

RSNA *News*



Forensic Imaging Bolstered by New Technology, Techniques

Also Inside:

- Pediatric Radiologists Thrust Radiation Safety into Spotlight
- MR Imaging Technique Capitalizes on Temperature
- E-Mentoring Program Takes Radiology Education Global
- Chicago Events and Attractions Sparkle During RSNA 2008

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RSNA News

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Fellers Resigns as RSNA Executive Director

DAVE FELLERS, C.A.E., has resigned his position as RSNA Executive Director, effective August 31. Fellers has served as executive director since January 2001.

Fellers has overseen significant growth in RSNA programs and in the Society's national and international prominence. He is particularly proud of RSNA's recognition for excellence among nonprofit organizations. RSNA was named one of nine remarkable associations in the American Society of Association Executives Measures of Success study in 2006.

"On behalf of the RSNA Board of Directors, I would like to thank Dave for his service to RSNA," said RSNA

Board Chair Hedvig Hricak, M.D., Ph.D., Dr. h.c. "He has been tireless in his efforts to implement the Board's vision for the Society and our profession, and we wish him well for the future."

Fellers said he is very proud of RSNA's accomplishments. "RSNA is a wonderful organization, has a fabulous staff and I will miss my many friends and colleagues," he said.

The Board of Directors has formed a committee, chaired by Dr. Hricak, to conduct the search for a new executive director. The committee will be assisted



Dave Fellers, C.A.E.

by an executive recruitment firm. The Board has appointed Mark G. Watson, C.P.A., to serve as interim executive director through the transition period. Watson has been a member of the RSNA staff since 1990 and has served as assistant executive director for finance and administration since 1994.

"With this appointment and the RSNA's dedicated professional staff, the Board is confident that the Society will continue to operate at a high level through a smooth transition," said Dr. Hricak.

CAR Publishes Standard for Irreversible Compression in Digital Diagnostic Imaging

The Canadian Association of Radiologists (CAR) has published a standard validating irreversible, or "lossy," compression of digital diagnostic images under certain circumstances and for specified examination types. The standard is available at www.car.ca/Files/Lossy_Compression.pdf.

CAR developed the standard in response to mounting concerns about the increasing volume of data generated by new imaging modalities, in particular with respect to storage cost and the efficiency of transmission over networks.

The standard provides compression ratios for computed radiography/digital radiography, CT, ultrasound, MR and nuclear medicine and offers guidelines for implementation and quality assurance.

CMS Launches CTC Coverage Study

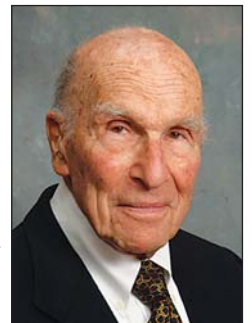
The Center for Medicare and Medicaid Services (CMS) has launched a national coverage analysis to study the impact and readiness of widespread CT colonography (CTC) colorectal cancer screening in the U.S. The analysis, scheduled to be completed early next year, could lead to a national coverage determination affecting reimbursement for CTC by Medicare and third-party payors.

Medicare reimbursement for colorectal cancer screening currently includes only some modalities, including optical colonoscopy, flexible sigmoidoscopy, double-contrast barium enema and fecal occult blood testing. More information about the CTC analysis is available at www.cms.hhs.gov.

2008 Meeting Program Dedicated to Picker

RSNA will dedicate the 2008 *RSNA Meeting Program* to the memory of renowned physicist, inventor, educator, businessman and philanthropist, Harvey Picker, M.B.A. Picker died March 22 at the age of 92.

Picker, of Camden, Maine, was named an RSNA honorary member in 1997. Longtime head of the Picker International imaging company and founder of the patient-focused Picker Institute, Picker served on the RSNA Research & Education (R&E) Foundation Board of Trustees from 1991 to 1997. Picker's donations to the Foundation remain the second highest by an individual donor.



Harvey Picker, M.B.A.

RADIATION SAFETY Fact of the Month

For an exam such as an AP lumbar spine, patient entrance dose doubles for every 4-5 cm increase in patient thickness.

 American Association of Physicists in Medicine

2008 Editorial Fellows Chosen

RSNA has named **Andrew R. Forauer, M.D.**, of Dartmouth-Hitchcock Medical Center in Lebanon, N.H., as the 2008 William R. Eyer Editorial Fellow. **Dino P. Massoglia, M.D., Ph.D.**, of the University of Maryland Medical System's Department of Radiological Sciences, is the Trainee Editorial Fellow.

Both fellows will work with *Radiology* editor Herbert Y. Kressel, M.D., in Boston and *RadioGraphics* editor William W. Olmsted, M.D., in Bethesda, Md. The Eyer fellowship lasts one month and the trainee fellowship lasts one week. Each fellow will also visit the RSNA Publications and Communications Division at RSNA Headquarters in Oak Brook, Ill. During the final week of his fellowship, Dr. Forauer will work with the RSNA editorial team at the RSNA annual meeting.

Dr. Forauer specializes in vascular and interventional radiology. He has been a manuscript reviewer for the *American Journal of Kidney Diseases*, *Journal of Vascular and Interventional Radiology* and *Journal of Vascular Surgery*. He has also served on a special emphasis review panel for the National Heart, Lung and Blood Institute of the National Institutes of Health.

Dr. Massoglia, who specializes in neurobiology, has researched topics including neuromorphic engineering and the development of time-coding nuclei in the auditory brainstem of the barn owl.

Both fellows say they look forward to gaining insight into the editorial process and using the knowledge in their future careers. "By sharpening my own



Andrew R. Forauer, M.D.



Dino P. Massoglia, M.D., Ph.D.

writing and editing skills, I hope to be a resource for my colleagues and to promote this aspect of academic practice to our trainees," said Dr. Forauer.

For more information about the RSNA Editorial Fellow program, go to RSNA.org/publications/editorial_fellowships.html.

PEOPLE IN THE NEWS

Min Named to Top Radiology Post

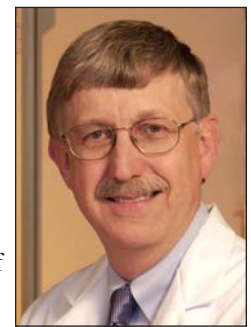
New York-Presbyterian Hospital/Weill Cornell Medical Center in New York has named **Robert J. Min, M.D.**, as radiologist-in-chief and chair of radiology. Dr. Min, the inventor of endovenous laser therapy for treating venous insufficiency, has been with New York-Presbyterian/Weill Cornell since



Robert J. Min, M.D.

Collins Leaves NHGRI

Francis S. Collins, M.D., Ph.D., has stepped down as director of the National Human Genome Research Institute (NHGRI) of the National Institutes of Health. Dr. Collins delivered the RSNA 2003 New Horizons Lecture, "A Roadmap for the Future of Biomedical Research." Alan E. Guttmacher, M.D., is serving as NHGRI acting director.



Francis S. Collins, M.D., Ph.D.

Goodman Receives STR Lifetime Award

The Society of Thoracic Radiology (STR) has announced that **Lawrence R. Goodman, M.D.**, is the recipient of its 2008 Lifetime Achievement Award. Chief of thoracic imaging and a professor of radiol-

ogy and medicine at the Medical College of Wisconsin (MCW), Dr. Goodman was one of the original members of STR and the society's third president.



Lawrence R. Goodman, M.D.

RSNA Attends ICR

RSNA Board Chairman **Hedvig Hricak, M.D., Ph.D., Dr. h.c.**, received a Moroccan Merit Medal during the International Congress of Radiology (ICR) in June in Marrakesh. Dr. Hricak is the Carroll and Milton Petrie Chair in the Department of Radiology at Memorial Sloan-Kettering Cancer Center in New York.

Also receiving the Moroccan Merit Medal at ICR were **Claude Manelfe, M.D.**, former chair of the Department of Radiology at the University of Toulouse, France, **Guy Frija, M.D.**, chief of radiology at the George Pompidou European Hospital in Paris, ICR President **Farida Imani, M.D.**, and **Alain Dana, M.D.**, of the Paris Institute of Radiology.

Elias A. Zerhouni, M.D., director of the National Institutes of Health, presented the Antoine Bécélère lecture and received the Bécélère Medal. **Francisco Arredondo, M.D.**, professor and chair of the Department of Radiology in the Francisco Marroquin University School of Medicine in Guatemala City, also received the Bécélère Medal.

RSNA sponsored a session, "Highlights of Diagnostic Imaging in the U.S. and Common Pathologies in America," at ICR. 2008 RSNA President Theresa C. McLoud, M.D., moderated the session, which featured **Geoffrey D. Rubin, M.D.**, **Suhny Abbara, M.D.**, and **Jonathan Goldin, M.D.**



(left to right) Nadia Zerhouni, M.D., Alexander R. Margulis, M.D., Elias A. Zerhouni, M.D., and Hedvig Hricak, M.D., Ph.D., Dr. h.c.



(left to right) Francisco Arredondo, M.D., Miguel Stoopan, M.D., Theresa C. McLoud, M.D., Jan H. Labuscagne, M.B.Ch.B., and Claude Manelfe, M.D.

AAPM Announces Awards

The American Association of Physicists in Medicine (AAPM) has announced awards presented at its annual meeting last month in Houston.

Paul L. Carson, Ph.D., received the William D. Coolidge Award. Dr. Carson is a professor of radiology and bioengineering and director of radiologic physics and engineering at the University of Michigan Medical Center in Ann Arbor.

The Award for Achievement in Medical Physics was presented to **Kenneth R. Kase, Ph.D.**, and **James M. Galvin, D.Sc.** Currently safety officer for Lyncean Technologies, Inc., Dr. Kase formerly served as director of the



Paul L. Carson, Ph.D.



Kenneth R. Kase, Ph.D.



James M. Galvin, D.Sc.



Allen S. Lichter, M.D.

Environment, Safety and Health Division at the Stanford Linear Accelerator Center. Dr. Galvin is a professor and director of the Medical Physics Division in the Department of Radiation Oncology at Thomas Jefferson University

Honorary membership was presented to **Allen S. Lichter, M.D.**, executive vice-president and chief executive officer of the American Society of Clinical Oncology.

Michigan Gold Medal Awarded to Mueller

Charles E. Mueller Jr., M.D., of Advanced Diagnostic Imaging in Saginaw, Mich., received the gold medal of the Michigan Radiological Society.

Dr. Mueller is particularly well-known for his public education efforts. As director of the

Breast Diagnostic Center from 1994-2007, Dr. Mueller advocated for early breast cancer detection by appearing on television and in radio ads and educational videos, as well as serving on professional panels and authoring newspaper editorials.

Costa Rica Society Names Board

The Association of Medical Imaging of Costa Rica has announced its new board of directors: **Randall Bujan, M.D.**, of San Jose, president **Jose Vega, M.D.**, of San Jose, secretary **Enrique Espinosa, M.D.**, of San Jose, treasurer

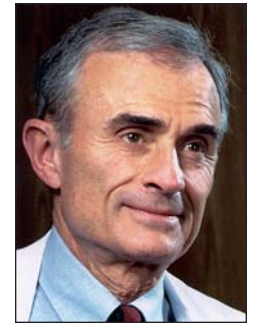
Other board members are **Kal Wong, M.D.**, **Faylan Esquivel, M.D.**, and **Maritza Salazar, M.D.**

Rao Named Levin Endowed Chair at Jefferson

Vijay M. Rao, M.D., has become the first David C. Levin Professor and Chair of the Department of Radiology at Jefferson Medical College and Thomas Jefferson University Hospital in Philadelphia. Dr. Levin was professor and chair of the department from 1986 until semi-retirement in 2002. Dr. Rao succeeded Dr. Levin and became the first woman to chair a clinical department in Jefferson's 184-year history. The endowment resulted from a gift to Jefferson in Dr. Levin's honor by Arthur and Marilyn Penn of New York.



Vijay M. Rao, M.D.



David C. Levin, M.D.



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.

MY TURN

**The Image Gently Campaign:
What It Means for Our Patients**

ONE OF the joys of being a pediatric radiologist is working with our patients and their families. Both parents and patients can be anxious about an imaging test, even something as simple as a radiograph. Will their son lose the college wrestling scholarship if his elbow is fractured? If the toddler's chest film shows pneumonia, who will stay home with her?

Adding to their anxiety is media coverage of concerns regarding the use of medical radiation for CT examinations—physicians often hear from parents wanting to know what we are doing to address this issue as it pertains to their children.

We now have an answer. Twenty-three organizations, representing more than 500,000 healthcare professionals, have formed the Alliance for Radiation Safety in Pediatric Imaging. The mantra is to “get the word out” to radiologists,

radiologic technologists, physicists and referring physicians to continue to lower radiation dose when performing CT scans on children.

