Experiences Offer Lessons

Dr. DeAngelis believes the difficulty mobilizing, communicating and getting medical supplies to the injured should serve as a valuable lesson for the future.

She explained, "If there's an emergency, we need to treat it like one. When that earthquake hit, the emergency was that day. To really do the most good, you have to clean people's wounds within 24 hours. That's how you're going to save people's limbs."

All volunteers agreed that their experiences in Haiti were life-changing.

"It was very emotional," Dr. Ivankovich said. "I cried every night. If you had too much down time to think about what you did, it was overwhelming.

"As physicians, this kind of experience helps define who we are," he added. "In the face of this kind of severe catastrophe, suffering and trauma, you find out who you are as a doctor."

"Culture of Safety" Minimizes Risk

Continued from Page 14

"By linking performance and reimbursement, many practices will realize that performance is no longer an option, but a necessity, and will embrace programs that improve reimbursements and patient care," he said.

Regulatory groups will also need to come to consensus on expectations for quality, according to Dr. Kruskal.

Because it is impractical for every single practice to develop its own process, ultimately, software for developing such systems will be available or hospitals will share programs with one another, he said.

Cultural Shift Takes Time

Radiology departments that implement such quality improvement programs can expect progress but won't see it overnight, Dr. Kruskal said.

"What we find most notable is that it takes approximately 18 months to two years to affect a cultural change such that staff is willing to report errors," he said. "After approximately two years, our rate of error reporting plateaued and the errors started to drop, which thrilled us."

Though the number of actual errors did diminish, the drop was not as drastic as it seemed. A subsequent analysis showed that unless staff members are continually shown the positive impact reporting can have on practice, they will lose interest and the reporting rate will drop.

"Staff needs to be continually reminded about quality and safety issues so they know it isn't going to go away," Dr. Johnson said. "Eventually, people will begin to think about quality and safety in everything they do and it becomes part of the fabric of everyday life."

LISTEN IN To hear C. David Johnson, M.D., discuss risk management, go to *rsnanews.RSNA.org.*

RadioGraphics Highlights Quality Improvement

Both C. Daniel Johnson, M.D., and Jonathan B. Kruskal, M.D., Ph.D., have written extensively on quality improvement topics for RSNA journals. Their 2009 *RadioGraphics* studies, "Continuing Medical Education: Developing a Radiology Quality and Safety Program: A Primer," and "Continuing Medical Education: Strategies for Establishing a Comprehensive Quality and Performance Improvement Program in a Radiology Department," respectively, are available at *RSNA.org/RadioGraphics.*

Journal Highlights

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

Imaging of Pulmonary Vasculitis

Because pulmonary vasculitides—noninfectious inflammatory disorders that mainly affect the blood vessels of the lung from the main pulmonary artery to alveolar capillaries—encompass a clinically, radiologically and histopathologically heterogeneous group of diseases, imaging findings are diverse and often not specific.

In the May issue of *Radiology (RSNA.org/Radiology),* Man Pyo Chung, M.D., and colleagues from Sungkyunkwan University School of Medicine in Seoul, Korea, explain how a pattern-based approach to imaging findings may help narrow the differential diagnosis of various pulmonary vasculitides.

Specifically, the authors:

- Classify the various types of pulmonary vasculitis according to the modified Chapel Hill consensus classification
- Describe clinical manifestations of each disease entity
- Propose diagnostic criteria for the diseases
- Present key imaging findings
- Compare imaging findings with those of pathologic examination

Hughes-Stovin syndrome in 35-year-old man. 3D volume-rendered CT pulmonary arteriogram shows irregular narrowing and pruned-tree appearance *(arrows)* of pulmonary arteries as well as aneurysmal dilatation *(arrowheads)* of peripheral pulmonary arteries.

(*Radiology* 2010;255;2:322-341) ©RSNA, 2010. All rights reserved. Printed with permission.

Radiology

"The differential diagnosis from other nonvascular diseases is not easy; therefore, it is essential to integrate clinical, laboratory and imaging findings to make a specific diagnosis of pulmonary vasculitides," the authors conclude.

