

RSNA *News*



Photo courtesy of the Arizona Simulation Technology and Education Center.

Medical Simulation Hailed as Turning Point in Radiology Training

Also Inside:

- PET/CT Outpaces Modalities Used Separately in Staging Colorectal Cancer
- Ankle MR Study Exemplifies Role of Imaging in Diagnosis and Treatment
- Radiology Has Growing Stake in Cervical Cancer Trial
- RSNA Highlights™ Debuts in Phoenix

**Advance Registration for RSNA 2007
Begins April 23**

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RSNA News

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NPI Deadline is May 23

RADIOLOGISTS are among the providers required by the Health Insurance Portability and Accountability Act of 1996 (HIPAA) to use only a national provider identifier (NPI) in standard transactions as of May 23.

There are several ways to obtain an NPI:

- Completing an application online at nppes.cms.hhs.gov.

- Completing a paper application/update form and mailing it to an NPI Enumerator, a special contractor hired by the Centers for Medicare and Medicaid Services (CMS). More information is available at 1-800-465-3203.

- Giving permission to a CMS-approved Electronic File Interchange Organization to obtain an NPI for the provider. More information is available at



www.cms.hhs.gov/NationalProvIdentStand/. A story about the NPI appeared in the November 2006 issue of *RSNA News*.

Legislation Calls for Two-Year Moratorium on DRA Cuts

Congress is considering the Access to Medicare Imaging Act of 2007, bipartisan legislation calling for a two-year moratorium on the medical imaging reimbursement cuts included in the Deficit Reduction Act (DRA) of 2005.

The bill, introduced Feb. 28 by Rep. Carolyn McCarthy, D-N.Y., and co-sponsored by 25 representatives, also calls for a Government Accountability Office analysis of the DRA cuts' impact on patient access to medical imaging, particularly in rural and medically underserved areas.



Rep. Carolyn McCarthy, D-N.Y.

Passed by Congress in February 2006, the DRA capped the technical component of reimbursement for physician office imaging to the lesser of the Hospital Outpatient Prospective Payment System or Medicare Fee Schedule payment.

India Launches First Teleradiology Network

A group of institutions in India has collaborated to establish the nation's first teleradiology network. The network was developed by Kakarla Subbarao Radiological and Imaging Educational Sciences Trust, Care Foundation, U.S. Electronics and Electronics Corporation of India. The first sites connected were the Care Hospital in Hyderabad to the Maa Scan and Research Centre in Guntur.

MEDICAL IMAGING COMPANY NEWS

Work Begins at Siemens Biomarker Facility

■ Siemens Medical Solutions, of Malvern, Pa., has opened its Molecular Imaging Biomarker Research facility. Siemens said the new facility is the next step toward its goal of becoming the first full-service diagnostics company, integrating in vivo and in vitro imaging capabilities. Looking to bring several new agents to the market over the next 5–10 years, scientists at the new facility will focus largely on oncology and neurology along with inflammation and microfluidics/nanotechnology research.

Implementation of NIH Reform Act Under Way

The National Institutes of Health (NIH) has named an ad hoc working group to carry out the provisions of the NIH Reform Act of 2006, signed by President Bush in January.

Chaired by NIH Deputy Director Raynard Kington, M.D., Ph.D., the working group comprises NIH directors and other leaders in legislation, policy, management, communications, extramural and intramural activities and budget, as well as representation from the Office of the General Counsel.

Key provisions in the act relate to NIH's Division of Program Coordination, Planning and Strategic Initiatives, Common Fund, Council of Councils and Scientific Management Review Board, as well as authorization of appropriations, reorganization and reporting. The act is the third omnibus reauthorization in NIH history and the first in 14 years.



VIEWING TECHNOLOGY Tip of the Month

CR and DR images can be greatly underexposed and still have normal density and contrast. Too little radiation may yield too much noise and therefore obscure the findings.



American Association of Physicists in Medicine

Hattery Named Honorary ECR Member

Robert R. Hattery, M.D., (center), immediate past-president of RSNA, was named an honorary member of the European Congress of Radiology (ECR) last month in Vienna, Austria. Dr. Hattery is executive director of the American Board



of Radiology. Presenting Dr. Hattery with honorary membership are **Nicholas Gourtsoyiannis, M.D.**, immediate past-president of the European Society of Radiology (left) and **Christian J. Herold, M.D.**, immediate past-president of ECR.

Also named an ECR honorary member was **Kaori Togashi, M.D.**, of Kyoto, Japan. **Philippe Grenier, M.D.**, of Paris, and **Robert E. Steiner, M.D.**, of London, received the ECR gold medal. Presented with the ECR Special Presidential Award was **Elias A. Zerhouni, M.D.**, director of the National Institutes of Health.



Kaori Togashi, M.D.



Philippe Grenier, M.D.

Smoron Honored by Chicago Radiological Society

THE Chicago Radiological Society will present **Geoffrey L. Smoron, M.D.**, with its Distinguished Service Award this month. Dr. Smoron is president of Midwest Radiation Oncology Consultants in Elgin, Ill.



Geoffrey L. Smoron, M.D.

Dr. Smoron received his M.D. degree from Loyola University and completed a residency at Northwestern University, both in Chicago. A commissioned officer in the U.S. Naval Reserve, he served as head of the nuclear medicine and radiation therapy branches in the Department of Radiology at the Great Lakes Naval Regional Medical Center in Illinois. He also taught at Northwestern University Medical School for more than 25 years and was medical director of the School of Radiation Therapy Technology at Provena St. Joseph Hospital in Elgin. He is a past-president of the Chicago Radiological Society and has held leadership positions in many other radiologic societies, including RSNA.

Segal, Korobkin to Receive SUR Lifetime Achievement Awards

The Society of Uroradiology (SUR) will present Lifetime Achievement Awards to **Arthur J. Segal, M.D.**, and **Melvyn T. Korobkin, M.D.**, at its joint meeting this month with the Society of Gastrointestinal Radiologists (SGR) and the European Society of Urogenital Radiology. Dr. Segal is chair of the Department of Diagnostic Imaging at Rochester General Hospital in Rochester, N.Y. Dr. Korobkin is a professor of radiology at the University of Michigan in Ann Arbor.



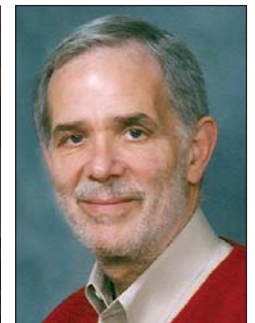
Arthur J. Segal, M.D.



Melvyn T. Korobkin, M.D.



Bronwyn Jones, M.D.



Robert L. Lebowitz, M.D.

Also at the meeting, SGR will award its Walter B. Cannon Medal to **Bronwyn Jones, M.D.**, a professor of radiology and director of the Swallowing Center at Johns Hopkins Hospital in Baltimore. **Robert L. Lebowitz, M.D.**, a staff radiologist at Children's Hospital Boston and a professor of radiology at Harvard Medical School in Boston, will receive the SUR gold medal.

SIR Presents Awards

THE Society of Interventional Radiology presented gold medals to **Rolf W. Günther, M.D., Eugene Klatte, M.D., and Julio Palmaz, M.D.,** during its annual meeting last month.

Dr. Günther has been a professor and chair of the Department of Diagnostic Radiology at the Aachen University of Technology in Germany since 1984. Dr. Klatte is a distinguished professor in the Department of Radiology at the Indiana University School of Medicine in Indianapolis, where he chaired the Department of Radiology for 20 years.

Dr. Palmaz helped invent the Palmaz-Schatz stent that was FDA approved in 1994. He is a professor in the Department of Radiology and chief of cardiovascular and special interventional radiology at the University of Texas Health Science Center at San Antonio.

The SIR Foundation presented its Leaders in Innovation Award to **Robert I. White Jr., M.D.,** whose concept of multidisciplinary care for the treatment of hereditary hemorrhagic telangiectasia (HHT) has been adopted by physicians worldwide. Dr. White is director of Yale University’s Vascular Malformation Clinical and Research Group.



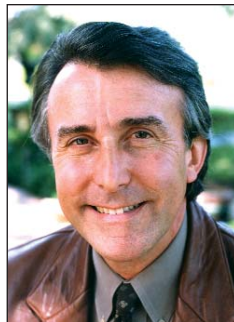
Rolf W. Günther, M.D.



Eugene Klatte, M.D.



Robert I. White Jr., M.D.



Julio Palmaz, M.D.

Cruea to Head Academy of Radiology Research

Renee Cruea, M.P.A., is the new executive director of the Academy of Radiology Research. Cruea had been the academy’s government relations director since 1998. In addition to managing day-to-day operations for the Washington-based organization, she will oversee its new Coalition for



Renee Cruea, M.P.A.

Imaging & Bioengineering Research.

Cruea succeeds Ed Nagy, who had served as executive director since 1995. Nagy passed away in July 2006.

Prior to joining the academy, Cruea worked with the Washington lobbying firm Rae Evans & Associates. She is also founder and president of “Sugar Mommas,” an organization for women who have type 1 diabetes and are mothers to young children.

IN MEMORIAM:

Paul A. Riemenschneider, M.D.

Paul A. Riemenschneider, M.D., an RSNA gold medalist in 1990, died January 29.

Dr. Riemenschneider completed his radiology residency at Peter Bent Brigham Hospital (now Brigham and Women’s Hospital) in Boston, and served as a medical officer in the U.S. Navy. He went on to develop and chair the Department of Radiology and the radiology residency program at Syracuse Memorial Hospital and later served as a professor and chair of the Department of Radiology at Upstate Medical Center in Syracuse. From 1964 until his retirement in 1988, Dr. Riemenschneider served as chief of diagnostic radiology at Santa Barbara Cottage Hospital in California.

