

RSNA *News*



Image courtesy of NASA

Undersea Mission Emphasizes Radiology's Telemedicine Role

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- PET and Enhanced MR Imaging Predict Response to Cancer Treatment
- Invention Aims to Eliminate Physician Radiation Exposure During Angiography
- Drug-Ultrasound Stroke Treatment Appears Promising
- RSNA 2006 Moves Informatics into the Mainstream
- Chicago Events and Attractions Offer Timeout at RSNA 2006

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RSNA News

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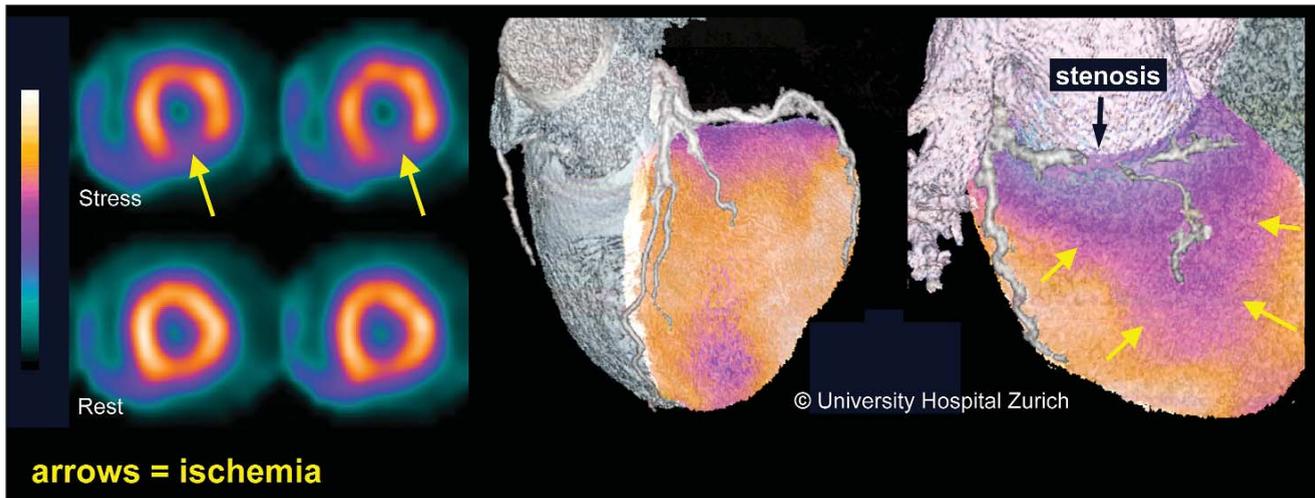
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SPECT/CT Image Named SNM Image of the Year



THE Society of Nuclear Medicine (SNM) Image of the Year for 2006 demonstrates the complementary nature of two imaging modalities to show coronary anatomy and blood flow to the heart. The image fuses CT with single photon emission computed tomography (SPECT), which uses noninvasive imaging systems and pharmaceutical tracers to show the function and metabolism of cells in the body.

Image courtesy of Oliver Gaemperli, M.D., and Philipp A. Kaufmann, M.D., University Hospital Zurich, Switzerland.

FDA Warns About Gadolinium and Patients with Kidney Failure

The Food and Drug Administration (FDA) is investigating a possible link between gadolinium-containing contrast agents and a disease known as nephrogenic systemic fibrosis or nephrogenic fibrosing dermopathy (NSF/NFD) that occurs in patients with kidney failure. The FDA has learned of 25 cases of NSF/NFD in patients who received the agent Omniscan™ for magnetic resonance angiography (MRA). To read the FDA's recommendations for healthcare providers and patients and to report adverse event information, go to www.fda.gov/cder/drug/advisory/gadolinium_agents.htm.

GE Healthcare, maker of Omniscan, said it is cooperating with the reporting hospitals and authorities to investigate the cases. Providers and patients with inquiries for GE Healthcare may call 1-800-654-0118.

Thomson Acquires MercuryMD

Thomson Corporation, of Stamford, Conn., has acquired MercuryMD, a mobile information systems company based in Research Triangle Park, N.C.

MercuryMD gives physicians instant access to patient information via personal digital assistants (PDAs), smartphones and other Web-enabled devices. It will become part of Micromedex, a Thomson scientific and healthcare business. Thomson offers software tools and applications to users in the fields of healthcare and scientific research, as well as law, tax, accounting, financial services, higher education and corporate e-learning and assessment.

NCI Adopts No-Smoking Rule for Meeting Venues

The National Cancer Institute (NCI) has implemented a new policy requiring that all meetings and conferences organized or primarily sponsored by NCI be held in a state, county, city or town that has adopted a comprehensive



smoke-free policy. Only specific circumstances will justify an exemption. NCI based the new policy on scientific data summarized recently in the U.S. Surgeon General report "The Health Consequences of Involuntary

Exposure to Tobacco Smoke," which indicated that secondhand smoke (also known as environmental tobacco smoke) causes premature death and disease in children and in adults who do not smoke.

AFIP Distinguished Scientist Named

Deborah J. Rubens, M.D., will serve as the distinguished scientist in the Department of Radiologic Pathology at the Armed Forces Institute of Pathology (AFIP) for the 2006–2007 academic year. Dr. Rubens is a professor of radiology and surgery at the University of Rochester School of Medicine in Rochester, N.Y.



Deborah J. Rubens, M.D.

The distinguished scientist program allows academic radiologists to study radiologic-pathologic correlation and integrate the understanding of the pathologic basis of disease with their teaching and research interests. The position is supported by contributions from RSNA, American College of Radiology, American Roentgen Ray Society and American Osteopathic College of Radiology.

Niederhuber is Acting NCI Director

John E. Niederhuber, M.D., has been named acting director of the National Cancer Institute (NCI). He replaces **Andrew von Eschenbach, M.D.**, who was named last year as FDA acting commissioner.



John E. Niederhuber, M.D.

Since September 2005, Dr. Niederhuber has been the NCI's Deputy Director for Translational and Clinical Sciences. He also has served the NCI as an external advisor, grant reviewer and chair of the National Cancer Advisory Board. Dr. Niederhuber is scheduled to deliver a lecture at the RSNA 2006 NCI Showcase (see page 15 for more details).

During his four-decade career as a cancer surgeon, Dr. Niederhuber has held positions at the University of Michigan, Johns Hopkins University and Stanford University. Most recently he was director of the University of Wisconsin Comprehensive Cancer Center.

SNM Names Officers, Honorees

THE Society of Nuclear Medicine (SNM) has named **Martin P. Sandler, M.D.**, of Nashville, Tenn., as its 2006-2007 president. Dr. Sandler is chair of the Department of Radiology and Radiological Sciences at Vanderbilt University School of Medicine and holds the post of Carol D. and Henry P. Pendergrass



Martin P. Sandler, M.D.

Professor of Radiology and Radiological Sciences at Vanderbilt.

SNM also named these officers: **Alexander J.B. (Sandy) McEwan, M.D.**, of Edmonton, Alberta, Canada, president-elect

Robert W. Atcher, Ph.D., of White Rock, N.M., vice-president-elect

SNM also awarded **Sanjiv Sam Gambhir, M.D., Ph.D.**, its 2006 Paul C. Aebersold Award for Outstanding

Achievement in Basic Nuclear Medicine Science. Dr. Gambhir is a professor of radiology and bioengineering, director of the Molecular Imaging Program and head of the Nuclear Medicine Division at Stanford University.

Walter Wolf, Ph.D., distinguished professor of pharmaceutical sciences and chair of the Biomedical Imaging Science Initiative at the University of Southern California, was awarded SNM's 2006 Georg Charles de Hevesy Nuclear Pioneer Award for his contributions to the nuclear medicine profession.

RADIATION SAFETY

Question of the Month

Q A radiologist asks, "I performed chest radiography on a patient and now I am told that she is pregnant. What are the risks to the fetus?"

[Answer on page 22.]



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

In Phase – Out of Phase

RECENTLY attended the American Board of Radiology (ABR) exams in Louisville, Kentucky, as an examiner in GU. My questions to candidates frequently were about patient safety related to the use of iodinated contrast media (CM), either CM-induced nephrotoxicity or treatment of reactions.

Let me tell you, our future colleagues, associates and partners know a lot more about MRI sequences and phases than conventional uro-radiology. So be it. That may be our current real world of practice.

There are still some knowledge gaps related to the aforementioned CM questions, but patient safety and quality improvement (QI) now include a whole new lexicon regarding oversight, documentation, evidence-based practice guidelines, pay-for-performance measures and, of course, maintenance of certification (MOC).

A recent report from Dr. Donald Berwick of Harvard School of Public Health concerning an initiative for

reduction of serious patient care errors illustrates the commitment of all physicians to re-examine their practice environment to reduce human error. While it may seem that we live and work in a “Big Brother,” Orwellian world of scrutiny and verification, MOC being just one facet, there should be little doubt that accountability, with information on individual performance and patient safety, will be necessary not only to get paid but also to practice radiology in hospitals and clinics.

MOC will hopefully be more than just the renewal of certificates that our young colleagues work so hard to earn in Louisville. It should also stand for Maintenance of Competence to practice safe diagnostic radiology, intervention and radiation therapy. In MOC, the C should also stand for a caring culture centered on our patients.

My faith is restored each year when I have the privilege to participate in the Louisville ABR experience. I am reas-



Bruce L. McClennan, M.D.

sured that we not only know how to make a diagnosis, but that we also know how to safely make that diagnosis part of the care and consultation we provide our patients and referring physicians.

Bruce L. McClennan, M.D., is a professor of diagnostic radiology at Yale University School of Medicine and an attending at Yale New Haven Hospital. He is also editor of RSNA News.

My Turn

ONE
RADIOLOGIST'S
VIEW

PEOPLE IN THE NEWS

SPR Installs Goske as President

Marilyn Goske, M.D., is the new president of the Society for Pediatric Radiology. Dr. Goske joined the Department of Radiology at Akron Children's Hospital earlier this year after serving as the head of pediatric radiology at the Cleveland Clinic for 15 years.



Marilyn Goske, M.D.

Roach Earns Prestigious Local Award

Mack Roach III, M.D., a professor of radiation oncology and urology and interim chair of the Department of Radiation Oncology at the University of California San Francisco (UCSF), has been named one of the 10 Most Influential African Americans in the Bay Area for 2005 by the Bay Area-based CityFlight Media Network. Dr. Roach recently worked on a clinical trial that demonstrated the value of pelvic nodal radiotherapy for patients with high-risk prostate cancer.



Mack Roach III, M.D.

RSNA Board of Directors Report

THE RSNA 2006-2007 budget was presented and approved at the June meeting of the RSNA Board of Directors. The operating plan includes several new projects and enhancements to existing programs.

New/Expanded Projects

Some of the new projects approved are designed to help radiologists enrich their **interaction with patients** and to help improve the public's perception of radiologists and understanding of radiology. Beginning this fall, RSNA will begin distributing a "60-Second Checkup" audio program to radio stations in the United States. Each program will feature a single topic, such as virtual colonoscopy or imaging heart disease, with a short introduction by a reporter and a short interview with an expert on that topic.

RSNA will also begin distributing two video news releases (VNRs) per year to television stations in the United States. Each VNR will correspond to a highlighted article in *Radiology*. A VNR is a prerecorded report that includes the voice of a reporter, a videotaped interview with an expert on a particular topic and video footage of a particular procedure, selected patients and/or medical images.

The Board approved the formation of a **Taskforce on Oncologic Imaging and Therapies**. The taskforce, comprising diagnostic radiologists, interventional radiologists, radiation oncologists, physicists and cancer biologists, will develop annual meeting programs with blended content on innovations in the use of imaging to diagnose, treat and monitor disease progression and treatment response in cancer patients.

The newly revised **radiation biology syllabus**, *Radiation Biology for Diagnostic and Interventional Radiologists—5th Edition*, will be made available on *RSNA.org* as a downloadable portable document format (PDF) file.

RSNA will sponsor two workshops as part of the **Medical Education Research Certificate program** at the Association of Program Directors in Radiology (APDR) annual meeting in April 2007 in Denver.

The 2007–2008 cycle of the **Revitalizing the Radiology Research Enterprise (RRRE)** program will include an educational workshop, site visits of programs competitively selected and a revamped Introduction to Grant Writing course.

In spring 2007, RSNA will host a small consensus workshop on methodologies for **validating the use of imaging as a biomarker**. This workshop follows a September 2006 conference in Maryland that RSNA is cosponsoring with the National Institutes of Health, National Cancer Institute, National Institute of Standards Technology and the Food and Drug Administration.

International Outreach

Each year RSNA leadership and staff visit more than a half-dozen medical meetings throughout the world. The purposes of the visits include informing potential members about what the Society has to offer, updating attendees about the upcoming RSNA annual meeting and RSNA Highlights conference, and assisting current members with questions about their benefits, such as online journal subscriptions.

The Board has approved creating a customized RSNA booth for some of these meetings. Using eye-catching



Theresa C. McCloud, M.D.
Chair, 2006 RSNA Board of Directors

graphics and a short PowerPoint presentation on a 42-inch plasma screen, the booth will visually reinforce the Society's commitment to patient care through research and education.

A list of meetings at which the RSNA booth will be present will be published in future editions of *RSNA News* so members can stop by to say hello or bring a colleague to learn more about RSNA membership.

The Board has also approved recommendations from the RSNA Committee on International Relations and Education for participants in the 2006 Introduction to Research for International Young Academics (IRIYA) Program and the 2007 International Visiting Professor (IVP) Program. The focus of the IRIYA Program is to encourage young radiologists from countries outside of the United States and Canada to pursue careers in academic radiology. The focus of the IVP Program is to send small teams of imaging professionals to lecture at the national radiology meetings of emerging nations, as well as

local hospitals and teaching institutions in the host institutions.