New and Evolving Concepts in the Imaging and Management of Urolithiasis: Urologists' Perspective

Multidetector CT plays an important management role in patients with urolithiasis, from the initial diagnosis in patients with acute flank pain to treatment planning and post-treatment follow-up. Keeping abreast of recent technologic developments will help radiologists meet the growing expectations of urologists.

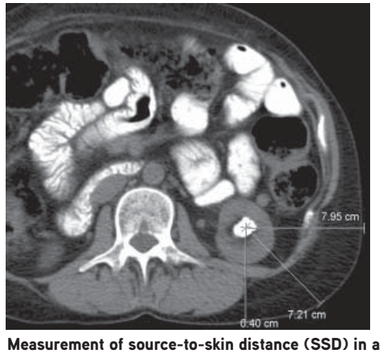
In the May-June issue of *RadioGraphics (RSNA.org/RadioGraphics)*, Avinash R. Kambadakone, M.D., and colleagues from Massachusetts General Hospital in Boston discuss urologists' expectations of imaging in the detection, quantification and characterization of urinary stones. Specifically, authors discuss:

- Stone classification based on composition
- Clinical perspective
- Factors influencing treatment decisions
- Imaging of urolithiasis

RadioGraphics

Authors also discuss radiation risks associated with frequent multidetector CT examinations for urolithiasis and suggest various strategies for minimizing those risks.

"Technologic advances in multidetector CT and a better understanding of urologists' expectations in cases of urolithiasis have expanded the role of imaging in this setting beyond helping make an accurate diagnosis to include providing crucial information on stone burden, composition, and fragility, thereby allowing more precise treatment selection and helping predict treatment success," the authors write.



Measurement of source-to-skin distance (SSD) in a 65-year-old man with a left lower pole renal stone. On an axial unenhanced CT scan, the distance from the center of the stone to the surface of the skin at 0°, 45° and 90° is 6.40, 7.21 and 7.95 cm respectively. The mean of these three values is used to represent the SSD (7.2 cm in this case).

(*RadioGraphics* 2010;30;603-623) ©RSNA, 2010. All rights reserved. Printed with permission.

Legacy Collection Puts 75 Years of *Radiology* Online

The *Radiology* Legacy Collection, a searchable archive of *Radiology* issues spanning 1923 to 1998, is available for the first time online. The Collection includes approximately 103,260 pages containing 73,331 articles and abstracts and featuring 86,618 historic images.

"The Legacy Collection will provide enhanced access for readers and researchers to the literature that has appeared in *Radiology* over the years and shaped the field as we know it," said Herbert Y. Kressel, M.D., *Radiology* editor.

Radiology ▪ Legacy Collection

The Collection is free of charge to RSNA members and accessible to institutions through purchase. To read the blog, purchase the Collection and for general information, go to *RSNA.org/Legacy.*

Radiology in Public Focus

Media Coverage of *Radiology*

In March 2010, media outlets carried 331 news stories generated by articles appearing in the print and online editions of *Radiology*. These stories reached an estimated 232 million people.

News releases promoted findings from a study on the cost effectiveness of annual breast cancer screening with both mammography and MR imaging for women at high risk for breast cancer (*Radiology* 2010;254:793-800) and a study on radiation dose from CT angiography performed with a 320-detector row volume scanner (*Radiology* 2010;254:698-706).

March coverage included Reuters, UPI, WOI-TV (Cleveland), WTNZ-TV (Knoxville, Tenn.), KLAS-TV (Las Vegas), KOOP-FM (Austin, Texas), WKRN-TV (Nashville, Tenn.), WNC-TV (Memphis, Tenn.), KITV-TV (Honolulu), AOL News, Yahoo! News, MSN Health, Discovery Health, *Businessweek.com, Palmbeachpost.com, Health.com, Healthy Woman, Filipino Reporter* and *Women's Health Weekly.*

May Public Information Activities Focus on Stroke

In recognition of American Stroke Month in May, RSNA will distribute public service announcements (PSAs) focusing on:

- Signs of stroke
- Stroke imaging
- Interventional treatments for stroke
- Importance of receiving stroke treatment quickly

In addition to the PSAs, RSNA will also distribute the stroke-focused "60-Second Checkup" audio programs to radio stations. The "60-Second Checkup" starts with a short introduction by a reporter and includes a brief interview with Robert Zimmerman, M.D., of the Weill Cornell Medical Center in New York.