He also received the gold medals of the American College of Radiology and American Roentgen Ray Society.



Paul A. Riemenschneider, M.D.

IN MEMORIAM:

Reynold F. Brown, M.D.

1971 RSNA President Reynold F. Brown, M.D., died Dec. 29, 2006.

Known for his work in establishing safeguards and standards for radiation exposure, Dr. Brown was a clinical professor in the Department of Radiology at the University of California, San Francisco and director of the university’s Radiologic Health Sciences Education Project. He also served numerous organizations charged with increasing radiation protection and chaired the former RSNA Radiation Safety Committee. Dr. Brown received the RSNA gold medal in 1973.



Reynold F. Brown, M.D.

MR Imaging Pioneers Inducted Into Inventor Hall of Fame

Paul C. Lauterbur, Ph.D., and **Sir Peter Mansfield, Ph.D.,** who shared the 2003 Nobel Prize in Medicine for their early discoveries in MR imaging, were inducted in February into the National Inventors Hall of Fame.

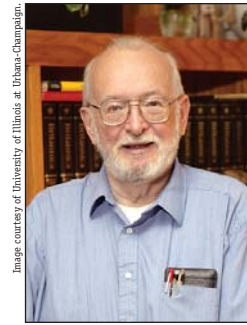
Dr. Lauterbur, who died March 27, was a professor of chemistry, biophysics and computational biology and bioengineering and a Distinguished University Professor of medical information sciences at the University of Illinois in Urbana.

Dr. Mansfield is an emeritus pro-

fessor of physics at the University of Nottingham in England.

Dr. Lauterbur received the RSNA gold medal in 1987 and the gold medal of the American Roentgen Ray Society in 2005. Drs. Lauterbur and Mansfield received the gold medal of and honorary membership in the International Society for Magnetic Resonance in Medicine.

They were among a Hall of Fame class of seven living inductees and nine posthumous recognitions that included



Paul C. Lauterbur, Ph.D.



Sir Peter Mansfield, Ph.D.

the inventors of non-toxic weed killer and the automotive airbag.



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

MY TURN

What Are Our Priorities?

THOUGHT this question might prompt some readers to pause and read this month's My Turn column. This provocative inquiry truly reflects my topic. As I walked around RSNA 2006, I heard "water cooler" discussions like the following: "I could make so much more money if I moved to ..."; "Our resident just took a job with a starting salary of ..."; "She just got a signing bonus of ..."; "I took the job because they have a 'nighthawk' service"; and "They get three months off per year ..."

What I didn't hear, on the other hand, were phrases such as: "That group does high-quality patient care," "This facility is very patient-centric" and "I was disappointed to have had this complication and need to figure out how to avoid it in the future."

We are fortunate to be part of an

exciting profession that serves patients and clinicians. We should never lose sight of our responsibilities—we are physicians first. When I started my radiology career after many years as a clinician, I had to get over the fact that some clinicians didn't consider us "real doctors."

Patients entrust their lives to our brains, eyes and hands. Our decisions profoundly affect clinical management and, ultimately, patient outcome. We should never forget that behind every radiographic study we perform and interpret is a patient; otherwise, we lose the respect of our clinical colleagues. Arguably, our patient commitment has already waned, putting us at risk of "commoditizing" our specialty.



George S. Bisset III, M.D.

Trivializing our responsibility toward the patient means turning our backs on why we chose our noble profession. As the theme of RSNA 2006 indicated, medical professionalism requires us to put our patients above all else. At the risk of sounding like a pedagogue, I challenge each of us to maintain our pro-

fessional values, continue the quest for high-quality care and, above all, remember why we are here.

So, what really are your priorities?

George S. Bisset III, M.D., is the RSNA Board Liaison for Education. Dr. Bisset is a professor of radiology and pediatrics and vice-chair of the Department of Radiology at Duke University Medical Center in Durham, N.C.



Medical Simulation Hailed as Next Revolution in Radiology Training

LAST FALL at the University of Arizona (U.A.) College of Medicine in Tucson, a CT technician notified a radiology resident of a patient's reaction to contrast medium. The resident talked to the patient, who reported feeling itchy. The resident administered Benadryl, but the patient's blood pressure and heart rate increased. Next trying epinephrine, the resident found the patient starting to wheeze. The resident put the patient on oxygen, to little effect. Faced with the prospect of anaphylactic shock, the resident decided to intubate the patient and, for the first time in his career, performed the procedure on his own.

Tense though the situation was, it didn't take place in the hospital and nobody was at risk. The drama unfolded in U.A.'s simulation laboratory, where residents learn to perform and manage procedures on various devices. The hybrid simulator used in this case combines computers with interface devices, such as automated mannequins, to create close-to-real-life practice situations.

The whole scenario, including the intubation procedure, was extremely realistic, said Elizabeth A. Krupinski, Ph.D., a research professor in the Department of Radiology Research at U.A. "You could see the resident's stress levels rising," said Dr. Krupinski, who designed the training with William Berger, M.D., director of U.A.'s Diagnostic Radiology Residency Program. Each session is videotaped and reviewed with the resident

It moves the entire learning experience, with diagnosis and treatment under stress, to a low-stakes environment away from the patient's bedside.

Gary J. Becker, M.D.



University of Arizona radiology resident Josh Morais, M.D., performs endotracheal intubation as he manages a simulated life-threatening reaction to iodinated contrast material in the Arizona Simulation Technology and Education Center. At left is Alyson E. Knapp, Sim Lab program coordinator and curriculum developer. In this scenario, Knapp serves as a radiologic technologist assisting Dr. Morais in managing the patient.

performing the simulated procedures. The resident then receives more training to correct mistakes and then repeats the simulation.

The Arizona Simulation Technology and Education Center, known as the SimLab, is in the vanguard of a young and growing field. Interventional radiologists in particular have increasing interest in simulation, especially for its potential to provide training without patient risk, said Gary J. Becker, M.D., professor of vascular and interventional radiology at U.A.

"It moves the entire learning experience, with diagnosis and treatment

under stress, to a low-stakes environment away from the patient's bedside," said Dr. Becker, 2007 RSNA Board Chairman and an associate executive director of the American Board of Radiology (ABR).

Procedural simulation in medicine began with anesthesiology and resuscitation training in the 1980s, and its use in interventional radiology goes back about a decade. Only three small companies now make interventional radiology simulators, all for training in image-guided interventions such as carotid stenting and angioplasty. Some also simulate endovascular procedures in the leg or kidney.

Growth Areas

Other applications are on the horizon, said Steven Dawson, M.D., associate

Continued on next page

Continued from previous page

professor of radiology at Harvard Medical School and program lead for medical simulation at Massachusetts General Hospital's Center for Integration of Medicine and Innovative Technology. Managing rare but dangerous situations like the contrast medium reaction is one example.

Another application is managing stroke in its early stages. If more first responders were trained to perform endovascular procedures, many more strokes could be halted and their effects reversed, said Dr. Dawson, a presenter at "Oncologic Image-Guided Interventions: Opportunities for Collaboration," a conference held in February in Washington to encourage collaboration among industry, academia and federal agencies. "It is a growth area and could have a huge public health impact," he said.

Another growth area is patient-specific simulation—placing a patient's

CT or MR images on a simulator and rehearsing a procedure just prior to performing it. The first such "virtual reality" carotid stenting took place recently at Emory Hospitals in Atlanta, as reported by Christopher Cates, M.D., and colleagues in the Jan. 17, 2007, issue of *The Journal of the American Medical Association*.

Caps on residents' work hours, the trend toward more outpatient procedures and the increase in noninvasive diagnostic procedures have all

decreased the direct contact radiology residents have with patients, said experts. Simulation can help fill the gap.

Simulation's unique advantages, such as its potential to measure performance, also make it attractive in cer-

tification examinations, said Dr. Becker. The ABR Foundation just took its first step in that direction with a grant to James Duncan, M.D., Ph.D., an assistant professor of radiology at Washington University in St. Louis, to develop image-guided biopsy simulation with cross-sectional imaging as part of the certification exam.

Simulation could also help measure milestone achievement during residency. "The need to integrate skills and reach milestones within the context of graduate medical education can be satisfied in large measure by simulation once we have a robust menu of simulators that can do what we need them to do," said Dr. Becker.

Next Steps

How to get that robust menu is the overall challenge facing the young field. Endovascular simulators are still in their infancy—some use fluoroscopic images that are somewhat lifelike, but there are still many nuances of feedback and control in real-life patients that simulators cannot yet provide, Dr. Becker said.

Given the limited applications offered so far, little planning has gone into where simulation can fit into a comprehensive course curriculum. As improvements are made in simulator technology and new applications are developed, the challenge will be to design course-specific simulators that can also provide performance evaluation.

The Joint International Simulation Task Force, which includes RSNA, the Cardiovascular and Interventional Society of Europe (CIRSE) and Society of Interventional Radiology (SIR), has outlined steps needed to meet these challenges. They include offering validation—proof that the skills acquired in simulation do transfer to patient care—as well as establishing performance



Elizabeth A. Krupinski, Ph.D.
University of Arizona

measures and identifying points in the curriculum at which to insert simulation.

For now, the task force recommends that simulation be limited to certain early stages of training, such as teaching the correct sequencing of steps in a procedure. Simulation cannot yet be regarded as equivalent to training on actual patients due

to the lack of validation, according to task force guidelines published in the February 2006 issue of the *Journal of Vascular and Interventional Radiology*.