In January 2008 the Alliance launched the Image

Gently campaign, designed to collect the many scientific reports and recommendations on

radiation protection and distill them into a straightforward message applicable to our daily practice. Now with the addition of the Canadian Association of Radiologists and the Sociedad Latino Americana de Radiologia Pediatrica, this message is going global.

We can look parents in the eye and tell them all these organizations have come together to promote the best care for their child. This may mean their child undergoes a CT



Marilyn J. Goske, M.D.

scan to diagnose a life-threatening illness or has a repeat X-ray, if indicated, but with the assurance that the lowest dose will be used that still ensures an accurate diagnosis. The key is also working with pediatricians—represented in the alliance by the American Academy of Pediatrics—to ensure each imaging test is the right exam for our pediatric patients.

CT scanning saves lives, but when you image, image gently.

Marilyn J. Goske, M.D., is Silverman Chair for Radiology Education at Cincinnati Children's Hospital Medical Center and chair of the board of trustees for the Society for Pediatric Radiology (SPR). An SPR past-president, Dr. Goske helped establish the “Image Gently” campaign.

■ A feature article about the latest efforts to reduce radiation dose, particularly in children, appears on Page 8.

My Turn
ONE RADIOLOGIST'S VIEW

image gently™



RSNA Board of Directors Report

AT ITS June meeting, the RSNA Board of Directors reviewed and approved the 2008-2009 budget, which includes financial resources for new projects as well as for the Society's general operating expenses. The annual report on the Society's finances will be presented during RSNA 2008.

Anticipation Builds for RSNA 2008

The Society continues preparations for its 94th Scientific Assembly and Annual Meeting. The 2008 *RSNA Meeting Program* will be dedicated to the memory of renowned physicist, inventor, educator, businessman and philanthropist, **Harvey Picker, M.B.A.** More information about Picker can be found on Page 1.

RSNA welcomes the **International Society of Radiographers and Radiologic Technologists** to the Associated Sciences Consortium this year. The consortium, which now includes 11 organizations, coordinates the Associated Sciences Program at the annual meeting. The RSNA 2008 program kicks off with a two-part series, "Radiation Dose: Are We at Crisis?"

Also to be held during RSNA 2008 is the **Introduction to Research for International Young Academics** program, a special seminar that encourages young radiologists from countries outside North America to pursue careers in academic radiology. Sixteen participants have been selected for this year's program.

At the conclusion of RSNA 2008, **Jack E. Price** will become chair of the RSNA Research & Education Board of Trustees. Price, who will serve as chair for two years, succeeds Anne G. Osborn, M.D.

Publications Welcome Changes

New personnel are helping RSNA publications evolve in their mission to advance radiologic science and education. The Board was pleased to appoint **Deborah Levine, M.D.**, as a senior deputy editor of *Radiology*. Dr. Levine is director of obstetric and gynecologic ultrasound and co-chief of ultrasound at Beth Israel Deaconess Medical Center in Boston and associate chief for academic affairs and an associate professor of radiology at Harvard Medical School.

The 2008 William R. Eyer Editorial Fellow is **Andrew R. Forauer, M.D.**, of Lebanon, N.H. The 2008 Trainee Editorial Fellow is **Dino P. Massoglia, M.D.**, of Baltimore. For more information about these fellows, see Page 1.

In keeping with its efforts to be an environmentally friendly society, RSNA will allow readers of *RSNA News* to "opt out" of the print version and access the magazine online only. More details will be provided in upcoming issues of *RSNA News*.

Collaborative Efforts Grow

The Board approved a number of initiatives that will see RSNA collaborating with other organizations to promote radiologic education and research. With the American Board of Radiology (ABR), RSNA will **jointly sponsor CME** activities, including workshops and didactic sessions. These activities center on development of the ABR exam.

RSNA will work with the American College of Radiology on various measures to assist in the **rebuilding of radiology in Iraq**.

RSNA continues to expand its educational efforts. As part of its program



Hedvig Hricak, M.D., Ph.D., Dr. h.c.
Chairman, 2008 RSNA Board of Directors

on patient-centered radiology, the RSNA Public Information Committee (PIC) will sponsor a workshop to equip interested radiologists with the resources to conduct educational sessions on physician-patient communication. The prototype for these sessions is the PIC's refresher course, "**Patient-Centered Radiology: Use It or Lose It.**"

HEDVIG HRICAK, M.D., PH.D., DR. H.C.
CHAIRMAN, 2008 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 September 2008.

Forensic Imaging Bolstered by New Technology, Techniques

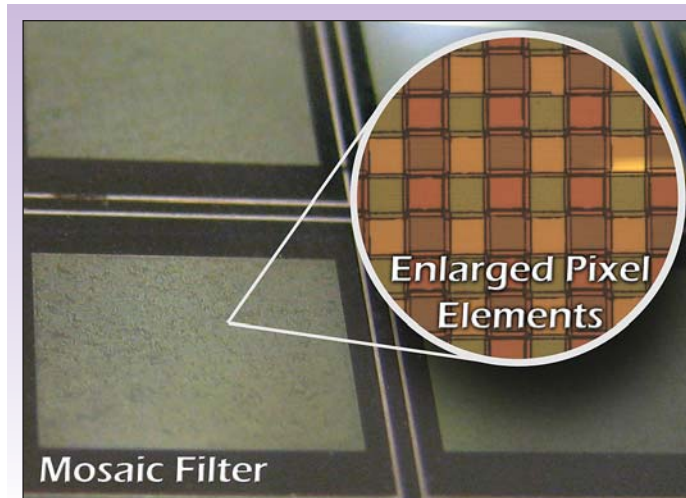
FORENSIC IMAGING continues to emerge as a subspecialty within radiology, with researchers in the U.S. and abroad reporting new technological developments and comparison techniques. These advances come as RSNA plans another refresher course in forensic imaging for RSNA 2008.

Postmortem Angiography Better with Mixed Contrast Media

Swiss researchers report the mixture of a water-soluble contrast medium and polyethylene glycol offers clearly superior quality over oily contrast medium and paraffin in postmortem whole-body CT angiography.

The researchers compared two different contrast media solutions—a lipophilic mixture consisting of lipiodol and paraffin oil and a hydrophilic mixture consisting of iohexol and polyethylene glycol. Performing minimally invasive postmortem CT angiography on 10 human cadavers via access to the femoral blood vessels, the researchers used a modified heart-lung machine for the pressure-controlled separate injection of contrast media in the arterial/venous system. Imaging was performed with a 6-slice CT scanner. The study results were reported in the May 2008 issue of the *American Journal of Roentgenology*.

“Our study showed a significant advantage in the group injected with the hydrophilic contrast mixture in postmortem angiography,” said lead author Steffen Ross, M.D., of the Center for Forensic Imaging and Virtopsy in the Institute of Forensic Medicine at



Researchers at the Georgia Institute of Technology developed this narrowband filter mosaic, which could empower front-line clinicians to detect and assess the severity of bruises and erythema in real time.

the University of Bern, Switzerland.

“Contrary to the group injected with the lipophilic contrast mixture, no unwanted extravasation through the gastrointestinal tract was seen,” said Dr. Ross. “The fast parenchymal diffusion of the small iohexol molecules allowed a separate imaging of the arterial and venous system and gained good parenchymal enhancement of organs. Indeed, the quality of the images and the scope of detectable lesions surpassed our greatest expectations.”

I think the future of radiology and clinical and forensic pathology will become increasingly entwined.

Steffen Ross, M.D.

The study highlights the possibilities of minimally invasive postmortem CTA in an enormously important area of clinical and forensic pathology, opening the door to completely new diagnostic opportunities, said Dr. Ross.

“Postmortem CTA has, in combination with CT-guided biopsy, the great potential to establish a whole new way of postmortem examination in a minimally invasive and examiner-independent manner,” Dr. Ross said.

“The close collaboration of radiologists and pathologists essentially permits a maximum of diagnostic accuracy.

“I think the future of radiology and clinical and forensic pathology will become increasingly entwined, perhaps giving rise to the future specialty of ‘forensic radiology’ or ‘radiologic pathology,’” Dr. Ross concluded.

Multispectral Imaging Goes Beyond What Eye Can See

Researchers at the Georgia Institute of Technology have developed the narrowband filter mosaic, a single-exposure imaging aid that could empower front-line clinicians to detect and assess the severity of bruises and erythema in real time, regardless of the patient’s pigmentation or the available lighting.

“This mosaic represents an opportunity to create a series of hand-held, simple, point-of-care devices that can provide optical contrasting of dermatologic conditions for use in radiology,” said Stephen Sprigle, Ph.D., a professor of industrial design and applied physiology and director of Georgia Tech’s Center for Assistive Technology and Environmental Access (CATEA).

“The mosaic gives a near real-time multispectral image that should have applications in a lot of environments, whether it’s at a crime scene or an autopsy room, or within a clinic or hospital,” added Dr. Sprigle.

CATEA personnel developed the narrowband filter mosaic as part of a project to design portable erythema and bruise detection technology with a goal of enhancing early prevention and diagnosis of pressure ulcers.

“Erythema and bruising were our targets in point-of-care technology,” said Dr. Sprigle. “Erythema is a marker of incipient pressure ulcer development. The localized redness indicates the skin has been under some kind of distress and has become ischemic.”

The researchers initially focused on people with dark skin, on whom erythema and bruising can be difficult to detect. The important visual indicators are masked by melanin in the skin.

“You want to image the skin well, and if you use a multispectral approach you’re not just recreating what the human eye sees—you’re augmenting what the human eye sees through contrasting,” Dr. Sprigle explained. “Enhancing that contrast hopefully will allow clinicians to detect bruises that they might have missed.”

With the mosaic, clinicians could also document changes in a bruise over time in a much more repeatable way and describe a bruise much better than can be done visually.

The challenge, said the researchers, was to design a simple, fairly affordable device that would supply answers rapidly. “Clinicians aren’t going to be able to take images and post-process them,” Dr. Sprigle said. “They need to take images and get the answer pretty quickly.”

The novel custom filter mosaic was designed and fabricated using lithography and vacuum multilayer film technologies. It incorporates four different wavelengths within the visual to near-infrared range, each having a narrow bandwidth. The design permits acquisition of a multispectral image in a single



ON THE COVER
Volume rendering of cranial CT after arterial injection of contrast medium in a 50-year-old female.

Widespread intraventricular extravasation (arrows) of contrast medium. Bleeding source was located on the bottom of the anterior right lateral ventricle. Subsequent neuropathologic examination revealed the rupture of a 2 mm intraparenchymal aneurysm of the anterior communicating artery.

Image courtesy of Steffen Ross, M.D.

exposure. The mosaic is configured to be compatible with existing complementary metal-oxide-semiconductor (CMOS) sensors.

RSNA 2008 Course Utilizes Real-World Examples

A course in forensic imaging was offered at the RSNA annual meeting for the first time last year and will be presented once again at RSNA 2008.

“The goal of the course is to introduce the concept of using primarily CT—and, to a lesser extent, MR and sonography—in postmortem imaging,” said course presenter Angela D. Levy, M.D., COL MC, U.S. Army, and an associate professor of radiology at the Uniformed Services University in Bethesda, Md.

The presenters will illustrate for the audience how effective imaging is when used in conjunction with autopsy, describing different applications and death scenarios in which it has proven to be particularly useful.

“In our experience, imaging is most useful in deaths from penetrating and blunt trauma,” said Dr. Levy. “But it is also useful in fire deaths and to screen the body prior to autopsy in nontraumatic deaths.

“Advanced imaging is very useful in determining cause of death,” Dr. Levy continued. “It’s a field that I think has tremendous potential and room to grow within radiology as well as within forensic medicine.” □

Learn More

- The abstract for “Postmortem Whole-Body CT Angiography: Evaluation of Two Contrast Media Solutions,” published in the May 2008 issue of the *American Journal of Roentgenology*, is available online at www.ajronline.org/cgi/content/abstract/190/5/1380.
- More information about the Center for Assistive Technology and Environmental Access at the Georgia Institute of Technology is available at www.catea.gatech.edu.

Forensic Imaging at RSNA 2008

THE “Forensic Imaging” refresher course (RC 224) will be led by Angela D. Levy, M.D., COL MC, U.S. Army, Howard T. Harcke, M.D., and Barry D. Daly, M.D. To be addressed:

- Current status and utility of MDCT and MR imaging in autopsy and death investigation
- Interaction between the radiologist and medical examiner
- Application of MDCT and MR imaging in the evaluation of perforating and penetrating projectile injury, blunt force trauma and severe burns
- Evolving use of sonography in forensic investigation
- Role of imaging in limited or noninvasive autopsy
- Future applications of forensic imaging

Enrollment for this and all RSNA 2008 courses is under way at RSNA2008.RSNA.org.



RSNA2008
Personal Learning in the
Global Community



Angela D. Levy, M.D., COL MC
U.S. Army/Uniformed Services University

Pediatric Radiologists Thrust Radiation Safety into Spotlight

WHILE radiologists have long been vigilant about radiation dose, recent outreach by the pediatric radiology subspecialty has inspired the strongest directives yet for professional organizations and industry.