IMAGE QUALITY

Answer

[Question on page 4.]

A A team approach is best—all protocols (not just those with doses reported for American College of Radiology accreditation) should be reviewed by a radiologist, technologist and medical physicist. The Image Gently campaign at *imagegently.org* has guidance for pediatric CT protocols.

Q&A courtesy of AAPM.

Other Radiology Headlines

Interventional Innovations Run Hot and Cold

Studies presented at the most recent annual meeting of the Society of Interventional Radiology, held in Tampa, Fla., in March, promoted the use of thermal ablation and cryoablation to treat various diseases, including colorectal cancer with liver metastases and breast cancer:

- Radiofrequency ablation (RFA) helps prolong the lives of people with colorectal cancer and liver metastases by as much as three years. Researchers treated a highly selective population—56 patients with multiple prior treatments of surgery and systemic and local chemotherapy—using CT-guided RFA. "This research shows how interventional radiologists can treat patients who have failed a prior surgical treatment," said researcher Constantinos T. Sofocleous, M.D., Ph.D., of Memorial Sloan-Kettering Cancer Center in New York.
- Researchers using cryotherapy to treat breast cancer in 13 women who refused surgery found no localized treatment recurrences for up to five years, no significant complications, and patients who were pleased with the cosmetic outcomes. A major difference between this study—modeled on the approach used in prostate cryotherapy—and prior applications of cryotherapy to treat breast cancer was confirmation of sufficient deadly temperatures when using two or more cryoprobes, said lead researcher Peter J. Littrup, M.D., director of imaging research and image-guided therapy for the Barbara Ann Karmanos Cancer Institute in Detroit.

(Source: Society of Interventional Radiology)

For Your Benefit

Education Center Launches Student Outreach

RSNA's newest outreach program for medical students—the Clerkship Companion—allows medical students to access information to aid in diagnosing and caring for patients in everyday practice. Access the Clerkship Companion by going to *RSNA.org/education.*

Users of the Clerkship Companion can choose a subject area either by subspecialty or patient complaint and then select from a wide range of subtopics. From there, a student may select from even more specific topic areas. One program feature, the Image Bank, allows users to pull up specific images to aid in diagnosis based on topic areas.

Judith Amorosa, M.D., and a 100-plus member team at the University of Medicine and Dentistry of New Jersey, played an integral role in creating the Clerkship Companion content. The site was peer reviewed to ensure quality of content. Dr. Amorosa's project was funded by an RSNA R&E Foundation grant. The grant was sponsored by GE Healthcare.

A full report on Dr. Amorosa's role in creating the Clerkship Companion will appear in the June issue of *RSNA News.*

RSNA Education™

RSNA provides tools to medical students and residents with Web-based programs specifically designed to meet their needs and spur interest in radiology.

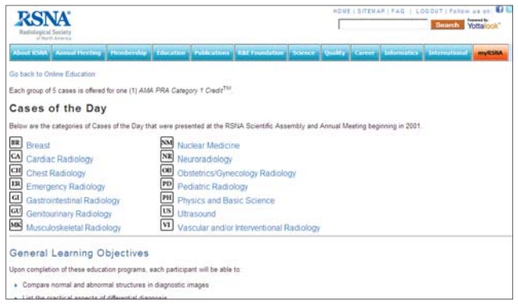
To access the Clerkship Companion, go to *RSNA.org/Education.*

Cases of the Day Now Online

The Case of the Day CME program from RSNA 2009 is now available and is online free to members at *RSNA.org/education.*

One of the most popular features at RSNA annual meetings, the Case of the Day features image-based case scenarios in 14 different subspecialties for five consecutive days. Attendees submit their diagnoses for cases and are able to learn the correct diagnosis the following morning. The same cases are made available in an online format with the advantage of offering immediate feedback to submitted diagnoses.

RSNA offers more than 300 peer-reviewed programs as a member benefit. Users may earn *AMA PRA Category 1 Credits™* by completing the various online programs.



RSNA Visits AUR Meeting

Left: **RSNA Board of Directors member Ronald L. Arenson, M.D, greets visitors to the RSNA booth at the recent Association of University Radiologists (AUR) Annual Meeting held in San Diego.** ***Above:*** **RSNA staff members demonstrate myRSNA and the Resident Learning Portfolio to program coordinators at the meeting jointly sponsored by RSNA.**

Member Question of the Month

What is the single most useful item you have purchased through the Technical Exhibition at the RSNA annual meeting?

