February 2009 ■ Volume 19, Number 2

RSNA News

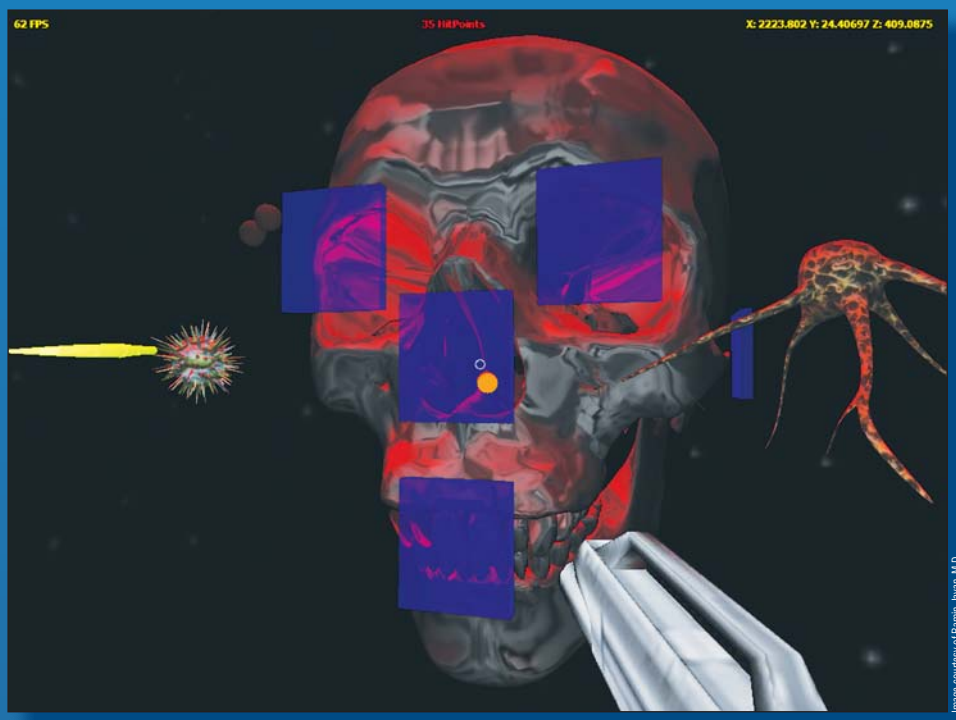

Image courtesy of Ramin Javan, M.D.

Simulation Technology Challenges Traditional Radiology Education

Also Inside:

- Visiting Professors Find Modern Radiology Departments in China
- Radiologists Seek Ways to Measure and Improve Productivity
- Engineering Approach Could Change Brain Tumor Outcomes
- TACE Targets Liver Cancer with Fewer Side Effects

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RSNA News
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Published monthly by the Radiological Society of North America, Inc., 820 Jorie Blvd., Oak Brook, IL 60523-2251. Printed in the USA.

POSTMASTER: Send address correction "changes" to: *RSNA News*, 820 Jorie Blvd., Oak Brook, IL 60523-2251.

Nonmember subscription rate is $20 per year; $10 of active members' dues is allocated to a subscription of *RSNA News*.

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Oak Brook, IL 60523

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RadiologyInfo™ Receives Aesculapius Award

RadiologyInfo™, the patient information Web site administered by RSNA and the American College of Radiology, has received an Aesculapius Award of Excellence. The site was among about a dozen honored.

Aesculapius Awards encourage excellence in patient communications about healthy lifestyles, disease prevention and healthcare treatments. A panel of judges, representing healthcare, Web publishing and multimedia, evaluates entries. The award is named for the ancient Greek god of healing, and was established by the Health Improvement Institute, a nonprofit, tax-exempt organization based in Bethesda, Md.

More information about the Health Improvement Institute and the Aesculapius Award is available at *www.hii.org.* An article about the latest developments on *RadiologyInfo.org*, including new recorded procedure descriptions, will appear in the March 2009 issue of *RSNA News.*

ASTRO Changes Name

After 26 years as the American Society for Therapeutic Radiology and Oncology, ASTRO has changed its name to the American Society for Radiation Oncology. With its new name, ASTRO has also unveiled a new logo that will keep the acronym ASTRO by having the "T" represent ASTRO's tagline, "Targeting Cancer Care."

ASTRO's new name will better correlate with the term that ASTRO members use in their practices to communicate with patients, said ASTRO Chief Executive Officer Laura I. Thevenot.

This is the society's fourth name change since it was established as the American Club of Therapeutic Radiologists in 1958. Each name change has reflected the growth of membership and the society's growing identification with the practice of oncology. For more information, go to *www.astro.org.*

FDA Issues Guidance on Handheld X-Ray

The U.S. Food & Drug Administration has issued guidance to manufacturers regarding radiation safety and the type of recommendations manufacturers should provide to operators to promote safe use of handheld X-ray equipment.

According to the FDA, federal performance standards for diagnostic X-ray systems did not anticipate handheld systems and therefore don't address system performance attributes or protective measures in light of the operator's proximity to the source assembly and the patient. Handheld systems pose increased operator exposure concerns due to leakage radiation and backscatter radiation, the FDA stated.

The guidance goes on to define limits placed on leakage and backscatter radiation and offers methods of reduction, such as shielding the source assembly and providing external shielding.

A copy of the guidance is at *www.fda.gov/cdrh/ocer/guidance/1680.pdf.*

CMS Moves Closer to PET Coverage Expansion

A new national coverage determination (NCD) proposed by the Centers for Medicare & Medicaid Services (CMS) would expand coverage for initial diagnostic testing with PET.

Under its Coverage with Evidence Development (CED) program, CMS issued a 2005 national coverage determination that tied Medicare coverage of PET to the collection of clinical information about the effect of the test on the patient's cancer care. Information was obtained through the National Oncologic PET Registry (NOPR).

NOPR sponsors requested that CMS reconsider the 2005 coverage determination based on the evidence collected and published. The proposed coverage expansion represents the first time that CMS has reviewed medical evidence arising from its CED program.

The proposed NCD would remove a significant part of the CED requirement for PET scans in cancer and allow coverage for one PET scan to guide the initial treatment strategy. CED will still be required for PET scans for subsequent treatment strategies. CMS will issue a final national coverage determination in April.

2009 RSNA Research & Education Foundation Board of Trustees Announced

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Martino is New ASRT CEO

THE American Society of Radiologic Technologists (ASRT) has named **Sal Martino, Ed.D., R.T.(R), C.A.E.,** as the society's new chief executive officer. Dr. Martino replaces Lynn May, who retired at the end of 2008.

Sal Martino, Ed.D., R.T.(R), C.A.E.

Dr. Martino has worked for ASRT since 1999, serving most recently as its chief academic officer. Since 2001, he has also served as the chief operating officer of the ASRT Education and Research Foundation. Dr. Martino chaired the advisory panel that led to creation of the radiologist assistant.

Before joining ASRT, Dr. Martino worked at Hostos Community College of the City University of New York in a number of positions, including director of the radiologic technology program, chair of the allied health department and associate dean of academic affairs.

Dr. Martino has served on the boards of the American Registry of Radiologic Technologists and New York City Society of Radiologic Technologists.

Inder Recognized as Distinguished Scientist

Terrie E. Inder, M.D., Ph.D., an associate professor of radiology, pediatrics and neurology in the School of Medicine at Washington University in St. Louis, received a 2008 Distinguished Clinical Scientist Award from the Doris Duke Charitable Foundation.

Terrie E. Inder, M.D., Ph.D.

One of six to receive a $1.5 million award recognizing outstanding leadership in clinical research, Dr. Inder uses neuroimaging of premature, at-risk infants to help predict developmental outcomes, in particular the risk of severe cognitive delays, psychomotor delays, cerebral palsy or hearing or visual impairments.

CT

Question of the Day

Q We are replacing an old CT scanner with a newer, much faster multislice scanner. Is additional shielding in the walls required?

[Answer on page 22.]

Wiest Named Radiology Chair

Philip W. Wiest, M.D., is the new chair of radiology at the University of New Mexico (UNM) in Albuquerque.

Philip W. Wiest, M.D.

Dr. Wiest is an associate professor of diagnostic radiology at UNM. Since 1997 he has served as vice-chair for clinical affairs within the Department of Radiology. He has conducted research projects both nationally and internationally including in Kazakstan and Estonia.

Wenzel Named Physician of the Year

Wayne Wenzel, M.D., has been named the 2008 Physician of the Year at Vail Valley Medical Center in Colorado. The recipient is chosen by hospital administrators and physicians.

Wayne Wenzel, M.D.

Dr. Wenzel serves on the hospital's board of directors and cancer committee, among other boards.

"In his 19 years here, he has been a valued educator and mentor and exemplifies the highest level of care and leadership. Dr. Wenzel is a doctor's doctor," said Chip Woodland, M.D., the hospital's chief medical officer.

ESNR Names New Officers

Marco M. Leonardi, M.D., a neuroradiologist with the Hospital Bellaria in Bologna, Italy, is the new president of the European Society of Neuroradiology (ESNR). The other new officers are:

- **Paul Parizel, M.D., Ph.D.,** Vice-president
- **Guido Wilms, M.D.,** Secretary general
- **Johan Van Goethem, M.D., Ph.D.,** Treasurer

RSNA News Send news about yourself, a colleague or your department to *rsnanews@rsna.org*, 1-630-571-7837 fax, or *RSNA News*, 820 Jorie Blvd., Oak Brook, IL 60523. Please include your full name and telephone number. You may also include a non-returnable color photo, 3x5 or larger, or electronic photo in high-resolution (300 dpi or higher) TIFF or JPEG format (not embedded in a document). *RSNA News* maintains the right to accept information for print based on membership status, newsworthiness and available print space.

IN MEMORIAM

Two Mayo Clinic Visionaries

1980 RSNA President **Hillier L. "Bud" Baker Jr., M.D.,** died Dec. 22, 2008, at the age of 84.

Hillier L. Baker Jr., M.D.

Dr. Baker spent his entire clinical career at the Mayo Clinic in Rochester, Minn., serving as director of neuroradiology and chair of the Department of Radiology. Already nationally recognized in neuroradiology practice, Dr. Baker became internationally known when he traveled to England in 1973 to acquire for Mayo the world's first non-prototype waterbag head CT scanner.