Adult patients generally trust that the benefits of CT scanning outweigh the risks of their own radiation exposure, but parents tend to ask more questions about the increased risk to their children, said Robert K. Zeman, M.D., professor and chair of radiology and radiation oncology at George Washington University Medical Center in Washington.

“Many of us who practice adult radiology had concerns about dose,” Dr. Zeman said. “But it is our pediatric radiology colleagues that have really mobilized industry and our professional organizations to take action.”

Pediatrics Well Positioned as Leader

Pediatric radiologists have naturally emerged as some of the key figures in radiation dose management, as many are old hands at techniques to reduce their young patients’ exposure. Donald P. Frush, M.D., and his colleagues at Duke University Medical Center now use scanners that incorporate the Broselow-Luten pediatric color-coded system, which assigns one of nine dosage zones based on the height and weight of the child.

“They’re the same zones used for medications, fluids and equipment like endotracheal tubes,” said Dr. Frush, chief of the division of pediatric radiol-

ogy. GE Healthcare liked the idea, he said, and obtained permission from Broselow-Luten to use the same color zones in their CT scanners.

“The technologists really like the built-in protocols,” said Dr. Frush. “There’s no magic here, really—just a way to build protocols directly into the scanners so the appropriate amount of radiation is given to kids of varying sizes.”

The idea that CT is a wonderful modality for specific problems—and if the exam is necessary, do it with the lowest radiation dose possible—is on the mind of all radiologists, said Marilyn Goske, M.D., Silverman Chair for Radiology Education at Cincinnati Children’s Hospital Medical Center and past chair of the board of trustees for the Society for Pediatric Radiology (SPR). As SPR past-president, Dr.

There’s no single dose in any examination that’s going to be appropriate for all individuals. The best we can do is establish maximum and minimum dose.”

Donald P. Frush, M.D.

Goske helped establish Image Gently, along with Dr. Frush and a steering committee from the American Society of Radiologic Technologists, American Association of Physicists in Medicine and American College of Radiology. The pediatrics-focused campaign is gaining attention with a simple message, said Dr. Goske: “When CT is the right thing to do, child size the kVp and mA. One scan (single phase) is often enough, and scan only the indicated area.”



Donald P. Frush, M.D.
Duke University Medical Center



Robert K. Zeman, M.D.
George Washington University Medical Center

Photo by Jessica Lampas

Manufacturers Follow Suit

Manufacturers are becoming acutely mindful of radiologists’ demand for conscientious imaging, said Drs. Goske and Frush. “All the major vendors now include radiation dose safety issues in their marketing platforms,” said Dr. Frush. “Focus is turning to creating more efficient detector technology to increase image quality.”

Added Dr. Goske, “Radiation dose has caught the attention of manufacturers not only because it’s the right thing to do, but also because it sets them apart from their competitors.”

In addition to manufacturers, Dr. Frush said that in recent years he has been pleased to see colleagues taking an active interest in dose reduction. “I see that when we get studies from other institutions now, they’re tending to use much lower doses than they did seven or eight years ago,” he said. “Before that, kids were scanned at the same settings as adults.”

Since launching the Image Gently campaign, the Alliance for Radiation Safety in Pediatric Imaging has assembled 23 member organizations and

more than 1,300 individuals have taken the Image Gently Pledge. “The organizations represent about half a million radiology professionals,” Dr. Goske said. “We have now gone international, with member organizations not only in the U.S. but beyond our borders.” (For more information about the Image Gently campaign, see Dr. Goske’s My Turn column on Page 4.)

ACR facility accreditation and other similar programs provide an incentive for dose reduction, and industry and regulatory agencies are also taking note, said Dr. Frush. He added that the U.S. Food and Drug Administration (FDA) and the National Imagery and Mapping Agency (NIMA) are calling for more consistent dose estimates, recording and archiving estimates. “The Alliance’s Vendor Summit will try to come to terms with how to do this,” he said.

Vendor Summit Seen as Pivotal

The Image Gently Vendor Summit, scheduled for Aug. 20 at Cincinnati Children’s Hospital, will include representatives of major CT manufacturers, Image Gently organizations, the FDA and the Medical Imaging and Technology Alliance, a division of the National Electrical Manufacturers Association. The goal of the summit is to encourage manufacturers to develop products with radiation dose in mind and also incorporate the campaign’s message into their training programs and installation procedures.

Radiologists warn, however, against expecting uniform standards for all dosage protocols—neither the equipment nor the operating guidelines will give radiologists a magic number. “There’s not going to be a single way that all the scanners work—it’s just not the nature of entrepreneurship,” said Dr. Frush. “And there’s no single dose in any examination that’s going to be appropriate for all individuals. The best we can do is establish maximum and minimum dose.”

Added James H. Thrall, M.D., radiologist-in-chief at Massachusetts Gen-



Supporters of the pediatrics-focused Image Gently campaign are promoting a simple message: When CT is the right thing to do, child size the peak kilovoltage (kVP) and milliamperes (mA). Remember that one scan (single phase) is often enough and scan only the indicated area. More information about Image Gently is available at www.imagegently.org.

eral Hospital and chair of the American College of Radiology (ACR) board of trustees, “How low one can go is partly up to the person who must interpret the images. We will not have uniform agreement.”

Individuals Must Seize Dose Reduction Opportunities

Ultimately the radiologist must decide in his or her own practice what constitutes a diagnostic quality exam, said Dr. Zeman. “There is, however, considerable ‘low hanging fruit,’ in terms of opportunities to reduce dose,” he said. “Those opportunities do not revolve

solely around reducing mAs.

“Radiology practices should closely look at their CT protocols and consider using automatic dose reduction on all exams, more aggressively on exams that are unlikely to harbor subtle low contrast lesions,” Dr. Zeman continued. “A weight-based patient dose nomogram is another effective tool for limiting dose. Practices should not automatically use the thinnest sections allowed on a particular scanner, but rather use slightly thicker sections which will decrease image noise and allow for lower doses. Using pitches of greater

Continued on Page 11

Learn More

- For more information about the Image Gently campaign and the Aug. 20 vendor summit, contact Jennifer Boylan, executive director of the Society for Pediatric Radiology, at jboylan@acr.org.
- Resources are available online for radiologists seeking radiation dose guidelines:
 - American College of Radiology—the White Paper on Radiation Dose in Medicine is available at www.acr.org. Click Radiation Safety under Hot Topics.
 - Image Gently Campaign—imagegently.org offers downloadable tools including a pediatric CT protocol guide and worksheet.
 - *RadiologyInfo.org*—the RSNA-ACR public information Web site provides simple, patient-oriented language about radiation safety.

Radiation Dose at RSNA 2008

“Contemporary Topics—Radiation Safety in CT” is the focus of the Friday Imaging Symposium to be held during RSNA 2008. Moderated by Lane F. Donnelly, M.D., this session will present epidemiologic evidence related to cancer risk and radiation dose. Also discussed will be current and future clinical and educational tools that can be used to minimize radiation dose from CT in children. Register for RSNA 2008 at RSNA2008.RSNA.org.



RSNA2008
Personal Learning in the
Global Community

E-Mentoring Program Offers Real-Time Global Radiology Education

WHILE MUCH has been made of how computers have facilitated radiologists' work of diagnosis and treatment, a new RSNA international e-mentoring program has seized upon technology as a way to connect—in real time—radiology educators with students half a world away.

Senior mentor William Brant, M.D., a professor of radiology at the University of Virginia, kicked off the program by visiting Nairobi, Kenya, last October to meet 17 first- and second-year radiology residents at Aga Khan University and assess their curriculum and needs. He then spent many hours over the next six months discussing—via Webcam—image-based case studies with the residents. He also built Webinars, developed teaching files and encouraged the residents to keep practice logs and participate in a discussion board and weekly face-to-face meetings with their fellow students.

A major goal of the program, said Dr. Brant, was to have an international radiology mentoring structure with the ability to develop and apply evidence-based practices in radiology.

The residents in east central Africa weren't the only ones learning something during the process, he added.

"The same way that I can challenge them with cases, they can provide me with cases that I can use to challenge my residents here," said Dr. Brant. "They sent me some great cases of tropical diseases and other things that people may have heard of in medical school, but you don't see in the U.S. That's a fascinating part of the exchange. They



William Brant, M.D., center, served as senior mentor of an e-mentoring program for radiology residents at Aga Khan University in Nairobi, Kenya. The residents said they especially appreciated how the program encouraged them to discuss various cases among themselves. Pictured, from left, are Drs. Brian Bwombuna, Twahirwa Nebayosi, Joyce Sande, Peter Chacha, Sheila Waa and Ruth Wanjohi.

have a lot more cases of tuberculosis and with far different manifestations than what we have in the U.S."

Another goal of the program, he said, was to develop the residents as a "community of learners," meaning that they can teach each other. "I would send the residents on a weekly basis a series of challenging cases as unknowns," said Dr. Brant. "Since I had been there, I knew what they could see or recognize. I'd send one case per resident and then they would meet and discuss their cases. I would challenge them with questions and tried to give them cases they had not seen before."

William Brant, M.D.

RSNA plans to continue to refine the e-mentoring program and expand it to training institutions in other geographic regions.

RSNA was assisted in planning and executing the e-mentoring project

by John Parboosingh, M.B.Ch.B., F.R.C.S.C., F.R.C.O.G., a professor emeritus at the University of Calgary and a community learning consultant. "RSNA's e-mentoring project highlights two recent advances in postgraduate education," said Dr. Parboosingh. "First, collaborative learning, an essential component of lifelong learning, can be explicitly fostered and evaluated through resident communities of learners. Second, technology enables residents to benefit from expert teachers and role models from other programs and countries.

"Enthusiasm, dedication and flexibility of all stakeholders are pivotal to the success of a program of this nature," Dr. Parboosingh continued. "But most important, RSNA has provided the leadership to enable these advances in medical education to be explored."

Nairobi Hospital Well-Equipped

Dr. Brant, assisted by Aga Khan University radiology professor Jeffrey Rees M.B.Ch.B., D.M.R.D., L.M.C.C.,

F.R.C.P.C., F.R.C.R., program coordinator Timona Obura, M.B.Ch.B., M.Med., and a few other radiology faculty members, uploaded the cases to a Web site from which the residents could download the cases to their computers.

After three initial weekly sessions, Dr. Brant talked to the residents live online once a month for two hours, using a commercial program that allowed him to share his desktop with the students. "We were able to discuss the cases live and the delay was less than a second, so that was not bad," said Dr. Brant.

While many government hospitals in Africa are very poor and lacking equipment, Dr. Brant noted that Aga Khan is fairly well-funded. "It has been there for a long time and in the past five years they have decided to make post-graduate education one of the functions of the hospital, with the hopes that it leads to a medical school," he said. "I think this hospital will be a good training ground for more radiologists to work in Kenya."

Dr. Brant added that Aga Khan has most of the same equipment as he has available at the University of Virginia, something very important to the program. "They had top notch ultrasound, state-of-the-art MR and a multislice CT scanner," said Dr. Brant. "Their biggest deficiency was plain radiography, believe it or not."

The University of Virginia's radiology department currently has three to four times as many clinical faculty and residents as Aga Khan. "We have many

more people with subspecialties, and for that reason we hoped this program would supplement their onsite learning by expanding their exposure to more cases and more subspecialty radiology," said Dr. Brant.

Joyce Sande, M.D., one of residents involved in the e-learning project, said exposure to a "spectrum of pathology" was one of the main reasons the program was a success. "While we do see a lot of normal exams, which is still of use, the experience we got from the sessions built our confidence in terms of conditions that we may face in the future," Dr. Sande said.

Program Prompts Discussion Among Residents

Residents said the program benefited them in other ways as well. "The way in which it was run encouraged us to discuss various cases together," said Dr. Sande. "In doing this, we were able to enhance each others' strengths and minimize weaknesses. This is especially so because during the discussions different points were raised by different residents such that at the end of a discussion, we all had made fullest use of each case."

Dr. Brant, who traveled to see the residents in person again in mid-June, said he believes that "everyone involved considers this program a great venture," but notes there initially might have been some hesitation on the part of the Aga Khan residents.

"I think at first they thought they may be guinea pigs of a sort, since this

is a pilot, but ultimately the residents felt that this program was very beneficial," he said.

While RSNA has over the years supported a lot of international education, he said, the e-mentoring program creates a "real-time" opportunity for supplementing education in developing countries, said Dr. Brant.

"A lot of faculty can participate and assist programs in developing countries at a much lower cost," he said. "We can therefore have a continuing relationship that can really develop over the years."

S.M. Faisal Mosharraf, M.B.B.S., who supervised the e-mentoring sessions and facilitated discussion on the Aga Khan end, praised the project as novel and innovative but said there is room from improvement. Residents learned from the sessions, he said, however more must be done to encourage them to apply their new knowledge to their day-to-day work.