E-mail us your answer at *tellus@rsna.org.* Respondents featured in an upcoming issue of *RSNA News* will receive a small gift featuring the new RSNA logo.

Education and Funding Opportunities

RSNA Clinical Trials Methodology Workshop

January 15–21, 2011
Scottsdale/Phoenix, Ariz.
Applications due June 7

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

- Principles of clinical study design
- Statistical methods for imaging studies
- Design and conduct of multi-institutional studies
- Sponsorship and economics of imaging trials
- Regulatory processes

Applicants will undergo a competitive selection process for course entrance. Once admitted, trainees will participate in advance preparation, didactic sessions, one-on-one mentoring, small group discussions, self-study and individual protocol development. Familiarity with basic concepts and techniques of statistics and study design is required of all applicants.

For more information, contact Fiona Miller at 1-630-590-7741 or *fmiller@rsna.org.*

RSNA Derek Harwood-Nash International Fellowship

Applications due July 1

RSNA Education™

International radiologists three to 10 years beyond training are invited to apply for this six- to 12-week fellowship at a North American institution. One or two fellows will be selected.

The application for this program is available at *RSNA.org/international/CIRE/dhnash.cfm.* For more information, contact Fiona Miller at *fmiller@rsna.org* or 1-630-590-7741.

RSNA/AUR/ARRS Introduction to Academic Radiology Program

Applications due July 15

Sponsored by RSNA, the American Roentgen Ray Society (ARRS) and Association of University Radiologists (AUR), the Introduction to Academic Radiology program introduces second-year residents to academic radiology, demonstrates the importance of research in diagnostic radiology, illustrates the excitement of research careers and introduces residents to successful clinical radiology researchers. Successful applicants will be assigned to either a seminar held during RSNA 2010 or the ARRS annual meeting in 2011.

More information and an application/nomination form are available at *RSNA.org/Research/educational_courses.cfm.*

World Molecular Imaging Congress

RSNA is a sponsor of the World Molecular Imaging Conference (WMIC) to be held September 8-11 in Kyoto, Japan. The meeting integrates submitted abstracts into special sessions that unite attendees from various disciplines for a comprehensive examination of the role of molecular imaging in specific biomedical problems. The keynote speaker will be Shizuo Akira, M.D., Ph.D., a professor in the Department of Host Defense at Osaka University in Kyoto. RSNA is organizing an educational workshop, "Clinical Translation of Molecular Imaging: Opportunities & Challenges," on September 9.

For more information, go to *www.wmicmeeting.org.*

MedicalMeetings

June – September 2010

JUNE 2–5
European Society of Gastrointestinal and Abdominal Radiology (ESGAR), 21st Annual Meeting, International Congress Centre Dresden, Germany
• *www.esgar.org*

JUNE 3–6
Society for Informatics in Medicine (SIIM), Annual Meeting, Minneapolis Convention Center
• *www.siim2010.org*

JUNE 5–9
SNM Annual Meeting, Salt Palace Convention Center, Salt Lake City
• *www.snm.org*

JUNE 7–9
U.K. Radiological Congress (UKRC), National Indoor Arena/ICC Birmingham, England • *www.ukrc.org.uk*

JUNE 9–12
World Congress on Interventional Oncology (WCIO), Loews Philadelphia Hotel • *www.wcio2010.com*

JUNE 21–22
Imaging for Treatment Assessment in Radiation Therapy (ITART), Gaylord National Resort & Convention Center, National Harbor, Md.
• *www.aapm.org/meetings/2010ITART.*

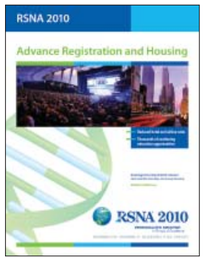
JULY 18–22
American Association of Physicists in Medicine (AAPM), 52nd Annual Meeting, Pennsylvania Convention Center, Philadelphia
• *www.aapm.org/meetings/2010AM*

AUGUST 11–14
American Society of Emergency Radiology (ASER), Annual Scientific Meeting, Grand Hyatt Seattle
• *www.erad.org*