Dr. Baker, as secretary of the RSNA Board, oversaw moving the annual meeting from the Palmer House to McCormick Place. He received the RSNA Gold Medal in 1982, served as president of the American Society of Neuroradiology (ASNR) in 1974 and received the ASNR gold medal in 2000.

Colin B. Holman, M.D., a critical force in the development of neuroradiology at the Mayo Clinic and at large, died Nov. 13, 2008, at the age of 91.

Colin B. Holman, M.D.

After serving in World War II, Dr. Holman began his 35-year career as a consultant in diagnostic radiology at Mayo. Dr. Holman oversaw upgrading of equipment and introduced fractional pneumoencephalography. Dr. Holman also collaborated with Dr. Baker in the development of head CT at Mayo.

Dr. Holman was a founding member of the American Society of Neuroradiology and served as its president in 1968. He also served as president of the American Roentgen Ray Society in 1974.

MY TURN

The Radiology Report of the Future: Structured, Quantitative

As diagnostic images become increasingly detailed and newer methods of data acquisition and image reformation are employed, the wealth of information that will be uncovered must be addressed. This information goes far beyond simple linear, area and volumetric measurements of masses or attenuation measured in Hounsfield units on CT.

While much of this information may not be of obvious clinical utility, it will be important in the coming years to determine what critical clinical questions can be more directly addressed using quantitative data—that is, what is really needed in a standard radiology report?

My Turn
ONE RADIOLOGIST'S VIEW

Examples of potentially useful and reportable data abound, such as relaxation values of cartilage on short TE sequences, velocity of cerebrospinal fluid flow, fractional anisotropic values and concentration of biochemical compounds on MR spectroscopy. These data will require standardization of quantitative measurements, so that values from center to center, and even from machine to machine in the same center, can be compared. Along with quantitative measurements comes the need for a radiology report that is highly structured so that these measurements and values can be easily compared from study to study.

Robert M. Quencer, M.D.

Qualitative assessment will always be a fundamental part of radiology reports. However, the expectation from our clinical colleagues will increasingly be for a report which, in part, contains structured quantitative data. Over the next few years, RSNA will help set the agenda for determining which quantitative data are clinically useful and how to most effectively convey that information in radiology reports.

Robert M. Quencer, M.D., a professor and chair of radiology at the University of Miami School of Medicine, serves as chair of the RSNA Scientific Program Committee.

RSNA Board of Directors Report

AT ITS MEETING during RSNA 2008, the RSNA Board of Directors celebrated the success of the Society's 94th annual meeting and looked forward to RSNA 2009 and other projects for the coming year.

Annual Meeting Examined

At a retreat in January, the RSNA Board of Directors took an in-depth look at the RSNA annual meeting, seeking ways to continue to enhance all aspects of the meeting experience for attendees.

Among the many new features offered at RSNA 2008 was an expansion of the RSNA digital presentation system to the classroom. About 70 attendees of a refresher course on imaging liver lesions logged into the system and followed along with the course presentations on their laptops. Some attendees also used the system to take notes. All those who logged in will find the presentation saved in the myBookmarks section of their myRSNA® personalized Web page. RSNA plans to expand the system to more courses in the future.

About 150 people attended "Japan Presents," a special RSNA 2008 integrated science and practice session showcasing late-breaking Japanese studies of CT and MR imaging. RSNA debuted its international focus sessions at RSNA 2007 with "Italy Presents" and plans to showcase the U.K. in 2009.

Bistro RSNA, the new dining option unveiled at RSNA 2008, was popular with attendees. RSNA plans to offer Bistro RSNA again at RSNA 2009, including the topic tables in the Lakeside Learning Center that allow people to participate in lunchtime discussions moderated by subject experts.

A redesign of the set in the Arie Crown Theater offered RSNA 2008 attendees a brilliant close-up of plenary sessions presented in the theater. RSNA plans to offer select RSNA 2008 plenary session content on-demand at *RSNA.org*. Watch the homepage for more details.

Burton P. Drayer, M.D.
Chairman, 2009 RSNA Board of Directors

The RSNA Research & Education (R&E) Foundation received a record $45,000 in donations at RSNA 2008. The Foundation also added three new Silver Anniversary Campaign pacesetters—those making a gift of $25,000 or more in support of the Foundation's campaign to raise $15 million by RSNA 2009. There are now 48 pacesetters who have collectively donated $1.2 million. The Foundation reports that it is 86 percent of the way toward its campaign goal.

Other RSNA education initiatives, including the InteractED® online education portal, will be the focus of a full-day kickoff meeting of the new RSNA Education Committee in March.

Collaborations Expanded

RSNA is reinforcing its commitment to interorganizational cooperation with a number of new collaborations.

At RSNA 2009, RSNA will work with SNM to offer a course combining didactic and case-based sessions on PET/CT. Also at RSNA 2009, RSNA will collaborate with the American Society of Radiologic Technologists to offer a 1½-day educational track for radiologic technologists.

RSNA will assist the National Cancer Institute with an epidemiological study of physicians who perform fluoroscopy-guided procedures. The study, a repeat of one conducted in the 1970s, will look at cancer morbidity in physicians with high, medium and low exposure to fluoroscopy.

RSNA will also help the American College of Radiology (ACR) to promote ACR's "Face of Radiology" campaign, which seeks to inform the public about the role of radiologists in healthcare.

Publications and Outreach Enhanced

Editors and editorial boards of RSNA's peer-reviewed journals and monthly newsmagazine met during RSNA 2008 and discussed increasing online features of all the publications. *Radiology* has launched a monthly podcast featuring Editor Herbert Y. Kressel, M.D., while *RadioGraphics* continues to enhance its online CME offerings. In 2009, *RSNA News* will begin posting online recordings of sources interviewed for each month's magazine.

More than 160 members of the medical news media attended RSNA 2008, providing coverage of the meeting via newspaper, television, radio and the Internet. Popular stories from the meeting included a study of self-embedding disorder in teens, new developments in autism research and a study of how including a patient's photo can enhance a radiologist's reading of an exam.

BURTON P. DRAYER, M.D.
CHAIRMAN, 2009 RSNA BOARD OF DIRECTORS

■ Note: In our continuing efforts to keep RSNA members informed, the chairman of the RSNA Board of Directors will provide a brief report in *RSNA News* following each board meeting. The next RSNA Board Meeting is in March 2009.

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RSNA.org/Career

Visiting Professors Find Modern Radiology Departments in China

Ken L. Schreibman, Ph.D., M.D. *(far left)*, Raquel Del Carpio-O'Donovan, M.D. *(second from left)*, and Edgardo J. Angtuaco, M.D. *(far right)*, traveled to Guangzhou and Chongqing in western China. Here they pose with their host, Quanfei Meng, M.D., of Guangdong Provincial People's Hospital in Guangzhou, and Teresita L. Angtuaco, M.D. The Five Goats of Guangzhou statue commemorates five celestial beings descending from heaven on goats to deliver the people of Guangzhou from famine.

All photos courtesy Ken L. Schreibman, Ph.D, M.D.

WHILE past participants in RSNA's International Visiting Professor Program have described experiences in developing or recently developed countries where equipment is sparse and funding more so, teams traveling to China in 2008 reported an entirely different experience—an exchange of knowledge with radiologists in some of the country's most state-of-the-art hospitals. Such development in the country's urban areas offers hope—through a "ripple" effect—to more remote areas, team members said.

"The hospitals we went to were huge and they have a similar type of imaging ability that we have," said Yvonne Lui, M.D., who traveled with Kitt Shaffer, M.D., Ph.D., to Beijing and Shanghai last September. "It's a well-equipped, well-supported system."

Edgardo J. Angtuaco, M.D., Ken L. Schreibman, Ph.D., M.D., and Raquel Del Carpio-O'Donovan, M.D., who traveled to Guangzhou and Chongqing in October, reported similar experiences.

> *We can show [Chinese physicians] the things we did right and wrong and help them find their own way. This provides opportunities for all of us.*
>
> **Ken L. Schreibman, Ph.D., M.D.**

Visitors Offered Guidance in Training, Research

While the infrastructure was top notch, there were areas where the Chinese physicians looked for some guidance, said Dr. Lui, an assistant professor of radiology at Albert Einstein College of Medicine, Montefiore Medical Center, in New York.

"They have a lot of hardware in place now, but they were very interested in the U.S. system of board certification, performing clinical research and writing papers," said Dr. Lui. There are many pathways to become board certified in radiology in China, she added, describing their system as "quite confusing."

"They were also very interested in better organizing their training programs," said Dr. Lui. "It's an evolving process and they are at the stage where they are trying to set standards."

Dr. Lui and Dr. Shaffer, a chest radiologist and director of medical education in radiology at Brigham and Women's Hospital and assistant chief of radiology at Dana Farber Cancer Institute in Boston, gave a combined 40-plus hours of lectures. The two also found some time to sightsee.

"Our hosts were great and they showed us around," said Dr. Lui. "We visited Suzhou, famous for its gardens. In Beijing, we were able to attend the paralympics, which were very inspiring. Dr. Shaffer was a great travel partner and it was wonderful learning from her as well."

Chongqing, located in western China, boasts the country's largest municipal area and population. With a history of more than 2,800 years, Guangzhou is located at the north of the Pearl River delta in southeastern China and is an important trading center as well as a busy port.

Hospitals Boast Modern Equipment, Talented Staff

As it was with the Beijing and Shanghai trips, radiologists traveling to Guangzhou and Chongqing said both cities had large, modern hospitals and a talented staff of radiologists.

"We started with the 15th Chinese Congress of Radiology in Chongqing and then went to Guangzhou, where we visited two major teaching hospitals—each with 3,000 beds and situated nearly across the street from one another," said Dr. Schreibman, a professor of musculoskeletal imaging in the Department of Radiology at

the University of Wisconsin. "I was really impressed with how modern their radiology equipment was. They have PACS, PET/CT and MR, although with regard to MR, they seem to be at a similar point to where we were 15 years ago—they image joints with the body coil rather than dedicated extremity coils. And they could certainly use many more PACS to send images from the provinces into the city."

The Chinese government has mandated more than 65,000 radiologists—one-third of that number are still needed and about 5,000 are in training—said Dr. Schreibman. "That's why we are seeing so many research papers coming out of China," he said. "They don't have a dictation system, so they have a system where they type on a Western keyboard and it pops up Chinese words and they choose the ones they want. Their reading rooms, I would say, are more spacious than ours."

Dr. Del Carpio-O'Donovan, a professor of neuroradiology at McGill University Health Center in Montreal, also was impressed during her time in Guangzhou and Chongqing.