"I think we have to further think and bring some innovative ideas to make the project a complete success," said Dr. Mosharraf.

Dr. Sande said she would recommend the program to other residents.

"It has helped in my studies by giving me guidelines on how to approach self-directed learning, and the time taken to explain the cases has give us a strong foundation because it will be difficult to forget what was learned," she said. "When you understand why certain pathology occurs and why it appears as it does, the memory is grounded deeper." □

Pediatric Radiologists Thrust Radiation Safety into Spotlight

Continued from Page 9

than one is a great way to reduce dose while reducing scan times."

One of the simplest ways to cut dose, Drs. Zeman and Goske point out, remains the same—scanning only the necessary area. "For example, if you have a child who has chronic hip dislocation, has had surgery to reduce the hip and is in a cast, the only way to look

through the cast to see the hip is with a CT scan," said Dr. Goske. "However, we only need to see gross anatomy, so we can bring the dose way down and do a very short spiral, maybe 3 centimeters. The referring doctor may order a scan of the pelvis, but we don't need the whole pelvis. We just need a couple of centimeters through the hip joint.

"The third phase of the Image Gen-

tly will be reaching out to parents," Dr. Goske continued. "But we must first remind radiologists, radiology technologists and physicists, and then referring physicians."

Added Dr. Zeman, "We are not currently positioned to be the gatekeepers of the entire referral process, but we can be the gatekeepers of patient dose." □

New MR Imaging Method Capitalizes on Temperature to Improve Sensitivity

PUTTING A series of nuclear magnetic resonance (NMR) techniques to use, researchers at the U.S. Department of Energy's Lawrence Berkeley National Laboratory have developed a new MR imaging process. Using something called temperature-controlled molecular depolarization gates, the process quickly creates more selective and sensitive MR images.

Leif Schröder, Ph.D., led the team, that included personnel in the labs of Alexander Pines, Ph.D., and David Wemmer, Ph.D., at Berkeley Lab and the University of California, Berkeley. The research sprung from the use of xenon in NMR to image void spaces such as lung areas. The spin of xenon's nuclei, like other noble gases, is easily polarized, making the gas useful in NMR imaging—when the xenon is depolarized with a burst of radiofrequency energy, the depolarized xenon stands out and enhances contrast.

Since Drs. Pines and Wemmer and colleagues published results of the use of xenon as a biosensor in 2001, xenon lung imaging has made its way into clinical applications. Drs. Pines and Wemmer developed a process of “caging” the xenon atoms in so-called biosensors—constructs containing a targeting unit and molecular cages known as cryptophanes. These biosensors can then be attuned and sent to find specific molecules of interest.

In 2006, Dr. Schröder's team found a way to boost the signal from the

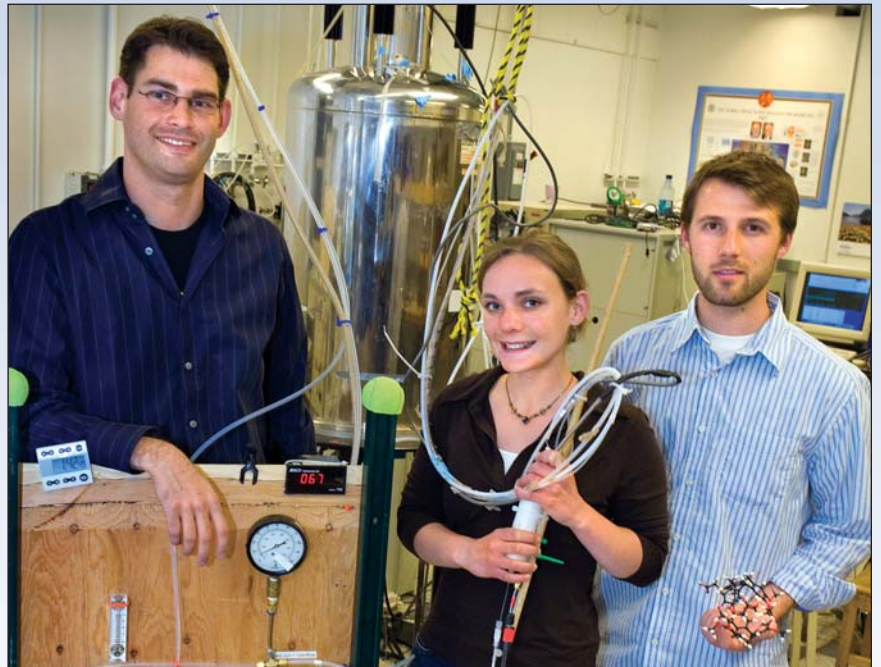
The goal is to make MR imaging more compatible with the sensitivity of PET or SPECT.

Leif Schröder, Ph.D.

hyperpolarized xenon atoms inside the biosensor cages. This new technique, called hyperpolarized xenon chemical exchange saturation transfer (HYPER-CEST), allows for a much stronger signal that creates images much more quickly. Meanwhile, the flexible nature of the cryptophane biosensors could allow imagers to “multiplex” and simultaneously seek out and highlight several different types of targets.

“As always, sensitivity is a big issue in NMR/MR imaging,” said Dr. Schröder. “If you work with small

concentrations of the biosensor as your contrast agent—and this is the case in realistic applications—there is only a small amount of xenon directly associated with the molecular cages. We had to come up with an indirect detection method. The goal is to make MR imaging more compatible with the sensitivity of positron emission tomography (PET) or single photon emission computed tomography (SPECT)—for example, combining molecular information from new contrast agents like the xenon biosensor with all the nice advantages MR imaging has over the other radiotracer methods.”



Leif Schröder, Ph.D. (left), and graduate students Monica Smith and Tyler Meldrum at Lawrence Berkeley National Laboratory have developed a new MR imaging process that uses temperature-controlled molecular depolarization gates to quickly create more selective and sensitive MR images.

Temperature Shift Has Big Impact

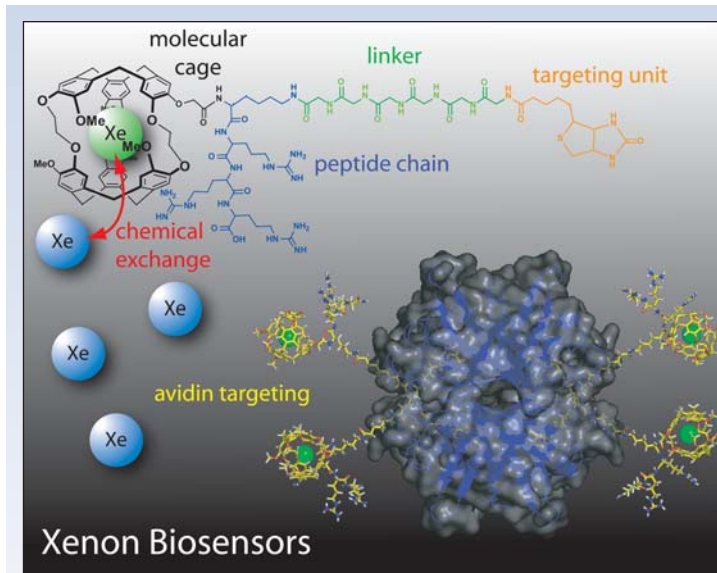
HYPER-CEST MR imaging had only been tested at room temperature until this past year, when the team was able to develop a HYPER-CEST process that also worked at body temperature—an upward temperature shift that drastically changes how the xenon atom reacts with the cryptophane cage.

“Even with HYPER-CEST, we saw the need for further improvement and started studying the impact of increased temperature, which works in our favor,” said Dr. Schröder. “It dramatically increases the sensitivity of the HYPER-CEST process and we are optimistic for applications with physiologically relevant temperatures.”

The temperature-controlled molecular depolarization acts as “a kind of control mechanism to optimize the contrast generated by HYPER-CEST,” said Dr. Schröder. “The temperature effect is useful to improve sensitivity at body temperature, so we are optimistic that this will cancel out some other problems that we might face for in vivo applications,” he said. “On the other hand, it might be a promising technique to monitor sites of inflammation with increased body temperature.”

The overall result is not just faster, sharper, more specific MR imaging, but the possibility of more closely examining chemical exchanges in nanostructures and other varied applications across different research fields.

“Temperature-controlled molecular depolarization is not going to change the way that MR imaging is used,” said team member Monica Smith, a graduate student in the Wemmer lab. “However, the sensitivity to changes in temperature achievable with this method shows promise for clinical applications, such as detecting ‘hot’ atherosclerotic plaques.” Smith went on to note that “HYPER-CEST, and by extension temperature-controlled molecular depolarization, is a method that can either be used as a spectroscopic technique or it can incorporate the encoding mechanisms of MR imaging to provide



Leif Schröder, Ph.D., and colleagues use this graphic to illustrate hyperpolarized xenon chemical exchange saturation transfer (HYPER-CEST). Xenon biosensors link a molecular cage to a targeting unit for specific sensing of biochemical target (in this case the biosensor can bind to avidin through biotin). Atomic xenon is trapped temporarily inside the cage and can transfer the information from the biosensor into the pool of free xenon. This process becomes more sensitive at higher temperatures.

spatially resolved spectroscopic information.”

Numerous Experiments Under Way

HYPER-CEST will be an additional tool to provide molecular imaging information with a high sensitivity, said Dr. Schröder. “The spatial resolution will probably not be as good as on modern scanners for proton imaging, but it will most likely reach into a new dimension of sensitivity and should close the sensitivity gap between MR imaging and PET/SPECT,” he said.

While Dr. Schröder was unwilling to guess at a possible timeline for clinical application of HYPER-CEST MR imaging, his team is moving forward with preliminary animal experiments this year. Smith added that the team plans to conduct more clinically relevant experiments.

Dr. Schröder also noted that, from the chemical side, researchers in the Wemmer group are working on new sensors with more biochemical relevance—for use, for example, in studies addressing heart and vascular disease.

“On the detection side, we are working on implementation of bioreac-

tors into our NMR setup to run experiments on living cells, such as for detection on tissue samples,” continued Dr. Schröder. “Other challenges are the limited lifetime of the hyperpolarization. We are currently working on a setup to deliver xenon to so called bioreactors with suspensions of living cells.” □

MR Imaging at RSNA 2008

“The Categorical Course in Diagnostic Radiology Physics: CT and MR Imaging” includes a session on MR Safety on Wednesday morning. Co-directed by Willi A. Kalender, Ph.D., and Edward F. Jackson, Ph.D., this session will detail the American College of Radiology 2007 White Paper on MR Safety and address MR and implanted devices and high field, radiofrequency and gradient safety. Enrollment is under way for this and all RSNA 2008 courses at RSNA2008.RSNA.org.



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Chicago Events and Attractions Sparkle During RSNA 2008

IN THE WINTER MONTHS, Chicago shines as an arts destination. From music performances to live theater, Chicago becomes a magical city, offering something for everyone attending RSNA 2008. In some cases, such as the opera and popular theater performances, it is recommended that tickets be purchased in advance.

RSNA Tours & Events

RSNA is sponsoring a series of tours and events during RSNA 2008. The RSNA Tours & Events brochure is available at RSNA2008.RSNA.org. Click Tours & City Events in the left-hand column.

Please look for the **RSNA TOUR** icon next to event listings in this article, signifying that a pre-arranged RSNA package is available. Enroll for tours and events online when registering for the annual meeting or while adding courses.



Art Institute of Chicago

THE Art Institute's world-renowned permanent collection includes a noteworthy exhibition of surrealist paintings and Impressionist art. This winter, a special exhibit highlights the Art Institute's unequalled tapestry collection featuring 15th through 18th century masterpieces. Accompanying the exhibition is an illustrated catalog noting recent discoveries made by scholars during the conservation process the tapestries underwent in Belgium. A second exhibit, *Henri Cartier-Bresson and the*

Art and Photography of Paris, celebrates Paris in the late 1920s. Cartier-Bresson's photojournalistic works will be displayed along with art representative of the time period, including Giorgio de Chirico, Henri Matisse, Piet Mondrian, Pablo Picasso and other photographers of the period.

- 111 S. Michigan Ave.
- Tickets: 1-312-930-4040
- www.artic.edu
- www.ticketmaster.com



Field Museum

WHILE visiting The Field Museum, say hello to Sue, the largest, most complete and best preserved *Tyrannosaurus rex* fossil ever discovered. Sue is only one of the many noteworthy specimens in the Field's permanent collection. The *Evolving Planet* exhibit explores 4 billion years of evolution, allowing visitors to touch a real dinosaur bone and the teeth of a mastodon and a woolly mammoth. Families may be interested in the new Crown Family Play Lab for children, which features interactive exhibits exploring science, anthropology, technology, nature, art and music, complete with a soundproof drum room.