SEPTEMBER 30-OCTOBER 2
5th International Symposium on Integrated Biomarkers in Cardiovascular Diseases, Seminaris Conference Center, The Dahlem Cube, Berlin
• *www.lorenzinifoundation.org*

Annual Meeting Watch

Member Registration and Housing Now Open



RSNA and AAPM members can register now for RSNA 2010. General registration and housing opens May 26. The Advance Registration and Housing brochure is available online at *RSNA2010.RSNA.org.*

Eye on Chicago

See the City with RSNA Tours and Events

From its world-class museums and bustling theater scene to its delectable dining and family-friendly activities, Chicago offers a stellar lineup of attractions sure to please everyone. RSNA will once again offer a series of exciting tours and events during RSNA 2010 including "The Lion King," "Billy Elliott the Musical" and "Million Dollar Quartet." RSNA tour registration begins June 30th at *RSNA.org/register.*

Architectural tours, shopping excursions, opera and symphony performances and museum exhibits such as the Chicago Museum of Science and Industry's "Smart Home: Green + Wired," a fully functioning, eco-friendly home on the museum grounds that has been transformed for 2010 by the interior designers of *Midwest Living* magazine.

The home has been redesigned to reflect the lifestyle of a couple looking to minimize home maintenance and maximize efficiency in a space that is both beautiful and functional.

More than 200,000 guests have visited the Smart Home to learn more about environmentally friendly living. The 2010 redesign will remain on display through Jan. 9, 2011. For more information, go to *www.msichicago.org.*

Photo: J.B. Spector, Museum of Science and Industry.

More than 200,000 guests have taken tours of the Smart Home at Chicago's Museum of Science and Industry since May 2008.

RSNA 2010
PERSONALIZED MEDICINE:
In Pursuit of Excellence
NOVEMBER 28 – DECEMBER 3 · McCORMICK PLACE, CHICAGO

Course Enrollment Begins June 30

Course enrollment information will be mailed in late June to all members and 2010 meeting attendees and will also be available online at *RSNA2010.RSNA.org.* People registering for RSNA 2010 prior to June 7 who wish to view course enrollment information online only can "opt out" of receiving the copy by mail.

Cut Costs During RSNA 2010 with Chicago Housing Deals

Members planning to attend RSNA 2010 can take advantage of economic incentives offered by many Chicago hotels. Of the 79 hotels participating in the RSNA block, a majority are offering reduced rates while the rest have frozen their rates from 2009.

International Visitors

If you must apply for a temporary non-immigrant visa to attend RSNA 2010, you are advised to apply as soon as U.S. travel is decided and no later than three to four months in advance of the travel date. The RSNA offers an official letter of invitation for RSNA 2010 attendees.

RSNA 2010 Registration

How to Register

There are four ways to register for RSNA 2010:

Fastest way to register!

1 INTERNET
Go to *RSNA.org/register*

2 FAX (24 hours)
1-800-521-6017
1-847-996-5401

3 TELEPHONE
(Mon.-Fri. 8:00 a.m. – 5:00 p.m. CT)
1-800-650-7018
1-847-996-5876

4 MAIL
Experient/RSNA 2010
568 Atrium Drive
Vernon Hills, IL 60061 USA

Registration Fees

BY NOV. 5	ONSITE	
$ 0	$100	RSNA/AAPM Member
0	0	RSNA/AAPM Member Presenter
0	0	RSNA Member-in-Training, RSNA Student Member and Non-Member Student
0	0	Non-Member Presenter
150	250	Non-Member Resident/Trainee
150	250	Radiology Support Personnel
680	780	Non-Member Radiologist, Physicist or Physician
680	780	Hospital or Facility Executive, Commercial Research and Development Personnel, Healthcare Consultant and Industry Personnel
300	300	One-day registration to view only the Technical Exhibits

Important Dates

May 26	Non-member registration and housing open
June 30	Course enrollment opens
October 22	International deadline to have full-conference materials mailed in advance
November 5	Final discounted advance registration, housing and course enrollment deadline to have full-conference materials mailed in advance
Nov. 28 – Dec. 3	RSNA 96th Scientific Assembly & Annual Meeting

For more information about registering for RSNA 2010, visit *RSNA2010.RSNA.org*, e-mail *reginfo@rsna.org* or call 1-800-381-6660 x7862.