The names of the program participants will be released in future editions of *RSNA News*. The host countries for the 2007 IVP Program are Algeria, Honduras and Uganda. A similar IVP team travels each year to Mexico.

An **International Advisory Committee** is being formed to provide advice to the Board regarding RSNA activities and programs, particularly as they impact international members and annual meeting attendees. The committee will include at least one representative from Africa, Asia, Oceania, Europe and South America. A survey of international members is also under way to learn more about the professional needs of international members.

RSNA 2006

Beginning this year, all RSNA services will be combined in one central location at the annual meeting. Rather than finding registration on one floor and subscription services and the Education Center Store on another floor, the RSNA Services pavilion will be located in the Lakeside Center Ballroom at the McCormick Place convention center. A smaller RSNA Services booth will be on the technical exhibits floor in the South Building.

New this year, RSNA 2006 professional attendees will have the opportunity to receive a **durable meeting bag** in addition to a limited supply of disposable bags that will be available in storage racks at McCormick Place. Professional attendees will receive a stub with their registration materials that will enable them to pick up a sturdy canvas bag with multiple pockets, including a drink holder.

The **RSNA Continuous Quality Improvement Initiative (CQI²)** is

sponsoring the opening session and a focus session on quality at RSNA 2006 and expanded programs, including refresher courses on quality, at RSNA 2007. The Board received an update on the initiative at the June Board meeting and will get further updates at the September Board meeting.

The Board also received an update on the new **Molecular Imaging Zone**. The Zone was created to provide molecular imaging information to practicing radiologists and to introduce residents to the training and research opportunities in molecular imaging. The Zone will incorporate scientific posters and education exhibits and will showcase booths, posters and information from various training and research programs, molecular imaging societies and funding agencies.

All molecular imaging activities at RSNA 2006 will be included in a subspecialty content brochure that will be available on the annual meeting Web site (rsna2006.rsna.org) in portable document file (PDF) format. About 20 other subspecialty content brochures will also be available.

A hard copy of the molecular imaging brochure will be available at McCormick Place during the meeting and will be distributed at the Society for Molecular Imaging meeting in Hawaii

August 30–September 2. RSNA is co-sponsoring a pre-conference symposium on molecular imaging prior to the meeting. For more information, go to www.molecularimaging.org/2006/meeting/preconferencesymp06.php.

Many activities related to **medical informatics** are planned for RSNA 2006 (see feature article on page 14). Demonstrations will be held on two new Integrating the Healthcare Enterprise (IHE[®]) profiles—IHE Cross-enterprise Document Sharing for Imaging (XDS-I) and Teaching File and

Clinical Trial Export (TCE). These new profiles will make it easier to deploy image-enabled electronic health records (EHRs).

The demonstrations will be held in the new Lakeside Learning Center (see the June issue of *RSNA News* at rsnanews.org). Information will also be available on RSNA's radiology lexicon project, RadLex[®], and the RSNA Medical Imaging Resource Center (MIRC).

Other educational activities on medical informatics include hands-on workshops, education exhibits, scientific posters and two refresher course tracks—basic informatics (track 26) and advanced informatics (track 30). For more information on the specific courses in these or other refresher course tracks, go to rsna2006.rsna.org and click on Registration, Housing & Courses.

In addition, the Board has approved a name change for the Electronic Communications Committee. The committee will now be known as the Radiology Informatics Committee. More information about RSNA's technology efforts can be found at www.rsna.org/Technology/index.cfm.

ABR Exams

The American Board of Radiology (ABR) will conduct computerized **subspecialty certification exams** during the RSNA annual meeting. A pilot was held last year. ABR wants to make it easier for diagnostic radiologists to schedule their primary certification and recertification exams.

THERESA C. MCLLOUD, M.D.

CHAIR, 2006 RSNA BOARD OF DIRECTORS

■ Note: In our continuing efforts to keep RSNA members informed, the chair 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 2006.



92nd Scientific Assembly and Annual Meeting
November 26–December 1, 2006
McCormick Place, Chicago

Undersea Mission Emphasizes Radiology's Telemedicine Role

AS GROUNDBREAKING research continues to expand the frontiers of telemedicine and teleradiology, radiology remains right at the center of the action.

Radiologists and surgeons from Hamilton, Ontario, recently helped an undersea crew in the waters near Key Largo, Fla., diagnose and simulate treatment of a knee injury.

"It was a wonderful experience for us," said Julian Dobranowski, M.D., chief of diagnostic imaging at St. Joseph's Healthcare in Hamilton. "We're educating people that the resources are available right now to be able to provide really good health-care—no matter where in the world people are."

Dr. Dobranowski teamed up with the National Aeronautics and Space Administration (NASA), Canadian Space Agency (CSA) and Centre for Minimal Access Surgery (CMAS) at McMaster University in Hamilton for NASA Extreme Environment Mission Operations 9 (NEEMO 9). NEEMO 9 demonstrated and evaluated a variety of diagnostic and therapeutic technologies, with the goal of enhancing delivery of state-of-the-art medical care in remote and harsh environments.

The project added to the evidence that even a 1- or 2-second time delay in telemedicine doesn't have to negatively affect outcomes when critical care is provided in extreme environments, or even in more typical settings where there's simply not enough radiology staff to provide state-of-the-art imag-

ing, Dr. Dobranowski said.

"The technologies are available right now for not only transferring radiologic information, but also interacting with individuals so we can be instrumental in how the examinations are being performed before the information is transferred," he said.

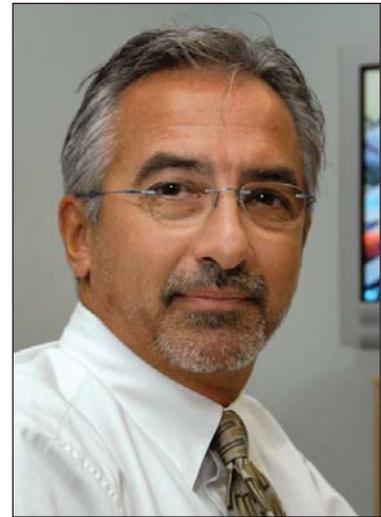
Second Collaboration with NASA

Dr. Dobranowski worked on NEEMO 9 and the earlier NEEMO 7, profiled in the December 2004 issue of *RSNA News*. In NEEMO 7, his team guided medical and non-medical personnel aboard the underwater habitat Aquarius through an abdomen and neck evaluation using the portable Titan ultrasound unit produced by SonoSite. The Aquarius habitat was also the site of NEEMO 9, which used a SonoSite portable ultrasound unit called MicroMaxx.

"We took a little different slant this time," Dr. Dobranowski said. "We focused more on musculoskeletal imaging and diagnosis of orthopedic type injuries. And we did simulation of x-rays, which hadn't been done before in our experiments. Everything we tested turned out very well. We were very happy with the results."

Aquanuts Dave Williams, Nicole Stott, Ron Garan and Tim Broderick, M.D., made up the undersea team for NEEMO 9. Jim Buckley and Ross Hein, research divers from the University of North Carolina at Wilmington, provided undersea engineering support. The mission ran from April 3 to 20.

"In this scenario, the aquanauts are



Julian Dobranowski, M.D.,
St. Joseph's Healthcare, Hamilton Ontario

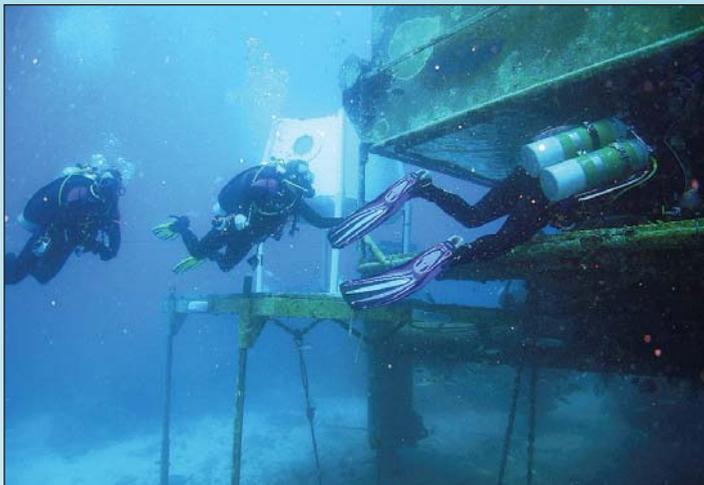
65 feet under water, and they can't come to the surface automatically," Dr. Dobranowski said. "They have to be protected, and getting to the surface would take a decompression procedure, which is quite lengthy. So this is the closest that we have to a really extreme environment on Earth."

Radiologists and other physicians communicated directly with the astronauts and teleradiated them through the program. "We've also developed quite elaborate manuals, so that in case the telecommunication links are broken, they would be able to go in a step-by-step manner through the processes and achieve the same outcomes," Dr. Dobranowski said.

MicroMaxx is an ultrasound machine the size of a laptop computer and turns on instantly, a plus in extreme situations. "You're scanning in less than 15 seconds from a cold start," said Drew D'Aguilar, general manager of SonoSite Canada Inc., based in Markham, Ontario. He added that because the system optimizes itself,

We're educating people that the resources are available right now to be able to provide really good health-care—no matter where in the world people are.

Julian Dobranowski, M.D.



(Clockwise, from upper left) Crew members for the ninth NASA Extreme Environment Mission Operations (NEEMO 9) mission arrive at their underwater home. NEEMO 9 was conducted April 3-20 inside the National Oceanic and Atmospheric Administration's (NOAA) Aquarius Underwater Laboratory, located off the coast of Key Largo, Fla.

NEEMO 9 Aquanaut Nicole P. Stott poses beside a habitat window in the Aquarius Underwater Laboratory. Ross Hein, a professional aquanaut from the University of North Carolina at Wilmington, is seen outside the window.

NEEMO 9 Aquanaut Ronald J. Garan Jr. helps with a Center for Minimal Access Surgery (CMAS) experiment in the Aquarius Underwater Laboratory. The experiment evaluated the use of telerenting for emergency treatment of medical conditions that could arise during a space mission.

Stott and Hein help NEEMO 9 Aquanaut and University of Cincinnati Physician Tim Broderick, M.D., apply a net with electrodes for an electroencephalogram (EEG) study. Dr. Broderick was studying brain activity while performing simulated surgical procedures.

Images courtesy of NASA

very few manipulations are required by the user.

The ultrasound images generated at the undersea habitat were beamed by satellite to the hospital in Ontario.

"We were linked with the orthopedic surgeons," Dr. Dobranowski said. "We guided the aquanauts in picking up the probes and doing an ultrasound of the knee. After that, they did a simulation of an arthroscopic examination

Continued on page 16

Teleradiology at RSNA 2006

"Survival Guide for Teleradiology" is among the topics addressed in one of the many informatics classes at RSNA 2006. To register for this or any other courses, go to rsna2006.rsna.org and click on Registration, Housing & Courses.

■ COURSE 085

Practical Informatics for the Practicing Radiologist—Part 2

(In conjunction with the Society for Imaging Informatics in Medicine)

- New Radiology Reporting Strategies
- Developing Enterprisewide PACS Sharing
- Survival Guide for Teleradiology
- Information Sharing in Community Networks



PET and Enhanced MR Imaging Predict Response to Cancer Treatment

POSITRON emission tomography (PET) and MR imaging accurately predicted response to cancer therapy in two recently published studies, raising the possibility that these modalities may eventually help oncologists and their patients determine treatment strategies for certain tumors in specific circumstances.

Fluorodeoxyglucose (FDG) PET predicted response to preoperative chemotherapy and radiation in patients with locally advanced esophageal cancer. Fast dynamic contrast-enhanced MR imaging predicted which patients would respond to chemotherapy for metastatic bladder cancer after just two cycles of treatment.

Both trials are part of a growing number of studies on using advanced imaging techniques to plan cancer treatment regimens by estimating response. "This is an important area for future study—it's a hot topic," said Edward A. Levine, M.D., chief of surgical oncology and professor of surgery at Wake Forest Comprehensive Cancer Center in Winston-Salem, N.C. Among other study authors were Michael R. Farmer, M.D., and A. William Blackstock, M.D., of the Department of Radiation Oncology and Paige B. Clark, M.D., of the Department of Nuclear Medicine.

PET in Esophageal Cancer

Dr. Levine and his colleagues at Wake Forest looked at whether FDG PET could predict response to preoperative

chemoradiation in patients with locally advanced esophageal cancer—tumors that have spread only within the esophagus. Determining response is especially important for these patients, since those who have complete responses to preoperative therapy—common for this stage of esophageal cancer—could avoid surgery. Esophagectomy has a high rate of morbidity and some associated mortality.

Currently, about 25 percent of patients with locally advanced esophageal tumors have complete responses to chemoradiation, based on histologic specimens obtained during surgery. The goal of a number of imaging studies is to determine prospectively who those patients are. Several preliminary studies have shown that FDG PET measurements of response to chemoradiation are strongly associated with histological response and improved overall survival in esophageal cancer.

The hope is that we can find a subset of patients who have a high likelihood of avoiding surgery.

Edward A. Levine, M.D.

"The hope is that we can find a subset of patients who have a high likelihood of avoiding surgery," Dr. Levine said.