Special exhibits include *Nature Unleashed: Inside Natural Disasters*, which provides a visually stunning look at the forces that create earth-



Mount St. Helens Eruption

The eruption of Mount St. Helens on July 22, 1980, showing an elutriate cloud from pyroclastic flow rising through cloud layer. The eruption is featured in the special exhibit, *Nature Unleashed: Inside Natural Disasters*.

quakes, hurricanes, tornadoes and volcanoes. Aztec World, examining the Aztecs through artifacts and works of art, explores an enigmatic civilization that bloomed and flourished for a brief 200 years.

- 1400 S. Lake Shore Dr.
- 1-312-922-9410
- www.fnmh.org

Smith Museum of Stained Glass Windows

LOCATED on the east end of Navy Pier, this free museum houses the nation's largest permanent collection of Tiffany stained glass windows. This tranquil exhibit offers a wonderful repose from the recreational chaos of Navy Pier. The museum has more than 150 stained glass works—some dating

back to the 1890s—by artists including John LaFarge, Louis Sullivan, Louis Comfort Tiffany, Frank Lloyd Wright, Franz Mayer and F.X. Zettler. Free public tours are offered most Thursdays at 2 p.m.

■ 600 E. Grand Ave.
1-312-595-5024

Shedd Aquarium

THE aquarium is home to aquatic life from around the world, with a special emphasis on crowd favorites such as sharks—*The Wild Reef* offers one of the most diverse displays of sharks in North America. Visitors can also enjoy seahorses, otters, seals, dolphins, penguins and Chicago's treasured Beluga

whales. The Shedd, a principal part of the Museum Campus, is a tasteful blend of contemporary and 1930s architecture situated on the shore of Lake Michigan.

■ 1200 S. Lake Shore Dr.
1-312-939-2438
www.sheddnet.org

Adler Planetarium

PLANETARIUM visitors now can view the newly restored Gemini 12 spacecraft in the *Shoot for the Moon* exhibit, where cutting-edge technology helps tell the story of America's part in the space race. Planetarium shows play continuously throughout the day in two theaters.

The StarRider Theater provides a virtual reality experience, while the Sky Theater depicts stars and other nighttime wonders projected on Adler's distinctive dome. The Adler Planetarium is located on a scenic section of the Museum Campus jutting into Lake Michigan.

■ 1300 S. Lake Shore Dr.
1-312-922-7827
www.adlerplanetarium.org



This fully restored Gemini 12 spacecraft is part of the *Shoot for the Moon* exhibit.

Photo: Diane Alexander White



Chicago's scenic Museum Campus, situated along the shores of Lake Michigan, is home to the Shedd Aquarium, Field Museum, Adler Planetarium and Soldier Field.

Museum of Contemporary Art

The MCA's three special exhibits promise an interesting experience this winter. *St. Cecilia* is a survey of the art of Chicago multimedia artist Joseph Grigley, who works with sculpture, sound and video to emphasize the "wit involved in miscommunication." *Jenny Holzer* features her work in various media from the past two decades. This is a rare U.S. show for Holzer, who has exhibited almost exclusively in Europe since the 1970s. Twentieth century artist Alexander Calder's work holds a place in many hearts with his colorful mobiles and stabiles. *Alexander Calder in Focus* is a small exhibit of his works from 1927 to 1968.

The MCA's permanent collection represents trends in art after 1945, with a special emphasis on Surrealism (1940s and 1950s), Minimalism (1960s), conceptual art and photography (1960s to the present), installation art and art by local artists. The collection includes paintings, sculpture, photography, video, film and installations.

■ 220 E. Chicago Ave.
1-312-280-2660
www.mcachicago.org

Peggy Notebaert Nature Museum

Perched on the edge of a Lincoln Park lagoon, this Chicago museum welcomes children of all ages to explore nature in unusual and innovative ways. Notebaert visitors both young and old love the majestic beauty of the Butterfly Haven. Other permanent exhibits include the Look-in Animal Lab, Extreme Green House, Mysteries of the Marsh, RiverWorks, Water Lab, Wilderness Walk and Hands on Habitat for visitors age seven and younger.

■ 2430 N. Cannon Dr.
1-773-755-5100
www.chias.org

Chicago History Museum

The Society has created an urban museum, which presents the fascinating multicultural heritage of the region in creative, up-to-date exhibits. Check the Web site for neighborhood tours, lectures, performances and events.

■ 1601 N. Clark St.
1-312-642-4600
www.chicagohs.org

Lincoln Park Conservatory

A tropical oasis features greenery from around the world. Seasonal features include a Christmas show in December.

■ 2391 N. Stockton Dr.
1-312-742-7736

Garfield Park Conservatory

A holiday flower show is presented by the Garfield Park Conservatory, which was built in 1907. The conservatory was designed by architect Jens Jensen and is one of the world's largest gardens under glass.

■ 300 N. Central Park Ave.
1-312-746-5100
www.garfield-conservatory.org

Museum of Science and Industry

THE Museum of Science and Industry is one of the most popular tourist destinations in the city of Chicago and among the seven most visited museums in the U.S. It was the first museum in North America to develop hands-on, interactive exhibits.

Permanent exhibits include the U-505 World War II submarine, the fascinating Coal Mine and Colleen Moore's Fairy Castle. The recently redesigned Henry Crown Space Center features the Apollo 8 Command Module. A new permanent exhibit, *Fast Forward ... Inventing the Future*, highlights cutting-edge entrepreneurs, engineers, inventors and scientists who are transforming the world. Visitors are invited to explore how their ideas will shape and advance the areas of agriculture, energy, entertainment and transportation. In *Smart Home: Green + Wired*, eco-friendly living is demonstrated in a three-story, sustainable "green" home that has been erected on the museum's property. Annual seasonal exhibits include the *Christmas Around the World* and *Holidays of Light*.

The Omnimax theater at the Museum of Science and Industry presents *Wild Ocean* and *Grand Canyon Adventure: River at Risk*, which takes viewers on a memorable rafting trip down the Colorado River.

- 57th St. and Lake Shore Dr.
1-773-684-1414
www.msichicago.org



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

The Transportation Gallery is one of the permanent exhibits at the Museum of Science and Industry.

Museums

Save Money, Avoid Ticket Lines with CityPass

A CityPass ticket booklet containing admission tickets to the Shedd Aquarium, Adler Planetarium, Field Museum and Museum of Science and Industry, as well as the Hancock Observatory, is available for \$59.00 by visiting www.citypass.com/city/chicago.html. Once you start using the CityPass, you have nine days to visit all of the included attractions.



Chicago Symphony Orchestra

November 30 **RSNA TOUR 5**

Conductor: *Bernard Haitink*
Program: *Haydn: Symphony No. 44 (Mourning)*
Lutoslawski: Symphony No. 3
Beethoven: Piano Concert No. 4

December 4 and 5 **RSNA TOUR 42**

Conductor: *Bernard Haitink*
Program: *Mozart: Symphony No. 41 (Jupiter)*
Strauss: Ein Heidenleben
■ Chicago Symphony Orchestra
220 S. Michigan Ave.
1-312-294-3000
www.cso.org

Lyric Opera of Chicago

THE world renowned Lyric Opera of Chicago performs in one of North America's most beautiful opera houses, the Civic Opera House, which opened in 1929. Tickets go on sale in August.

- 20 N. Wacker Dr.
1-312-332-2244 x5600
www.lyricopera.org

Lulu

November 30

A steamy black widow story set in the salons of Paris and London's back alleys.
by Alban Berg
Conductor: *Sir Andrew Davis with Marlis Petersen, Wolfgang Schöne and Jill Grove*



Photo: Dan Rest

Porgy and Bess

December 3 and 5

American opera at its best.
by George Gershwin, Dubose and Dorothy Heyward and Ira Gershwin
Conductor: *John DeMain (December 3) and Kelly Kou (December 5) with Gordon Hawkins, Morenike Fadayomi, Lester Lynch and Lisa Daltirus*

Symphony & Opera

A Midsummer's Night Dream

This clever, "can't miss" production of the well-loved Shakespeare play is performed by a cast of 23 actors, dancers, martial arts experts, musicians and street acrobats from India and Sri Lanka.



- Chicago Shakespeare Theater (Navy Pier)
Courtyard Theater stage
800 E. Grand Ave.
1-312-595-5600
www.chicagoshakes.com

Jersey Boys **RSNA TOUR 29**

This award-winning musical about the life of Rock and Roll Hall of Famers The Four Seasons chronicles how Frankie Valli, Bob Gaudio, Tommy DeVito and Nick Massi became one of the greatest successes in pop music history.

- LaSalle Bank Theatre
18 W. Monroe St.
1-312-977-1710
www.ticketmaster.com

The Snow Queen

Hans Christian Andersen's popular winter tale will be performed for a third holiday season.

- Victory Gardens Mainstage
2257 N. Lincoln Ave.
1-773-871-3000
www.victorygardens.org

Dirty Dancing

A doctor's daughter starts a summer romance with a boy from the wrong side of the tracks. A musical fashioned after the blockbuster movie, with more musical and dance numbers.

- Cadillac Palace Theatre
151 W. Randolph St.
1-312-902-1400
www.ticketmaster.com

Ruined

A much-anticipated world premiere of the original work by Lynn Nottage, Ruined explores the position and experience of women in the African Congo.

- Goodman Theatre
170 N. Dearborn St.
1-312-443-3800
www.goodman-theatre.org

The Second City

Chicago's favorite comedy venue, the venerable Second City, has spawned stars such as John Belushi, Bill Murray and Mike Myers. The Main Stage features well-established actors and skits and a smaller ETC stage features up-and-coming Chicago comics.

- Mainstage and ETC stage
1616 N. Wells St.
1-312-337-3992
www.secondcity.com

Wicked: The Untold Story of the Witches of Oz

This smash hit **RSNA TOUR 38** examines the friendship between Gilda the Good Witch and the Wicked Witch of the West.

- Ford Center for the Performing Arts
Oriental Theatre
24 W. Randolph St.
1-312-902-1400
www.ticketmaster.com

Behind the Emerald Curtain

Performers from Wicked: The Untold Story of **RSNA TOUR 33** the Witches of Oz guide this back-stage tour of the blockbuster musical's set. In addition to seeing costumes, masks and props, visitors are treated to a question-and-answer session with the cast members.

- Ford Center for the Performing Arts
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A Christmas Carol

This production of the famous Dickens tale makes even Scrooge seem magical.

- Goodman Theatre
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Rewired

by Blue Man Group
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- Briar Street Theatre
3133 N. Halsted
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4, featuring the North American Debut of Barbatuques

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Those attending RSNA Tour 6 will be supporting the RSNA Research & Education Foundation to help fund radiology's future. Fifty percent of the ticket price will be donated directly to the Foundation.

- Harris Theater for Music and Dance
Millennium Park
205 E. Randolph Dr.
1-312-334-7777
www.chicagotap.org



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American Girl Place

Shoppers at American Girl Place may choose among the beautiful dolls.

- Water Tower Place
835 N. Michigan Ave.
1-877-247-5223
www.americangirl.com



Chicago Children's Museum

At Chicago Children's Museum, more than 12 interactive exhibits and new programs offer hours of creative play. As part of the museum's winter theme, children can skate in their stocking feet to festive music in the "ice rink." Call in November to reserve a place in one of the gingerbread house workshops.

- 700 E. Grand Ave. (on Navy Pier)
1-312-527-1000
www.chicildrensmuseum.org

Navy Pier IMAX Theatre

The Navy Pier IMAX theatre will announce its holiday film schedule in late autumn.

- 700 E. Grand Ave.
1-312-595-5629
www.imax.com/chicago

Lincoln Park Zoo

The Lincoln Park Zoo is the oldest zoological garden in the country, as well as one of the most modern. Casting a festive glow on the zoo grounds, the ZooLights Festival is a nightly event during the holiday season.