Product News

PRODUCT UPGRADE

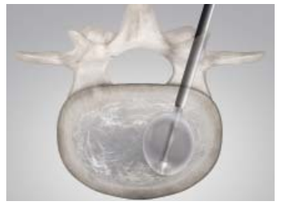
Radiopaedia.org Pairs with iPhone™

Radiopaedia.org, a comprehensive on-line knowledge-sharing tool and learning resource for the global radiology community, now offers the iPhone™ application, Radiology Teaching Files Version 2.0.

Comprising real life cases and articles uploaded by radiologists around the world, *Radiopaedia.org* harnesses collective experience and expertise into one resource. The teaching file provides access to Radiopaedia's global bank anytime and anyplace from the convenience of the iPhone, and includes comprehensive discussion and sample reports and links to additional online content.

NEW PRODUCT

Minimally Invasive Device for Kyphoplasty



CareFusion, *(www.carefusion.com),* has launched the AVA*max*® Vertebral Balloon, a minimally invasive device for use during kyphoplasty.

CareFusion offers the new AVA*max* Vertebral Balloon as part of a system that includes needles, bone cement and delivery instruments for both kyphoplasty and vertebroplasty, giving doctors the choice and flexibility to perform either procedure at the time of patient care.

The AVA*max*® PLUS vertebral augmentation system, used with the AVA*max* Vertebral Balloon to deliver cement, has features that allow the radiologist's hands to be out of the radiation field during the procedure.

NEW PRODUCT

Affordable Computed Radiology Solution

New from 3DISC *(www.3-disc.com),* the FireCR solution is ideal for computed radiography examinations in busy clinics and specialty practices. Affordable, rugged, compact, lightweight and fast, the effective FireCR system enables all imaging functions to be performed with the advanced Quantor image management software.

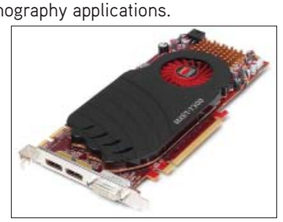
FireCR can be configured for nearly all clinical applications, is designed for full DICOM connectivity and allows users to set up the system to capture high quality X-ray images of any body part. All imaging parameters are optimized, resulting in digital images that can be enhanced, enlarged, duplicated and sent to any location in seconds with no resolution loss.

The Quantor workstation software comes pre-configured and is easy to install. The system can be seamlessly integrated with a broad variety of equipment and PACS systems.

NEW PRODUCT

Display Controller Speeds Mammography and 3D Imaging

Barco's *(www.barco.com)* new graphics display controller, the MXRT-7300, is specifically designed to speed up 3D imaging and digital mammography applications.



Fitted with 1GB of memory and an ultra-fast GPU, Barco's MXRT-7300 ensures smooth loading and ultra-fast processing of large datasets. The 10-bit display controller generates the complete grayscale data set with 1024 simultaneous levels of gray and more than one billion colors. Besides the traditional DVI-I video outputs, the new MXRT-7300 can equally drive DisplayPort®, making for a perfect DVI- DisplayPort® transition board.

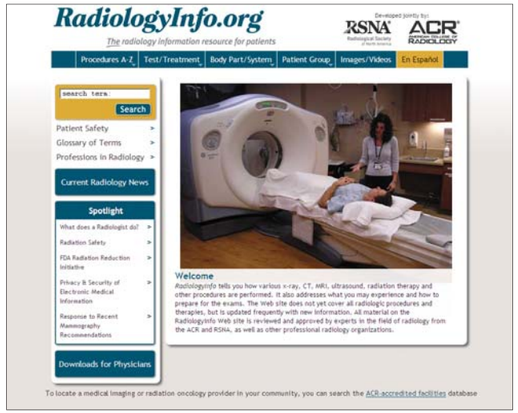
The MXRT-7300 is compatible with Windows® operating systems including Windows 7.

Information for *Product News* comes from the manufacturers. Inclusion in this publication should not be construed as a product endorsement by RSNA. To submit product news, send your information and a non-returnable color photo to *RSNA News*, 820 Jorie Blvd., Oak Brook, IL 60523 or by e-mail to *rsnanews@rsna.org.* Information may be edited for purposes of clarity and space.