The task force emphasized that simulation will never replace managing real patients. Nevertheless, task force leaders Derek Gould, M.D., of CIRSE and Aalpen A. Patel, M.D., of SIR, giving a joint presentation at the Medicine Meets Virtual Reality meeting in Long Beach, Calif., in February 2007, articulated an optimistic vision. By 2010, they said, "a growing number of validated interventional radiology simulation training modules will have been shown to transfer skills and reduce procedural error, be delivering clinical benefit to patients and have been integrated into a standardized interventional radiology training curriculum and certifying exam."

Creating simulators to meet this vision will take experts in various fields, said Dr. Dawson, currently the U.S. leader for the task force. "Huge challenges revolve around issues of physics, mathematics, computer graphics and physiology models," he said, adding that educational psychologists and others in the human factors fields are also needed to design simulators that are educationally sound with defined metrics and performance indicators.

"It's a daunting task," he said, "but one worthy of national attention." □

Learn More

Additional information about the institutions, conferences and articles mentioned in this story is available online.

■ Arizona Simulation Technology and Education Center
www.astec.arizona.edu

■ Medicine Meets Virtual Reality 15
www.nextmed.com/mmvr_virtual_reality.html

■ "Use of Virtual Reality Simulation for Mission Rehearsal for Carotid Stenting"
jama.ama-assn.org/cgi/content/extract/297/3/265-a

■ "Simulation Devices in Interventional Radiology: Validation Pending"
www.jvir.org/cgi/content/full/17/2/215

RSNA Highlights™ Debuts in Phoenix

ENTHUSIASTIC attendees of RSNA's new annual conference option, RSNA Highlights™, hailed the inaugural outing as convenient, collegial and concentrated.

"The conference provided an excellent overview of many topics important to daily practice," said Ian Peterkin, M.D., an RSNA member in private practice in Washington. "Many experts in diagnostic imaging from around the country, as well as international speakers, shared their knowledge and experience with superb lectures."

Held Feb. 26–28 at the J.W. Marriott Desert Ridge Resort & Spa in Phoenix, RSNA's first educational conference drew 300 attendees. Among them was Yusuf Mnyusiwalla, M.D., of Waterloo, Ontario.

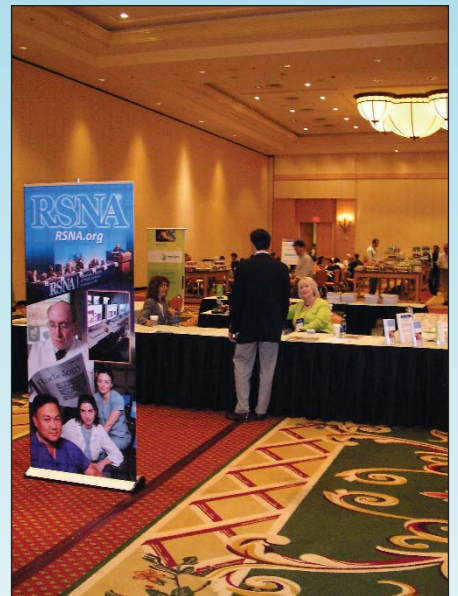
"I haven't been to an RSNA [annual] meeting in 15 years—it's just become too big," said Dr. Mnyusiwalla. "I like the small size of this Highlights meeting and the location. It's a nice place to bring family."

RSNA Highlights was designed for radiologists who can't attend the annual meeting, or those who attend but find they can't get to every lecture they want. Four topics were covered in four refresher courses apiece and two "hot topics" courses were offered as well. RSNA Highlights attendees also had immediate access to select electronic education exhibits from RSNA 2006—a feature that was a definite hit with attendee Alton Baker, M.D., of Birmingham, Ala.

"This is genius!" said Dr. Baker, of the education exhibits and RSNA Services area. "This is a chance for the collegiality you'd like to see at the RSNA meeting. I just had breakfast with people from L.A., San Francisco and



(clockwise, from top left:) Elliot K. Fishman, M.D., delivered the keynote address at RSNA Highlights™ 2007. In the RSNA Services area, attendees could access the Internet, purchase RSNA educational products and learn about RSNA membership and benefits. Attendees could also access select electronic education exhibits from RSNA 2006. The conference drew more than 300 attendees.



Phoenix."

Dr. Baker said he also felt more able to focus on the educational courses at Highlights than at the RSNA annual meeting. "At the annual meeting, I spend so many hours looking at equipment, it reduces the time for hearing papers and going to courses," he said.

Others echoed Dr. Baker's comments, noting that the sheer volume of opportunities that make the RSNA annual meeting so popular can also make it distracting. Highlights, they said, gave them a chance to "hone in on topics." Attendees also welcomed the opportunity to complete self-assessment modules, which contribute to the

American Board of Radiology Maintenance of Certification process.

Highlights participants also applauded the conference location. While much of the country was shivering in below normal temperatures, Phoenix saw highs in the 60s and 70s.

RSNA Highlights 2008 will be held Feb. 18–20 at the Ritz-Carlton/J.W. Marriott Orlando, Grande Lakes in Florida. Course emphasis will include cardiac imaging, head and neck imaging, thoracic imaging and breast imaging. More details will be announced in future issues of *RSNA News* and on the Web at RSNA.org/highlights. □

PET/CT Outpaces Modalities Used Separately in Staging Colorectal Cancer

PHYSICIANS and their patients have reason to be intrigued by a recent study showing the potential of positron emission tomography (PET) and computed tomography (CT) as a whole-body imaging procedure to improve colorectal cancer staging.

In a prospective study of 47 patients who had clinical findings and optical colonoscopy suggesting primary colorectal cancer, researchers at University Hospital Essen in Germany found tumor, lymph node and metastasis (TNM) staging was correctly determined by PET/CT colonography in 37 of 50 lesions (74 percent). TNM staging was correctly determined by CT followed by PET (CT + PET) in 32 lesions (64 percent) and by whole-body CT alone in 26 lesions (52 percent).

Patients underwent whole-body PET/CT colonography one day after colonoscopy. Study findings appear in the Dec. 6, 2006, issue of *The Journal of the American Medical Association*.

Few studies have explored staging colorectal cancer with PET/CT, said lead researcher Patrick Veit-Haibach, M.D., formerly a radiologist in the Department of Radiology at University Hospital Essen. He said he conducted the study because he felt image quality in PET/CT had been compromised in the past.

“The CT component was used only as a morphological landmark,” he said. “This was the first study of true integrated hybrid imaging using state-of-



Patrick Veit-Haibach, M.D.
University Hospital, Zurich

the-art radiological imaging protocols in PET/CT.”

Combined Report Available Immediately

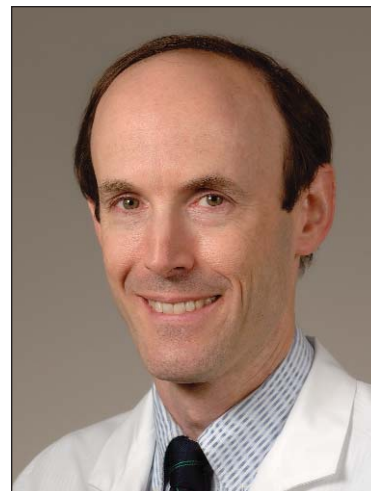
While acknowledging optical colonoscopy as the standard for cancer detection and tissue sampling, Dr. Veit-Haibach and colleagues noted that many additional imaging tests are

We think this is a logistical advantage for referring physicians and patients, because we can provide a combined, one-step report on the same day.

Patrick Veit-Haibach, M.D.

needed to check if the disease has spread to the lymph nodes and other organs. They theorized fusing functional with morphological data could help clinicians stage tumors and plan treatment.

“We think this is a logistical advantage for referring physicians and patients, because we can provide a combined, one-step report on the same day,” said Dr. Veit-Haibach, now a nuclear medicine physician in the



Ronald M. Summers, M.D., Ph.D.
National Institutes of Health Clinical Center

Department of Nuclear Medicine at University Hospital in Zürich, Switzerland.

In determining N-stage with PET/CT colonography and CT alone, Dr. Veit-Haibach and colleagues used a 0.7 cm node threshold, which was of particular note to Ronald M. Summers, M.D., Ph.D., a senior investigator with the Department of Diagnostic Radiology at the National Institutes of Health Clinical Center. Noting that the 0.7 cm threshold is a third smaller than the 1 cm standard for investigators today, Dr. Summers said, “Radiologists should take a closer look at this.”

The study revealed a statistically significant advantage for PET/CT over conventional staging in defining T-stage—information that is critical in rectal cancer as neoadjuvant therapy is weighed against resection alone, said Dr. Veit-Haibach.

It’s important for a surgeon to have accurate information about higher T-stages because other organs may be

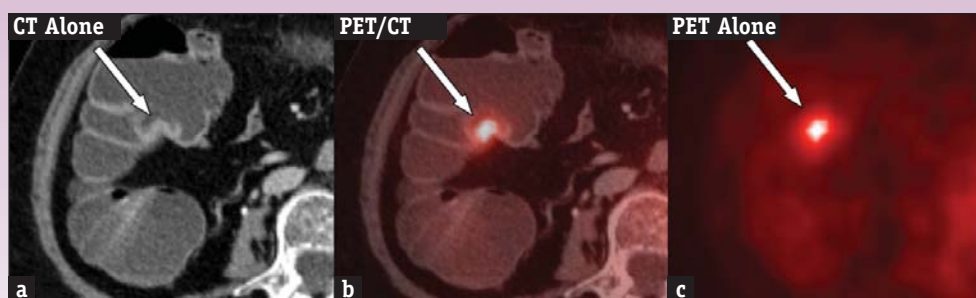
involved, Dr. Veit-Haibach added. Of the four patients in his study for whom PET/CT changed patient management, three had abnormalities which were detected in organs other than the colon.