"Their rounds were very well-prepared," she said. "A resident or junior staffer would present a difficult case. We were shown selected images, lab results and sometimes the pathology reports. Other cases were still diagnostic enigmas and they asked for our opinion.

"Presentations were made in English and our discussions were translated by some of the English-speaking residents or staff," Dr. Del Carpio-O'Donovan continued. "On two occasions, there were formal lectures by the RSNA visiting professors in splendid modern auditoriums, with our lectures projecting both in English and in Chinese."

Drs. Schreibman and Del Carpio-O'Donovan praised their hosts for their hospitality and making such good use of the visitors' professional and leisure time.

"They kept us very busy and I am spoiled by how well they fed us—I didn't have to even order, everyone took us out and we really got to see what Chinese dining was all about," said Dr. Schreibman.

RSNA International Visiting Professor Raquel Del Carpio-O'Donovan, M.D. *(center)*, discusses a case with residents at Guangzhou University Hospital. She said she found radiology rounds well prepared during her time in Guangzhou and Chongqing. A resident or junior staffer would present a difficult case, showing selected images, lab results and sometimes pathology reports, she said.

"We were treated with great respect and warmth," added Dr. Del Carpio-O'Donovan, adding that she particularly appreciated a day outing to Zhaoqing while in Guangzhou. "We visited the majestic limestone peaks known as the Seven Star Crags, a place of great beauty and tranquility," she said. "The next day we visited Zhuhai, a modern port city which faces Macau in the South China Sea."

Generational Gap Must Be Filled

Though the hospitals they visited were well-equipped, American radiologists can help their fellow Chinese radiologists in areas such as sports medicine MR, said Dr. Schreibman.

"China is not a third-world country," said Dr. Schreibman, who since his trip has been posting his lectures to his Web site in both English and Chinese. "They have very good technology and very smart people.

"Chinese radiologists need to take advantage of people who are experienced with these other modalities and can teach it to them," Dr. Schreibman continued. "I think there is a real opportunity to partner with them and help radiology grow in China. We can show them the things we did right and wrong and help them find their own way. This provides opportunities for all of us."

Established in 1986, the RSNA International Visiting Professor Program annually sends teams of North American professors to lecture at national radiology society meetings and visit with radiology residency training programs at selected host institutions in developing nations. The goal is to foster teaching and a cultural exchange between radiology departments in the U.S. and those in other countries. The RSNA Committee on International Relations and Education administers the program.

In 2008, RSNA also sent visiting professors to Nigeria, Vietnam and Mexico. In 2009, IVP teams will travel to Argentina, Bolivia, Estonia, South Africa and Mexico. Other recent trips have included Uganda, Algeria and Honduras.

Learn More

■ For more information on the RSNA International Visiting Professor Program, go to *RSNA.org/International/CIRE/ivpp.cfm.*

Simulation Technology Challenges Traditional Radiology Education

SOMEDAY SOON, adding an intracranial coiling training module to an in-house learning system will be considered as routine as buying a new subscription to a journal for the department library, a medical simulation guru predicts.

"Simulation is still in its infancy," said Steven L. Dawson, M.D., whose lecture at the RSNA 2008 Opening Session explored the possibilities and challenges of simulation as a learning tool for training programs. "But it's a tool that allows us to re-examine the way we think of education, how we can train in the future and how we adjust our educational traditions to these powerful new methods that hold great promise."

Dr. Dawson, an interventional radiologist and program lead in medical simulation at Massachusetts General Hospital and an associate professor at Harvard Medical School, emphasized that simulation programs—and the funding required to support them—require a concerted effort to reach their full potential.

Interactive Anatomy Program Mimics Video Game

Elsewhere at RSNA 2008, Ramin Javan, M.D., and Bryan S. Jeun, M.D., demonstrated their interactive computer game designed to familiarize students with anatomical structures. Drs. Javan and Jeun, former classmates at the University of Virginia, presented the education exhibit "Interactive 3D Simulation of Head and Neck and Vascular Anatomy with Radiologic Correlates: A First-Person Shooter 'Serious Gaming' Project."

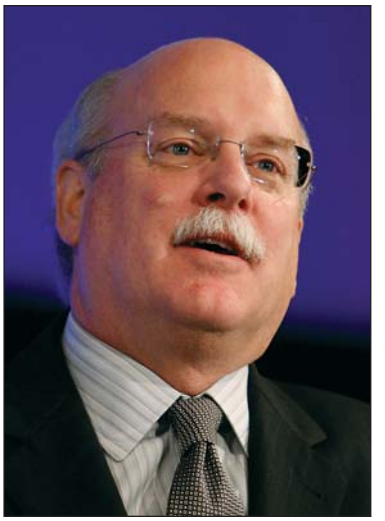
"As part of the generation that grew up playing video games, we learned that when you explore 3D rooms and hallways, you quickly learn the layout and pinpoint exactly where the enemies are," said Dr. Javan, a resident at Baptist Memorial Hospital in Memphis, Tenn.

The object of the game—shooting assorted viruses and bacteria that intelligently follow or flee from the player—is secondary to the exploration of the landscape, an anatomical model consisting of various "rooms" constructed from a conglomerate of virtually created structures as well as actual radiographic images. "The use of real volumetric datasets to create 3D models presents a unique opportunity and challenge," said Dr. Javan. "These models can be imported into the game environment, which will allow a user to view a 'real' patient's anatomy."

"In medical school, Ramin was an artist. He made this complex drawing of all the bony structures in the head," said Dr. Jeun, the game's programmer, now a resident at the West Virginia University Hospitals in Morgantown. "This became the basis for the game layout."

The most complete areas of the game landscape are the head and neck, and Drs. Javan and Jeun said their focus was especially on small and complex structures that are difficult to visualize in the imagination. Right-clicking on any of the structures displays its name. A compass accompanies the player, displaying anterior, posterior, medial and lateral directions. The intent, said the presenters, is to help players envision the structures in their proper spatial orientation.

One of the more elaborate "rooms" is in the inner ear, where players encounter vasculature, bones and nerves in their relative positions. "The room is transparent, and you can see the great vessels," explained Dr. Jeun. "That is relevant anatomy—you have to know they are below the floor."



Steven L. Dawson, M.D.
Massachusetts General Hospital

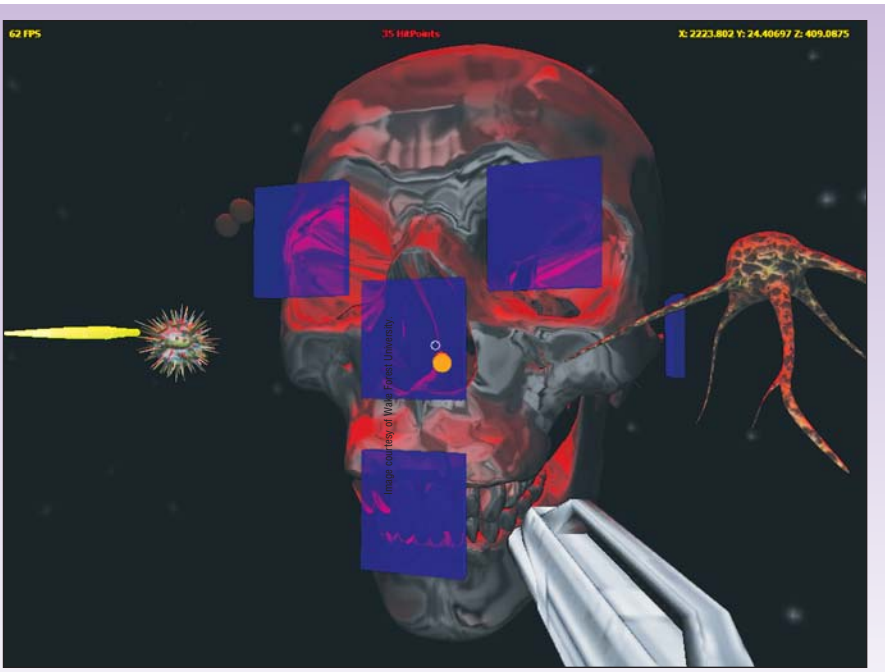
Our images have become digital and now our education must as well.
Steven L. Dawson, M.D.

Players can take routes through a number of hallways, doors and windows throughout the head and neck—for example, going through the optic nerve to enter the eye by a route constructed from actual fundoscopic images.

"We have demonstrated our software to medical students and residents and it has been received with high praise," said Dr. Jeun. "For example, users were able to navigate through the pterygopalatine fossa—one of the most spatially difficult structures in the head and neck—in a short time period and were able to successfully describe all of its intricate connections."

Future plans include incorporating the Nintendo® Wii™ controller in the

A generation that grew up playing video games learns quickly from a game incorporating 3D structures, said Ramin Javan, M.D. *(left),* who demonstrated his interactive anatomy program at RSNA 2008.



ON THE COVER
In this image of the game provided by Dr. Javan, bacteria shooting at the player cause damage represented by a reduction in "hit points." The blue transparent boxes represent entry to the skull.

game, designing further anatomic structures and details, adding more Flash tutorials and quizzes, providing "challenges" or "missions" within the game and simulating basic interventional procedures in order to give users the ability to better manipulate the game's 3D world and target objects. The game is currently available on CD and can be installed on a personal computer with no additional software.

"We are in the process of developing the vascular anatomy of the head and neck," said Dr. Javan. "Our goal is to simulate interventional procedures such as coiling and stenting of aneurysms, where our 'gameplay' entails locating the aneurysm—the 'enemy'—and destroying it using the appropriate weapon, which is placing the correct therapeutic device."

Organized Medicine Must Take Lead with Simulation

Simulation prototypes have shown success, said Dr. Dawson. "The sleeping giant is the actual specialty that uses simulation. That means that organized medicine must slip into the driver's seat and take control of the direction we're going."

Recent combined efforts of RSNA, the American College of Radiology, Society of Interventional Radiology and, to some extent, Cardiovascular and Interventional Radiological Society of Europe, are beginning to address this responsibility, said Dr. Dawson. Manufacturers will also drive developments as they create new devices for which pre-marketing training would be useful to ensure a smooth introduction, he predicted.

While Dr. Dawson focused on procedural simulation in his opening session lecture, he also noted the usefulness of "team training" simulation, which teaches individuals to communicate and function effectively as part of a group. In addition to training medical students, simulation is useful for introducing experienced radiologists to new procedures and helping them brush up on slipping performance, Dr. Dawson said.