In the Wake Forest study, published in the April 2006 issue of the *Annals of Surgery*, the researchers studied 64 consecutive patients who were either entered in a prospective phase II trial or formally monitored off-study between January 2000 and August 2004. All patients received chemoradiation followed by surgery. The median radiation dose was 50.5 Gy, given concurrently



Edward A. Levine, M.D.
Wake Forest University

with chemotherapy that consisted of cisplatin or carboplatin and 5-fluorouracil in most cases.

A total of 57 patients were staged with FDG PET before chemoradiation and 50 patients after chemoradiation. Forty-six patients had both pre- and post-chemoradiation scans.

Among those who had a PET scan before chemoradiation, the standard uptake value (SUV), or amount of radioactivity in the region, was closely associated with treatment response. Nine patients had an SUV of 15 or more, and seven of those, or 77.8 percent, had a complete pathologic response or a complete response with microscopic residual disease at the time of surgery. In contrast, of 34 patients whose pre-chemoradiation SUV was less than 15, only nine, or 26.4 percent, had comparable responses.

The researchers also examined the association between treatment response

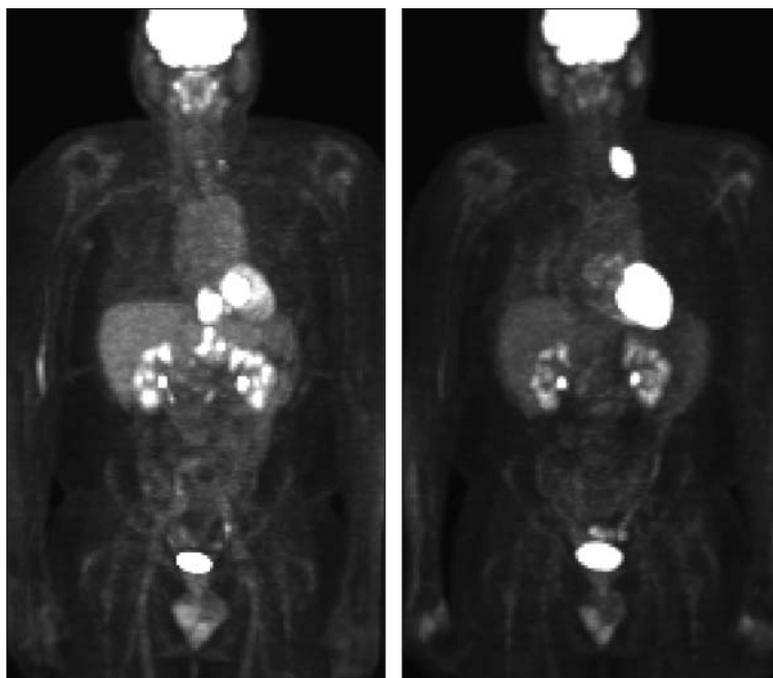
and an SUV decrease post-treatment when compared to pre-treatment. A significant response was observed in five of seven patients, or 71.4 percent, whose SUV decrease was 10 or more, compared to seven of 21 patients (33.3 percent) whose decrease was less than 10. The post-chemoradiation FDG PET was able to show metastatic disease with 83.3 percent sensitivity and 88.2 percent specificity.

Dr. Levine and his colleagues concluded that while prospective, multi-institutional studies are needed, the data so far suggest that FDG PET is a useful tool for identifying patients likely to experience a significant response to preoperative chemoradiation. "For now I'd certainly recommend a PET scan before chemoradiation, and we and others will continue to evaluate its value afterwards," said Dr. Levine.

MR imaging in Bladder Cancer

MR imaging studies have the potential of imaging to guide therapeutic decisions. In a study led by B. Ph. Schrier, M.D., of the Radboud University Nijmegen Medical Centre in The Netherlands, researchers compared conventional MR imaging with fast dynamic contrast-enhanced MR imaging in 36 patients with regionally metastatic or inoperable transitional cell carcinoma of the bladder. Patients underwent MR imaging before and after two, four and six cycles of chemotherapy and the results were compared with pathology findings at surgery.

The findings, which appeared in the April 2006 issue of *European Urology*, showed that after two cycles of chemotherapy, the fast dynamic contrast-enhanced technique distinguished between responders and non-responders with 91 percent sensitivity and 93 percent specificity. Conventional MR imaging, on the other hand, had just 81 percent sensitivity and 50 percent specificity. The median survival was 42 months for those who responded according to the contrast-enhanced MR imaging, versus 12 months for non-responders.



Demonstration of response and re-staging by ¹⁸F-FDG PET.

(left) Pre-chemoradiation imaging is displayed revealing an abnormality consistent with malignancy within the esophagus (SUV 24), retroperitoneum and celiac nodal station. (right) Post-chemoradiation imaging is displayed revealing resolution of the abnormality within the esophagus, retroperitoneum and celiac nodal station. Interval development of a left supraclavicular lymph node is noted.

Image courtesy of Edward A. Levine, M.D. *Annals of Surgery* 2006;243(4):472-478. © 2006 Annals of Surgery.

The small number of patients is obviously a limitation in this study, the authors said, and a larger prospective study would help to validate the results. Nevertheless, the findings suggest that it is possible to predict which patients will respond to chemotherapy after just two cycles, they said.

"The practical consequences of these findings are obvious," the authors wrote. "Patients who respond to enhanced MR imaging after two cycles [of chemotherapy] can be encouraged

to complete the whole course of six cycles. Patients who do not respond may want to discontinue therapy so as to avoid the adverse effects and have a better quality of life in the months ahead."

Not all experts agree, however. An editorial comment following the research report, by Stephané Culine, M.D., Ph.D., of the Centre Régional de Lutte Contre le Cancer, Centre Val D'Aurelle-Paul Lamarque, Montpellier,

Continued on page 16

Assessing Therapeutic Response at RSNA 2006

A REFRESHER course at RSNA 2006 will review the use of novel analysis methods and modalities such as PET for therapy response assessment. To register for this or any other courses, go to rsna2006.rsna.org and click on Registration, Housing & Courses.

■ RC118

Therapeutic Response Assessment in Oncology

- Conventional and Novel Techniques for Therapeutic Response Assessment
- MR Imaging Techniques in Tumor Response Assessment
- PET in Tumor Response Assessment



Invention Aims to Eliminate Physician Radiation Exposure During Angiography

PLATO'S adage about necessity being the mother of invention has proven true again. A Maryland radiologist's dissatisfaction with traditional radiation safety precautions during coronary angiography led him to create a new device that he said nearly eliminates radiation exposure to the physician.

Martin Magram, M.D., an assistant professor in the Department of Diagnostic Radiology at the University of Maryland Medical Center in Baltimore, said the longer curved handle he developed to attach to the patient table gives him flexibility in performing coronary angiograms while significantly cutting his own radiation exposure. The handle, he said, allows the physician to remain safely behind the lead plastic shield while retaining table control for panning.

"It has always bothered me that the head, arms and legs are exposed. We wear a lead apron and some of us wear lead glasses and a thyroid shield, but that's not enough," said Dr. Magram. "It occurred to me it might be possible to augment the protection so you could work behind the screen and yet still be as functional right near the table."

A study Dr. Magram conducted to test his invention attracted attention via the annual meeting of the American Roentgen Ray Society (ARRS) in Vancouver, British Columbia, earlier this year. Using his technique and recording

radiation exposure to various parts of the physician's body during coronary angiography on 25 patients, Dr. Magram compared the results to physician's radiation exposure during 25 procedures using conventional radiation protection. The new table control device, he concluded, reduced radiation exposure to the physician's head, arms, and legs by 90 percent.

Dr. Magram's curved extension bar replaces the traditional short handle. "The extension bar is rather like a broomstick, which is a yard long and curves behind the leaded glass panel," he said. He added that his goal was to put the physician as far out of danger as possible, while still being able to do his or her job effectively.

"You don't have to be standing right next to the table if you need to pan while you're doing the angiogram that is moving the table with the patient on it," Dr. Magram said. "By standing behind the shield and moving the table with the bar connected to the table, your entire body is protected from radiation, so you get only about one-tenth of the radiation that you would have gotten without the shield and bar."

Ergonomics Still an Issue

Whether the technique can be modified to suit the needs of other radiologists remains to be seen. It has been tested only during coronary angiography. Donald L. Miller, M.D., professor of



Martin Magram, M.D.
University of Maryland

radiology at the Uniformed Services University in Bethesda, Md., acknowledged the widespread physician interest in radiation protection. Since the principle of "as low as reasonably achievable" (ALARA) still guides institutions—which check exposure regularly via badges and review the practices of staff members who receive 10 percent and 25 percent of the permitted annual dose—safety research collaborations between angiographers and interventional radiologists also continue to investigate ways to improve protection.

Dr. Miller said that while Dr. Magram's device does reduce radiation dose to the body, it doesn't address an issue just as troublesome to physicians—the ergonomic problems associated with the lead aprons routinely worn to shield the body. Weighing between 9½ and 13½ lbs., the aprons stress the neck and spine and may cause significant injuries.

It occurred to me it might be possible to augment the protection so you could work behind the screen and yet still be as functional right near the table.

Martin Magram, M.D.

Because Dr. Magram's reported reduction in radiation exposure occurred while he was wearing a lead apron, said Dr. Miller, his technique does little to address those stress issues. "Most of us who do this work think there is a clear relationship between spine problems suffered by some physicians and the kinds of positions we are in and the weight of the lead protection," said Dr. Miller.

Working Toward Eliminating Lead Gowns

Dr. Miller added that interventional radiologists' need to stand in various places around their patients might prevent them from utilizing the technology. "The area of interest of the patient's anatomy can be anywhere from the head to the foot and the operator could be standing anywhere. In coronary angiography, the operator is standing at the patient's hip and that's a relative constant for most cardiology procedures," said Dr. Miller.

However, Dr. Magram said that because he was able to clearly demonstrate a significant exposure reduction, this encourages further exploration of his technique and oth-

ers like it. "Previously people did things a certain way and that's how we were taught. Now we are rethinking all this," he said.

The new technique may eventually free physicians from the need to wear lead gowns, Dr. Magram explained. "As the sophistication of radiologic diagnostics has increased, it is tragic when a physician can no longer perform procedures because the lead gowns cause onset of neck or back degeneration and the physician becomes unable to tolerate the weight of a lead gown," he said. "This may extend by years their ability to apply the skills they have developed over long careers of serving patients."

Dr. Miller said that even as new techniques are developed and evolve, the basic principles of radiation safety will always apply.

"Keeping the image receptor as close to the patient as possible, collimating tightly around the area of interest, using reduced-dose pulsed fluoroscopy and limiting fluoroscopy time and the number of angiographic images, will reduce dose to both the patient and operator," he said. □

Thyroid Disease Prevalent in Atomic Bombing Survivors

In one recently published study on the effects of radiation exposure, researchers report that the prevalence of thyroid diseases—including solid nodules, malignant tumors, benign nodules and cysts—among survivors of the atomic bombings in Hiroshima and Nagasaki, Japan, is significantly associated with radiation dose to the thyroid gland.

In addition, dose effects were significantly higher in those exposed when young, Misa Imaizumi, M.D., of the Radiation Effects Research Foundation, Nagasaki and Hiroshima, and colleagues reported in the March 1 issue of *The Journal of the American Medical Association (JAMA)*.

Between 2000 and 2003, Dr. Imaizumi and colleagues looked at 4,091 survivors. The mean age of the participants was 70 and two thirds were women.

Excluding approximately 900 people exposed in utero, not in the cities at the time of the atomic bombings or with unknown radiation dose, researchers identified thyroid diseases in 44.8 percent of the participants. The researchers estimated that 28 percent of all solid nodules, 37 percent of malignant tumors, 31 percent of benign nodules and 25 percent of cysts were associated with radiation exposure.

The researchers found no significant dose-response relationship for positive antithyroid antibodies, antithyroid antibody-positive hypothyroidism, or Graves disease, an inflammatory disorder of the thyroid gland.

"The present study revealed that, 55 to 58 years after radiation exposure, a significant linear dose-response relationship existed to the prevalence of not only malignant thyroid tumors but also benign thyroid nodules, and that the relationship was significantly higher in those exposed at younger ages," the researchers wrote. "Careful examination of the thyroid is still important long after radiation exposure, especially for people exposed at younger ages."

■ To read the abstract for "Radiation Dose-Response Relationships for Thyroid Nodules and Autoimmune Thyroid Diseases in Hiroshima and Nagasaki Atomic Bomb Survivors 55-58 Years After Radiation Exposure," go to jama.ama-assn.org/cgi/content/abstract/295/9/101.

■ To read the abstract for "Reduced Physician Radiation Exposure during Coronary Angiography with New Radiation Protection Technique," presented at the 2006 annual meeting of American Roentgen Ray Society, go the RSNA News Extras page at RSNA.org/Publications/rsnanews/extras.cfm.

Radiation Dose Optimization and Safety at RSNA 2006

SPECIAL CONSIDERATIONS for angiography will be among the topics examined during the RSNA 2006 Categorical Course in Diagnostic Radiology Physics. In addition to angiography, the course will also touch on fluoroscopy, CT and mammography. Attendees may register for individual sessions of the course. To register for these sessions or any other courses, go to rsna2006.rsna.org and click on Registration, Housing & Courses.