Bowel Preparation Still a Drawback

While physicians can appreciate the quick, integrated report offered by PET/CT—which facilitates quickly starting patients on needed therapies—patients also reap psychological and physical benefits from not having to undergo different imaging procedures separately. In fact, in the German study CT and PET were performed on the same scanner, not separate scanners as had been the clinical norm in the past. This may have overestimated the accuracy of CT + PET for TNM staging, Dr. Veit-Haibach said.

PET/CT colonography isn't without its drawbacks for patients, however. Bowel preparation for the patient can be very uncomfortable, as it involves a water enema that must be retained for a half-hour. Researchers used water after determining that colonic distension by carbon dioxide or air could require additional air inflation during the procedure, due to intestinal absorption of the gas which may cause misregistered images.

While the digital bowel cleansing being investigated by vendors won't be available for some time, said Dr. Veit-



Slightly Thickened Bowel Wall at the Left Colonic Flexure and T2 Tumor
(a) This small lesion was missed by CT imaging (T0) (arrowhead). (b) and (c): Corresponding PET/CT colonography and PET alone demonstrated elevated glucose metabolism, indicating a colorectal cancer (arrowheads). The PET/CT scan suggested a T2 tumor, which was verified by subsequent hemicolectomy with histopathological evaluation.

Reprinted from *The Journal of the American Medical Association* 2006;296:2590-2600. Veit-Haibach, P., et al. "Diagnostic Accuracy of Colorectal Cancer Staging With Whole-Body PET/CT Colonography." © 2006, with permission from the American Medical Association.

Haibach, burden to the patient has been eased by reducing the procedure time from 30 minutes to 20 minutes.

Dr. Summers said it is important to remember that this research focuses only on patients with colorectal cancer—a relatively small patient population compared to the huge screening patient population envisioned to benefit from standard CT colonography. "CT colonography does find cancers very well—almost 100 percent," he said. He also noted that researchers have previously used CT colonography to stage colorectal cancers; it is the added benefit of PET, as shown in this study, that is of great interest.

Bottom line, said Drs. Veit-Haibach and Summers, the new study illuminates some intriguing and innovative

developments which require still more investigation. "This is a new way to use an existing technology to provide potential new information in the staging of colorectal cancer, particularly for T-stage and N-stage," said Dr. Summers.

Dr. Summers said he'd like to see these results replicated and validated on a larger scale, with a larger number of patients, at different medical centers and using even newer PET/CT scanners that reduce the exam time. "In theory, this may become a more useful test as the equipment improves, such as PET/CT detectors with thinner slices," he said. □

■ To read the abstract for "Diagnostic Accuracy of Colorectal Cancer Staging with Whole-Body PET/CT Colonography," go to jama.ama-assn.org/cgi/content/abstract/296/21/2590.

Radiotherapy Delivery Influences Rectal Cancer Outcomes but Accuracy Depends on Several Factors

RADIO THERAPY delivery is a prognostic factor for locoregional recurrence rate (LRR) in rectal cancer and is influenced by factors including treatment center and schedule, German and Austrian researchers have concluded.

Rainer Fietkau, M.D., of the University of Rostock in Germany, and colleagues analyzed data from 788 patients with rectal cancer to determine radiotherapy's impact on LRR and disease-free survival (DFS) at five years. Results of their study appear in the March 15, 2007, issue of the *International Journal of Radiation Oncology * Biology * Physics*.

Noting significant differences in radiotherapy delivery patterns among the 10 treatment centers involved in the study, Dr. Fietkau and colleagues defined radiotherapy as adequate if delivered in less than 49 days for adjuvant or less than 44 days for neoadjuvant, or with a minimum radiation dose of 4700 cGy for adjuvant or 4300 cGy for neoadjuvant.

The researchers found that 137 patients not receiving radiotherapy had a 29.6 LRR and 55.1 percent DFS, while 71 patients received inadequate radiotherapy but had a 21.2 LRR and 57.4 percent DFS. The 580 patients

whose radiotherapy was deemed adequate had a 6.8 percent LRR and 69.1 percent DFS.

The researchers also noted that postoperative radiotherapy significantly influenced LRR while radiotherapy delivered preoperatively did not.

The abstract for "Rectal cancer delivery of radiotherapy in adequate time and with adequate dose is influenced by treatment center, treatment schedule, and gender and is prognostic parameter for local control: Results of study CAO/ARO/AIO-94" can be found online at www.rsource.com/periodicals/rob/article/PIIS0360301606033499/abstract.

Radiology Has Growing Stake in Cervical Cancer Trial

RADIOLOGISTS now have double the reasons to join a new clinical trial looking at lymph node metastasis in patients with cervical cancer. A trial initially set to test only PET against surgery has expanded to evaluate MR imaging with a new agent.

A joint effort of the American College of Radiology Imaging Network (ACRIN) and the Gynecologic Oncology Group (GOG), the ACRIN 6671/GOG 0233 trial will launch this spring at eight sites. Launch was delayed several months by complex preparations, not the least of which was obtaining FDA approval for the new MR contrast medium, ferumoxtran-10, to be used as an investigational new drug (IND) agent.

GOG principal investigator Michael A. Gold, M.D., an associate professor of obstetrics and gynecology at the University of Oklahoma Health Sciences Center, conceived of the initial concept for the trial in 2000. "We were looking at newer modalities for imaging, mainly PET scans, to see if they would be useful tools for finding lymph node metastasis from locoregionally advanced cervical cancer," said Dr. Gold. While early cervical cancers can be treated with surgery, he said, many centers don't perform surgery at all and rely entirely on imaging to look for lymph node metastasis to guide chemotherapy and radiation treatments in advanced cervical cancer.

Some centers, such as the University of Oklahoma, prefer to do pre-operative mini-surgical explorations of the lymph node bed in search of metas-



Michael A. Gold, M.D.
University of Oklahoma



Mostafa Atri, M.D., Dipl., Epid.
University of Toronto

tasis. Studies have suggested that such explorations can alter treatment decisions in as many as 40 percent of patients compared to those who only had imaging with no surgery, said Dr. Gold. However, he added, the explorations can also delay treatment and raise their own risks and possible complications. Hence, his search for better lymph node imaging approaches began.

Need for Radiologists Recognized

After three years of developing the study, Dr. Gold said he and his GOG colleagues realized that "as

oncologists, radiation oncologists and medical oncologists, we see and treat a lot of cervical cancers, but we're not imagers, so we don't really have the knowledge to run an image-based study like this." They subsequently presented the idea of a PET study to the National Cancer Institute's Cancer Therapy

Evaluation Program and ACRIN.

It was at that point that the study's ACRIN protocol principal investigator, Mostafa Atri, M.D., Dipl., Epid., became involved. Head of the abdominal division of the University of Toronto's Medical Imaging Department, Dr. Atri said he and ACRIN recognized innovations and agents that could be tested alongside PET. They suggested combining the modalities into a new proposal that added MR imaging with the ferumoxtran-10 and combined PET with CT.

"Traditionally we have used CT and MR imaging to look for lymph node metastasis mainly using size-based criteria," said Dr. Atri. "In this study we are looking for metastatic foci in the lymph nodes, so we are not relying on the size criteria.

While the PET/CT scans of the lymph nodes will identify disease based on increased activity, the MR images with ferumoxtran-10 will show disease based on a lack of absorption, said Dr. Atri. Ferumoxtran-10 is an ultrasmall

As oncologists, radiation oncologists and medical oncologists, we see and treat a lot of cervical cancers, but we're not imagers.

Michael A. Gold, M.D.

superparamagnetic iron oxide agent picked up by macrophages in the normal lymph nodes, resulting in “defects” in the nodes where they are occupied by metastasis.

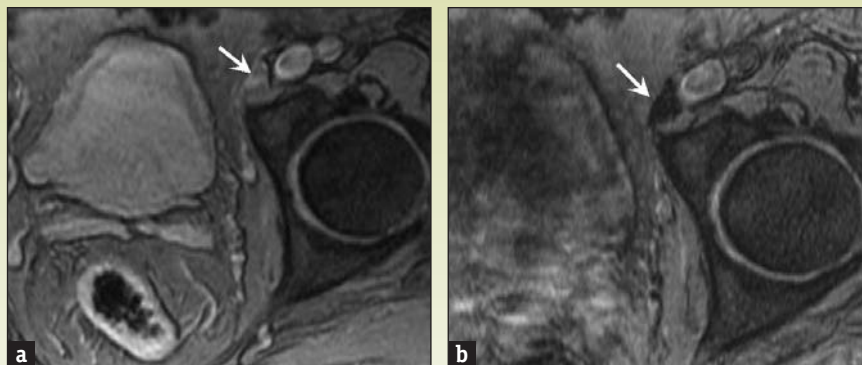
The ACRIN-GOG trial will use a brand of ferumoxtran-10 called Combidex. Dr. Atri said the Combidex manufacturer, Advanced Magnetics Inc., had considered using the study to gain FDA approval, but instead has decided to pursue approval while the trial is ongoing.

Surgery to Confirm Imaging Accuracy

Dr. Gold said the trial will involve 325 patients with stage IB2, IIA>4 cm and stages IIB to IVA cervical cancers.

While past single-site trials have tested the effectiveness of PET/CT scanning of the lymph nodes, said Dr. Gold, this trial will not only be larger but will also use the “gold standard”—surgical exploration following imaging to determine if the scans were accurate.