RSNA.org

RadiologyInfo.org™ Unveils New Look

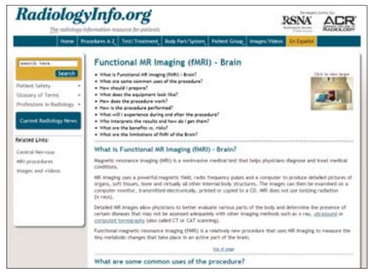
RadiologyInfo.org, the radiology patient education Web site created by the RSNA and the American College of Radiology (ACR), has unveiled a new design and simplified navigational tools.

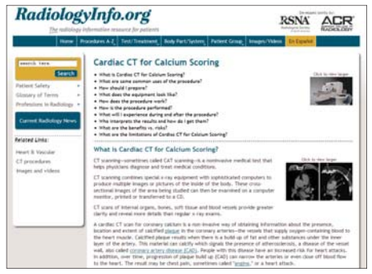


The improvements were the result of a 2008 usability assessment by the Web site development firm Imaginary Landscape that ranked *RadiologyInfo.org* in the top 15 percent of more than 200 Web sites and rated most of the site's criteria eight or nine on a 10-point scale. While the assessment found that viewers were generally satisfied, the firm recommended simplifying the site's navigational tools and updating its design.

Other improvements planned for *RadiologyInfo.org* in 2010 by the RSNA-ACR Public Information Web Site Committee include:

- A Web site for mobile devices
- Adding more video presentations to enhance existing radiology procedures
- Incorporating pediatric-specific content





Launched in 2000 as a first-of-its-kind joint RSNA project with ACR, *RadiologyInfo.org,* drew more than 6.5 million visitors in 2009. New content is continually developed and posted—the site currently offers content on radiology topics covering diagnostic and interventional radiology, nuclear medicine, radiation therapy and new developments.

All *RadiologyInfo.org* content is reviewed and approved by radiology experts from the RSNA and ACR, as well as other professional radiology organizations.

The importance of providing patient-ready information—and the critical role of *RadiologyInfo.org* in that effort—is the subject of the "My Turn" column by James S. Donaldson, M.D., on Page 3.

COMING IN JUNE

Next month, *RSNA News* will feature a report on Project ProSPECTus—cutting-edge technology British researchers are developing for the next generation of single photon emission computed tomography (SPECT). Researchers say the revolutionary technique could lead to earlier detection of brain tumors and increase the probability of successful cancer therapy.

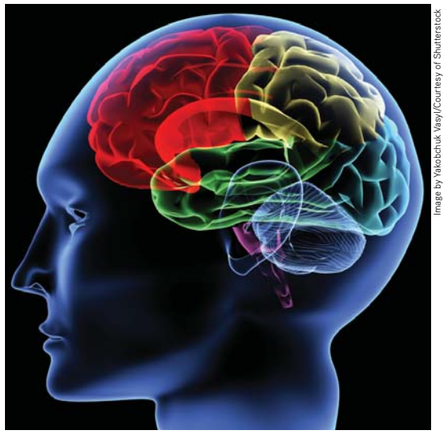


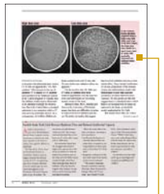
Image by Yakobchuk Vasyl/Courtesy of Shutterstock

20 Retrospective

Celebrating 20 Years of *RSNA News*

Headlines

Remembering radiologic topics that made the news during the past decade; this month's feature: radiation dose concerns.



September 2001 FDA Plans Education Alert on Radiation Doses from CT

February 2002 CT Radiation Safety in Children: The Responsibility is Ours

January 2003 NCRP Coordinates Strategy on CT Dose Recommendations

February 2004 Experts Confirm Importance of Minimizing CT Dose

August 2004 Patients and Physicians Uninformed About CT Risks, Study Says

March 2005 Medical X-rays Added to Government's List of Carcinogens

June 2005 U.S. House Subcommittee Hears Testimony of Overuse of Diagnostic Imaging