Categorical Course in Diagnostic Radiology Physics: From Invisible to the Visible—The Science and Practice of X-Ray Imaging and Radiation Dose Optimization

- RC125 Introduction, Radiographic Image Formation and Characteristics, Measures of Image Quality
- RC225 Medical Radiation Dosimetry, Radiation Risks in Diagnostic Radiology, Balancing Risks and Benefits in Medical Radiography
- RC325 Computed Radiography/Digital Radiography: Adult, Pediatric and Radiologist, Perspective of Controlling Dose and Study Quality
- RC425 Fluoroscopy (Gastrointestinal): Dose, Clinical Practice—Controlling Dose and Study Quality
- RC525 CT: Dose and Image Quality
- RC625 Clinical Practice: Controlling Adult and Pediatric Radiation Dose and Study Quality
- RC725 Special Procedures (Angiography): Dose, Image Quality and Clinical Practice
- RC825 Mammography: Dosimetry, Screen-Film and Digital



Drug-Ultrasound Stroke Treatment Appears Promising

A DECADE after the Food and Drug Administration approved the use of a clot-busting medication to treat strokes within three hours of onset, radiologists continue to find ways to combine the drug with other technology to improve functional outcomes.

Specifically, a drug-ultrasound combination can increase the chances for reopening blocked arteries after a stroke, according to a new study. The study was co-sponsored by the National Institute of Neurological Disorders (NINDS) and EKOS Corporation, manufacturer of a catheter used in the study.

Co-principal investigators Thomas Tomsick, M.D., director of neuroradiology at the University of Cincinnati and Cincinnati's University Hospital, and Joseph Broderick, M.D., chair of the Department of Neurology at the University of Cincinnati, presented their findings at the 2006 International Stroke Conference.

Their pilot showed the standard clot-busting medication, tissue plasminogen activator (tPA), when used in combination with low-energy ultrasound, appears to reopen clogged arteries better than medication alone. "The study looked at the effect of ultrasound microcatheter thrombolysis following a reduced dose of IV-tPA," Dr. Tomsick said.

Ultrasound Vibrated and Dissolved Clots

The Interventional Management of Stroke Study (IMS-II) involved 73 patients seeking treatment for a severe ischemic stroke at one of 13 medical centers. Ischemic strokes make up



Thomas Tomsick, M.D.
University of Cincinnati



Howard A. Rowley, M.D.
University of Wisconsin

about 88 percent of all strokes. Participants, between the ages of 18 and 80, were given lower doses of tPA over a half-hour period within three hours of the onset of stroke.

Patients then underwent angiography. Twenty-two patients did not receive intra-arterial tPA (IA rtPA); 13

The most important thing we can do is open the blood vessels quickly. Every minute is crucial.

Howard A. Rowley, M.D.

did not have a visible and treatable clot and consequently were not given any additional treatment. The remaining 51 subjects were given up to 22 milligrams of additional tPA, delivered directly to the blockage via a catheter, extending the treatment time to seven hours.

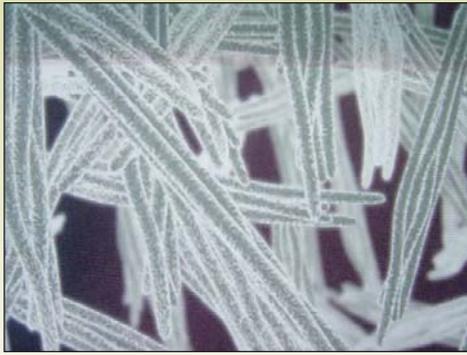
In addition, 30 subjects were then administered a low-energy ultrasound treatment at the site of the clot, in the hope that sound waves would vibrate and help dissolve the clot. The researchers used the EKOS Micro-Infusion Catheter MicroLysUS infusion

system, except in 21 participants where a standard catheter was used instead.

Positive Results Prompted Further Study

Of the 26 patients receiving treatment with the final ultrasound-design catheter, 69 percent were shown to have complete reopening of the blocked artery. Dr. Tomsick said this is notable because in IMS-I—a trial where a standard microcatheter was used to bring tPA to the location of the stroke-causing clot—only 50.5 percent of patients achieved complete reopening of the blockage.

The mortality rate of IMS-II was 16 percent, identical to the mortality rate of IMS-I and lower than the 21-percent mortality rate for the NIH-NINDS tPA Stroke Trial. However, in IMS-II, the rate of bleeding in the brain leading to a worsening of the patients' condition was 11 percent, compared to 6.3 percent in IMS-I. Dr. Tomsick said further study comparing patient outcomes and safety is in the works.



The fabric of a blood clot, called fibrin, is naturally tightly bound (left). Ultrasound helps temporarily loosen and separate the fibrin (center) for more blood clot permeability. Loosened fibrin increases the availability of plasminogen activation receptor sites (right), leading to quicker clot dissolution.

Images courtesy of EKOS Corporation.

Overall, the findings of IMS-I and IMS-II were so encouraging that a much broader phase III trial is about to begin. Some 45 to 50 medical centers will participate in a study involving 940 U.S. and Canadian stroke patients over the course of four to five years. Dr. Tomsick said this \$21-million trial will compare full-dose tPA with reduced-dose tPA and three different interventional techniques. The study is sponsored by NINDS, the EKOS Corporation, Concentric Corporation, Cordis Neurovascular and Genentech, Inc.

“If we prove there is a benefit to intraarterial intervention beyond the standard early intravenous therapy, people will jump on the interventional bandwagon,” said Dr. Tomsick, who has no financial interest in the companies involved.

Radiologists Can Maximize Stroke Treatment Role

Dr. Tomsick said with ultra-early treatments, a 50 percent improvement in functional outcomes in certain select stroke patients could be achieved. “Our goal is improved functional outcomes,” he said.

Howard A. Rowley, M.D., chief of neuroradiology and Joseph Sackett Professor of Radiology at the University of Wisconsin in Madison, agreed. “The most important thing we can do is open the blood vessels quickly,” he said, noting that radiologists play a large role in stroke triage by imaging and treating

patients. “Every minute is crucial,” he added.

Dr. Tomsick said radiologists can maximize their role in triage by facilitating CT scans of the brain as quickly and accurately as possible and rapidly transmitting that information to the emergency department and referring physicians. “Radiologists can also contribute to care by developing interventional skill sets and aggressively treating appropriate stroke patients,” he said.

Noting that better patient selection can also improve results, Dr. Rowley said such studies provide evidence that radiologists can use imaging to target

patients for the exact care they need and successfully use thrombolytic agents even beyond the currently approved 3-hour window. Ultrasound is another weapon in the arsenal, he said, but added, “Even in the best of hands, it can be hard to get blood vessels open.”

An August 2005 article by Dr. Rowley, published in the journal *Neuroimaging Clinics of North America* as “Extending the Time Window for Thrombolysis: Evidence from Acute Stroke Trials,” shows that while the current standard is giving tPA within 3 hours of the onset of a stroke,

Continued on page 16

■ To view the abstract for “Interventional Management of Stroke Study Part II (IMS II),” presented at the 2006 International Stroke Conference, go to www.abstractsonline.com/arch/RecordView.aspx?LookupKey=12345&recordID=16949

■ To view the abstract for “Extending the Time Window for Thrombolysis: Evidence from Acute Stroke Trials,” go to www.neuroimaging.theclinics.com/article/PIIS1052514905000523/abstract

■ The National Institute of Neurological Disorders and Stroke (NINDS) now offers a Web-based tutorial in acute stroke imaging. See “Other Web News” on page 33 for more information.

Stroke Treatment at RSNA 2006

A COUPLE OF RSNA 2006 refresher courses will examine CT and MR imaging evaluation, as well as endovascular treatment, of acute stroke. To register for these or any other courses, go to rsna2006.rsna.org and click on Registration, Housing & Courses.

■ RC350

Intraarterial Acute Ischemic Stroke Therapy (How-to Workshop)

■ RC505*

Comprehensive Imaging for Acute Stroke Treatment (An Interactive Session)

* A self-assessment module (SAM) can be completed in this course and applied toward maintenance of certification (MOC) requirements.



RSNA 2006 Moves Informatics into the Mainstream

JUST AS informatics has changed the way radiologists do their jobs, RSNA is changing how it presents this ever-changing science at the annual meeting.

After almost 20 years of being grouped in a special *infoRAD*® area, this year's exciting informatics demonstrations have been integrated with the rest of the electronic and hard-copy education exhibits and posters in the newly redesigned and renamed Lakeside Learning Center (formerly Hall D).

"Practicing radiologists will benefit from making good informatics choices and implementing integrated solutions through knowledge enhanced by participating in the activities in the new and friendly Lakeside Learning Center," said David Avrin, M.D., Ph.D., a professor of radiology, adjunct professor of biomedical informatics and chief of body imaging in the Department of Radiology at the University of Utah. Dr. Avrin is chair of the RSNA Radiology Informatics Committee (formerly the Electronic Communications Committee).

"Informatics is the key to workflow, and good workflow is the key to running an efficient imaging practice," said Dr. Avrin. "At RSNA 2006 you'll also get to experience cutting-edge technology of the not-too-distant future."

Clinical Informatics Moved to Organ Areas

David S. Mendelson, M.D., a member of the Radiology Informatics Committee, said attendees will find that clinical informatics exhibits, when relatively mature and specific to an organ system,



David S. Mendelson, M.D., and John Halamka, M.D., M.S., address attendees of an IHE workshop in Oak Brook, Ill., in June.

have been integrated into the exhibits of that organ area.

"RSNA is trying to integrate informatics as much as possible by featuring demonstrations with specific clinical applications within the relevant organ areas at the meeting," said Dr. Mendelson. "We are trying to present these technologies as part of the mainstream."

As for informatics exhibits not tied to a specific clinical area or in a more embryonic form—including trends in image processing and analysis, as well as decision support and workflow topics and new technologies in development—they will be subspecialty "spokes" in the new "wheel" layout of Lakeside Learning Center. Integrating the Healthcare Enterprise (IHE®) and a new National Cancer Institute (NCI) showcase will occupy space on the perimeter of the center, along with classrooms for how-

to workshops (see sidebar).

IHE Exhibits Will Enhance Physician Knowledge

IHE will demonstrate its Cross-enterprise Document Sharing for Imaging (XDS-I) and Teaching File and Clinical Trial Export (TCE) integration profiles. These profiles offer standards-based solutions for sharing medical images and reports across care sites defined by IHE.

Developed nine years ago by RSNA and the Healthcare Information and Management Systems Society (HIMSS), IHE strives to improve patient care by standardizing the way health systems exchange information. Fields such as cardiology, eye care, laboratories, patient care coordination and patient care devices have joined IHE. The IHE demonstration at RSNA 2006 is one of more than a dozen planned presentations, some of which will be held at meetings of the American Academy of Ophthalmology and Society for Cardiovascular Angiography and Interventions.

Informatics is the key to workflow, and good workflow is the key to running an efficient imaging practice.

David Avrin, M.D., Ph.D.

In January 2007, IHE will combine an educational conference with its annual Connectathon for the first time. See page 27 for more details.

The need for clinicians to understand and embrace the capabilities of IHE is critical, said Dan Russler, M.D., vice-president for clinical technology at McKesson and co-chair of IHE's Patient Care Coordination Technical Committee. For example, he said, think of a patient who has completed the uncomfortable but necessary preparations for a colonoscopy, only to arrive at the appointment and find that the specialist has not received the needed pre-procedure information from the primary care physician and consequently the procedure cannot be performed.

IHE also will play a significant role in the work of the new Healthcare Information Technology Standards Panel (HITSP) established by the Department of Health and Human Services (HHS), said John Halamka, M.D., M.S., chair of HITSP and chief



MIRC

RadLex

information officer at Harvard Medical School.

"IHE is more essential than ever because of the experiences you've had," Dr. Halamka told attendees of an IHE workshop in Oak Brook, Ill., in June.

NCI Director to Lecture in New Cancer Showcase

The new NCI Showcase at RSNA 2006 will include a number of informatics demonstrations as part of its focus on recruiting more physicians into clinical trials work. A theater area will feature

lecturers throughout the week, including NCI Acting Director John E. Niederhuber, M.D., and Ken Buetow, director of the NCI Center for Bioinformatics.

"These demonstrations have tremendous implications for cancer clinical care and research," said Eliot Siegel, M.D., professor and vice-chair of the Diagnostic Radiology Department at the University of Maryland's School of Medicine, chief of imaging at the Baltimore Veterans Affairs Medical Center and member of the Radiology Informatics Committee. Dr. Siegel is also part of the NCI cancer Biomedical Informatics Grid (caBIG) initiative.

Also part of the informatics demonstrations this year will be RadLex®, an RSNA initiative aimed at developing a comprehensive radiology lexicon, and RSNA's Medical Image Resource Center (MIRC). The goal of MIRC is to enable the wealth of information generated by radiologists to be used for education and research. □

Informatics at RSNA 2006

HERE IS A sampling of the informatics courses, classes and workshops offered at RSNA 2006. For a full listing and to register for these or other courses, go to rsna2006.rsna.org and click on Registration, Housing & Courses. Courses with multiple numbers repeat throughout the week.



■ COURSES 073, 074, 075, 076
Overview of RSNA's Teaching File and Clinical Trial Software (MIRC)

■ COURSES 031, 032, 033, 034, 035
Using the RSNA Teaching File: Hands-on Workshop

■ COURSE 070
Electronic Measurements, Electronic Reports: IHE, DICOM, and HL7 CDA

■ COURSES 060, 061, 062, 063, 064, 065
Purchasing and Integrating Radiology Systems with IHE: A Tutorial and a Real-world Case

■ COURSE 067
IHE Radiology: What's New in 2006?

■ COURSES 077, 078
Workshop: Installing a Teaching File System on Your Laptop (MIRC)

■ COURSES 084 AND 085
Practical Informatics for the Practicing Radiologist—Parts 1 & 2 (In conjunction with the Society for Imaging Informatics in Medicine)

■ COURSE 081
RadLex for Radiologists: A Clinical Introduction to a New Lexicon for Radiology

■ COURSE 066
The IHE Initiative Worldwide: An Update from Europe, Asia, and North America

■ COURSE 068
IHE Mammography: What's New in 2006?