"Our images have become digital and now our education must as well," said Dr. Dawson. "We will enlist radiologists, educational psychologists, engineers, computer scientists, mathematicians, designers and trainees to invent educational systems built around the capabilities of computer-based education, not text-based learning. We will move from lightbox learning to display screen learning. And the students we train will be completely comfortable in this medium, which shares characteristics with video gaming, social networking and immediate response that they use in their everyday lives."

Learn More

■ For more information about the interactive simulation of head and neck vascular anatomy, contact Bryan S. Jeun, M.D., at *bryan.jeun@gmail.com.*

■ Note: This article was adapted from stories that appeared in the RSNA 2008 *Daily Bulletin.* Daily newspapers from the annual meeting are available online at *RSNA.org/bulletin.*

Daily Bulletin

Radiologists Seek Ways to Measure and Improve Productivity

MORE THAN HALF of radiologists in private practice, along with a majority of those in academia, now find themselves compelled to measure their productivity, according to presenters of an RSNA 2008 session.

"Proper management now requires that we get more bang for the buck," said Stephen Chan, M.D., who along with Richard Duszak Jr., M.D., presented "Tracking Radiologist Productivity: Is It Necessary and How Should It Be Done?"

Dr. Chan, an academic radiologist at New York's Columbia University, said measurement is absolutely necessary for increased productivity in the academic setting, as competition for imaging dollars increases and fewer dollars exist to pay radiologists and support research and education.

In the clinical setting, productivity measurement is imperfect but still useful, said Dr. Duszak, a diagnostic and interventional radiologist in practice in Memphis, Tenn. All too often, "groups don't go down this pathway because of pure academic, intellectual and business reasons, but instead want to validate their subjective, emotional or political reasons," said Dr. Duszak.

Proper management now requires that we get more bang for the buck.
Stephen Chan, M.D.

Practices that do see a need to measure productivity, he said, should address desired behavior: administrative work, practice and relationship development and support of those motivated physicians he called "good sandbox players."

Drs. Chan and Duszak cautioned that ill-considered productivity measurement may not reflect reality and may harm conscientious workers, lead to cherry-picking of responsibilities and damage morale. When conducted thoughtfully, measurement can have a positive impact on morale as well as performance, they said.

When conducted thoughtfully, measurement can have a positive impact on employee morale as well as performance, said Richard Duszak Jr., M.D., a diagnostic and interventional radiologist in practice in Memphis, Tenn. Less productive physicians work harder and respond more willingly to non-clinical demands, he said, while productive physicians feel more comfortable in the work environment.

When measurement begins, discontent often abates, said Dr. Duszak. Less productive physicians work harder and respond more willingly to non-clinical demands, while productive physicians feel more comfortable in the environment. Radiology practices measuring productivity often reward or penalize individual or group performance outcomes with monetary bonuses or fines or by offering or withholding vacation time, said Dr. Duszak. "Pride, money, embarrassment and vacation are strong motivators," he said.

Clinical practices are measuring productivity by examinations read, by revenue or by relative value units (RVUs), the CPT code-based measurement of physician services that provides benchmarks for evaluating productivity in clinical radiology. So as not to penalize those also responsible for critical but non-clinical services, practices may separate non-quantifiable responsibilities and measure a physician's clinical work as a percentage of full-time employee status.

In academic radiology, measurement involves a more complex effort, said Dr. Chan, tabulating clinical per-

RAs Add Time and Value to Radiology Practice

ANOTHER STUDY presented at RSNA 2008 described how radiologists can dramatically increase their productivity by adding a radiologist assistant (RA) to their staff.

In 2005, students at Midwestern State University (MSU) in Wichita Falls, Texas, identified certain procedures that they performed, for which they collected productivity data over a period of 336 hours. "They found that the RA was saving the radiologist in their group an average of about 99 minutes a day," said Donna Wright, Ed.D., R.T., who presented "The Radiologist Assistant: Extending the Reach of the Radiologist."

"That's a lot of time when you're thinking about what a radiologist could be doing with those 99 minutes," said Dr. Wright, a professor of radiologic science at MSU.

Donna Wright, Ed.D., R.T.

The students calculated that a radiologist could hypothetically earn $373,000 a year with the time saved by an RA. In a similar study performed in 2007, MSU students focused on nine mandatory procedures and one elective procedure, and found that an RA averaged 0.79 procedures per hour. "What they found was that the RA was saving the radiologist about 27.86 minutes per procedure," Dr. Wright said. "They extrapolated the numbers out again and concluded that a group could potentially receive about $570,000 for this timesaving."

RAs can take care of the necessary but time-consuming duties that pull radiologists away from interpreting images, Dr. Wright said, including pre-procedure care, histories and physicals, follow-up after procedures, checking for necessary lab studies, evaluating lab results and looking for medication complications. All registered RAs are trained to perform upper gastrointestinal, small bowel, cystography, arthrography, lumbar puncture and placement of nasoesophageal/nasogastric tubes and peripherally inserted central catheter lines. RAs also have a subset of skills that include ductography, myelography, breast needle localization and many other procedures.

"We have found over time that during the first year an RA is credentialed, the list of what physicians have RAs perform may be fairly small," said Dr. Wright. "As they become more familiar with the person and more familiar with the concept of having this physician extender, the list gets longer."

Importantly, RAs extend the reach of the radiologist by helping provide more one-on-one contact with patients, Dr. Wright said. Increasing patient contact, she said, helps reduce medical errors, improves the quality of care and increases patient satisfaction.

The abstract for "The Radiologist Assistant: Extending the Reach of the Radiologist" is available at *RSNA2008.RSNA.org/event_display.cfm?em_id=6005441.*

formance, numbers of peer-reviewed publications, time devoted to administration and community service, research grants and grant dollars and educational evaluations. The RVU system has no relevance outside of clinical medicine, said Dr. Chan, so practices develop their own ways to quantify non-clinical work.

Dr. Duszak cited a useful "academic RVU" template created by Reuben Mezrich, M.D., and Paul Nagy, Ph.D., of the University of Maryland School of Medicine. The template, for evaluating work performed in research, education and administration, was published in the July 2007 issue of the *Journal of the American College of Radiology.*

Meanwhile the very measurement of productivity has been found to increase work output, even when results are never communicated, presenters said. This so-called "Hawthorne Effect," asserts that perceived attention provides a short-term incentive such as that observed by researchers at Western Electric's Chicago-area Hawthorne Works in the 1920s.

Learn More

- The abstract for "Tracking Radiologist Productivity: Is It Necessary and How Should It Be Done?" is available at *RSNA2008.RSNA.org/event_display.cfm?em_id=4425890.*

- Note: These articles were adapted from stories that appeared in the RSNA 2008 *Daily Bulletin.* Daily newspapers from the annual meeting are available online at *RSNA.org/bulletin.*

Daily Bulletin

TACE Targets Liver Cancer with Fewer Side Effects

PATIENTS WITH inoperable liver cancer treated with targeted chemotherapy administered by an interventional radiologist live longer and experience a better quality of life, according to a new study.

The study examined the outcomes for several hundred patients with hepatocellular carcinoma (HCC) who were treated with transcatheter arterial chemoembolization (TACE). Results were presented at RSNA 2008 by Eleni Liapi, M.D., a post-doctoral research fellow in the Division of Interventional Radiology at The Johns Hopkins University School of Medicine in Baltimore.

HCC is the fifth leading cause of cancer worldwide and its incidence is increasing. There are 19,000 cases each year in the United States and 350,000 to one million cases a year worldwide. HCC usually progresses slowly and silently, and there are usually no tumor-related symptoms at an early stage.

The most common curative treatment options for HCC include surgical resection, liver transplantation and chemical or thermal ablative therapies. "Fewer than 20 percent of the patients we see can be treated surgically," Dr. Liapi said.

The other 80 percent of patients with HCC have the choice of receiving systemic chemotherapy or chemoembolization as palliative options.

The study conducted by Dr. Liapi and colleagues included the largest series of patients with unresectable HCC treated with TACE in the U.S. TACE was performed on 347 patients in 979 sessions. All patients underwent MR and/or CT imaging at baseline and at four to six weeks after each session.

The Johns Hopkins protocol includes the selective injection of three chemotherapeutic agents—cisplatin, doxorubicin and mitomycin C—mixed with ethiodized oil. Those agents are followed by embolic agents to prevent chemotherapy washout to other areas of the body.

Patients were clinically, biochemically and radiologically evaluated before each session. Disease status was evaluated before and at the end of the treatment period with the Child-Pugh class system and tumor size measurements were evaluated according to the Response Evaluation Criteria in Solid Tumors (RECIST). The researchers used Eastern Cooperative Oncology Group (ECOG) scoring to evaluate the patients' performance status.

> *Chemoembolization is an effective treatment for unresectable hepatocellular carcinoma, with minimal systemic toxicity. We don't see the same side effects that we see with systemic chemotherapy.*
>
> **Eleni Liapi, M.D.**

"First of all, we saw that chemoembolization is an effective treatment for unresectable hepatocellular carcinoma, with minimal systemic toxicity," said Dr. Liapi. "We don't see the same side effects that we see with systemic chemotherapy."

The targeted therapy allows for a higher dose of chemotherapy to be used because less of the drug is able to circulate to the healthy cells of the body.

The median survival time for the entire group of patients was 20.25 months. "This is actually very good when we compare it to the survival of patients who receive the best supportive care or systemic chemotherapy," Dr. Liapi said. "If these patients do not receive any treatment, they die within six months."

Eleni Liapi, M.D.
The Johns Hopkins School of Medicine

Patients' performance status over time did not change. "They remained functional throughout the course of the disease," said Dr. Liapi. "They could keep on with their daily activities and did not experience any significant side effects. Their quality of life did not deteriorate because of TACE."

TACE did not further deplete the patients' hepatic reserve. "People with unresectable hepatocellular carcinoma also often have underlying liver disease," Dr. Liapi said. "It is important to preserve their liver function and this is another advantage of local delivery."

Learn More

■ The abstract for "Chemoembolization of Hepatocellular Carcinoma with a Standardized Treatment and Follow-up Protocol: Survival, Clinical, and Tumor Control Outcome over 11 Years at a Single Center" is available at *RSNA2008.RSNA.org/event_display.cfm?em_id=7122110.*

Percutaneous Cryoablation Proves Effective and Efficient as Renal Tumor Treatment

TWO OTHER STUDIES presented at RSNA 2008 indicate that percutaneous cryoablation results in minimal loss of renal function and that intraprocedural monitoring with CT and MR allows tumors to be ablated completely in one session.