Dr. Gold said the trial will “be a slowly evolving process,” beginning with the eight sites this spring and expanding to more sites in about six months. The study is starting with sites that anticipate enrolling 10 or more patients a year, said Dr. Gold, so that “we can get a good sense of how well the trial works before other sites, which



MR Using Ferumoxtran-10 Contrast Medium

Benign internal iliac node in a patient with prostate cancer. (a) Precontrast axial T2-weighted gradient-echo MR image shows a small hyperintense left groin lymph node (arrow). (b) Postcontrast image obtained 24 hours after ferumoxtran-10 shows homogenous signal drop due to ferumoxtran-10 uptake indicating no malignant infiltration.

Images courtesy Mukesh Harisinghani, M.D., Center for Molecular Imaging Research, Massachusetts General Hospital.

may not see that many patients, get involved.” Both Drs. Atri and Gold expect the trial to run about three years.

For a center to participate, it must be affiliated with both ACRIN and GOG, as well as be ACRIN accredited for PET/CT and MR imaging and have a recruited surgeon willing to follow the trial’s protocols for the removal of the patients’ lymph nodes following imaging.

For future stages of the trial, investigators will be looking for centers that can enroll a minimum of five cases per year, said Dr. Atri. Once a site is approved, its radiology principal inves-

tigator will undergo training in performing and interpreting ferumoxtran-10 MR imaging.

Dr. Gold said he is excited about the start of the trial and welcomed radiologists’ participation. “This is my brainchild,” he said. “I’ve worked so hard for seven to eight years to get it to this point, so the more interest among the imaging community, the better.” □

Centers interested in participating in the trial can go to www.acrin.org/6671_protocol.html or contact ACRIN Project Manager Bernadine Dunning at bdunning@phila.acr.org.

Fear, Distrust Hold Women Back From Clinical Trial Participation

Conflicting attitudes about participating in clinical trials—uncertainty about trusting the experimenters, fear of the trial itself and hope that the research will result in medical progress—may hinder women’s willingness to participate, according to recent study conducted at the Wake Forest University School of Medicine in Winston-Salem, N.C.

The study, published in the February 2007 issue of the *Journal of Health Care for the Poor and Underserved*, focused particularly on black women and low socioeconomic status white women.

“Enrolling representative populations is essential to the generalizability of study findings,” write researchers Deborah F. Farmer,

Ph.D., Sharon A. Jackson, Ph.D., and Mark A. Hall, J.D., of the Department of Social Sciences and Health Policy. Women and minorities continue to be under-represented in clinical trials despite a 1993 Congressional mandate that they be included, the researchers note.

For the study, 72 women—52 black women from a range of income levels and 20 low-income white women—were placed in 10 focus groups. Asked about clinical trials, participants expressed fear at subjecting themselves to procedures or drugs not used before and distrust of clinical investigators as self-promoting, but also talked of hope that research would prevent and cure diseases.

The subjects also cited other reasons, including time constraints, lack of day care and fear of medical procedures, for not wanting to participate in clinical trials. The solution, the Wake Forest team concludes, is for academic centers to become more involved with minority and low socioeconomic status communities so that scientists and citizens may become partners in addressing health problems.

The abstract for “Attitudes of African American and Low Socioeconomic Status White Women toward Medical Research” can be accessed at muse.jhu.edu/login?uri=/journals/journal_of_health_care_for_the_poor_and_underserved/v018/18.1farmer.html.

Ankle MR Study Exemplifies Role of Imaging in Diagnosis and Treatment

A NEW STUDY showing that MR imaging of the ankle improved diagnostic confidence in more than 70 percent of patients could be more significant for those outside the radiology specialty than those within it, some radiologists said.

In a study led by Philip Bearcroft, M.D., and colleagues in the University Department of Radiology at Addenbrooke's Hospital in Cambridge, England, ankle MR changed management plans for 35 percent of 91 orthopedic foot and ankle patients. Findings were published in the November 2006 issue of the *American Journal of Roentgenology*.

The study results might seem obvious at first glance, but there's more to consider, said Mark J. Kransdorf, M.D., a professor of radiology at the Mayo Clinic College of Medicine and consultant in the Department of Radiology at the Mayo Clinic in Jacksonville, Fla.

"Those who have no exposure to ankle imaging may not realize how important it is to patient management," said Dr. Kransdorf. "To non-imagers, this information may not only be new, but may also help them make more intelligent choices when assessing their patients."

MR Influences Clinician Confidence

While MR imaging is widely accepted as an accurate diagnostic tool, there have actually been few studies quantifying the effect of ankle MR on clinical diagnosis and patient management, said Dr. Bearcroft.

"We know we can obtain good images of the ankle and make accurate

diagnoses, but how do we know we actually make a difference to a referring clinician or even to a patient?" he asked. "The study was designed to determine whether performing MR examinations actually made a difference."

The researchers studied 91 cases referred from a single orthopedic foot and ankle surgeon to a regional teaching hospital over an 18-month period, where diagnosis and proposed management were made before and after the MR imaging in each case. Measuring diagnostic confidence with a visual analog scale, researchers found MR imaging was "a useful tool of exclusion," allowing the clinician to exclude many diagnoses that had been considered before imaging. In addition, there was an increase in diagnostic certainty with which the remaining diagnoses were made, with the number considered "very likely" or "definite" increasing from 20 percent before imaging to 88 percent afterward.

Mark E. Schweitzer, M.D., a professor of radiology and orthopedic surgery and chief radiologist at the New York University Hospital for Joint Diseases, said the study's significance lies in illustrating how imaging can change a physician's confidence in a diagnosis and, to some degree, whether a person should go to surgery.

"The holy grail of imaging is how it affects patient outcome," said Dr. Schweitzer.

Prior to the use of MR imaging, patients in the study had an average of



Philip Bearcroft, M.D.
Addenbrooke's Hospital

2.3 possible diagnoses. After MR imaging, the number of diagnoses per patient reduced to 1.2.

"In 69 percent of all diagnoses entertained before imaging, there was a significant change in the confidence with which they were considered after imaging," said Dr. Bearcroft.

"Although in some cases the clinician was considering the correct diagnosis prior to imaging, MR imaging increased confidence in that diagnosis."

The study does have its limitations. Dr. Schweitzer noted it is difficult to separate the images from the interpretation. "It is hard to know if the MR images are what changed the surgeon's mind or if it was the interpretation of the radiologist," he said.

The fact that diagnostic confidence changed in more than two-thirds of

The holy grail of imaging is how it affects patient outcome.

Mark E. Schweitzer, M.D.

patients referred from a single experienced foot surgeon, said Dr. Bearcroft, demonstrates how difficult it is even for someone with great clinical experience to differentiate between the various clinical entities that present with similar symptoms in the foot. In 66 percent of the cases studied, he said, the referring physician felt that his understanding of the disease had either depended upon, or had been improved by, MR imaging.

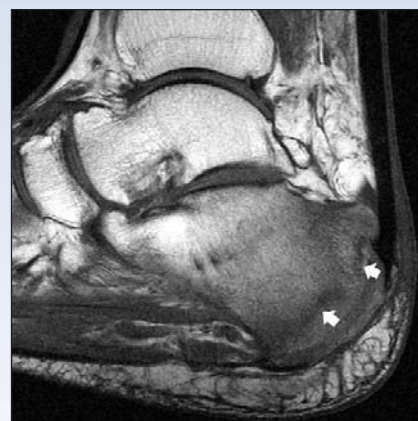
Of the 35 percent of patients for whom MR imaging changed management plans, 31 percent ultimately underwent a less invasive treatment.

Also of particular note, said Dr.

Bearcroft, is the fact that in the 34 percent of patients for whom MR imaging was less helpful to the clinician, the patients had symptoms of a meniscoid lesion—a condition that is difficult to see on conventional MR.

More studies like this would be welcome, said Dr. Schweitzer. “The audience for this kind of study isn’t necessarily other radiologists. It should be referring clinicians and other providers, because it will change how they use radiology,” he said. □

■ To read the abstract for “MRI of the Ankle: Effect on Diagnostic Confidence and Patient Management,” go to www.ajronline.org/cgi/content/abstract/187/5/1327.



Stress fracture in a 76-year-old man. Sagittal T1-weighted spin-echo MR image shows a subtle stress fracture (arrows) in the posterior calcaneus with prominent associated edema.

Image courtesy of Mark J. Kransdorf, M.D.

Snowboarder Study Finds Common Ankle Fracture Often Missed

ANOTHER ankle imaging study has revealed a high miss rate for a type of lateral process talus fracture—an inversion and dorsiflexion of the ankle also known as the “snowboarder fracture”—that can cause chronic pain, nonunion and premature osteoarthritis.

Kevin Cunneely, M.D., and his colleagues at the University of Utah in Salt Lake City began their study after observing an incidence of lateral process talus fractures much higher than that indicated by the medical literature, where they make up less than 1 percent of documented ankle injuries.

“We knew we were seeing more than that and we were wondering if it was because we’re in Utah, which is snowboarding country,” Dr. Cunneely said in a presentation at RSNA 2006.

Dr. Cunneely and colleagues retrospectively evaluated radiographs of ankle fractures from a Level 1 trauma center over a three-year period. In cases where the researchers identified lateral process fractures, they also reviewed CT and MR images—if available—to confirm their diagnoses.

Out of 1,480 radiographs of ankle injuries, researchers found 130 lateral process fractures, an 8.8 percent incidence. Of these, 48 (3.2 percent) involved the subtalar joint.

Twenty-seven cases also included CT images, all of which confirmed the fractures.

Of 82 nonarticular fractures, 13 (16 percent) were properly diagnosed. Of 48 articu-

lar fractures, 34 (71 percent) were properly diagnosed. Fractures were less likely to be recognized in senior patients or in association with pilon and calcaneal fractures.