■ COURSE 072
IHE: Building the Electronic Health Record

■ COURSE 079
Using MIRC for Clinical Trials

■ COURSE 069
IHE Nuclear Medicine: What's New in 2006?

■ COURSE 071
IHE for Administrators: Overcoming Implementation Obstacles

Undersea Mission Emphasizes Radiology's Telemedicine Role

Continued from page 7

and a meniscectomy, which was also telementored by one of the orthopedic surgeons from our site. That went very well, also.”

The project also included a simulated x-ray procedure using a portable x-ray device—deactivated to avoid radiation exposure—manufactured by MinXray, Inc., of Northbrook, Ill.

Time Delay Not a Problem

Dr. Dobranowski said no one involved in the project had trouble adjusting to the signal time-delay that occurs in satellite transmissions.

“If a space mission was set up on the moon, it would take about a second to communicate information from the Earth to the moon, and then another second to get information back from the

moon to the Earth,” he said. “We didn’t know how people would react to having that delay. But we found that both the person who was teaching and the recipient of the information adapted very rapidly. That time-delay environment, which we created artificially for this project, became the new norm for the communication. People adapted very quickly to that new norm and were able to do all the tasks quite successfully.”

CMAS founder and director Mehran Anvari, M.D., was the lead surgeon on the scientific mission and remotely manipulated the arms of a surgical robot for a simulated treatment of the knee injury. Stott, one of the aquanauts, called it amazing.

“This was a medical first because not only did he perform the procedure from a remote location, [but] he also

successfully performed the procedure with a 2-second delay in the communication/video signal he was receiving as his only reference,” Stott wrote in the online expedition journal published by NASA.

“It was a very impressive demonstration of skill and new technology that will change the face of surgical care,” Williams, another aquanaut, added in the journal.

Dr. Dobranowski said he and his colleagues always believed that a 400- to 500-millisecond delay was the maximum possible. “But even with the one-second delay, he was still able to do fine surgical procedures,” he said. □

■ To learn more about the NEEMO 9 mission, visit www.nasa.gov/mission_pages/NEEMO/NEEMO9.

PET and Enhanced MR Imaging Predict Response to Cancer Treatment

Continued from page 9

France, suggested that, even if confirmed, these results are not likely to modify clinical practices. “As there is unfortunately no current effective salvage treatment to offer for these patients who fail primary chemotherapy, I would continue to recommend standard CT scans only for daily practice,” she wrote.

However, in patients with operable disease, enhanced MR imaging could be an important tool in assessing neoadjuvant therapy, Dr. Culine said. “In a prospective clinical trial, I would suggest an MR imaging assessment along with pathological evaluation after

two cycles of neoadjuvant chemotherapy, followed by bladder preservation in responder patients or cystectomy in non-responder patients.”

Using advanced imaging techniques to identify a subset of patients who can avoid resection would be similar to studies at Wake Forest, where Dr. Levine and his colleagues look forward

to continued favorable research with esophageal cancer. They believe it will impact the standard of care. “While additional studies are needed, the evidence does suggest the potential for PET to change clinical practice,” Dr. Levine said. □

■ To view the abstract for “Predictive Value of 18-Fluoro-Deoxy-Glucose-Positron Emission Tomography (18F-FDG-PET) in the Identification of Responders to Chemoradiation Therapy for the Treatment of Locally Advanced Esophageal Cancer,” go to www.annalsofsurgery.com/pt/re/annos/abstract.00000658-200604000-00007.htm.

■ To view the abstract for “Evaluation of Chemotherapy with Magnetic Resonance Imaging in Patients with Regionally Metastatic or Unresectable Bladder Cancer,” go to linkinghub.elsevier.com/retrieve/pii/S0302283806000418.

Drug-Ultrasound Stroke Treatment Appears Promising

Continued from page 13

only 20 percent of stroke patients present to a hospital in that time frame. Only about 2 to 4 percent of patients actually receive tPA today, leaving hundreds of thousands untreated. Dr. Rowley said these current limitations

underscore the need for radiologists to help rapidly triage stroke patients and guide acute interventions beyond the traditional 3-hour window.

In the future, Dr. Tomsick said there could be potential benefit of administering IV-tPA with other med-

ications. “Researchers are investigating other drug agents to break up clots when used in a timely fashion or even neuroprotective agents that could help diminish the effects of strokes,” Dr. Tomsick said. □

Chicago Events and Attractions Offer Timeout at RSNA 2006

REGARDLESS of age or interest, Chicago offers something for everyone during RSNA 2006. Chicago's diverse selection of activities and events includes art, music, theater and a number of other pursuits.



RSNA Tours & Events

RSNA is sponsoring a series of tours and events during RSNA 2006. The RSNA Tours & Events brochure is available at rsna2006.rsna.org. Click Tours and City Events in the left-hand column.

RSNA members who participated in tours at RSNA 2004 and RSNA 2005 will automatically receive a brochure in the mail.

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.



The Field Museum

KING TUT'S treasures along with riches from neighboring tombs in the Valley of the Kings are available for viewing in the exhibit *Tutankhamun and the Golden Age of the Pharaohs*. Approximately 30 objects are displayed including the "boy king's" crown and organ jars and containers. The artifacts are estimated to be between 3,300 and 3,500 years old. Tickets may be arranged in advance for this popular exhibit.

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. In the *Evolving Planet* exhibit, which explores 4 billion years of evolution, visitors can touch a real dinosaur bone and the teeth of a mastodon and a woolly mammoth. The Field Museum anchors the Museum Campus, which also includes the Shedd Aquarium and Adler Planetarium, on South Lake Shore Drive at Soldier Field.

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



(above) Sue, the largest, most complete and best preserved *Tyrannosaurus rex* fossil ever discovered, welcomes visitors to The Field Museum.

(left) This nearly life-size painted wooden model of the head and torso of the boy king Tutankhamun was found partially hidden behind one of his chariots in the Antechamber of his tomb. *Tutankhamun and the Golden Age of the Pharaohs* continues through January 1, 2007 at The Field Museum.

MUSEUMS

Two bronze lions that flank the Michigan Avenue entrance to the Art Institute of Chicago were made for the Art Institute's opening at its current location in 1893. Shown here is the "north lion," who is "on the prowl."



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 will feature the work of Charles Sheeler, an important 20th-century American photographer and painter. A second exhibit, *So the Story Goes: Photographs by Tina Barney, Philip-Lorca diCorcia, Nan Goldin, Sally Mann, and Larry Sultan*, offers an intimate view of these photographers' private lives.

■ 111 S. Michigan Ave.
Tickets: 1-312-930-4040
Membership: 1-312-575-8000

www.artic.edu
www.ticketmaster.com



Shedd Aquarium

LIZARDS and the Komodo King is a special exhibit featuring lizards of all shapes and sizes from around the world. Komodos, which can grow up to 8-feet long and weigh as much as 300 lbs., can eat a pig in 20 minutes.

The aquarium is home to aquatic life from around the world. The Wild Reef exhibit offers one of the most diverse displays of sharks in North America. Visitors can also enjoy seahorses, otters, seals, dolphins, penguins and 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



© Denver Zoo

Faust, an 8-foot, 120-pound Komodo dragon, is the highlight of *Lizards and the Komodo King*, a Shedd Aquarium exhibit featuring more than 25 species of lizards.

Museum of Contemporary Art

On display are two related exhibits, *Sustainable Architecture in Chicago: Works in Progress*, which focuses on sustainable building practices, and *Massive Change: The Future of Global Design*, which considers ethical and environmentally responsible energy, land and materials use. Another special exhibit surveys the work of American artist Richard Tuttle, including his drawings, installation art, furniture, paintings, printmaking and sculpture.

The MCA's permanent collection represents trends in art after 1945, with a special emphasis in 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



Adler Planetarium

PLANETARIUM visitors can see the newly restored Gemini 12 spacecraft in the new *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. Scheduled in the virtual reality StarRider Theater

are *Stars of the Pharaoh*, *SonicVision* and *TimeSpace*, where time travelers quickly flip through the highlights of 14 billion years of our universe's history. The Sky Theater depicts stars and other nighttime wonders projected on Adler's distinctive dome. Sky Theater presentations include *Egyptian Nights: Secrets of the Sky Gods* and *Space...In Your Face*. 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



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, Frank Lloyd Wright, Franz Mayer and F.X. Zettler. Free guided tours are also available by appointment.

- 600 E. Grand Ave.
1-312-595-5024

Peggy Notebaert Nature Museum

PERCHED on the edge of a Lincoln Park lagoon, Chicago's newest museum welcomes children of all ages. Visitors should be sure to enjoy the beauty of the Butterfly Haven. Other permanent exhibits include the Look-in Animal Lab, Extreme Green House, Mysteries of the Marsh, River-Works, 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

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 seven of the most visited museums in the United States. Opened in 1933, it was the first museum in North America to develop hands-on, interactive exhibits.

Permanent exhibits include the U-505 World War II submarine, Colleen Moore's Fairy Castle, the Apollo 8 Command Module and IMAGING: Tools of Science, an exhibit featuring the use of computer-based imaging technology in the fields of medicine, science, law enforcement and entertainment.

Annual exhibits include the *Christmas Around the World* and *Holidays of Light*. Also on display in a special exhibit are

more than 200 robots and space toys from the Robert Lesser collection. *Robots Like Us* explores how these delightful toys once illustrated a generation's fantasies and fears of the future.

Additional special exhibits include, *Frogs! A Chorus of Colors*, which unites 150 fantastic frogs in all shapes, patterns and colors imaginable from around the world, and a visiting exhibit from the Drug Enforcement Administration's museum. *Target America: Opening Eyes to the Damage Drugs Cause* considers the societal cost of drugs and the forensic science and technology used to stem the illegal drug trade.

The Omnimax theater at the



Museum of Science and Industry
Scott Brownell, Museum of Science and Industry

**RSNA
TOUR 24**

Museum of Science and Industry features *Volcanoes of the Deep Sea* and *Wired to Win: Surviving the Tour de France*.
■ 57th St. and Lake Shore Dr.
1-773-684-1414
www.msichicago.org

Lincoln Park Conservatory

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

■ 2391 N. Stockton Dr.
1-312-742-7736

Garfield Park Conservatory

View the holiday flower show at 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

Chicago Historical Society

This urban museum 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

T H E A T E R

Hotel Cassiopeia

Anne Bogart directs the SITI Company in a performance exploring the life of a Manhattan artist.

■ Court Theatre
5535 S. Ellis Ave.
1-773-753-4472
www.courttheatre.org

Late Nite Catechism

This witty performance is a favorite among those who were taught by nuns in the parochial school system.

■ Royal George Theatre
1641 N. Halsted St
1-312-902-1400
www.ticketmaster.com

The Pirate Queen

The story of Ireland's 16th century pirate chief-tain Grace O'Malley.

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

**RSNA
TOUR 4**

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 ETC stage features up-and-coming Chicago comics.

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

**RSNA
TOUR 17**



Continued on next page

FAMILY PERFORMANCES

A Christmas Carol

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

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

A Christmas Schooner

A holiday tradition, this performance takes a wonderful look at families and customs.

■ Bailiwick Repertory Theater
1229 W. Belmont Ave.
1-773-883-1090
www.bailiwick.org

A Nutcracker Christmas

A children's musical based on the famous Nutcracker story.

■ Apollo Theater
2540 N. Lincoln
1-312-902-1400
www.ticketmaster.com

Rewired

by Blue Man Group Performance art and comedy meet music.

■ Briar Street Theatre
3133 N. Halsted
1-773-348-4000
www.bluesman.com
www.ticketmaster.com

Continued from previous page

Sonia Flew

As an immigrant family prepares to celebrate Christmas and Hanukkah, memories of escaping the Cuban Revolution emerge. Previews begin Dec. 1. Tickets go on sale in August.

- Steppenwolf Theater
1650 N. Halsted St.
1-312-335-1650
www.steppenwolf.org

Tommy Gun's Garage

Set in a Prohibition-era speakeasy, this 1920s musical comedy revue includes dinner.

- Tommy Gun's Garage
1239 S. State St.
1-773-728-2828
www.tommygunsbar.com

Wicked: The Untold Story of the Witches of Oz

Wicked 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

RSNA
TOURS 3, 28, 45

S Y M P H O N Y & O P E R A

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, that opened in 1929.

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



il Trovatore

November 26 and 29
A love triangle ends with a flair to which only classic Italian opera can aspire.
by Giuseppe Verdi
Conductor: Bruno Bartoletti
with Dolora Zajick and Nicola Rossi Giordano

Romeo et Juliette

November 27 and 30
A story of love, loyalty and youth. Tickets go on sale in August.
by Charles Gounod
Conductor: John Mauceri
with Dina Kuznetsova and Matthew Polenzani

Chicago Symphony Orchestra

November 24, 25, 28
Conductor: Pierre Boulez
Program: Mahler's Seventh Symphony

November 30 and December 1, 2 and 5
Conductor: Pierre Boulez
Piano: Pierre-Laurent Aimard
Program: Ravel: Valses nobles et sentimentales
Ligeti: Piano concerto
Bartók: The Miraculous Mandarin



- Chicago Symphony Orchestra
220 S. Michigan Ave.
1-888-294-3550
www.chicagosymphony.org

FAMILY ACTIVITIES

American Girl Place

SHOPPERS at American Girl Place may choose among the beautiful dolls and catch American Girl Review in the theater. Lunch, tea and dinner are served at The Café. Reservations are recommended.