December 2005 Several Small Steps Can Reduce Radiation Dose from Survey Scans

March 2007 Radiation Protection Becomes Personal, Professional Priority

August 2008 Pediatric Radiologists Thrust Radiation Safety into Spotlight

September 2008 MOC Summit Tackles Radiation Dose

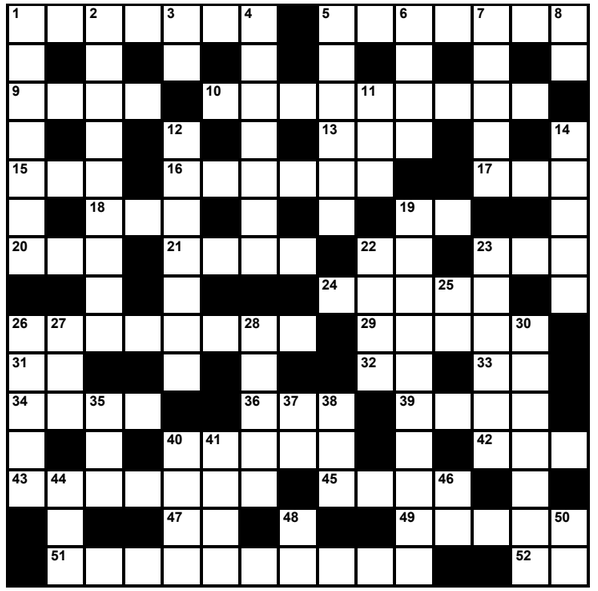
March 2009 Filters Lower Radiation Dose in Adult, Pediatric CT

September 2009 EHRs Help Track Cumulative Radiation Dose

December 2009 iPhone Application Tracks Radiation Exposure Risk

Crossword

Test your knowledge of radiology history and the press, politics and pop culture of the last 20 years. Answers will appear in the June issue of *RSNA News.*



Across

1 Major League Baseball expansion team won first World Series in 1997, just four years after being formed
5 RSNA Executive Director, 1971 to 1985
9 Mouse genetically engineered to have severely restricted immune system
10 First *RadioGraphics* editor
13 Female reproductive cells
15 Sense of self
16 *Rabbit at Rest* author awarded 1991 Pulitzer Prize for fiction
17 Maximum voltage applied across X-ray tube; controls radiographic contrast of image, abbr.
18 Pastoral setting
19 "War of the Worlds" star initials
20 "Much __ about nothing" Shakespeare
21 MSN's butterfly, e.g.
22 Cerium symbol
23 Process of keeping radiology board certification current, abbr.
24 Sly character!
26 Clancy or Fleming novel, e.g. (2 words)
29 First RSNA President
31 Nickel, abbr.
32 Lane
33 Tin symbol
34 Goals
36 Buddhist discipline
39 Charged particles
40 *Radiology* editor, 1998 to 2007
42 Amazement
43 Ultrasound to examine blood vessels
45 Blood carrier
47 Airline, briefly
49 Principle aims to balance radiation exposure risks against benefits sought, abbr.
51 RSNA Research and Education _____, advances radiologic research, education and practice
52 Unit for measuring effective dose, abbr.

Down

1 Stepped down in 1999 as president of South Africa
2 RSNA science journal
3 Trendy
4 This millionaire took best picture Oscar in 2008
5 Logic game became popular in the 21st century
6 Lab burner
7 Won the first of two Oscars in 1999, for The Crying Game
8 Doctor, in film
11 Brady Bunch's Plumb
12 RSNA 2009 theme: _____ Counts
14 Uses gamma camera to detect radioisotopes and create 3D images of distribution in body, abbr.
19 In radiology, someone who often takes X-rays
22 Refrigerate
23 RSNA personalizable Web portal
25 Cathode abbr.
26 Golfing legend, died in 2002
27 Basic chess tactic
28 Stubble remover
30 Question responses
35 Quantity reflects not only dose but also volume of tissue irradiated, abbr.
37 Sci-fi blockbuster from 1982
38 Turkey mo.
40 Blueprint
41 Understand
44 Not operating
46 Netherlands internet address
48 Type of scan, abbr.
50 Audio visual, abbr.

CHALLENGE YOURSELF An interactive version of this puzzle at *rsnanews.org* includes a timer and optional hints.

Simplify
the MOC Process

Manage
your CME Credits Online

CMEgateway.org

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