“We not only found that this type of fracture occurred at a higher rate than what was reported in the literature, but also the miss rate was significantly higher than what was acceptable,” said Dr. Cunneely.

The significance of misdiagnosis depends on the degree of fracture. A Type 1 fracture, the least severe, is nonarticular. Types 2 and 3 are articular and can result in intense, chronic pain and osteoarthritis. Prospective diagnosis was poor for nonarticular fractures, said Dr. Cunneely, however, patient management is likely unaffected as the fractures are generally treated conservatively.

Of greater concern, he noted, was the miss rate of 29 percent for articular fractures, given the high rate of chronic pain and premature osteoarthritis associated with those injuries.



Kevin Cunneely, M.D.

Lateral process fractures generally present as an ankle sprain and can cause persistent pain. A variety of factors is likely responsible for why they are so commonly missed, said Dr. Cunneely, noting that the fractures can be very subtle and in some cases other injuries may distract from their diagnosis.

Adding that the majority of lateral process fractures studied could have been accurately diagnosed radiographically, Dr. Cunneely urged more care when diagnosing ankle injuries and recommended the use of CT.

Despite the “claim to fame” of lateral process talus injury as the “snowboarder fracture,” researchers concluded that the winter sport bias did not play a role in the higher incidence. They found that just 43 percent occurred during the winter sport season, with the peak number of injuries occurring in June.

■ Note: This article was adapted from a story that appeared in the RSNA 2006 *Daily Bulletin*. The daily newspapers from the annual meeting are available online at RSNA.org/bulletin.

Daily Bulletin

■ To read the abstract of Dr. Cunneely’s presentation, “High Incidence of Missed Diagnosis of a Common Ankle Fracture,” go to the RSNA Meeting Program at rsna2006.rsna.org. The direct link is rsna2006.rsna.org/rsna2006/V2006/conference/event_display.cfm?em_id=4434072.



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Kathy Golucke-Heredia & Sergio L. Heredia, M.D.
Brian J. Holloway, M.B.B.Ch.
Abi Raymer & Brooks A. Horsley, M.D.
Laura A. Hotchkiss, M.D. & Bruce L. Hotchkiss
Nancy & John R. Howard, M.D.
Connie & George F. Hromyak Jr., M.D.
Steffen Huber, M.D.
Andrew J. Hwang, M.D.
Vasavi Rajagopal & Saravanan Kasthuri, M.D.
Satomi Kawamoto, M.D.
Nadine Koff, M.D. & David A. Koff, M.D.
Cynthia Reese & Keith Y. Kohatsu, M.D.

Eli Konen, M.D.
Elizabeth & Jay L. Korach, M.D.
Madonna L. Kral, M.D.
Andrew Ku, M.D.
Shawn L. Laferriere, D.O.
Phyllis & Philip H. Lapidus, M.D.
Claudia A. Lawn, M.D.
Maximiliano R. Loret, M.D.
Giselle Alvarez de la Campa & Fernando J. Lopez, M.D.
Manuel A. Madayag, M.D.
David C. Madoff, M.D.
Mary T. & Melvin A. Magidson, M.D.
Fanny E. Moron, M.D. & Carlos Martinez
Diane & Robert A. Maxey, M.D.
Valdemar Moreno-Ford, M.D.
Richard P. Moser III, M.D.
Kristine M. Mosier, D.M.D., Ph.D.
Erika Kim, M.D. & Andreas Mueller
Luigi Natale, M.D.
Thelma J. & Luther S. Nelson, M.D.
Fukiat Ongseng, M.D.
Susan S. Patel, M.D.
Christine L. Petersen, M.D.
Cheryl A. Petersilge, M.D.
Francisco Plancarte, M.D.
Jeffrey S. Pollak, M.D.
Ilias Primetis, M.D.
Lorentz G. Quekel, M.D., Ph.D.
Steven S. Raman, M.D.
Magdalena Ramirez Arellano, M.D.
Maurice M. Reeder, M.D.
Frank M. Rembert, M.D.
Jan Rijkman, M.D.
Roberto Rivera, M.D.
Robert B. Roach, M.D.
Klaus Ruedisser, M.D.
Yoko Saito, M.D.
Aram Salem, M.D.
Jerome M. Sampson, M.D.
Sergio De Los Santos Sanchez, M.D.
Mark J. Sands, M.D.
Michael F.H. Schocke, M.D.
Chunilal P. Shah, M.D.
James H. Short, M.D., Ph.D.
Andreas F. Siriaa, M.D.
Keith M. Spellman, M.D.
Susan G. & Richard J. Sukov, M.D.
Karen & Michael A. Sullivan, M.D.
David C. Swanson, M.D.
Yu Ming Tang, M.B.B.S.
Sayuri & Noboru Tanigawa, M.D.
Catherine & Bernard L. Tassin, M.D.
Satoru Tazawa, M.D.
Serge Tchengu, M.D.
Renate Tewaag, M.D.
Panagiotis V. Tsirkinidis, M.D.
Giuseppe Vadala, M.D.
Michael E. Waldman, M.D.
Ivy M. Warsinski, M.D.
Edward C. Wheeler, M.D.
Rodrick A. Williams, M.D.
Michael A. Winkler, M.D.
Masaki Yamamuro, M.D.
Kan Ying, M.D.
Shigeyuki Yoshida, M.D.

Journal Highlights

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

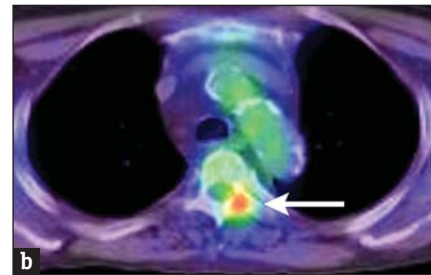
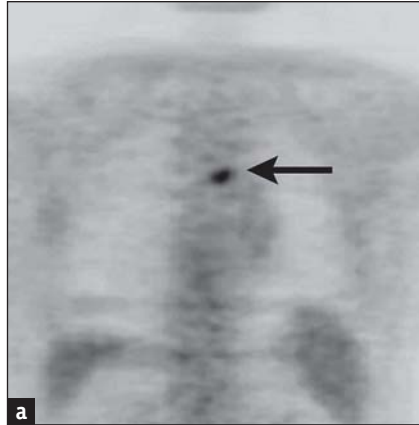
Imaging Prostate Cancer: A Multidisciplinary Perspective

AS THE longstanding role of imaging in assessing prostate cancer becomes ever more important in guiding treatment selection and planning, there still exists no consensus regarding use of the many modalities available.

In an article in the State of the Art section of the April issue of *Radiology* (RSNA.org/radiologyjnl), Hedvig Hricak, M.D., Ph.D., of Memorial Sloan-Kettering Cancer Center in New York, and colleagues provide a multidisciplinary perspective on the optimal role of imaging in the detection and staging of prostate cancer, as well as in treatment planning and follow-up.

Specifically, Dr. Hricak and colleagues offer comprehensive, evidence-based explanations of the following modalities:

- Transrectal ultrasonography
- CT
- MR, including dynamic contrast-



PET/CT scans of osseous metastasis in the posterior element of thoracic spine.

(a) Coronal fluorodeoxyglucose positron emission tomography (FDG PET) scan shows focal increased activity in left posterior spine (arrow). (b) Transverse PET/CT overlay scan shows that focal lesion corresponds to metabolically active bone metastasis in the posterior vertebra (arrow).

(*Radiology* 2007; 243:28-53) © RSNA, 2007. All rights reserved. Printed with permission.

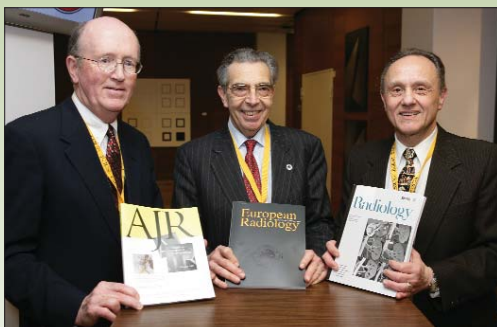
- enhanced MR and MR spectroscopy
- Radionuclide bone scanning
- Positron emission tomography (PET)

Noting the substantial progress already made in imaging prostate cancer, Dr. Hricak and colleagues conclude, "It is hoped that advances in

imaging, and future advances in molecular imaging, will contribute to long-term improvements in morbidity from prostate cancer and patients' quality of life and to a decrease in mortality from prostate cancer that we are now just beginning to see."

Proto Participates in ECR Editors Forum

Radiology Editor Anthony V. Proto, M.D., (right) joined Robert J. Stanley, M.D., (left), editor-in-chief of the *American Journal of Roentgenology*, and Albert L. Baert, M.D., Ph.D., editor-in-chief of *European Radiology*, for "Ask the Editors: Discuss Your Most Burning Questions and Problems," a forum held during the European Congress of Radiology (ECR) last month in Vienna, Austria. Among the issues addressed by the editors were duplicate submissions and quality of research.



ECR - European Society of Radiology / Henry Schiffer

RSNA Members Enjoy Journals, Annual Meeting

Free subscriptions to *Radiology* and *RadioGraphics* and attending the annual meeting free of charge are the most valuable RSNA benefits, according to members responding to a recent RSNA survey.

Relative Value of Select RSNA Services

- 1 *Radiology* subscription
- 2 *RadioGraphics* subscription
- 3 Annual meeting
- 4 Access to continuing medical education
- 5 Educational products
- 6 Free access to self-assessment modules
- 7 *RSNA News*
- 8 Discounted admission to educational courses held outside annual meeting
- 9 Career Connection
- 10 CME Credit Repository

Source: 2006 RSNA Member Needs Assessment Survey

Imaging the Complications of Bone Marrow Transplantation in Children

WITH THE use of bone marrow transplantation continually on the rise, radiologists must know how to use ultrasonography, CT and MR to detect a range of potential complications.