- 2200 N. Cannon Dr.
1-312-742-2000
www.lpzoo.com

Theater



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Journal Highlights

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

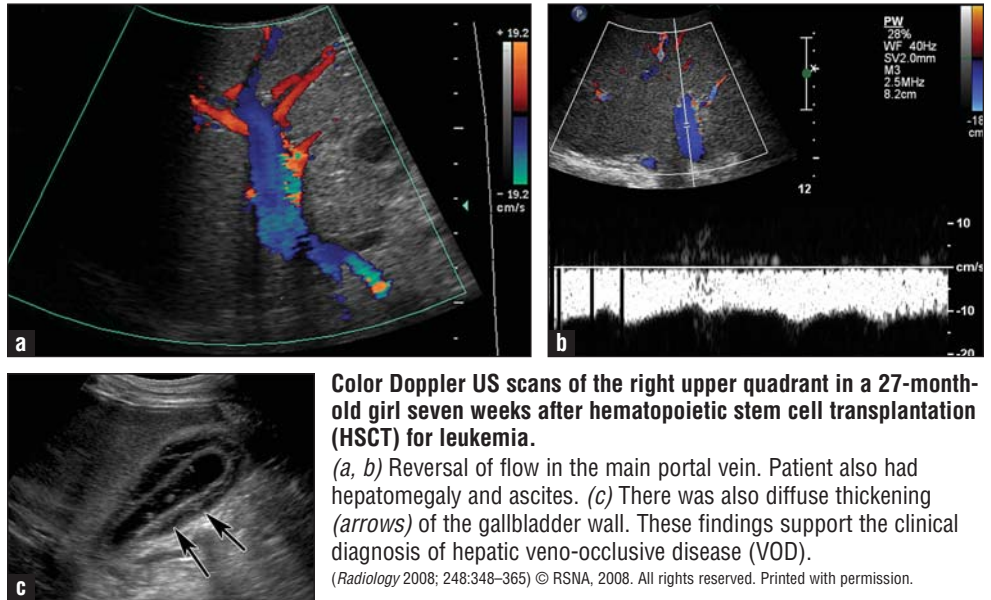
Pediatric Hematopoietic Stem Cell Transplantation and the Role of Imaging

INCREASED USE of hematopoietic stem cell transplantation (HSCT) to treat children afflicted with potentially fatal and nonmalignant diseases has led not only to improved survival but also to increased risk for short- and long-term complications. HSCT requires support from many medical disciplines, including radiologists who must be familiar with the broad concepts of the procedure as well as the specific problems that can follow.

Radiology

In a review article in the August issue of *Radiology* (RSNA.org/radiology), Caroline Hollingsworth, M.D., M.P.H., of Duke University Medical Center in Durham, N.C., and colleagues summarize the clinical aspects of HSCT, emphasizing the common complications and their imaging features:

- Early and late pulmonary
- Cardiovascular
- Musculoskeletal
- Gastrointestinal
- Hepatobiliary
- Genitourinary
- Endocrine
- Neurologic



Color Doppler US scans of the right upper quadrant in a 27-month-old girl seven weeks after hematopoietic stem cell transplantation (HSCT) for leukemia.

(a, b) Reversal of flow in the main portal vein. Patient also had hepatomegaly and ascites. (c) There was also diffuse thickening (arrows) of the gallbladder wall. These findings support the clinical diagnosis of hepatic veno-occlusive disease (VOD).

(*Radiology* 2008; 248:348–365) © RSNA, 2008. All rights reserved. Printed with permission.

Although parallels can be found between pediatric and adult HSCT survivors, substantive and unique differences affect the surveillance of young patients for acute and chronic problems, Dr. Hollingsworth and colleagues write. “Pediatric patients have a greater risk of developing complications because of the developing organs,” they conclude. “An understanding of current HSCT treatment regimens and specific

complications, especially relating to the time from treatment, typical imaging features and effect on management decisions, underscores the vital role radiologists serve in this complex life-saving therapeutic modality.”

Read BIROW 5 Report in *Radiology*

THE FINAL report of the fifth annual Bioengineering and Imaging Research Opportunities Workshop (BIROW 5) is in the August issue of *Radiology*. Encompassing more than 25 scientific societies, BIROW meetings facilitate the mission of the National Institute of Biomedical Imaging and Bioengineering by encouraging cross-

fertilization of ideas and interdisciplinary science.

The BIROW 5 report addresses research opportunities in imaging and characterizing structure and function in native and engineered tissue, outlining goals and challenges in these areas:

- Heterogeneous single cell measurements

and their integration into tissue and organism models

- Functional molecular and structural imaging of engineered tissue in vitro and in vivo
- New technologies for characterizing cells and tissues in situ
- Imaging for targeted cell, gene and drug delivery

Continued on next page

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Mimics of Cholangiocarcinoma: Spectrum of Disease

DIAGNOSIS and treatment of cholangiocarcinoma (CCA)—the second most common primary malignant hepatobiliary neoplasm, accounting for approximately 15 percent of liver cancers—are challenging, as numerous other conditions of the biliary tract may masquerade as CCA.

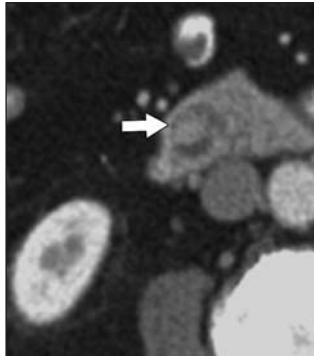
RadioGraphics

In an article in the July-August issue of *RadioGraphics* (RSNA.org/radiographics), Christine O. Menias, M.D., of the Mallinckrodt Institute of Radiology in St. Louis, and colleagues discuss the cross-sectional imaging findings of a spectrum of neoplastic and

This article meets the criteria for 1.0 AMA PRA Category 1 Credit.

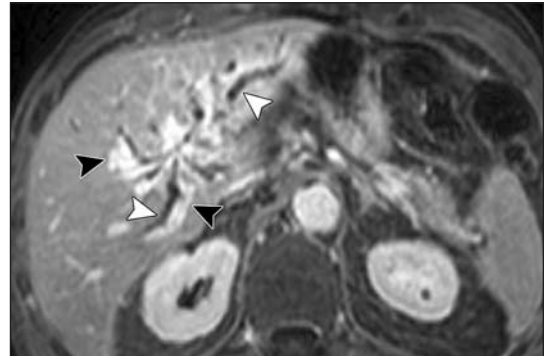
nonneoplastic biliary lesions that mimic CCA at imaging, including:

- Inflammatory or infectious biliary conditions: primary and secondary sclerosing cholangitis



Cholangiocarcinoma (CCA) with intraductal polypoid growth pattern.

Axial contrast-enhanced CT scan shows a polypoid soft-tissue mass (arrow) within the dilated common bile duct.



Periductal-infiltrating type of CCA.

Axial delayed gadolinium-enhanced fat-saturated 3D gradient-echo T1-weighted MR image shows a periductal, infiltrative pattern of tumor growth (black arrowheads) with associated biliary dilatation (white arrowheads).

(*RadioGraphics* 2008;28:1115–1129) © RSNA, 2008. All rights reserved. Printed with permission.

- Hepatobiliary tumors: hepatocellular carcinoma, intrabiliary metastases, biliary tract melanoma and lymphoma, leukemic involvement or carcinoid tumors of the bile ducts

“Precise differentiation of various inflammatory or neoplastic biliary disorders from the more ominous cholangiocarcinoma allows optimal patient treatment,” the authors write.

Report: Impact Factors High for Radiology, RadioGraphics

Radiology continues to have the highest impact factor among general diagnostic imaging journals, according to the 2007 *Citations Reports*® from the Thomson/Institute for Scientific Information Annual Citation. *Radiology* also has more citations than any other radiology journal.

The impact factor for *RadioGraphics* continues to climb, placing among the top five for general diagnostic imaging journals.

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Radiology in Public Focus

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

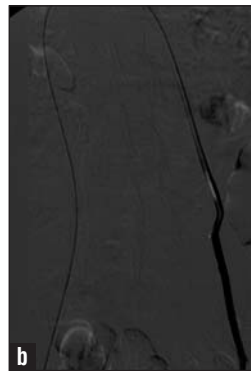
Embolization of varicoceles: Pre-treatment sperm motility predicts later pregnancy in partners of infertile men

This article appears in the August issue of Radiology.

IN MEN who undergo embolization of varicoceles as an infertility treatment, sperm motility prior to treatment is an important predictor of pregnancy in their female partners. Sebastian Flacke, M.D., Ph.D., and colleagues found in a study of 223 patients that baseline sperm motility was the only tested pre-treatment factor that significantly predicted a sired pregnancy. Hormone levels, clinical grading of varicoceles, Doppler ultrasound findings and other semen parameters did not reach statistical significance, according to the study.

“This is the first description of such a prognostic factor for treatment success in infertile males with varicoceles,” the researchers write. “Assessing sperm motility prior to the embolization of varicoceles in infertile men may help identify those couples that may require additional treatment besides the embolization.”

Most patients demonstrated a significant improvement in sperm motility at three-month follow-up, though average values remained in the abnormal



Venograms depict the interventional approach: A 5-F spermatic catheter is introduced through right groin access and placed in the left renal vein.

(a) To increase intraabdominal pressure, patient is asked to perform a Valsalva maneuver, and retrograde venogram shows a type I varicocele with a single internal spermatic vein with insufficient confluence valve function. (b) Spermatic catheter is exchanged for an end-hole catheter. (c) Second injection through end-hole catheter can be used to clearly delineate distal anatomy. After distal embolization of the internal spermatic vein with platinum coils at the level of the sacroiliac joint, the sclerosing agent is injected while slowly retracting the catheter. (d) The distal internal spermatic vein is manually externally compressed to avoid inadvertent injection into the scrotum.

(*Radiology* 2008;248:540–549) © RSNA, 2008. All rights reserved. Printed with permission.

range, Flacke and colleagues observed. Of the 173 patients who answered a follow-up questionnaire, 45 percent reported a pregnancy. The researchers concluded that embolization of the spermatic vein in infertile males significantly improves semen parameters and in this study was associated

with increased likelihood of pregnancy. “Patients with less impaired sperm motility appear to benefit the most from this treatment, if a sired pregnancy is considered as the main factor in judging successful clinical outcome,” the researchers write.

Pre-Medication to Reduce Discomfort with Screening Mammography

This article is currently available online and will be published in the September issue of Radiology.

PRE-MEDICATION with lidocaine gel can significantly improve the experience for women who experience greater than average discomfort during mammography, researchers have found.

In a study of 418 participants who were surveyed before and after

a screening mammogram, Colleen K. Lambert, M.S.N., M.B.A., F.N.P., and colleagues at Luke’s Mountain States Tumor Institute in Boise, Idaho, found that discomfort significantly decreased participants’ satisfaction with the mammography experience, with level of satisfaction affecting participants’ plans for future mammograms. Women who experienced greater than average dis-

comfort were more likely to report this discomfort and women who delayed their study mammograms due to fear of discomfort were less likely to plan to get a mammogram the next year. “These results indicate that expectation of discomfort, anxiety and perceived discomfort negatively influence women’s satisfaction with screening

Continued on next page

Pre-Medication to Reduce Discomfort with Screening Mammography

Continued from previous page

mammography and their likelihood to undergo regular screening,” the researchers write.

Some participants received pre-medication with acetaminophen, ibuprofen and/or topical gel with 4 percent lidocaine prior to the study mammogram. The lidocaine gel, the researchers observed, provided a significant reduc-

tion in discomfort and increased satisfaction with the experience, even when the gel was removed up to 60 minutes before the mammogram. “This gel is a readily available, over the counter, topical anesthetic that is easy to apply and remove,” the researchers write. “Lidocaine gel would be especially useful to women who expect discomfort and may be tempted to delay or avoid

screening mammography.” Lambertz and colleagues also propose that the gel could be applied at home before scheduled mammograms by the patients themselves, thus reducing additional facility costs.

(Radiology 2008;248:765-772)

Media Coverage of Radiology

IN June, media outlets carried 349 news stories generated by articles appearing in *Radiology*. These stories reached an estimated 118 million people.

A news release promoted findings from a study on the use of a new calcium scoring method to better predict a person’s risk of cardiac event (*Radiology 2008;247:669-678*).

Print and wire coverage included the *National Post* (Ontario, Canada),



Oklahoman (Oklahoma City), *Daily Herald* (Arlington Heights, Ill.), *Health and Medicine Week*, *Diagnostic Imaging*, Reuters, Health Day News and Asian News International.

Broadcast coverage included WBBM-TV (Chicago), WMGM-TV (Philadelphia), WKYC-TV (Cleveland),

KMTR-TV (Eugene, Ore.), WJAR-TV (Providence, R.I.), WSLS-TV (Roanoke, Va.), WAVE-TV (Louisville, Ky.) and KCBD-TV (Lubbock, Texas).

Web placements included AOL

com, Yahoo! News, *MSNBC.com*, *MSN.com*, *Washingtonpost.com*, *USNews.com* and *Forbes.com*.

August Outreach Focuses on Clinical Trials

In August, RSNA’s 60-Second Checkup radio program addressed clinical trials, including information on the different types of trials and what results may mean for patients.

MAINTENANCE OF CERTIFICATION

MOC News

New SAMs Available

SEVERAL NEW self-assessment modules (SAMs) are available online at RSNA.org/education. The new SAMs are “qualified by the American Board of Radiology (ABR) in meeting the criteria for self-assessment toward the purpose of fulfilling requirements in the ABR Maintenance of Certification Program.” Each SAM qualifies for 1 SAM credit in addition to 2.5 CME

credits. SAMs are offered free of charge to RSNA members. New SAMs include:

- PET Basics: Targets, Tracers, and Interpretations
- Using PET in Cancer Treatment Planning and Assessment
- PET’s Role in Head and Neck Cancer
- Breast MR Imaging and Artifacts



- Alternatives in Imaging of Congenital Heart Disease
- Correlation of Findings in Idiopathic Interstitial Pneumonia

- The Pregnant Patient
- Imaging & Pathology in Renal Cell Carcinoma

For more information, contact the RSNA Education Center at 1-800-381-6660 x3733.