- 111 E. Chicago Ave.
1-877-247-5223
www.americangirl.com



Chicago Children's Museum

Chicago Children's Museum is committed to creating a community where play and learning connect. More than 12 interactive exhibits and new programs offer hours of creative play. Hands-on exhibits are creatively focused on science, literacy, humanities and the arts. The annual Gingerbread Fantasy Factory exhibit will open for holiday visitors so children of all ages can pretend to make, bake and decorate gingerbread goodies and participate in creating gingerbread-scented sculptures in the Kraft Artabounds Studio. Children can read and sing-a-long with the Gingerbread Man.

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

Navy Pier IMAX Theatre

Visit the Navy Pier IMAX theatre to see The Polar Express: An IMAX 3D Experience and Wild Safari as well as two child-oriented animated 3-D films, Open Season and Happy Feet.

- 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



Research & Education Foundation Donors

THE Board of Trustees of the RSNA Research and Education Foundation and its recipients of research and education grant support gratefully acknowledge the contributions made to the Foundation **May 20 – June 23, 2006.**

The Foundation is now recognizing donors for their cumulative giving. These donors will

be recognized for achieving giving milestones through the Foundation's Visionary Donor Program. At the end of the year, a complete roster of Visionary Donors will be listed in the 2006 RSNA Annual Report.

For more information on Foundation activities, go to RSNA.org/foundation.

VANGUARD PROGRAM

Philips Medical Systems
Healthcare Informatics



\$30,000

A Vanguard company since 2004

Tyco Healthcare/Mallinckrodt



\$25,000

A Vanguard company since 1989

Varian Medical Systems, Inc.



\$25,000

A Vanguard company since 2001

Hitachi Medical Corporation



\$15,000

A Vanguard company since 1999

Canon U.S.A., Inc.



\$10,000

A Vanguard company since 1999

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Austin Radiological Association
Austin, TX



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Newport Beach, CA



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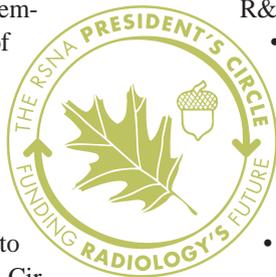
R&E FOUNDATION GIVING PROGRAMS

RSNA President's Circle Program

AN ANNUAL contribution of at least \$1,500 to the R&E Foundation qualifies a donor for the RSNA President's Circle Program. Established in 2001, the President's Circle Program encourages RSNA members to support the future of radiology by giving back to their profession.

Each year, President's Circle Program members can monitor the impact of their gifts as they are used to fund the annual President's Circle/RSNA Research Grant. These grants give young investigators further insight into scientific investigation while developing their competence in research techniques and methods.

Benefits of joining the RSNA President's Circle Program include:



- Early registration and hotel selection notice for RSNA annual meeting
- Special Recognition in *RSNA News*, the R&E Pavilion at annual meeting, the RSNA Annual Report and on the R&E Foundation Web site

- Access to premier services in the Donor Lounge at RSNA annual meeting
- Priority taxi/shuttle bus lines at RSNA annual meeting
- Exclusive annual thank you gift

For more information about the RSNA President's Circle Program or other R&E Foundation giving programs, visit RSNA.org/Foundation or contact the Foundation at R&EFoundation@RSNA.org or 1-800-381-6660 x7885.



New R&E Brochures
The RSNA R&E Foundation has published a series of brochures explaining the guidelines and benefits of its various giving programs. The brochures will be available at RSNA 2006 and *RSNA Highlights: Clinical Issues for 2007*.

25 Questions Submissions End August 31

RSNA members are invited to help the R&E Foundation chart the course for future radiologic discovery by identifying the most compelling questions still to be answered.

Questions may be entered at RSNA.org/25questions. Scientific reviewers will choose the top 25, which will be announced along with the names of the submitters during RSNA 2006 and in RSNA publications.

"People's Choice" voting starts September 1 and continues through September 30. Log on to RSNA.org/25questions to read the



questions that have been submitted and vote for your favorite 10. People's Choice voting results also will be announced.

RADIATION SAFETY

Answer

[Question on page 2.]

AThe fetus receives only a small amount of scattered radiation from radiography if the uterus is not in any beam. The dose is higher for abdominal or pelvic radiographic procedures. Even so, fetal dose usually is less than 2.0 mSv (less than one year's background radiation).

Q&A courtesy of AAPM.

Journal Highlights

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

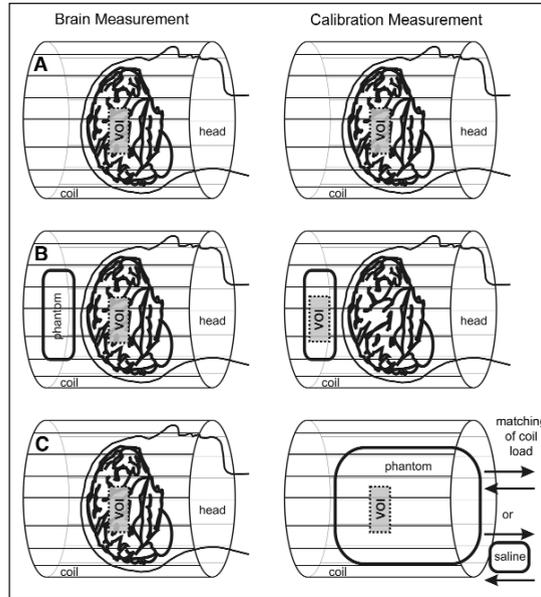
¹H MR Spectroscopy of the Brain: Absolute Quantification of Metabolites

METABOLITE concentrations in the brain, obtained with noninvasive hydrogen 1 (¹H) MR spectroscopy, are most often presented as ratios rather than as absolute concentrations.

Radiology

In a review article in the Reviews and Commentary section of the August issue of *Radiology* (RSNA.org/radiologyjnl), Jacobus F.A. Jansen, M.S., of the Department of Radiology at Maastricht University Hospital in The Netherlands, and colleagues note that ratios can be

Continued on page 25



Schematic illustrates experimental setup of calibration strategies used to quantify cerebral metabolite concentrations.

Left: Setup for brain examination. Right: Calibration measurement. A, Internal endogenous marker, water signal reference method and principle of reciprocity. B, External reference method. C, Replace-and-match method.

(Radiology 2006;240:318-332) © RSNA, 2006. All rights reserved. Printed with permission.

US Diagnosis of UCL Tears of the Thumb and Stener Lesions: Technique, Pattern-based Approach, and Differential Diagnosis

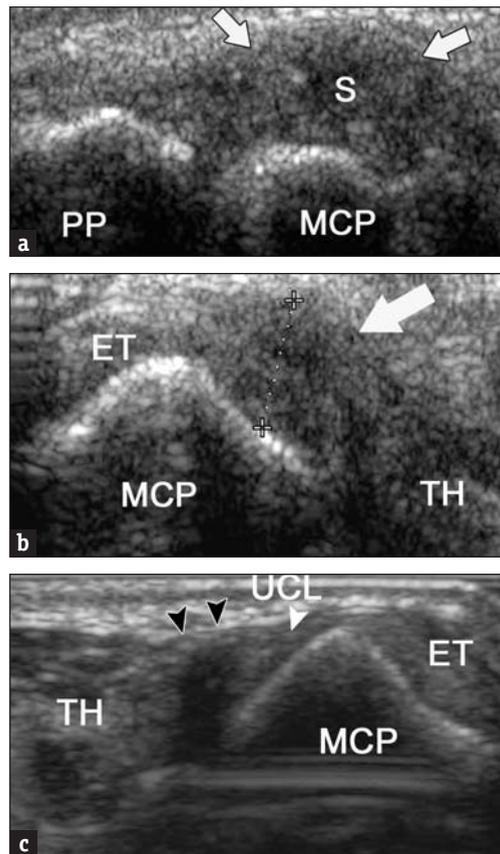
ULTRASONOGRAPHY (US) has evolved as a reliable adjunct to clinical examination in evaluation of the ulnar collateral ligament (UCL) of the thumb, offering a safe, simple, and effective method of assessing the ligament and its supporting structures at the bedside.

RadioGraphics

In an article in the July-August issue of *RadioGraphics* (RSNA.org/radiographics), Farhad S. Ebrahim, M.D., of the University of Michigan Health System and colleagues outline how to perform US of the thumb, focusing particularly on:

- Basic techniques used to perform US of the UCL of the thumb

Continued on page 25



Stener lesion.

(a) Coronal US thumb scan shows a proximal lobulated nodule (S, arrows), representing the retracted displaced proximal segment of the ulnar collateral ligament (UCL). The smooth contour of the aponeurosis is distorted by the superficially lying ligament, resulting in aponeurosis surface bulging. MCP = metacarpal, PP = proximal phalanx. (b) Axial US thumb scan shows a thickened lobulated UCL (cursors). There is loss of the smooth contour of the aponeurosis with bulging (arrow). ET = extensor tendon, MCP = metacarpal head, TH = thenar eminence. (c) Axial US thumb scan shows a normal UCL. The adductor aponeurosis (black arrowheads) covers the muscle and UCL (white arrowhead). There is no nodule, lobulation, or bulging. ET = extensor tendon, MCP = metacarpal head, TH = thenar eminence.

(RadioGraphics 2006;26:1007-1020) © RSNA, 2006. All rights reserved. Printed with permission.

Radiology in Public Focus

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

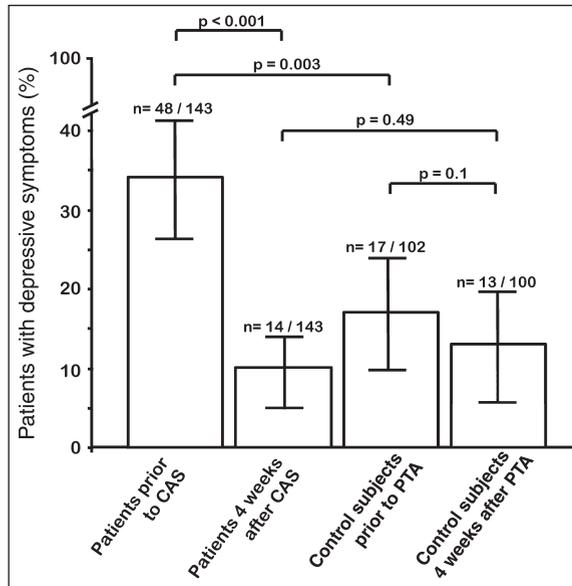
Is There Improvement of “Vascular Depression” after Carotid Artery Stenting?

PATIENTS with high-grade carotid stenosis are likely to suffer depression symptoms that carotid artery stenting (CAS) appears to improve, researchers in Austria have found.

Wolfgang Mlekusch, M.D., and colleagues from Vienna General Hospital Medical School compared the depressive symptoms of 143 patients undergoing CAS to symptoms in a control group of 102 patients undergoing lower limb angioplasty for advanced peripheral artery disease (PAD) without carotid stenosis.

Depressive disorders causatively associated with degenerative processes based on cerebrovascular disease are known as “vascular depression.”

“We found a significantly higher



Graph of percentage and number of patients with clinically substantial depressive symptoms before and 4 weeks after carotid artery stenting (CAS), compared with those of control subjects with peripheral artery disease (PAD) before and 4 weeks after percutaneous transluminal angioplasty (PTA). Significant decrease in frequency of depressive symptoms was found in 143 patients after successful CAS. No significant change in frequency of depressive symptoms was observed in 100 control subjects after PTA. Bars represent percentages and 95 percent confidence intervals.

(*Radiology* 2006;240:508-514) © RSNA, 2006. All rights reserved. Printed with permission.

prevalence of depressive symptoms in patients with carotid stenosis compared to PAD patients at baseline,” the researchers write. Following up at four weeks, they report “a substantial reduc-

tion of depressive symptoms was found in CAS patients, while the frequency of depressive disorders remained unaffected in controls.”

Effect of Obesity on Image Quality: Fifteen-year Longitudinal Study for Evaluation of Dictated Radiology Reports

A STUDY of more than 5 million radiology reports from a Massachusetts hospital from 1989-2003 has shown a small but progressive increase in the number of habitus-limited reports—those limited by the patient’s size.

Raul N. Uppot, M.D., of the Department of Radiology, Division of Abdominal Imaging and Interventional Radiology at Massachusetts General Hospital and Harvard Medical School, and colleagues also found that the modality most commonly associated with habitus-limited reports was abdominal ultrasonography.

Seeking to retrospectively assess the effect of obesity on image quality,

Dr. Uppot and colleagues identified a positive correlation between the increased number of habitus-limited reports and the increased prevalence of obese individuals in Massachusetts between 1991 and 2001.

Difficulties radiologists must face in examining obese patients, the researchers note, include transporting them, accommodating them on imaging equipment and obtaining diagnostic-quality images. After abdominal ultrasonography, the modalities most frequently classified as habitus-limited were chest radiography, abdominal radiography, abdominal CT, chest CT and MR imaging.

“Radiologists should be aware of the limitations of current imaging equipment and be knowledgeable in the optimization of imaging protocols and equipment settings when examining large patients,” the researchers write. “Future prospective studies performed to establish a correlation between body mass index and image quality for each modality could help manufacturers and radiologists achieve their goal of improving image quality in an increasing population of obese Americans.”

(*Radiology* 2006;240:435-439)

¹H MR Spectroscopy of the Brain: Absolute Quantification of Metabolites

Continued from page 23

useful for clinical diagnosis to characterize pathologic tissue. However, they add, relative quantification can also introduce substantial errors and may lead to misinterpretation of spectral data and to erroneous metabolite values.