Another study presented, however, called for caution in CT-guided procedures, indicating that patient radiation dose during one procedure is approximately equivalent to eight standard abdominal CT scans.

Radiology resident Adam Weisbrod, M.D., presented a retrospective review of 175 patients, each with a single kidney, who underwent cryoablation at Mayo Clinic in Rochester, Minn., from March 2003 to November 2008.

In the study, 38 tumors with a mean size of 3 cm were treated. Researchers compared creatinine levels pre-ablation, immediately post-ablation, three to six months post-ablation and, finally, the patient's most recent creatinine level to assess whether there was significant loss of kidney function.

"As expected, there is an initial decrease in their renal function, with eventual establishment of a new baseline," said Dr. Weisbrod. "We found their new baseline reflected a minimal decrease in renal function with a median increase in creatinine of 0.1 milligrams per deciliter. That number is very comparable to surgical literature for partial nephrectomy in these patients.

"Notably, none of the patients in our study required dialysis," Dr. Weisbrod said.

A second study presented by Kemal Tuncali, M.D., assistant professor of radiology at Harvard University Medical School, examined 180 renal masses treated with CT and MR-guided cryoablation. Multiple cryoprobes were placed and tumors were ablated using iceball monitoring. Of 149 tumors followed for three months or more, 142 (95 percent) were successfully ablated. Tumors successfully treated required only one ablation procedure.

"This is a midterm follow-up and these results show very promising, successful results comparable to surgical methods in treating these tumors," said Dr. Tuncali.

Adam Weisbrod, M.D.
Mayo Clinic

Kemal Tuncali, M.D.
Harvard University Medical School

Paul R. Morrison, M.S.
Brigham and Women's Hospital

Cryoablation is a reasonable alternative for patients with a single kidney and renal insufficiency, with advanced age or other risks for surgery, and those who prefer a minimally invasive treatment method supported by their urologist instead of surgery, said Dr. Tuncali.

Nevertheless, the effective dose of radiation given to patients during CT-guided renal cryroablation should be considered carefully, according to a report by Paul R. Morrison, M.S., a medical physicist in radiology at Brigham and Women's Hospital in Boston.

He reviewed 50 cases and found, on average, 71 millisieverts (mSv) were delivered per procedure—an equivalent of eight standard abdominal spiral CT scans. "The effective dose we have estimated is substantial," he said. However, he added, CT provides value by both targeting the lesion and monitoring the freezing.

Abstracts for these studies can be found at *RSNA2008.RSNA.org/event_display.cfm?em_id=7002546.*

■ Note: These articles were adapted from stories that appeared in the RSNA 2008 *Daily Bulletin.* Daily newspapers from the annual meeting are available online at *RSNA.org/bulletin.*

Daily Bulletin

Engineering Approach Could Change Brain Tumor Outcomes

A CHANCE CONVERSATION that Jonathan H. Gillard, M.D., had with an engineer over lunch at the University of Cambridge may some day result in huge benefits for patients with brain tumors.

The meeting happened more than six years ago when Dr. Gillard, now a professor of neuroradiology in the University Department of Radiology at Cambridge, was working on a study funded by a 2000 Philips Medical Systems/RSNA Research Seed Grant. The study used diffusion tensor imaging to look at brain tumors.

The two men discussed why some victims are disabled and others recover, despite having the same size stroke. The engineer suggested an analogy.

"This guy said, 'Oh it is easy. It's like a piece of plastic.'" Dr. Gillard recalled. "'If you bend a piece of plastic a little, it just bends and then goes back to normal. If you bend it too much, it breaks.'

"That is a rather simplistic approach, but what it did was allow us to use engineering analysis tools in what we were doing in stroke," Dr. Gillard continued.

He and his colleagues then applied those tools to Dr. Gillard's seed grant project, "Assessment of Normal Brain Tissue Response Following Radiotherapy Using MR Dynamic Contrast Enhancement Imaging and Diffusion Tensor Imaging at 3 Tesla." Since receiving the seed grant, Dr. Gillard has gone on to receive more than $27 million in funding from other sources.

"I had a hunch that it would be useful," Dr. Gillard said of his conversation with the engineer at Cambridge. "We used the same mathematical tools that the engineers had been using for 20 years. That fundamentally changed our approach to the imaging."

Dr. Gillard's study found that diffusion tensor imaging could more accurately pinpoint the edges of brain tumor infiltration, thus allowing for more precise radiation treatment. Currently, radiation oncologists err on the side of caution to reduce the chance of damaging normal brain matter when treating high grade tumors with radiation. The precise edges do not show up in normal enhanced MR imaging. The study could have a significant impact on the quality of care and treatment for patients with brain tumors, said Dr. Gillard.

"It is one of those areas where in medicine when you do research, you just want to make that tiny bit of a difference," he said. "I think it might lead to some increase in survival in these patients, but also potentially better quality of life because you're damaging less normal brain. That is a big thing. If that happens, I would be very happy."

> *It is one of those areas where in medicine when you do research, you just want to make that tiny bit of a difference.*
>
> **Jonathan H. Gillard, M.D.**

The process is ongoing. A trial using diffusion tensor imaging techniques on about 50 patients should wrap up within the next two to three years, Dr. Gillard said.

"You have to be cautious because it is a fundamental change from normal practice," he said. "You have to be very careful about how you introduce it. There are a number of centers around the world now that are actually using this method of analysis, which is quite novel for medicine, but for an engineer it is quite simple. The transition that is happening at the moment is getting used to how you analyze data and how you interpret it."

Jonathan H. Gillard, M.D.
University of Cambridge

Working in his favor is the medical community's eagerness to do whatever it can when it comes to treating brain tumors, said Dr. Gillard.

"Generally for the aggressive brain tumors, the outcome is appalling," he said. "Anything you can do is usually of benefit."

Dr. Gillard said he knows his study may never have gotten off the ground without the seed grant he received from RSNA. Back then, he said, he was fresh out of residency and had little in the way of a reputation except for a relatively small number of scientific publications. The RSNA grant allowed Dr. Gillard and his group to produce enough data to lead to a larger grant from England's Department of Health New and Emerging Applications of Technology (NEAT) program.

NEAT, which initially provided

nearly $300,000 for Dr. Gillard, helps researchers who have unique ideas but not necessarily large amounts of preliminary data to support them, which traditional funding agencies usually require.

"It was designed for new technologies that have no proven benefit but actually might have a much greater impact if it proves to be positive," Dr. Gillard said.

The NEAT grant has since grown to more than $20 million as Dr. Gillard has branched out beyond diffusion tensor imaging of brain tumors. His research now includes areas such as atheroma imaging, stroke, Huntington disease and traumatic brain injuries.

"The RSNA seed grant basically gives you academic credibility," Dr. Gillard said. "If we had not received the seed grant, it would have been virtually impossible to have received the other funding because it is such a novel area. It would have been much more difficult for us to get the next small grant, and the next grant."

Dr. Gillard further credited RSNA for taking a chance on his research even though he was relatively unknown in the research community. He added that seed grants are worth the risk, regardless of the study results.

NAME:
Jonathan H. Gillard, M.D.

GRANT RECEIVED:
Philips Medical Systems/RSNA Research Seed Grant (2000)

STUDY:
"Assessment of Normal Brain Tissue Response Radiotherapy Using MR Permeability Imaging and Diffusion Tensor Imaging at 3 T"

Grants in Action

CAREER IMPACT:
Dr. Gillard said that when he received the grant, he was in residency and had little in the way of a reputation except for a relatively small number of scientific publications. The RSNA grant allowed him and his colleagues to produce enough data to lead to another, larger grant from England's Department of Health New and Emerging Applications of Technology (NEAT) program. Dr. Gillard's NEAT funding now totals more than $20 million. "If we had not received the seed grant, it would have been virtually impossible to have received the other funding because our research is such a novel area," said Dr. Gillard.

CLINICAL IMPLICATIONS:
Dr. Gillard's study found that diffusion tensor imaging could more accurately pinpoint the edges of brain tumor infiltration, thus allowing for more precise radiation treatment. The study could have a significant impact on the quality of care and treatment for patients with brain tumors, he said. "It is one of those areas where in medicine when you do research, you just want to make that tiny bit of a difference," he said. "I think it might lead to some increase in survival in these patients, but also potentially better quality of life because you're damaging less normal brain. That is a big thing."

For more information on all Foundation grant programs, go to *RSNA.org/Foundation* or contact Scott Walter, M.S., Assistant Director, Grant Administration at 1-630-571-7816 or *swalter@rsna.org*.

Nominations Sought for R&E Roentgen Resident/Fellow Research Award

The RSNA Research & Education Foundation seeks nominations for the Roentgen Resident/Fellow Research award, designed to recognize and encourage outstanding residents and fellows in radiologic research. Each participating North American residency program will receive an award plaque with space to display a brass nameplate for each year's recipient. The Foundation will also provide a personalized crystal award for the department to present to the selected resident or fellow.

The residency program director or the department chair should identify one individual annually based on the following:

- Presentations of scientific papers at regional or national meetings
- Publication of scientific papers in peer-reviewed journals
- Receipt of a research grant or contributions to the success of a research program within the department
- Other research activities

The nomination deadline is April 1. Every resident/fellow in an Accreditation Council for Graduate Medical Education-approved program of radiology, radiation oncology or nuclear medicine is eligible. Nominations are limited to one resident or fellow per department per year. For more information, including the nomination form and a listing of the 2008 recipients, go to *RSNA.org/Foundation/RoentgenResidentFellowResearchAward.cfm.*

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Henry Z. Wang, M.D., Ph.D.
Steven F. Waslawski, M.D.
Warren A. Wass, M.D.
Takeyuki Watadani, M.D.
James H. Watt, M.D.
David R. Watts, M.D.
In honor of C. Leon Partain, M.D., Ph.D.
Mark R. Wax, M.D.
LeRoy D. Weaver, M.D.
Chao-Jung Wei, M.D., Ph.D.
Edward H. Welles III, M.D.
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Katherine & Ralph P. Wells, M.D.
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Lori & Brad L. Williams, M.D.
Lance R. Williams, M.D.
Lois & Russell S. Williams, M.D.
Alecia N. & Kyle M. Williamson, M.D.
Miriam & Marshall R. Willis, M.D.
William A. Willoughby, M.D.
C.A. Wilson, M.D.
David M. Wolf, M.D.
In memory of Patricia Diaitto, M.D.
Constance & Edward Y. Wong, M.D.
Jason T. Wong, M.D.
Verona & Jonathan A. Wood, M.D.
Emma J. Wood, M.B.B.S. & Lorenzo Wood
Allan M. Wright, M.D.
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Alain Zilkha, M.D.