Described in an article in the March-April issue of *RadioGraphics* (RSNA.org/radiographics) are the basic principles of and indications for pediatric bone marrow transplan-

tion, the range of potential clinical complications and the imaging manifestations of those complications. Specifically, lead author Daniel S. Levine, M.B.Ch.B., of the Hospital for Sick Children and University of Toronto, and colleagues address the following complication types:

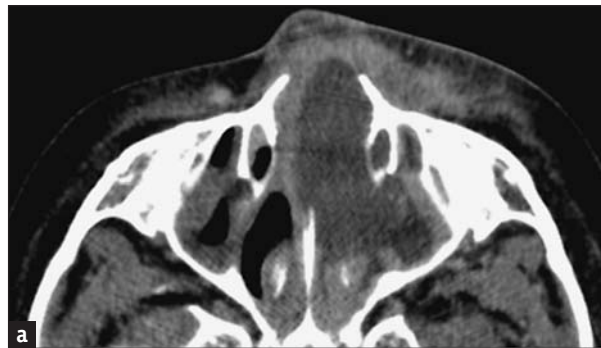
- Pulmonary, including interstitial pneumonitis

- Abdominopelvic, including graft-versus-host disease
- Musculoskeletal, including chronic atrophy of subcutaneous tissues
- Central nervous system, including intraparenchymal and intraocular hemorrhage
- Paranasal, including sinusitis

“The increasing use of bone marrow transplantation to treat a range of malignant and nonmalignant conditions mandates that radiologists be familiar with the range of potential complications and the associated imaging appearances,” Dr. Levine and colleagues conclude.

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

RadioGraphics



Invasive fungal sinusitis in a 6-year-old girl, three months after bone marrow transplantation for aplastic anemia.

(a) Axial CT image shows bilateral maxillary sinus opacification, complete on the left, and premalar soft-tissue swelling and infiltration. (b) Axial CT image shows periorbital soft-tissue swelling and a subperiosteal abscess (arrow) with destruction of the orbital plate of the ethmoid bone.

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EDUCATION RESEARCH

Program and Grant Announcements

Revitalizing the Radiology Research Enterprise

Application Deadline Extended Through April 23

RSNA is accepting applications for the Revitalizing the Radiology Research Enterprise (RRRE) program site visits to evaluate the departmental and institutional research environment. The RRRE program is designed to help academic radiology and radiation oncology departments improve their ability to support and conduct radiologic

research. Six departments will be selected from applications made by departments of radiology, radiation oncology and nuclear medicine.

In addition, a 1½ day workshop to be held Oct. 19–20 at RSNA Headquarters in Oak Brook, Ill., will focus on challenges to and strategies for con-



ducting research in radiology and radiation oncology departments.

For more information, contact Tracy Schmidt, M.S., at tschmidt@rsna.org or 1-630-368-3751.

Continued on page 20

Radiology in Public Focus

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

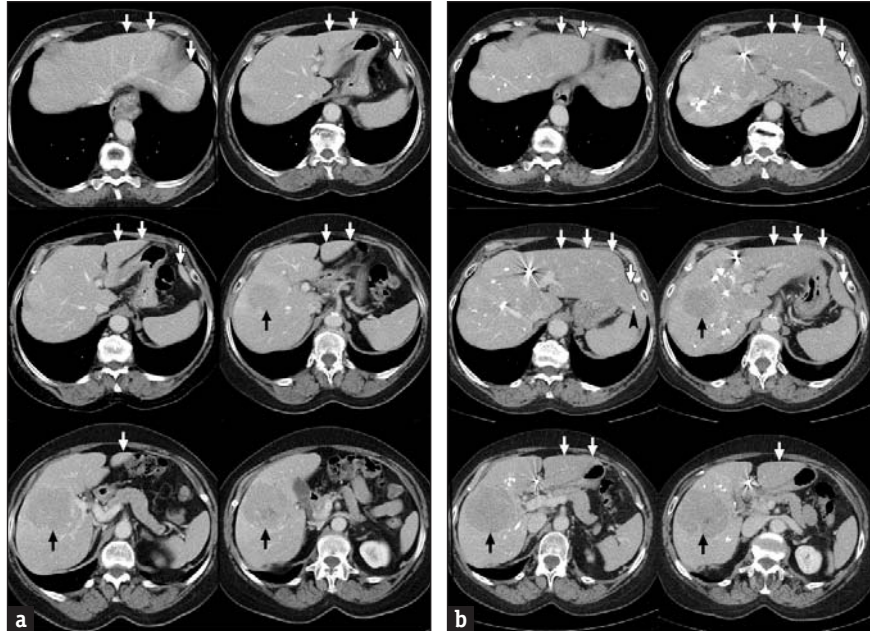
Portal Vein Embolization and Autologous CD133⁺ Bone Marrow Stem Cells for Liver Regeneration: Initial Experience

COMBINING portal vein embolization (PVE) and intraportal somatic stem cell application can significantly improve hepatic regeneration prior to extended liver resection, reducing time to surgery in patients with extensive hepatic tumors, German researchers have found.

Günter Fürst, M.D., and colleagues at Heinrich-Heine-University of Dueseldorf found that six patients treated with PVE and CD133⁺ bone marrow stem cells (BMSCs) experienced a twofold higher average daily hepatic growth rate than seven patients who underwent PVE alone. This resulted in a reduction of the time to surgery by an average of 18 days.

For almost half of patients requiring extended hepatectomy, an anticipated future liver remnant volume (FLRV) below 25 percent of total liver volume poses an increased risk of postoperative morbidity and mortality, Dr. Fürst and colleagues note.

“Recent progress in stem cell research and cell transplantation spurred



Transverse CT scans from patient with hepatocellular carcinoma (black arrow) obtained (a) before and (b) 14 days after portal vein embolization (PVE) and intra-portal CD133⁺ bone marrow stem cell (BMSC) application. (a) Preinterventional CT volumetry revealed total liver volume of 1317 mL, tumor volume of 177 mL and future liver remnant volume (FLRV) of 217 mL (white arrows). Preoperative relative left lateral liver volume ratio was 19 percent. (b) Postinterventional CT volumetry revealed marked hypertrophy of segments II and III (white arrows), indicated by FLRV of 440 mL, preoperative relative left lateral liver volume ratio of 39 percent, relative gain of 103 percent and hepatic daily gain rate of 15.9 mL/d.

(*Radiology* 2007;243:171-179) © RSNA, 2007. All rights reserved. Printed with permission.

our attempt to augment preoperative liver regeneration and shorten the time to sufficient expansion of the FLRV,” they state, adding that they chose CD133⁺ stem cells based on their

hepatic capacity as demonstrated in previous studies.

Pulmonary Radiofrequency Ablation: Long-term Safety and Efficacy in 153 Patients

LUNG radiofrequency (RF) ablation improves survival and local tumor control outcomes in patients whose cases are unsuitable for surgery, according to a new study.

Caroline J. Simon, M.D., and colleagues at Brown Medical School/

Rhode Island Hospital in Providence retrospectively evaluated 153 patients who underwent percutaneous CT-guided lung tumor RF ablations and found:

- Overall long-term survival rates for stage I non-small cell lung cancer

(NSCLC) were 78 percent at one year, 57 percent at two years, 36 percent at three years and 27 percent at four and five years.

- Overall long-term survival rates for stage IV colorectal lung metastases

Continued on next page

CT Screening for Lung Cancer: Diagnoses Resulting from the New York Early Lung Cancer Action Project

ANNUAL CT screening for lung cancer results in the identification of a high proportion of patients with early-stage lung disease, according to a new report by the New York Early Lung Cancer Action Project (NY-ELCAP).

Led by Principal Investigator Claudia I. Henschke, Ph.D., M.D., 21 investigators at 12 institutions throughout New York State conducted 6,295 baseline and 6,014 annual repeat screenings. The study was an expansion of the Early Lung Cancer Action Project conducted at two institutions in New York City.

With diagnostic work-up recommended for participants with positive results at baseline or repeat screenings, 101 lung cancer diagnoses were made at initial screening and 20 at repeat. Diagnoses in three other participants were prompted by symptoms before the first scheduled repeat screening.

The researchers note that a high proportion of patients had no clinical evidence of metastases when biopsy was recommended in the baseline and repeat screenings.

The findings also illustrate the benefit of updating the ELCAP screening

regimen to take advantage of technological advances, Dr. Henschke and colleagues note. "In particular, our findings showed the importance of updating the definition of a positive result to accommodate the finer collimation provided by multidetector row CT and the improved potential for interpretation with high-resolution monitors," they write.

(*Radiology* 2007;242:239-249) © RSNA, 2007. All rights reserved. Printed with permission.

Pulmonary Radiofrequency Ablation: Long-term Safety and Efficacy in 153 Patients

Continued from previous page

were 87 percent at one year, 78 percent at two years and 57 percent at three, four and five years.

- Local tumor progression-free rates for tumors 3 cm or smaller were 83 percent at one year, 64 percent at two

years, 57 percent at three years and 47 percent at four and five years. For tumors larger than 3 cm, rates were 45 percent at one year and 25 percent at two, three, four and five years.

"Surgery is usually the treatment of choice for localized cancers, but only

20 percent of all NSCLCs diagnosed are suitable for potentially curative resection," the researchers note.