Program and Grant Announcements

The Joint Commission Annual Ambulatory Care Conference: Quality and Safety, The Passwords to Success

October 2-3 • Westin River North, Chicago

AMBULATORY healthcare is the predominant method of providing healthcare in the U.S. Research has revealed that adverse events do occur in ambulatory care, from medication to treatment errors, and many of these events are considered preventable. Quality and safety in ambulatory care must be a priority.

This conference offers practical

strategies and solutions for concerns in ambulatory care. Joint Commission initiatives will be outlined and track sessions devoted to ambulatory surgery centers, free-standing ambulatory care and hospital-based ambulatory care. Attendees will learn how to create a culture of superior customer service.

RSNA is a supporting organization for this meeting. For more information, go to www.jcrinc.com/29933.

Writing a Competitive Grant Proposal

January 30-31, 2009 • RSNA Headquarters, Oak Brook, Ill. • Application Deadline—December 15

Registrations are being accepted for the second Writing a Competitive Grant Proposal program, designed for researchers in radiology, radiation oncology, nuclear medicine and related sciences who are interested in actively pursuing federal funding.



A limited number of slots is available for this 1½-day intermediate-level program. Topics to be covered include the NIH grant review process, developing specific aims and funding opportunities.

Guided by a faculty of leading researchers with extensive experience in all aspects of grant applications and funding, the program will focus on developing realistic expectations and provide tools for getting started.

The course fee is \$175. Registration forms can be found at RSNA.org/CGP. Contact Fiona Miller at 1-630-590-7741 or fmiller@rsna.org for further information.

RSNA-sponsored Session at ASTRO Translational Advances in Radiation Oncology and Cancer Imaging

October 17-18 • Westin Arlington Gateway, Virginia

RSNA will sponsor a session on MR spectroscopy at the American Society for Therapeutic Radiology and Oncology (ASTRO) meeting, Translational Advances in Radiation Oncology and Cancer Imaging. Session presenters are Peter L. Choyke, M.D., of the National Cancer Institute and Cynthia Menard, M.D., of Princess Margaret Hospital in Toronto.

The ASTRO meeting will look at how increasing use of MR and PET imaging techniques is changing radiation therapy planning. Advances in molecular tracers, particularly those that address components of the cancer phenotype relevant to radiation therapy, are altering the ways that treatment response is assessed and recurrence is determined.

Also collaborating with ASTRO to present the meeting are the National Institutes of Health, Radiation Therapy Oncology Group and SNM. For more information, go to www.astro.org/Meetings/UpcomingMeetings/Translational.

Financial Planning Opportunities at RSNA 2008

Saturday, November 29 • McCormick Place

RSNA will offer two investment seminars just prior to RSNA 2008. "Effective Estate Planning Strategies" will be presented by Barry Rubenstein, B.S., J.D., L.L.M., and "Effective Investment Strategies" will be presented by J. Michael Moody, M.B.A.

In simple and direct language these educational seminars, specifically tailored for the medical profession, will help attendees reach financial goals and plan a sound financial future. There is no sales pitch and each seminar comes with its own textbook.

Detailed seminar descriptions can be found at RSNA.org/Education/RSNA_shortcourses.cfm. Register online at RSNA.org/register or use the Registration and Housing Form 1 included in the Advance Registration, Housing and Course Enrollment brochure. You must be registered for the annual meeting in order to sign up for these seminars. An additional fee applies. These seminars do not qualify for *AMA PRA Category 1 Credit*[™]. For more information, contact the RSNA Education Center at 1-800-381-6660 x7772 or e-mail ed-ctr@rsna.org.



Working For You

Making MIRC™ Work

RSNA News continues its series of profiles on real-world users of RSNA's Medical Imaging Resource Center (MIRC™). Lawrence Tarbox, Ph.D., research assistant professor at the Mallinckrodt Institute of Radiology at Washington University in St. Louis, and colleagues at the Electronic Radiology Lab have learned just how much users value the system.

Making **MIRC™** Work

RSNA.ORG/MIRC
RSNA'S FREE ONLINE RESEARCH
AND EDUCATION TOOLS

A PROFESSOR of mine said the way to tell if a system is valuable is to shut it down and see how many people notice," said Dr. Tarbox. "Well, MIRC can't be down for more than a day before people start hollering."

Dr. Tarbox and his colleagues maintain a MIRC site that serves as a gateway for Washington University researchers to get their non-configured scan data back to the lab. MIRC provides them with one destination on the clinical network from which they can then transfer data to different sites.

Their MIRC system, created in 2004 with custom modifications that are now a part of the standard MIRC package, does more than a PACS, Dr. Tarbox said. "We catalog data for the researchers and they can go pick them up as Zip files, with or without personal health information," he said. "This is a bona fide HIPAA repository and people can send things here that wouldn't normally go to a PACS, such as raw CT scan data

prior to reconstruction."

There have been few complications outside of a minor, yet memorable, setback about two months after installation. The memory load became too much for the outdated equipment to handle. "At the time, we were working with basically hand-me-down hardware," Dr. Tarbox explained. "Our files are raw collected data, from the actual detector, that come in DICOM format. These are huge files, some a couple of gigabytes."

After someone in the department discovered the system was malfunctioning and shut it down, Dr. Tarbox received a deluge of calls from users concerned that they "couldn't send to Goldfinger." Turns out Goldfinger—much of the department equipment is named after James Bond characters—was shut down "because the system literally smoked," said Dr. Tarbox. "We



Lawrence Tarbox, Ph.D.

pulled it to see if it was just wires or something trivial, but it turns out it actually smoked the motherboard."

A hardware upgrade has since prevented any crashes resulting in data loss, said Dr. Tarbox, and system users now trust MIRC as they conduct projects including a multi-center trial of sickle cell disease in children. Researchers in the lab are also working with manufacturers on alternate ways to reconstruct CT images from raw detector data.

For new MIRC users, Dr. Tarbox offers this advice: "Don't be afraid to ask questions. There are tons of folks out there using it and most of them don't mind answering. And don't give up too soon because once you've got the hang of it, it's amazingly simple to use."

For more information, visit RSNA.org/MIRC.

2007 Cases of the Day Available on InteractED®

Many of the Cases of the Day from RSNA 2007 are available online for *AMA PRA Category 1 Credit™* as an RSNA member benefit. To view the Cases of the Day, go to RSNA.org/education.

Cases of the Day are available in:

- Breast Radiology



- Chest Radiology
- Emergency Radiology
- Gastrointestinal Radiology
- Genitourinary Radiology
- Musculoskeletal Radiology
- Nuclear Medicine
- Neuroradiology
- Obstetrics/Gynecology
- Pediatric Radiology

For more information on education products available from RSNA, contact the RSNA Education Center at 1-800-381-6660 x3753 or 1-800-272-2920.

If you have a colleague who would like to become an RSNA member, you can download an application at RSNA.org/mbrapp or contact the RSNA Membership and Subscriptions Department at 1-877-RSNA-MEM [776-2636] (U.S. and Canada), 1-630-571-7873 or membership@rsna.org.

News about RSNA 2008

Enroll for Courses, Tours and Events

SPACE REMAINS in many of the courses and tours and events at RSNA 2008. Online registration occurs instantly, while faxed or mailed registration forms are processed in the order of receipt. The Advance Registration, Housing and Course Enrollment and Tours and Events brochures,



as well as online registration, are available at RSNA.org/register. Registration for RSNA 2008 is required in order to enroll for courses and tours and events. More information about Chicago events and attractions is available on Page 14.

International Visitors

Personalized invitation letters are available at RSNA2008.RSNA.org. Click International Visitors. This section of the annual meeting Web site also includes important information about planning a trip to the U.S. Visa applicants are advised to apply as soon as they decide to travel to the U.S. It is recommended that international visitors start their visa process now.

For more information go to:

- www.unitedstatesvisas.gov
- travel.state.gov/visa
- nationalacademies.org/visas

Arrange Childcare

Children under the age of 16 will be allowed to ride on the RSNA shuttle buses but are not allowed to attend the meeting. Onsite childcare will be available for children six months to 12 years through



ACCENT on Children's Arrangements, Inc. Online registration and application forms are available at RSNA2008.RSNA.org. Click on Camp RSNA in the left-hand column.

Registering for RSNA 2008

There are four ways to register for RSNA 2008:

1 Internet

Go to RSNA.org/register

Fastest way to register!

Use your member ID number from the *RSNA News* label or meeting flyer sent to you. If you have questions, send an e-mail to rsna@experient-inc.com

2 Fax (24 hours)

1-800-521-6017
1-847-940-2386

4 Mail

Experient/RSNA 2008
108 Wilmot Rd.,
Suite 400
Deerfield, IL 60015-5124
USA

3 Telephone

(Monday–Friday,
8:00 a.m.–5:00 p.m. CT)
1-800-650-7018
1-847-940-2155

Registration Fees

BY 11/7	ONSITE	
\$0	\$100	RSNA Member, AAPM Member
\$0	\$0	Member Presenter
\$0	\$0	RSNA Member-in-Training, RSNA Student Member and Non-Member Student
\$0	\$0	Non-Member Presenter
\$130	\$230	Non-Member Resident/Trainee
\$130	\$230	Radiology Support Personnel
\$620	\$720	Non-Member Radiologist, Physicist or Physician
\$620	\$720	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

■ For more information about registering for RSNA 2008, visit RSNA2008.RSNA.org, e-mail reginfo@rsna.org or call 1-800-381-6660 x7862.

Important Dates for RSNA 2008

Oct. 24	International deadline to have full-conference materials mailed in advance
Nov. 7	Final advance registration, housing and course enrollment deadline
Nov. 30–Dec. 5	RSNA 94th Scientific Assembly and Annual Meeting

Continued on next page

Receive Registration Materials Prior to the Meeting

Continued from previous page

Registration Materials

RSNA will mail registration materials in advance of the annual meeting to all North American attendees who register by **November 7**. RSNA will mail materials in advance to international attendees whose registration is received by **October 24**.

Registration materials include:

- **Name badge and holder**—RSNA will track attendance in the Technical Exhibit Halls, the Lakeside Learning Center and multiple session rooms using radiofrequency identification, also known as RFID. No personal information is stored on the RFID badge, only an identification number. RFID is used to obtain total attendance counts and exhibit floor traffic. Attendees wishing to opt out of this program should visit a Help Desk onsite.
- **Course and tour tickets** (if requested)
- **Attendance vouchers for CME or CE credit**
- **Free pass for the Chicago Metra Electric Line train system**
- **Airport shuttle discount coupon**

Registration materials also include an ExpoCard™ and *Pocket Guide*.

ExpoCard™

ExpoCard™ is an electronically personalized business card attendees can use at the technical exhibition to request exhibitor information. The card is encoded with the holder's name, institution, address, e-mail, address, phone/fax numbers and radiologic specialty. Attendees who prefer that exhibitors contact them at a different address than the one used during advance registration should provide alternate information directly to the exhibitor at the point of contact. Attendees may also visit either Help Center at McCormick Place to change the registration and ExpoCard detail.



Pocket Guide

The RSNA 2008 *Pocket Guide* is an easy-to-use reference guide with two main sections:

Overview of the RSNA Scientific Assembly and Annual Meeting

- Complete A-Z listing of everything available to attendees
- Room assignments for the scientific sessions, refresher courses and plenary sessions
- Floor plans of each building and each floor of McCormick Place

Traveling to and from McCormick Place

- Shuttle bus schedules, routes and boarding locations
- Taxi fees, loading and unloading areas
- Airport transportation service with times, costs and boarding information
- Complete Metra Electric Line Train System schedule outlining station locations, times and drop-off destinations
- Parking lot locations, hours and fees

Transportation information is also available online. Go to RSNA2008.RSNA.org and click Transportation Guide.



Navigating McCormick Place is made easier with the *Pocket Guide*, a quick reference guide that provides a complete A-Z listing of everything available to annual meeting attendees, along with room assignments for various course offerings and floor plans. Information on transportation and dining is also included.



Technical Exhibition

2008 Exhibitor List Available

The Technical Exhibition at the RSNA annual meeting has long been one of the world's largest medical exhibitions.



With more than 510,000 square feet of confirmed exhibit space, RSNA 2008 continues the tradition. To see a list of participating companies, along with an interactive floor plan, visit RSNA.org/showcase.

Expanded Exhibition at RSNA 2008

At RSNA 2008, the Technical Exhibition will include Hall D (Lakeside Center) as well as Hall A (South Building) and Hall B (North Building). The new arrangement will allow RSNA to accommodate the growing number of exhibiting companies while offering more space to current exhibitors.