Journal Highlights

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

Motion in Cardiovascular MR Imaging

Radiology

While MR techniques are widely used in cardiovascular imaging, involuntary motion of the heart can result in image degradation including blurring, ghosting and misregistration artifacts.

In a review article in the February issue of *Radiology (RSNA.org/radiology)*, Andrew D. Scott, M.Sc., of the Royal Brompton Hospital in London, and colleagues describe the type and extent of heart motion due to the cardiac and respiratory cycles and discuss methods of eliminating or reducing image degradation during each cycle.

Strategies detailed for the cardiac cycle include:

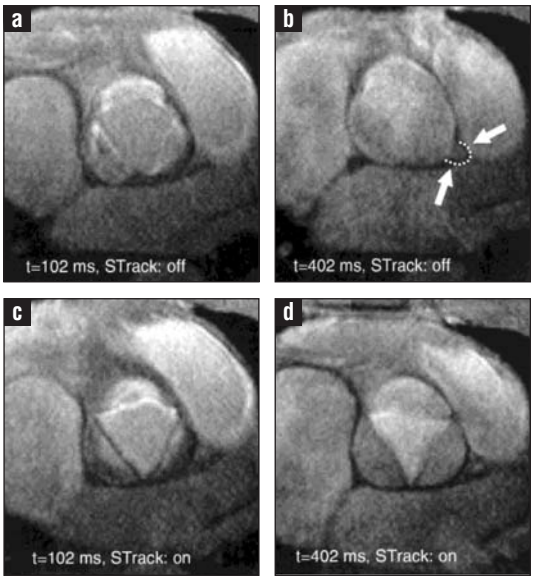
- Electrocardiogram gating
- Subject-specific acquisitions windows
- Section tracking

Strategies outlined for the respiratory cycle include:

- Breath holding
- Respiratory gating
- Section tracking
- Phase-encoding ordering
- Subject-specific translational models

Reviewers also discuss advanced techniques, including tracking imaging planes throughout the cardiac cycle and correcting blood velocities for through-plane motion, as well as image-based registration schemes that eliminate the need for navigator echoes and respiratory motion models.

"Several methods of reducing the acquisition time while maintaining much of the image quality exist," the authors conclude. "Many of the more recently developed of these techniques do not rely on an inaccurate generalized model, and some include correction for non-rigid tissue deformation and hysteresis."



Magnitude MR images of a cross section of aortic valve at two time points *(t)* in the cardiac cycle, with and without section tracking *(STrack)*.
Section tracking enables valve to be seen with greater clarity at both time points. Arrows in *b* highlight left coronary root, which has moved into the imaging frame since *a* but is rightly absent in *d*.
(*Radiology* 2009;250:331–351)

MR Imaging in Patients at Risk for Developing Nephrogenic Systemic Fibrosis: Protocols, Practices, and Imaging Techniques to Maximize Patient Safety

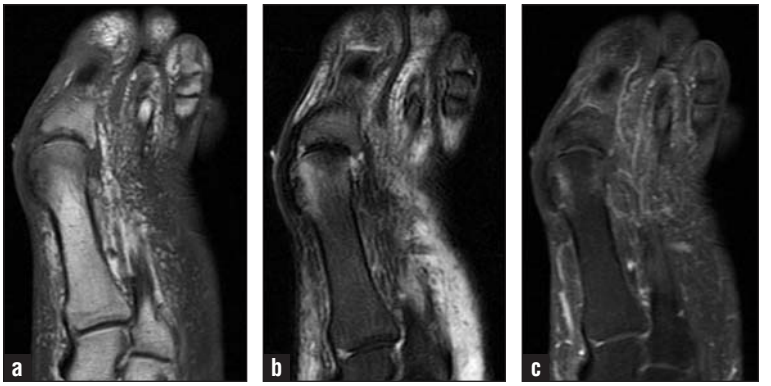
RadioGraphics

An article in the January-February issue of *RadioGraphics (RSNA.org/radiographics)*, reports that nephrogenic systemic fibrosis (NSF) is a rare but potentially debilitating or even fatal fibrosing condition, most often affecting the skin but now also recognized to involve multiple organs.

NSF is associated with renal failure after the administration of gadolinium in patients with renal insufficiency.

"Although gadolinium-enhanced MR angiography was once considered one of the safer imaging procedures,

Continued on Page 21



Noncontrast MR imaging diagnosis of osteomyelitis.
(a) Precontrast long-axis T1-weighted MR image of the right foot shows loss of signal intensity in the head of the first metatarsal bone. *(b)* Precontrast long-axis fat-saturated T2-weighted MR image shows high signal intensity in the first metatarsal head. In the appropriate clinical setting, the findings in *a* and *b* are consistent with osteomyelitis. *(c)* Postcontrast long-axis fat-saturated T1-weighted MR image shows mild enhancement of the first metatarsal head. This finding does not contribute to the diagnosis of osteomyelitis, which was already made with noncontrast techniques.
(*RadioGraphics* 2009;29:9–22)

Radiology in Public Focus

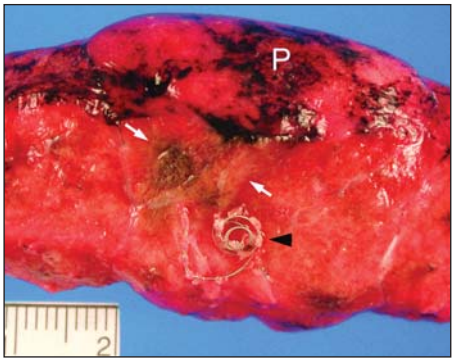
Press releases have been sent to the medical news media for the following articles appearing in the February issue of *Radiology (RSNA.org/radiology):*

Lung nodules: CT-guided Placement of Microcoils to Direct Video-assisted Thoracoscopic Surgical Resection

ADDING A new microcoil localization technique to fluoroscopically guided video-assisted thoracoscopic surgery (VATS) to excise small lung nodules can increase the surgery's success rate from 54 to 97 percent.

In a study of 69 patients with 75 small peripheral lung nodules, John R. Mayo, M.D., and colleagues at the University of British Columbia used CT guidance to place fiber-coated microcoils with one end adjacent to the suspicious nodule and the other end coiled in the pleural space. VATS excision of lung tissue, lesion and microcoil was performed under fluoroscopic guidance.

Seventy-three of 75 nodules were removed using fluoroscopically guided VATS. The study showed minimal pain and a low (3 percent) rate of intervention for procedural complications.



Pathologic specimen resected parallel to the microcoil shows the microcoil *(arrowhead)* coiled on the pleural surface *(P)* and extending through the semisolid nodule *(arrows).* Note the absence of parenchymal hemorrhage in the specimen due to the thrombogenic fuzz on the microcoil.
(*Radiology* 2009;250:575–584)

Although the lesion was directly punctured in 79 percent of the cases, the technique did not impair the pathologic processing or interpretation of the specimen and no local recurrences of cancer have been documented.

"Use of this technique may help to address the diagnostic dilemma provided by the increasing number of small peripheral lung nodules that are detected incidentally or found to grow on serial chest CT examinations," the researchers concluded.

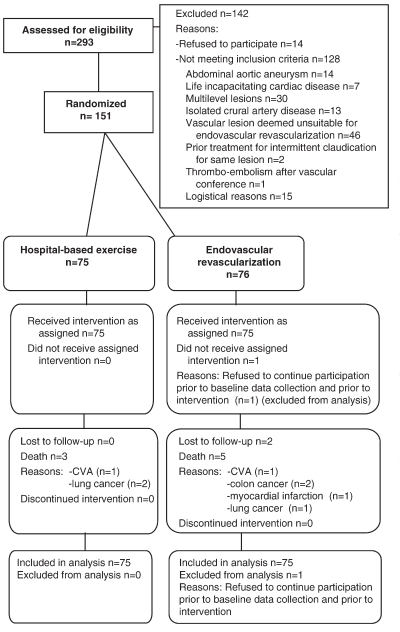
Intermittent Claudication: Clinical Effectiveness of Endovascular Revascularization Versus Supervised Hospital-Based Training—Randomized Controlled Trial

PATIENTS WITH intermittent claudication benefit equally from endovascular revascularization or supervised exercise after 6- and 12-month periods, although the benefit is more immediate following revascularization.

During a 3-year period, Sandra Spronk, Ph.D., of Ikazia Hospital in the Netherlands, and colleagues randomly assigned 151 consecutive patients with symptoms of intermittent claudication to receive either endovascular revascularization or hospital-based, supervised exercise. Outcomes were measured by clinical success, functional capacity and quality of life.

After revascularization, the clinical success rate was 75 percent at six months and 68 percent at 12 months. After exercising, the clinical success rate was 77 percent at six months and 65 percent at 12 months. After both treatments, functional capacity and quality-of-life scores increased after six and 12 months, but there was no significant difference between the two groups.

The study emphasizes that all patients with symptoms of intermittent claudification begin treatment with an exercise program and that invasive procedures should be considered only if there is no improvement, according to the researchers.



Flow diagram of study (according to Consolidated Standards of Reporting Trials statement) shows reasons for exclusion, random assignment to endovascular revascularization or supervised hospital-based exercise training, and treatment actually received, including 6- and 12-month follow-up. CVA = cerebrovascular accident.
(*Radiology* 2009;250:585–594)

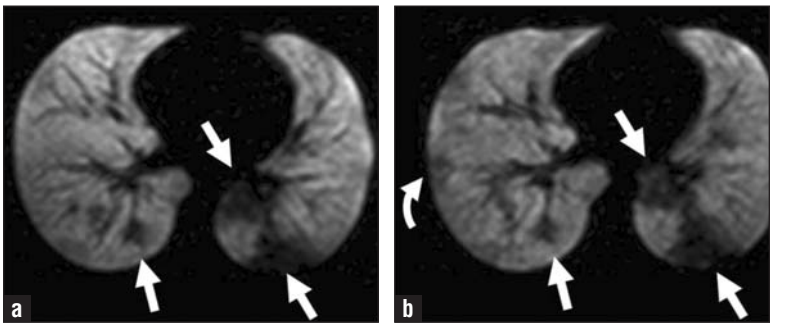
Changes in Regional Airflow Obstruction over Time in Lungs of Patients with Asthma: Evaluation with ^{3}He MR Imaging

FOCAL AIRFLOW impediment within the lungs of asthma patients can persist over time despite treatment and severity of disease, according to results of an MR imaging study using hyperpolarized helium-3 (^{3}He).