Dr. Jansen and colleagues review how to obtain absolute concentrations with a clinical MR system by using single-voxel spectroscopy or chemical shift imaging. Discussing the advantages and disadvantages of absolute concentrations and methods of data analysis, the researchers also specifically address these aspects of absolute quantification strategy:

- Radiofrequency coil properties

- Calibration procedures
- Spectral fitting methods
- Cerebrospinal fluid content correction
- Macromolecule suppression
- Spectral editing

The researchers note that to obtain reliable absolute concentrations, potential complicating factors must be considered. However, they state, most of these problems have been critically addressed.

“Absolute quantification is available and can improve the diagnostic utility of ¹H MR spectroscopy procedures,” the

researchers write. “Therefore, further progress in the development of automated spectral analysis methods and databases of normal regional and age-dependent metabolite concentrations has to be encouraged to make the absolute quantification procedures more easily applicable in clinical routine.”



US Diagnosis of UCL Tears of the Thumb and Stener Lesions: Technique, Pattern-based Approach, and Differential Diagnosis

Continued from page 23

- US features of UCL injury of the thumb with emphasis on the Stener lesion
- US features of other common acute conditions affecting the base of the thumb

While both MR imaging and US are currently used to directly evaluate the UCL of the thumb and are both safe

and accurate, US is more dynamic and less time-consuming and may be easier to perform, Dr. Ebrahim and colleagues write. For their study, they looked at sonograms of 32 patients with a clinically suspected UCL injury and correlated the imaging findings with one fresh and two embalmed cadaveric specimens.

“Furthermore, other disorders such

as tenosynovitis, tendon tears and articular pathologic conditions can involve the thumb and thenar region and may also be diagnosed with US,” they add. “In this context, US is an underused tool because it is potentially an adjunct to the clinical examination in the appropriate setting.”

Media Coverage of Radiology

IN JUNE, RSNA media coverage reached more than half a billion people worldwide.

RSNA issued two press releases related to studies appearing in the June issue of *Radiology*. Lia Bartella, M.D., and colleagues detailed how the application of MR spectroscopy reduces the need for breast biopsy (*Radiology* 2006; 239:686-692). This story reached an estimated audience of 378 million via appearances in the *Chicago Tribune*, *The Australian* and *The Indianapolis Star*, as well as on *MSN.com*, Yahoo!

News, *Forbes.com*, *iVillage.com* and the online Discovery Hospital.

Sean Fain, Ph.D., and colleagues outlined the use of hyperpolarized-helium MR imaging to detect early emphysema in asymptomatic smokers (*Radiology* 2006; 239:875-883). Coverage appeared on ABC and NBC broadcast stations across the country, as well as in the *Chicago Tribune*, *Newsday*, *The Indianapolis Star*, *The Cincinnati Post* and *The Australian*. Stories also appeared on Yahoo! News, *Forbes.com*, Red Orbit, HealthCentral and MedPage

Today, bringing the estimated total audience for the story to almost 76 million.

Additional June coverage appeared on CNN Money and in *Popular Science*, *Harper's Bazaar*, *The Vancouver Sun*, *St. Paul Pioneer Press* and the *Daily Herald* of Suburban Chicago.

Working For You



(from left) Wendy Morris, Cindy Rogers, Teresa Smith

RadioGraphics Editorial Office

THE *RadioGraphics* Editorial Office staff in Bethesda, Md., works with Editor William W. Olmsted, M.D., to obtain material to publish in RSNA's bimonthly education journal. Staff members facilitate the review of education exhibits by 17 subspecialty panels at the annual meeting and then oversee progress of manuscripts from solicitation through submission, peer review, revision and final acceptance. The staff also manages submissions for regular features including the Armed Forces Institute of Pathology (AFIP) Archives,

Inner Visions and American Association of Physicists in Medicine (AAPM)/RSNA Physics Tutorials for Residents. To better serve authors and

Working for you
DEPARTMENT PROFILE

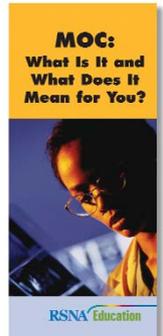
reviewers, the office is developing a new online submission application, RGX-Press, with projected completion in fall 2006. Supporting the *RadioGraphics* editor and RSNA in offering the very best educational material and CME opportunities, the staff takes pride in their work and in the popularity *RadioGraphics* has gained since Dr. Olmsted's tenure began in 1990.

Brochures Detail MOC Process

RSNA has released the first two titles in its series of brochures regarding the American Board of Radiology (ABR) maintenance of certification (MOC) process. "MOC: What Is It and What Does It Mean for You?" gives the basics of the process, while "CME: What's New?" covers the CME requirements under MOC. Future brochures in the series will address topics such as creating an education plan, making time for self-assessment modules (SAMs) and participating in communities of learners.

Radiologists certified in 2002 and after and those who received time-limited certification are now required to complete the MOC process in 10-year cycles. RSNA is committed to helping make the process easier by offering a variety of tools such as the brochures and other educational materials. Brochures will be mailed to people participating in the MOC registry, an online feature designed to assist members in participating in the MOC process and who have completed a practice profile.

To participate in the MOC registry or access the brochures online, go to RSNA.org/Education/moc.cfm. For a tutorial on using MOC resources on RSNA.org, including the registry, go to page 33. Brochures also will be available at RSNA 2006 and the new RSNA Highlights conference to be held February 26–28, 2007, in Phoenix.



RSNA 2005 Cases of the Day Now Online

GET READY for the RSNA 2006 Cases of the Day by taking another look at those from RSNA 2005. Cases of the Day are offered as part of InteractED®, an online CME resource available free to RSNA members as a membership benefit. RSNA 2005 Cases of the Day are available in:

- Breast
- Cardiac
- Chest
- Gastrointestinal
- Genitourinary
- Musculoskeletal
- Neuroradiology
- Nuclear Medicine
- Obstetrical Imaging
- Pediatric
- Ultrasound
- Vascular/Interventional

InteractED is located in the Education portal of RSNA.org, which includes other valuable resources such as links to RSNA's online self-assessment modules (SAMs) and RSNA CME Repository, as well as information for residents and medical students. Access InteractED and other Education links at RSNA.org/education.

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.

Program and Grant Announcements

IHE® Connectathon and Conference 2007

January 15–19, 2007, Hyatt Regency Chicago—Wacker Drive

THE TWO missions of the Integrating the Healthcare Enterprise® (IHE) initiative—systems testing and education—will converge at the first-ever IHE Connectathon and Conference. As with past Connectathons, participating companies will have an opportunity to test their systems with corresponding systems from industry peers.

For the new educational conference portion in 2007, the key players who are implementing regional and national health information networks will provide insight into the connected health system and how IHE is helping make it happen.

Registration opens in October. Check www.ihe.net/events/connectathon07 for further information.



At the IHE Connectathon, companies test their systems with the corresponding systems of their peers.

NIH Grantsmanship Workshop

November 25, McCormick Place, Chicago

Held the day before the RSNA annual meeting begins, this 4-hour workshop covers grant writing techniques from concept development to submission and the NIH review process. Attendees will also experience a mock study section. Lee Rosen, Ph.D., from the NIH Center for Scientific Review, will facilitate and speakers will address basic applications, K grants and the NIH grant application experience. Registration is available by visiting rsna2006.rsna.org and clicking on Registration, Housing & Courses.

Imaging as a Biomarker: Standards for Change Measurements in Therapy

September 14–15, Gaithersburg, Md.

Recent work has shown that biomedical imaging can provide an early indication of drug response by use of x-ray, CT or PET-CT. This workshop will bring together industry, academic and government representatives to develop a strategy for standardizing imaging methods of data collection and data analysis in the context of drug or radiation therapy trials. Developing standards could significantly reduce the size of clinical trials for drug response.

RSNA is co-sponsoring this conference along with the National Institute of Standards & Technology, National Cancer Institute, National Institute of Biomedical Imaging and Bioengineering and the Food & Drug Administration. For more information, go to www.nist.gov/public_affairs/conf-page/060914.htm.

Personal Financial Seminars at RSNA 2006

TWO comprehensive financial seminars are available again this year on Saturday, November 25, at McCormick Place in Chicago just prior to the RSNA annual meeting.

“Protecting Assets from Creditor Claims, Including Malpractice Claims” will be held from 10:00 a.m. to 12:00 p.m. and costs \$129. “Effective Investment Strategies” will be held from 1:30 p.m. to 5:00 p.m. and costs \$159. Save almost \$20 by registering for both courses for \$269. Textbooks written specifically for each course are included.

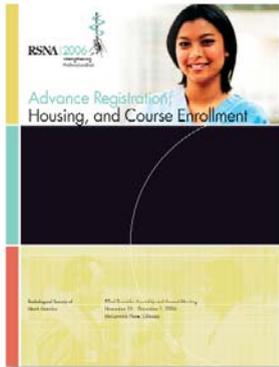
Register for the courses by going to rsna2006.rsna.org and clicking on Registration, Housing & Courses. Please note that these seminars do not qualify for *AMA PRA Category 1 Credits™*. For more information, please contact the RSNA Education Center at 1-800-381-6660 x3747 or ed-ctr@rsna.org.



News about RSNA 2006

Enroll for Courses, Tours and Events

Space remains in many of the courses, tours and events at RSNA 2006. 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 2006 is required in order to enroll for courses, tours and events.



How to Register

There are four ways to register for RSNA 2006:

1 Internet

Go to RSNA.org/register. Use your member ID# from the *RSNA News* label or meeting flyer sent to you. If you have questions, send an e-mail to rsna@itsmeetings.com.

Fastest way to register!

2 Fax (24 hours)

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

4 Mail

ITS/RSNA 2006
108 Wilmot Rd.,
Suite 400
Deerfield, IL 60015-
5124 USA

3 Telephone

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

Important Dates for RSNA 2006

- Oct. 27** International deadline to have full-conference badge and tickets mailed in advance
- Nov. 6** Final housing reservation deadline
- Nov. 10** Advance registration deadline
- Nov. 26–
Dec. 1** RSNA 92nd Scientific Assembly and Annual Meeting

Receive Materials Prior to Meeting

RSNA will mail registration materials in advance of the annual meeting to all North American attendees who register for RSNA 2006 by November 10. RSNA will mail materials in advance to international attendees whose registration forms are received by October 27.

Registration materials enclosed in the badge wallet include:

- Name badge and holder
- Course and tour tickets (as requested)
- Attendance vouchers
- Free pass for the Chicago Metra train system
- Airport shuttle and limousine discount coupon
- Coupon book

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. Any attendee who prefers that exhibitors contact him or her 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 registration and ExpoCard detail.



Pocket Guide

The RSNA 2006 *Pocket Guide* is an easy-to-use reference guide with two main sections:

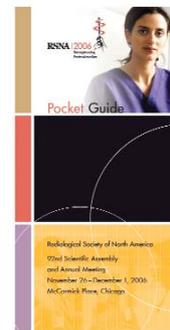
Overview of the RSNA Scientific Assembly and Annual Meeting

- Complete A-Z listing of everything available to attendees
- Room assignments for 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 and loading and unloading areas
- Airport transportation service times, costs and boarding information
- Complete Metra train system schedule outlining station locations, times and drop-off destinations
- Parking lot locations, hours and fees

Transportation information is also available by visiting rsna2006.rsna.org and clicking on Transportation.



■ For more information about registration at RSNA 2006, visit RSNA.org/register, e-mail reginfo@rsna.org, or call 1-800-381-6660 x7862.

News about RSNA 2006

Obtain a Visa (International Visitors)

Personalized invitation letters are available at www2.rsna.org/visa_form/invitation_letter.cfm. The International Visitors section of rsna2006.rsna.org also includes important information about visa applications. Visa applicants are advised to apply as soon as they decide to travel to the United States or at least three to four months in advance of their travel date. It is recommended that international visitors start the 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 may ride RSNA shuttle buses but will not be 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 by going to rsna2006.rsna.org and clicking on Childcare, under Registration.

Registration Fees

BY 11/10	ONSITE	
\$0	\$100	RSNA Member, AAPM Member
\$0	\$0	Member Presenter
\$0	\$0	RSNA Member-in-Training, RSNA Student Member and Technical Student
\$0	\$0	Non-Member Presenter
\$120	\$220	Non-Member Resident/Trainee
\$120	\$220	Radiology Support Personnel
\$570	\$670	Non-Member Radiologist, Physicist or Physician
\$570	\$670	Hospital Executive, Research and Development Personnel, Healthcare Consultant, Industry Personnel
\$300	\$300	One-day registration to view only the Technical Exhibits area



92nd Scientific Assembly and Annual Meeting
November 26–December 1, 2006
McCormick Place, Chicago

RSNA Highlights: Clinical Issues for 2007



REGISTRATION opens September 5 for RSNA's new educational conference, RSNA Highlights: Clinical Issues for 2007. The conference will be held February 26–28, 2007, at the J.W. Marriott Desert Ridge Resort & Spa in Phoenix. For more information about course content or to reserve a room or request a brochure, visit RSNA.org/highlightsconference.



Important Dates for RSNA Highlights
Sept. 5
Registration opens
Feb. 26–28
RSNA Highlights: Clinical Issues for 2007

Each physician can earn up to 19 AMA PRA Category 1 Credits[®] at RSNA Highlights

Exhibitor News

Publishers Row a Must See at RSNA 2006

ONE OF the most popular destinations inside the RSNA 2006 Technical Exhibit halls will be Publishers Row, located in Hall A of the South Building. More than 20 leading publishers of medical books and products, including the RSNA Education Store, will be on hand.

When browsing these aisles don't forget the RSNA Publisher Partners program. These publishers offer discounts of at least 10 percent to RSNA members on the purchase of popular medical books and products. Details about specific discounts and how to obtain them are available by going to RSNA.org and clicking on Membership and then Publisher Partners.