In addition, large food outlets, known as Bistro RSNA, will be located in all three exhibit halls and in the Lakeside Learning Center. Bistro RSNA will serve a variety of menu items, including several healthy options, international cuisine and regional favorites.

New Companies Participating in RSNA 2008

Each year more than 100 companies participate in the RSNA annual meeting for the first time, showcasing new technologies and ideas for the health-care industry. By visiting first-time exhibitor booths at RSNA 2008, you can stay up to date on the latest innovations that may soon enhance your work experience. A complete list of first-time exhibitors can be found at RSNA2008.RSNA.org under Technical Exhibition.

Hands-on Computer Workshop Registration Now Open

Five commercial leaders—Agfa Healthcare, Brit Systems, Confirma, GE Healthcare and Philips—have reserved classrooms to conduct sessions on their respective proprietary computer systems. Hands-on Computer

Workshops will be located in Hall A (South Building).

Hours of operation are 10:00 a.m. to 6:00 p.m. on Sunday, November 30 through Wednesday, December 3 and 10:00 a.m. to 2:00 p.m. on Thursday, December 4. Each session accommodates only 30 participants, so attendees are encouraged to reserve a seat as soon as possible. Advance online registration is required for these workshops. For a complete schedule and online registration, go to RSNA.org/register.



At the RSNA Technical Exhibition, attendees can check out the latest innovations to enhance their work experience and improve their productivity. RSNA 2007 featured a recordbreaking 535,300 square feet (49,749 square meters) and 757 exhibitors.



RSNA2008
Personal Learning in the
Global Community

**94th Scientific Assembly and
Annual Meeting**
November 30–December 5, 2008
McCormick Place, Chicago

Product News

NEW PRODUCT

3.0 T MR Scanner

GE Healthcare (www.gehealthcare.com) introduces the Signa® MR750 3.0 T, built around GE's third-generation short-bore superconducting 3.0 T magnet. Whole-body gradients deliver 50 mT/m gradient field on each axis simultaneously and yield a slew-rate of 200 T/m/s when combined with OpTix optical radiofrequency technology. The system provides higher accuracy and more reproducible scans with up to 60 percent more anatomical coverage and

resolution per unit time, 27 percent more signal-to-noise ratio and faster reconstruction speeds.

MR750 3.0 T offers high homogeneity for excellent results even in large or off-center field-of-view imaging, fat saturation techniques and high-performance applications such as cardiac, functional MR imaging, diffusion ten-



sor imaging and spectroscopy. Other features include real-time specific absorption rate optimization,

heat extraction gradient architecture for faster acquisitions and fewer slow-downs, accelerated parallel imaging and anatomy-optimized radiofrequency coils and arrays.

FDA CLEARANCE

Automated Contrast Delivery System

Covidien Imaging Solutions (www.covidien.com) has received FDA approval for its contrast delivery system with radiofrequency identification (RFID), designed to reduce the risk of medical errors.



Combining unit-dose Ultraject™ prefilled contrast media syringes with Optivantage™ DH power injectors, the system captures, stores and transmits data between the syringe and the injector using RFID transponders or “tags.” This better ensures that each patient receives the prescribed drug and dose. The interface allows the injector to physically alter the RFID label on a syringe once it is used and automatically prevents injection

of contents from a previously used RFID-labeled syringe, substantially reducing the probability of life-threatening air injections or air embolisms. Covidien's system also indicates if the drug in an RFID-labeled syringe is past its expiration date.

NEW PRODUCT

Custom-Moldable Head Support

CIVCO Medical Solutions (www.civco.com) introduces the Individual Head Support for customized head and neck positioning during radiation therapy treatment and diagnostic procedures. Using specially shaped impression foam combined with fabric-coated thermoplastic, the Individual Head Support allows clinicians to customize position and support to each patient while minimizing movement.

The flexibility of the heated thermoplastic allows easy molding of the impression foam to the individual patient's anatomy, maximizing both patient comfort and reproducibility of positioning. Once cooled, the thermoplastic binds the foam to the molded shape.

FDA CLEARANCE

MR Perfusion Software

Imaging Biometrics (www.imaging-biometrics.com) has received FDA clearance for its IB Neuro™ 1.0 MR perfusion software. IB Neuro analyzes dynamically acquired MR datasets and generates parametric maps of the brain that include relative cerebral blood volume (rCBV), cerebral blood

flow (CBF) and mean transit time.

The software is currently available for the aycan workstation OsiriXPRO and OsiriX applications. IB Neuro is DICOM compliant and easily integrates into existing viewers, CAD workstations and PACS.

IB Neuro displays the dynamic MR

signal time course for any chosen brain location. It automatically corrects for artifacts in rCBV maps caused by contrast agent leakage, allows interactive selections of arterial input functions for CBF and normalizes perfusion parameters to normal appearing white matter to facilitate comparisons.

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

My RSNA® Tutorials

LEARN TO use My RSNA®, the new personalized member portal on *RSNA.org*, by watching easy-to-follow, informative tutorials.

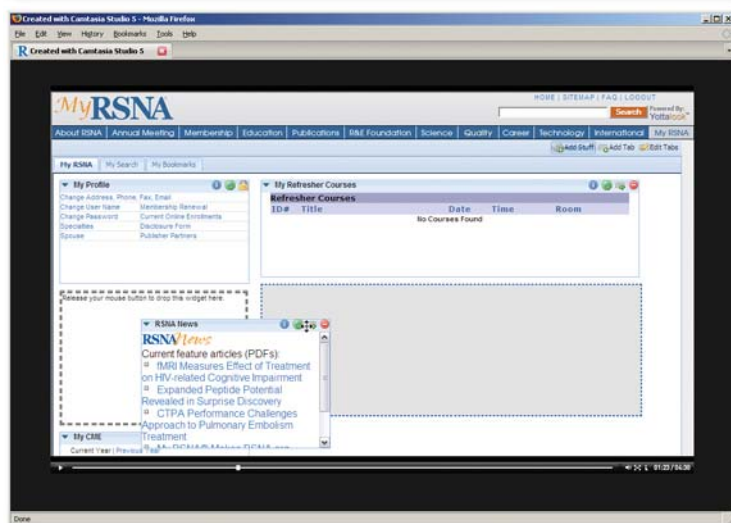
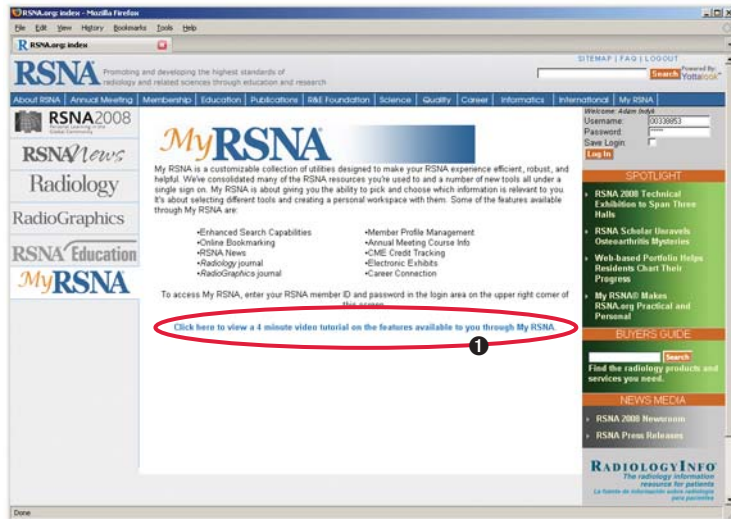
My RSNA allows RSNA members to organize information in a way that best meets their particular needs. Drop and drag “plug-ins” prioritize RSNA content such as journal articles, CME credit and committee obligations, while specialized search and bookmarking functions find and save content from throughout the Web. With My RSNA, accessible from anywhere, users can take their preferences to go.

Start with a 4-minute overview by choosing My RSNA from the lefthand sidebar on *RSNA.org* and then clicking the tutorial link at the bottom ❶.

Available on the My RSNA home page are these other tutorials:

- 15-minute full tutorial on My RSNA
- 3-minute tutorial on My Search
- 2-minute tutorial on My Bookmarks

A My RSNA demonstration at RSNA 2008 will give attendees the chance to learn more about this new member benefit and ask questions.



Connections

Your online links to RSNA

RSNA.org

- My RSNA™**
RSNA.org – click My RSNA
- Radiology Online**
RSNA.org/radiology
- RadioGraphics Online**
RSNA.org/radiographics
- RSNA News**
rsnanews.org
- Membership Applications**
RSNA.org/mbappr

- RSNA Membership Directory**
RSNA.org/directory
- Education Portal**
RSNA.org/education
- RSNA CME Credit Repository**
RSNA.org/cme
- 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*

- RSNA Press Releases**
RSNA.org/media
- RSNA Research & Education (R&E) Foundation**
Make a Donation
RSNA.org/donate
- Silver Anniversary Campaign
RSNA.org/campaign
- Community of Science**
RSNA.org/cos

- COI Initiative**
RSNA.org/quality
- My Portfolio**
RSNA.org/myportfolio
- RSNA 2008**
RSNA2008.RSNA.org

Medical Meetings

September – November 2008

SEPTEMBER 7-11

Sociedad Ibero Latino Americana de Neuroradiologia, 20th Annual Scientific Meeting, Fiesta Americana Royal Beach Hotel, Cancun, Mexico • www.silan2008.com

SEPTEMBER 10-13

World Molecular Imaging Conference (WMIC) 2008, Acropolis Convention Center, Nice, France • www.wmicmeeting.org

SEPTEMBER 10-14

American Society of Head and Neck Radiology (ASHNR), 42nd Annual Meeting, Hilton Toronto Hotel • www.ashnr.org

SEPTEMBER 13-14

Society for the Advancement of Women's Imaging (SAWI), 2008 Symposium, Westin Chicago River North • www.sawi.org

SEPTEMBER 13-17

Cardiovascular and Interventional Radiology Society of Europe (CIRSE), Annual Meeting, Bella Center, Copenhagen, Denmark • www.cirse.org

SEPTEMBER 18-21

Australasian Society for Ultrasound in Medicine (ASUM), 38th Annual Scientific Meeting, SKYCITY Auckland Convention Centre, New Zealand • www.asum.com.au

SEPTEMBER 21-25 VISIT THE RSNA BOOTH

American Society for Therapeutic Radiology and Oncology (ASTRO), 50th Annual Meeting, Boston • www.astro.org

OCTOBER 1-4

American Society of Emergency Radiology (ASER), Annual Meeting, InterContinental Houston • www.erad.org

OCTOBER 2-3

The Joint Commission, Annual Ambulatory Care Conference: Quality and Safety, The Passwords to Success, Westin River North, Chicago • www.jcrinc.com/29933

OCTOBER 6-8

International Cancer Imaging Society (ICIS), Society Meeting and 8th Annual Teaching Course, The Assembly Rooms, Bath, United Kingdom • www.icimatingsociety.org.uk

OCTOBER 9-12

InterAmerican College of Radiology (CIR), 24th InterAmerican Congress of Radiology, Expo Minas, Belo Horizonte, Brazil • www.cir-radiologia.org

OCTOBER 11-14

North American Society for Cardiac Imaging (NASCI), Annual Meeting, Camelback Inn, Scottsdale, Ariz. • www.nasci.org

OCTOBER 16-18

Society of Chairs of Academic Radiology Departments (SCARD), 2008 Fall Meeting, JW Marriott Starr Pass Resort & Spa, Tucson, Ariz. • www.scardweb.org

OCTOBER 16-19

Royal Australian and New Zealand College of Radiologists (RANZCR), 59th Annual Scientific Meeting, Adelaide, South Australia • www.ranzcr.edu.au

OCTOBER 17-18

ASTRO, Translational Advances in Radiation Oncology and Cancer Imaging, Westin Arlington Gateway, Arlington, Va. • www.astro.org

OCTOBER 24-28 VISIT THE RSNA BOOTH

12th Asian Oceanian Congress of Radiology (AOCR), COEX Convention Center, Seoul, Republic of Korea • www.aocr2008.org

OCTOBER 24-26

Society of Radiologists in Ultrasound (SRU), 18th Annual Meeting, The Loews Hotel, Philadelphia • www.sru.org

OCTOBER 29-NOVEMBER 1

International Skeletal Society, Annual Meeting and Refresher Courses, Taj Palace Hotel, New Delhi, India • www.internationalskeletalsociety.com

NOVEMBER 13-15

ASTRO, American Society of Clinical Oncology (ASCO), International Society for the Study of Lung Cancer, Multidisciplinary Symposium in Thoracic Oncology, Chicago Marriott Downtown Magnificent Mile • www.oncologymeetings.org/lung.htm

NOVEMBER 30-DECEMBER 5

RSNA 2008, 94th Scientific Assembly and Annual Meeting, McCormick Place, Chicago • RSNA2008.RSNA.org

RSNANews

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