Eduard E. de Lange, M.D., of the University of Virginia Health Sciences Center, and colleagues examined 43 patients who underwent a total of 104 scans—26 scanned twice the same day and 17 scanned on three instances within one to 476 days.

For patients scanned twice the same day, 75 percent of defects remained in the same location and 71 percent of those defects remained unchanged in size. In patients scanned on multiple days, 67 percent of defects persisted between the first and second scans and 43 percent persisted between the second and third scans. More than a third of defects remained in the same location after six months and more than 50 percent of those defects did not change in size. Trends were the same regardless of disease severity.

"The persistence of relatively large numbers of defects over time has implications for understanding the nature of focal airway obstruction in patients with asthma," the researchers concluded.



Persistence of ventilation defects at same-day assessments. *(a)* Baseline axial breath-hold MR image of lung obtained after inhalation of 1 L of ^{3}He–nitrogen gas mixture shows two defects *(arrows)* in the left lung and one *(arrow)* in the right lung. *(b)* Image at same anatomic level obtained 57 minutes later with the same parameters as a shows the three defects *(straight arrows)* again, with no change in location or size. A small new defect *(curved arrow)* has developed in the right lung.

Media Coverage of *Radiology*

In December, media outlets carried 117 news stories generated by articles appearing in *Radiology*. These stories reached an estimated 66 million people.

A news release promoted findings from a study on trabecular structure in adolescents with anorexia nervosa (*Radiology* 2008;249:938-946).

Broadcast coverage included *Medical Breakthroughs* (syndicated), WCAU-TV (Philadelphia), KPRC-TV (Houston), WMTV-TV (Madison, Wis.), KSL-TV (Salt Lake City), WNWO-TV (Toledo, Ohio), WCNC-TV (Charlotte, N.C.), KSHB-TV (Kansas City, Mo.), KGW-TV (Portland, Ore.), KQCA-TV (Sacramento, Calif.), KOMU-TV (Columbia, Mo.), WSTM-TV (Syracuse, N.Y.), WCBD-TV (Charleston, S.C.), WHO-TV (Des Moines), KJRH-TV (Tulsa, Okla.), WPTA-TV (Fort Wayne, Ind.) and WSLS-TV (Roanoke, Va.)

Print and wire coverage included *General Practitioner,* HealthScout News and Asian News International.

Web placements included, Yahoo! News, *USNews.com, docguide.com, healthcentral.com, forbes.com* and *washingtonpost.com.*

February Public Information Activities Focus on Heart and Vascular Health

In February, RSNA will distribute the "60-Second Checkup" audio program to nearly 100 radio stations across the U.S. Segments will focus on diagnosis of and minimally invasive treatments for peripheral artery disease and the use of CT to diagnose cardiac disease.

MR Imaging in Patients at Risk for Developing Nephrogenic Systemic Fibrosis: Protocols, Practices, and Imaging Techniques to Maximize Patient Safety

Continued from Page 19

studies documenting the presence of gadolinium in the tissue of patients with NSF have forced the radiology community to rethink its imaging practices," Krishna Juluru, M.D., of Weill Cornell Medical Center in New York, and colleagues report.

In the article, the authors:

- List the risk factors for developing NSF
- Discuss the advantages and disadvantages of various MR contrast agents in at-risk patients
- Describe contrast-enhanced and non-enhanced MR imaging techniques that can help minimize risk for developing NSF

This article meets the criteria for 1.0 *AMA PRA Category 1 Credit*™. CME is available online only.

Authors stress the importance of developing a comprehensive approach for optimal patient safety within the setting of NSF.

Working For You

RSNA to Participate in ECR

RSNA's informational booth will be on hand at the European Congress of Radiology (ECR), March 6–10 at the Austria Center in Vienna. RSNA members attending ECR are invited to stop by the booth and bring a colleague to learn more about RSNA membership.

Earlier this month, RSNA brought its informational booth to the Sociedad Mexicana de Radiologia e Imagen in Mexico City. In June, RSNA will travel to Toronto for the SNM annual meeting and will showcase RSNA journals at the meeting of the Special Libraries Association in Washington.

CT Answer [Question on page 2.]

A Possibly. A significantly higher workload is possible, which may require additional shielding. Have the shielding requirements, including ceilings and floors, re-evaluated based on the expected workload.

Q&A courtesy of AAPM.

News about RSNA 2009

Submit Abstracts for RSNA 2009

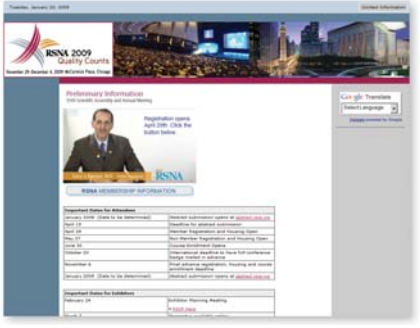
The online system to submit abstracts for RSNA 2009 is now open. The submission deadline is 12:00 p.m. Central Time on April 15, 2009. Abstracts are required for scientific papers, scientific posters and education and applied science exhibits.

To submit an abstract online, go to *RSNA.org/abstracts.* For more information about the abstract submission process, contact the RSNA Program Services Department at 1-877-776-2227 within the U.S. or 1-630-590-7774 outside the U.S.

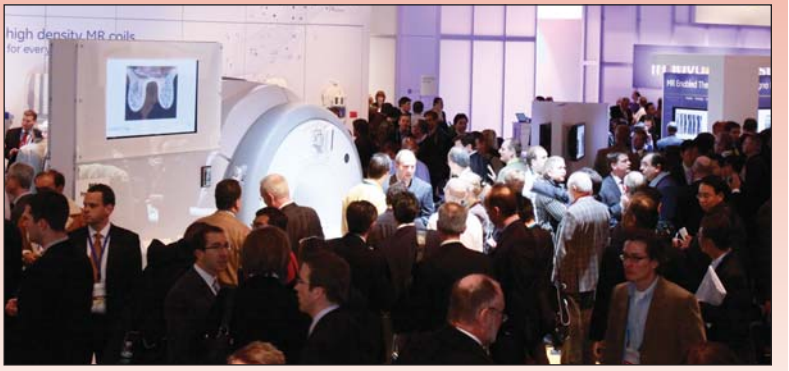
Important dates for RSNA 2009

April 15	Deadline for abstract submission
April 29	RSNA/AAPM member registration and housing open
May 27	Non-Member registration and housing open
June 30	Course enrollment opens
November 6	Final advance registration, housing and course enrollment deadline
Nov. 29 – Dec. 4	RSNA 95th Scientific Assembly & Annual Meeting

Becker Featured in Online Meeting Videos



Visitors to the annual meeting Web site, *RSNA2009.RSNA.org*, will find promotional videos featuring 2009 RSNA President Gary J. Becker, M.D. In a series of videos to be released over the next several months, Dr. Becker will address such topics as abstract submission, registration and CME credit.



RSNA 2008 Sets Records

More than 59,000 people attended RSNA 2008, which saw record attendance in a number of categories. A record 10,772 RSNA members attended the annual meeting, including a record 2,920 resident members and 145 medical student members.

RSNA 2008 saw a record 9,397 international attendees. Attendance from Canada, Mexico, France, Italy, U.K., China and Spain also set records.

Program and Grant Announcements

RSNA Introduction to Research for International Young Academics

Deadline for Nominations—April 15

THE RSNA Introduction to Research for International Young Academics program encourages young radiologists from countries outside the U.S. and Canada to pursue careers in academic radiology. The program consists of a special seminar held during the RSNA annual meeting.

Eligible candidates are residents and fellows currently in radiology training programs or radiologists not more than two years out of training who are beginning or considering an academic career. Nominations must be made by the candidate's department chairperson or training director. Fluency in English is required. Nomination forms can be found at *RSNA.org/IRIYA.*

SNM Symposium on Multimodality Cardiovascular Molecular Imaging

April 30–May 1 • National Institutes of Health, Bethesda, Md.

This symposium aims to bring together individuals from chemistry, engineering, physics, molecular biology, cardiovascular physiology and imaging sciences to promote cardiovascular molecular imaging. The meeting continues the work of a similar conference held at NIH in 2004 that served as the basis for the first textbook dedicated to the field of cardiovascular molecular imaging. Included will be expert lectures, panel discussions and an abstract poster session, with a focus on imaging of cardiovascular receptors, stem cell therapy, vascular biology and myocardial metabolism. RSNA is co-sponsoring this meeting. More information is available at *www.snm.org/cvmi2009.*

NIBIB Innovation in Molecular Imaging Probes Initiative

Next Deadline: May 21

The National Institute of Biomedical Imaging and Bioengineering (NIBIB) solicits applications for its Innovation in Molecular Imaging Probes initiative, which encourages development of novel approaches that can detect and image specific molecular activities in vivo and have the potential for clinical applications. Approaches developed through this initiative can focus on one or both of two long-term translational goals:

- Imaging the characteristic markers and function of normal cells in control human subjects and patients
- Imaging the characteristic markers and biochemical or physiological abnormalities of disease cells in patients

Potential abnormalities that could provide early markers for disease include inflammation, fibrosis, immune cell activation, altered signal transduction and gene expression pathways and altered post-translational modification of proteins. This initiative solicits applications exploring innovative "high-impact" approaches, rather than incremental technology development already supported by NIH programs.

For more information, go to *grants.nih.gov/grants/guide/pa-files/PAR-09-016.html.*

RSNA Eyler Editorial Fellowship

Application Deadline—May 1

Candidates are sought for the RSNA Eyler Editorial Fellowship, sponsored by the RSNA Publications Council and the Committee on International Relations and Education (CIRE).

Named after William R. Eyler, M.D., a former editor of *Radiology*, the fellowship is designed to provide an opportunity for a mid-career radiologist to further his/her experience in radiologic journalism. Working with the editors of *Radiology* and *RadioGraphics* and RSNA publications staff, the fellow will learn about manuscript preparation, peer review, manuscript editing, journal production, printing and electronic publishing.