Searchable Exhibitor Database Available Online

To plan ahead for the RSNA 2006 experience, search the database of RSNA 2006 technical exhibitors, online at RSNA.org/showcase. The database, updated weekly, includes a list of the technical exhibitors, booth numbers and company contact information, as well as an interactive floor plan.



More Hands-on Computer Workshop Classes Announced

After the printing of the RSNA 2006 Advance Registration, Housing and Course Enrollment brochure, Siemens Medical Solutions and Eastman Kodak announced schedules for hand-on classes they'll conduct on their proprietary computer systems in the

Lakeside Learning Center. A complete listing of these and other hands-on classes is available by visiting rsna2006.rsna.org and clicking on Registration, Housing & Course, then Course Enrollment Details and Hands-on Computer Workshops.



Technical Exhibit Fact

■ With more than 30,000 square feet of space apiece, the GE Healthcare, Siemens Medical Solutions and Philips exhibit booths at RSNA 2006 will measure nearly 2/3 of a football field in size.

Product News

NEW PRODUCT

Long-Length Orthopedic Cassette

Konica Minolta Medical Imaging (medical.konicaminolta.us) has introduced a 14" x 51" long-length cassette assembly for use with its Xpress and IQue computed radiography (CR) systems. The assembly is designed for digital capture of full-length leg and full-length spine of patients taller than 6'6" with one single exposure.



The long-length cassette houses three slightly overlapped CR plates to capture the entire spine or leg on multiple CR plates simultaneously. Plates are inserted onto cassettes of the same size for scanning by the CR reader and stitching software on the Xpress CR and IQue CR automatically joins the individual images as one composite image.

FDA CLEARANCE

Cardiac SPECT Device

CardiArc Ltd. (www.cardiarc.com) has FDA clearance to market its new cardiac SPECT imaging device, which the company said offers sharper images of blood flow and heart function in half the time previously required.

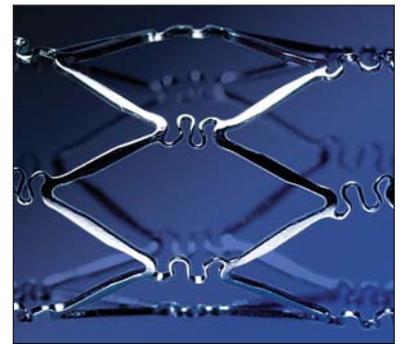
The device was specifically designed for use in outpatient settings and emergency rooms. Patients sit upright, without rotating or holding arms over their heads. Scan times are very fast, ranging from 2 to 6 minutes at physician discretion.



NEW PRODUCT

Biliary Stent Treats Blockages

CORDIS ENDOVASCULAR (www.cordis.com) has launched the Palmaz® Blue™ .014 transhepatic biliary stent, balloon-expandable stent delivery technology to treat biliary blockages. The Palmaz Blue features a cobalt chromium alloy enhanced with tungsten to make it stronger than stainless steel stents and use less metal. The stent was designed to offer physicians increased strength and radiopacity while lessening overall procedure time.



NEW PRODUCT

Advanced Printers Introduced

Sony Electronics (www.sony.com) has added a selection of advanced printers to its lineup of hard copy solutions.

Included is the UP-D77MD, a nuclear medicine printer capable of recreating large image files exactly as displayed on screen. Also recently unveiled are the UP-990AD and UP-970AD hybrid printers, which support full-page monochrome

printing for such applications as mobile C-arm, ultrasound and cardiac catheterization.

Also in the new lineup is the FilmStation, a compact dry film imager designed with flexibility to fit any office space regardless of size or layout.



Sony UP-990AD hybrid printer



RSNA HIGHLIGHTS

CLINICAL ISSUES FOR 2007

PHOENIX, ARIZONA – FEBRUARY 26–28, 2007



J.W. Marriott Desert Ridge Resort & Spa



Introducing a new educational opportunity...

This new RSNA educational conference will include selected refresher courses and electronic education exhibits from the 2006 RSNA annual meeting.

Course content will include special emphasis on:

- Cardiac imaging
- PET/CT
- Breast imaging
- Sports injuries

RSNA Highlights is intended for anyone who was unable to attend RSNA 2006 or who missed some of the educational sessions of interest to them. All courses will be taught in an interactive format, using audience response technology.

For more information, contact
RSNA Program Services at
programs@rsna.org.



Registration begins September 5, 2006
RSNA.org/highlightsconference

RSNA[®] Education

RSNA.org

Maintenance of Certification Resources

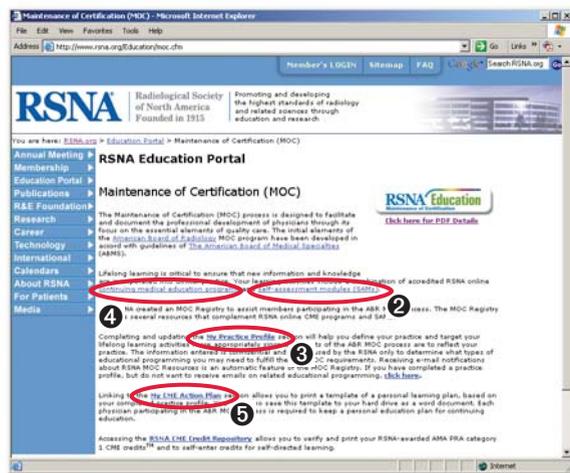
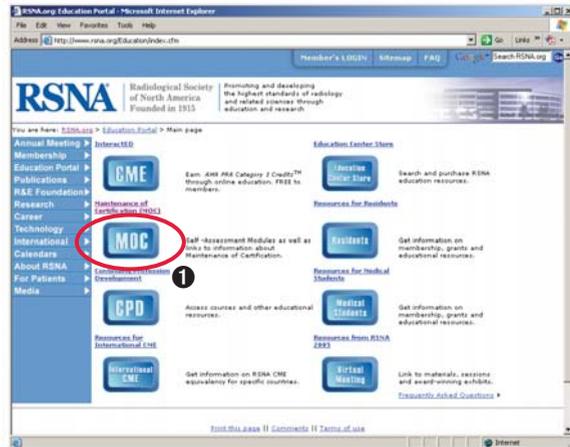
RSNA is committed to helping members meet maintenance of certification (MOC) requirements by offering educational resources and online tools at *RSNA.org*.

To access online MOC resources, go to *RSNA.org/Education* and select the MOC button ❶. To access Self-assessment Modules (SAMs) qualified by the American Board of Radiology to meet MOC criteria, select self-assessment modules ❷.

The MOC Registry includes several resources that complement RSNA online CME programs and SAMs. Completing and updating My Practice Profile ❸ puts you in the registry and helps you define your practice and target your lifelong learning activities. E-mail notifications about RSNA MOC resources are an automatic benefit of the MOC Registry.

To access accredited RSNA online continuing medical education (CME) programs, such as selected refresher courses and *RadioGraphics* CME tests, select Continuing Medical Education Programs ❹.

Accessing My CME Action Plan ❺ allows you to print a template of a personal learning plan, based on your completed practice profile. You have the option of saving this template to your hard drive as a Microsoft Word document.

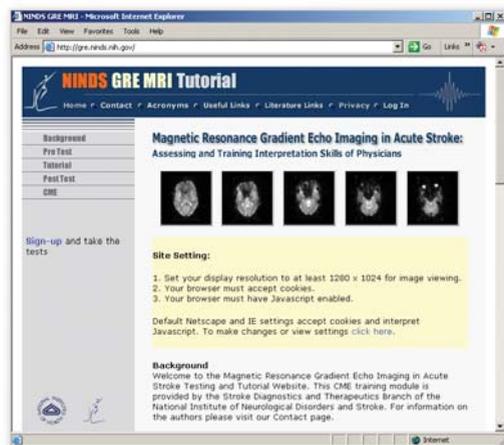


OTHER WEB NEWS

Tutorial Focuses on MR Imaging for Acute Stroke

ACCESS a free Web-based training module on Magnetic Resonance Gradient Echo (GRE) Imaging in Acute Stroke at the National Institute of Neurological Disorders and Stroke (NINDS) GRE MRI tutorial. The module is worth *1 AMA PRA Category 1 Credit™* and is provided by the NINDS Stroke Diagnostics and Therapeutics Branch. Designed for use by physicians involved in the full spectrum of the treatment and evaluation of acute stroke patients, the site provides instruction on general principles and interpretation of GRE MR imaging.

The NINDS GRE MRI Tutorial can be viewed at gre.ninds.nih.gov.



connections

Your online links to RSNA

- RSNA.org**
- Radiology Online**
RSNA.org/radiologyjnl
- Radiology Manuscript Central**
RSNA.org/radiologyjnl/submit
- RadioGraphics Online**
RSNA.org/radiographics
- RSNA News**
rsnanews.org
- Education Portal**
RSNA.org/education
- RSNA CME Credit Repository**
RSNA.org/cme
- CME Gateway**
CMEgateway.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
- My RSNA Profile & Benefits**
RSNA.org/memberservices
- RSNA Research & Education Foundation**
Make a Donation
RSNA.org/donate
- R&E 25 Questions Forum**
RSNA.org/25questions
- Community of Science**
RSNA.org/cos
- Membership Applications**
RSNA.org/mbrapp
- RSNA Membership Directory**
RSNA.org/directory
- Register for RSNA 2006**
RSNA.org/register
- RSNA 2006**
rsna2006.rsna.org
- RSNA Highlights: Clinical Issues for 2007**
RSNA.org/highlightsconference

Medical Meetings

September – October 2006

AUGUST 30–SEPTEMBER 2

Society for Molecular Imaging, 5th Annual Meeting, Hilton Waikoloa Village • www.molecularimaging.org

SEPTEMBER 7–10

American Society of Nuclear Cardiology (ASNC), 2006 Symposium and Scientific Session, Palais des Congrès de Montréal • www.asnc.org/symposium06

SEPTEMBER 8–9

American Society for Therapeutic Radiology and Oncology (ASTRO), Translational Research in Radiation Oncology, Physics and Biology, Radisson Boston Hotel • www.astro.org

SEPTEMBER 9–13

Cardiovascular and Interventional Radiological Society of Europe (CIRSE), Annual Meeting and Postgraduate Course, Palazzo dei Congressi, Rome • www.cirse.org

SEPTEMBER 12–16

International Society of Radiology (ISR)/Radiological Society of South Africa (RSSA)/International Society for Magnetic Resonance in Medicine (ISMRM), 24th International Congress of Radiology, Cape Town International Convention Center, South Africa • www.isr2006.co.za

SEPTEMBER 13–16

33rd Annual International Skeletal Society, Radiology Refresher Course, Fairmont Hotel Vancouver, British Columbia • www.internationalskeletalsociety.com

SEPTEMBER 14–15

Imaging as a Biomarker: Standards for Change Measurements in Therapy, National Institute of Standards and Technology, Gaithersburg, Md. • www.nist.gov/public_affairs/confpage/060914

SEPTEMBER 14–16

European Society of Gastrointestinal and Abdominal Radiology (ESGAR), 5th Hands-On Workshop on CT-Colonography, Green Park Resort Hotel, Pisa, Italy • www.esgar.org

SEPTEMBER 15–16

ASTRO, Health Services Outcomes Research in Radiation Oncology, The Westin Horton Plaza, San Diego • www.astro.org

SEPTEMBER 15–17

Australasian Society for Ultrasound in Medicine (ASUM), Annual Scientific Meeting, Melbourne Convention Centre, Victoria, Australia • www.asum.com.au/asum2006.htm

SEPTEMBER 16–17

Society of Computed Body Tomography and Magnetic Resonance (SCBT/MR), MDCT: A Practical Approach 2006, Westin Boston Waterfront Hotel • www.scbtmr.org/courses/MDCT/mdct_course.html

SEPTEMBER 21–22

National Institutes of Health (NIH) Diagnostic Radiology Department Clinical Center, High Field Cardiovascular Magnetic Resonance Workshop, Washington Hilton • www.capconcorp.com/highfield/

SEPTEMBER 27–29

Argentine Society of Radiology, 52nd Argentine Congress of Diagnostic Imaging and Radiation Therapy, Sheraton Hotel and Convention Center, Buenos Aires, Argentina • www.sar.org.ar

SEPTEMBER 27–30

American Society of Emergency Radiology (ASER), 2006 Annual Scientific Meeting and Post Graduate Course, The Omni Shoreham, Washington • www.erad.org

SEPTEMBER 27–OCTOBER 1

American Society of Head and Neck Radiology (ASHNR), 40th Annual Meeting, Sheraton Wild Horse Pass Resort and Spa, Chandler, Ariz. • www.ashnr.org

SEPTEMBER 30–OCTOBER 4

European Association of Nuclear Medicine (EANM), 2006 Annual Congress, Megaron International Conference Center, Athens, Greece • www.eanm.org

OCTOBER 8–12

European Society for Therapeutic Radiology and Oncology (ESTRO), ESTRO25, Congress Center Leipzig, Germany • www.estro.org

OCTOBER 10–13

World of Health IT 2006 Conference and Exhibition, Geneva Palexpo • www.worldofhealthit.org

NOVEMBER 26–DECEMBER 1

RSNA 2006, 92nd Scientific Assembly and Annual Meeting, McCormick Place, Chicago • rsna2006.rsna.org

FEBRUARY 26–28, 2007

RSNA Highlights: Clinical Issues for 2007, J.W. Marriott Desert Ridge Resort & Spa, Phoenix, Ariz. • RSNA.org/highlightsconference

RSNANews

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