For more information regarding eligibility requirements and to apply, go to *RSNA.org/Publications/editorial_fellowships.cfm.*

RSNA-Sponsored Sessions at the Association of University Radiologists (AUR) Annual Meeting

May 12–15 • Marriott Crystal Gateway Hotel, Arlington, Va.

MERC Workshop

Part of the Association of American Medical Colleges (AAMC) Medical Education Research Certificate (MERC) Program, this workshop is targeted to clinicians and other educators who want to learn research skills enabling collaborative participation in medical education research projects.

More information about all sessions will be available at *www.AUR.org.*

RSNA Medical Imaging Resource Center (MIRC®) Session

"Introduction to RSNA's Teaching File Software: A Do-It-Yourself Guide to Setting It Up, Capturing Cases or Simply Using It for Board Review" will be presented by Eliot Siegel, M.D., Micah Adams, B.A., Naomi Saenz, M.D., and Tara Morgan, M.D.

Also presented will be the AUR-RSNA Quality Keynote, by Stephen J. Swensen, M.D., and Kevin B. Weiss, M.D., M.P.H.

Product News

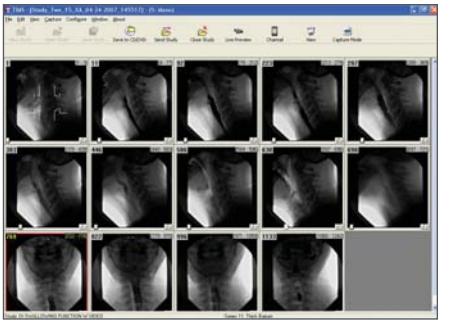
NEW PRODUCT

Fast-Scan, Low-Dose CT

THE SOMATOM® Definition Flash, the new dual-source CT from Siemens *(www.medical.siemens.com)*, features two X-ray tubes that simultaneously revolve around the patient's body. A scanning speed of 43 centimeters per second and temporal resolution of 75 milliseconds enable complete scans of the entire chest region in just 0.6 seconds. The SOMATOM Definition Flash also operates at an extremely reduced radiation dose, allowing a spiral heart scan to be performed with less than 1 millisievert (mSv), as opposed to the average effective dose of 8 mSv to 40 mSv.

NEW PRODUCT

DICOM Converter Software Upgrade

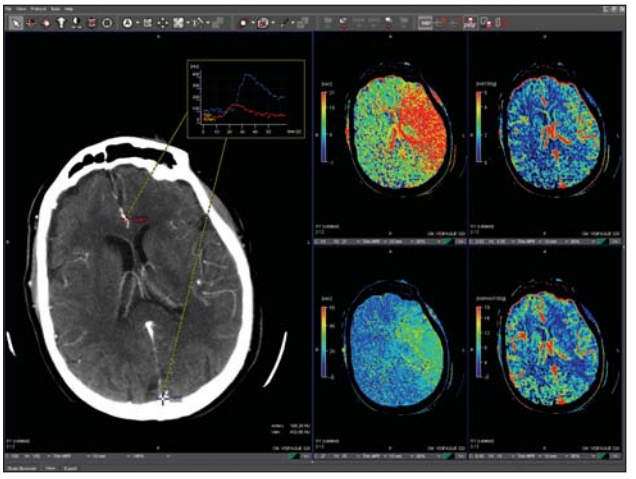


Version 2.2 of the TIMS DICOM System software by Foresight Imaging *(www.tims.com)* has new features including annotation especially for audio playback, audio recording to CD/DVD, file attachment, editing of saved studies and TIF & JPEG 2000 file import. TIMS converts any non-DICOM medical modality to DICOM for a small fraction of the cost of a modality upgrade. The resulting digital study can be sent to PACS, recorded to CD/DVD/USB and printed to film or paper.

NEW PRODUCT

Free PACS Software

OnePacs *(www.onepacs.com)* has made a free version of its PACS software available via an online application. The free version includes Web-enabled PACS functionality, a unified worklist for studies from multiple PACS or multiple facilities and a Web-based DICOM study viewer that operates via Javascript but does not require installation of Java, ActiveX or Flash. Users can track results reporting and quality assurance information and automatically include that information in their reports at their discretion.



FDA CLEARANCE

CT Analysis Software Upgrades

Visage Imaging *(www.visageimaging.com)* has received FDA clearance for its thin client product release, Visage CS 3.1. A new neuroradiology option facilitates brain perfusion analysis in CT and MR imaging, while an oncology option provides tools for analyzing, documenting and comparing lesions for multiple modalities, including standardized uptake value-based analysis for PET/CT. In addition, Visage CS 3.1 features new measurement and postprocessing tools such as advanced 3D segmentation, region-of-interest-based analysis and time-value curves and improved editing of cardiac left ventricular models.

RSNA*News* Information for *Product News* came 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

Users Praise myRSNA®

RSNA 2008 attendees who took a test drive of myRSNA®, the new customizable Web portal for RSNA members, said they are impressed with all it has to offer, as well as the ease of use.

RSNA member Robert L. Hamm, M.D., said he was particularly pleased with the radiology-specific search engine, Yottalook™, incorporated into myRSNA. Dr. Hamm said he often scours Google™ and other search engines for articles and images, but not always with satisfying results.

"Yottalook should give me just what I need," said Dr. Hamm, of Providence Hospital in Washington. Yottalook allows the user to do Internet searches based on certain keywords and save them for future reference. The radiology engine finds pages using the Google index but its algorithms use radiology ontologies to filter the results.

myRSNA employs a system of tabs ❶ and drop-and-drag widgets ❷ to help users organize content. On the main myRSNA tab, users can add, remove and move widgets to receive regularly updated information about *Radiology, RadioGraphics* and *RSNA News* articles, CME opportunities, annual meeting content and more.

Tabs further assist users in obtaining and organizing information:

mySearch: Searches are based on the keywords entered and results are filtered into different categories, including RSNA, Yottalook, Google, Video and Images ❸. Users can save favorite searches ❹ and refer back to a list of those performed recently ❺.

myBookmarks: Users can bookmark Web pages for access directly through myRSNA ❻, rather than sort through unrelated bookmarks on their Internet browser.

myFiles: Users can upload files of any type to a personal online directory and access those files from any computer in the world via myRSNA, without additional software. Each member receives one gigabyte of storage space.

Learn more at *myRSNA.org*.

Connections

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Education Portal
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RSNA CME Credit Repository
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CME Gateway
CMEgateway.org

International Radiology Outreach Resources
RSNA.org/International/IROR.cfm

InterOrganizational Research Council
radresearch.org

RSNA Medical Imaging Resource Center
RSNA.org/mirc

RSNA Career Connection
RSNA.org/career

RadiologyInfo™
RSNA-ACR patient information Web site *radiologyinfo.org*

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CALENDAR

Medical Meetings March – June 2009

MARCH 6–10 VISIT THE RSNA BOOTH
European Congress of Radiology (ECR), Austria Center, Vienna • *www.ecr.org*

MARCH 7–12
Society of Interventional Radiology (SIR), 34th Annual Meeting, San Diego • *www.sirweb.org*

MARCH 15–20
Society of Gastrointestinal Radiologists (SGR) and Society of Uroradiology (SUR), Abdominal Radiology Course, Grand Wailea Resort Hotel & Spa, Maui, Hawaii • *www.sgr.org*

APRIL 2–5
American Institute of Ultrasound in Medicine (AIUM), Annual Meeting, Marriott Marquis, New York • *www.aium.org*

APRIL 4–8
Healthcare Information and Management Systems Society (HIMSS), Annual Conference and Exhibition, Chicago • *www.himssconference.org*

APRIL 18–24
International Society for Magnetic Resonance in Medicine (ISMRM), 17th Scientific Meeting and Exhibition, Honolulu • *www.ismrm.org*

APRIL 21–25
Society for Pediatric Radiology (SPR), 52nd Annual Meeting, La Costa Resort and Spa, Carlsbad, Calif. • *www.pedrad.org*

APRIL 25–29
American Radium Society (ARS), Annual Meeting, Four Seasons Vancouver, British Columbia • *www.americanradiumsociety.org*

APRIL 26–29
Society of Breast Imaging (SBI), 9th Postgraduate Course, The Broadmoor, Colorado Springs, Colo. • *www.sbi-online.org*

APRIL 26–MAY 1
American Roentgen Ray Society, Annual Meeting, John B. Hynes Veterans Memorial Convention Center, Boston • *www.arrs.org*

APRIL 27–29
International Atomic Energy Agency (IAEA), International Conference on Advances in Radiation Oncology, Vienna International Centre, Austria • *www.iaea.org*

APRIL 30–MAY 1
SNM/RSNA, Symposium on Multimodality Cardiovascular Molecular Imaging, National Institutes of Health, Bethesda, Md. • *www.snm.org/cvmi2009*

APRIL 30–MAY 2
French Society of Radiology, InterAmerican College of Radiology, Sao Pãulo Society of Radiology and Brazilian College of Radiology, French and Latin American Congress of Radiology, São Paulo, Brazil

MAY 2–6
American College of Radiology, Annual Meeting and Chapter Leadership Conference, Hilton Washington, D.C. • *www.acr.org*

MAY 12–15
Association of University Radiologists (AUR), Annual Meeting, Crystal Gateway Marriott, Arlington, Va. • *www.aur.org*

MAY 16–21
American Society of Neuroradiology (ASNR), 47th Annual Meeting, Vancouver Convention and Exhibition Center, British Columbia • *www.asnr.org*

MAY 30–JUNE 2
2nd World Congress of Thoracic Imaging and Diagnosis in Chest Disease, Valencia Conference Centre, Spain • *www.geyseco.es/thoracicimaging.htm*

MAY 31–JUNE 2
American Brachytherapy Society (ABS), Annual Meeting, Westin Harbour Castle Hotel, Toronto • *www.americanbrachytherapy.org*

JUNE 2–5
Latin American Association of Radiation Oncology Therapy (ALATRO), 2nd Congress, Cancún, México • *www.alatro.org*

JUNE 4–7
Society for Imaging Informatics in Medicine (SIIM), Annual Meeting, Charlotte Convention Center, North Carolina • *www.siim2009.org*

NOVEMBER 29–DECEMBER 4
RSNA 2009, 95th Scientific Assembly and Annual Meeting, McCormick Place, Chicago • *RSNA2009.RSNA.org*