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Media Coverage of Radiology

IN February, media outlets carried 333 news stories generated by articles appearing in *Radiology*. These stories reached an estimated 57 million people.

News releases promoted findings from *Radiology* studies on intracranial hemorrhage in babies after vaginal birth (*Radiology* 2007;242:535-541) and contrast-enhanced MR angiography for assessment of the supra-aortic arteries (*Radiology* 2007;242:600-609). In addition, a special news release was issued to draw attention to an editorial on the possible association between MR contrast agents and nephrogenic systemic fibrosis (*Radiology* 2007;242:647-649).

Coverage highlights include print

placements in the *Washington Post*, *Los Angeles Times*, *Seattle Times*, *Kansas City Star*, *South Florida Sun-Sentinel*, *Fort Worth Star-Telegram*, *Lexington Herald Leader*, *Augusta* (Georgia) *Chronicle*, *Monterey County* (California) *Herald*, *The Capital* (Annapolis, Md.) and *The News & Observer* (Charlotte, N.C.), as well as the Canadian publications *Vancouver Sun*, *Calgary Herald*, *Edmonton Journal* and *Montreal Gazette*.

Broadcast placements include numerous stories on regional television stations including KNBC-TV (Los

Angeles), WMAQ-TV (Chicago), WBAL-TV (Baltimore), KUSA-TV (Denver), WFSB-TV (Hartford, Conn.), WCCO-TV (Minneapolis), KING-TV (Seattle), WKYC-TV (Cleveland), WFLA-TV (Tampa, Fla.) and KSDK-TV (St. Louis). Prominent Web placements include Yahoo! News, *MSNBC.com*, *forbes.com*, *latimes.com*, *washingtonpost.com*, *abcnews.com* and *boston.com*.



Working For You

RSNA Committees

RSNA News continues its series highlighting the work of RSNA's volunteer committees with a look at the new International Advisory Committee. The committee currently includes 10 international representatives from five continents.

International Advisory Committee

THE International Advisory Committee advises the RSNA Board of Directors on the impact that Society activities and programs have on international members and attendees at the annual meeting. The committee also offers an international perspective on RSNA publications, governance and both traditional and Web-based educational programs. In addition, the committee helps guide the promotion of Society membership internationally.

Working for you
COMMITTEE PROFILE

At their first meeting at RSNA 2006, committee members pledged to help identify candidates for RSNA's editorial boards and committees and international faculty for refresher courses. The committee also addressed travel and lodging issues for international annual meeting attendees. The chair of the committee is Christian J. Herold, M.D., of Vienna, Austria.



Christian J. Herold, M.D.

MOC File Added to RSNA MOC Resources

The MOC File is the latest service offered by the RSNA Education Center to assist members in meeting maintenance of certification (MOC) requirements.

Available at RSNA.org/education/MOC, the MOC File gives RSNA

members a central location to store electronic documents, such as a CME action plan, pertaining to their personalized MOC program.

Other services that help members fulfill MOC requirements as designated



by the American Board of Radiology (ABR) are also available online. They include self-assessment modules (SAMs), My Practice Profile, My CME Action Plan and the RSNA CME Credit Repository.



RSNA Attends ECR

Executive Director Dave Fellers, C.A.E., (left), and 2007 President R. Gilbert Jost, M.D., were among the RSNA representatives on hand when the Society's new booth premiered at the European Congress of Radiology last month in Vienna, Austria. People interested in RSNA could talk with representatives and obtain informational materials at the booth, which features a plasma screen displaying Society facts and images as well as a computer terminal where visitors may explore benefits offered at RSNA.org.

Radiology Editor Anthony V. Proto, M.D., also answered booth visitors' questions about article submissions and other aspects of the journal.

The booth's next stop will be the German Congress of Radiology, May 16-19 in Berlin.

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

Continued from page 16

RSNA Outstanding Researcher and Educator Awards

Nomination deadline—June 15

The 2007 RSNA Outstanding Researcher and Outstanding Educator awards will honor one senior physician or scientist in each award category who has made a career of significant contributions to the field of radiology or radiologic sciences through research or teaching/education.

To nominate an individual for one of these awards, send a letter of nomination and one or more corroborating letters of support, along with the nominee's complete curriculum vitae, to Scott Walter, M.S., Senior Manager, Grant Administration, at swalter@rsna.org. More details are available at RSNA.org/Foundation/RecognitionAwards.cfm.

Tools for Success in the Practice of Radiology

June 29–30 • RSNA Headquarters in Oak Brook, Ill.

This customized, interactive seminar featuring sessions on leadership, planning, staff development and quality and safety will help participants confidently manage day-to-day issues on the job. Claire E. Bender, M.D., of the Mayo Clinic College of Medicine in Rochester, Minn., is directing the course. More information is available at RSNA.org/education/RSNA_shortcourses.cfm or by calling the RSNA Education Center at 1-800-381-6660 x7772.



Online Registration Now Open

Advanced Course in Grant Writing

Application Deadline – July 1

This course helps junior faculty members prepare and submit a National Institutes of Health, National Science Foundation or equivalent grant application. The course will consist of four two-day sessions at RSNA Headquarters in Oak Brook, Ill., over a nine-month period beginning in September 2007.

More information about these programs, including applications, is available at RSNA.org/research/educational_courses.cfm.

RSNA/AUR/ARRS Introduction to Research Program

Application Deadline – July 15

Sponsored by RSNA, the American Roentgen Ray Society (ARRS) and Association of University Radiologists

(AUR), this program demonstrates the importance of research in

diagnostic radiology, illustrates the excitement of research careers and introduces residents to successful clinical radiology researchers. Successful applicants will be assigned to either a seminar held during

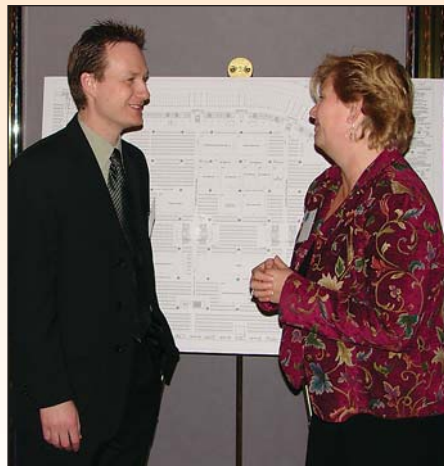
RSNA 2007 or the ARRS annual meeting in 2008. Radiology departments are invited to nominate one second-year resident. Eighty residents will be selected to participate.

EXHIBITOR NEWS RSNA 2007

Exhibitors Prepare for RSNA 2007



Eighty exhibitor personnel representing 56 companies met with RSNA staff in March to learn about 2007 exhibiting rates and exhibit floor plans, as well as rules and regulations and deadlines.



RSNA Technical Exhibit Services Manager John Jaworski (left) talks with Diane Wilhelm of Berlex Laboratories at the planning meeting. Behind them are floor plans for the RSNA 2007 technical exhibition.

News about RSNA 2007

RSNA President Welcomes Attendees in Online Video

Hear 2007 RSNA President R. Gilbert Jost, M.D., describe the plethora of opportunities available at the RSNA annual meeting in a short welcome video posted at RSNA2007.RSNA.org.



Important Dates for RSNA 2007

- April 15** Abstract submission deadline
- April 23** RSNA/AAPM member registration and housing opens
- May 21** Non-member registration and housing opens
- June 18** Course enrollment opens
- Nov. 5** Final advance registration, housing and course enrollment deadline
- Nov. 25–30** RSNA 93rd Scientific Assembly and Annual Meeting

Registering for RSNA 2007

There are four ways to register for RSNA 2007:

1 Internet

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

Fastest way to register!

2 Fax (24 hours)

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

4 Mail

Experient/RSNA 2007
108 Wilmot Rd.,
Suite 400
Deerfield, IL 60015-5124
USA

3 Telephone

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

Registration Fees

BY 11/5	ONSITE	
\$0	\$100	RSNA Member, AAPM Member
\$0	\$0	Member Presenter
\$0	\$0	RSNA Member-in-Training, RSNA Student Member and Non-Member Student
\$0	\$0	Non-Member Presenter
\$130	\$230	Non-Member Resident/Trainee
\$130	\$230	Radiology Support Personnel
\$620	\$720	Non-Member Radiologist, Physicist or Physician
\$620	\$720	Hospital or Facility Executive, Commercial Research and Development Personnel, Healthcare Consultant, Industry Personnel
\$300	\$300	One-day registration to view only the Technical Exhibits area

International Visitors

Apply Early for Your Visa

Personalized invitation letters are available at RSNA2007.RSNA.org. Click on International Visitors, a section of the annual meeting Web site that also includes important information about visa applications. Visa applicants are advised to apply as soon as they decide to travel to the United States and 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

Also, as part of the **Western Hemisphere Travel Initiative (WHTI)**, the U.S. government is now enforcing new passport requirements for all air travelers entering or re-entering the United States from Canada, Mexico, Central and South America, the Caribbean and Bermuda.

Information is available at:

- www.dhs.gov
- travel.state.gov/travel/cbpmc/cbpmc_2223.html
- www.getapassportnow.com/

Advance Registration and Housing Opens April 23, Brochure Available

RSNA 2007 advance registration and housing opens April 23 for RSNA and AAPM members. Non-member registration and housing opens May 21.

The Advance Registration and Housing brochure will be available in electronic format only. Go to RSNA.org/register and click on the PDF file.



For more information about registering for RSNA 2007, visit RSNA2007.RSNA.org, e-mail reginfo@rsna.org or call 1-800-381-6660 x7862.

MEETING WATCH **RSNA 2007 - PRELIMINARY PROGRAM**



Lunch, Visit Posters, Education Exhibits & Technical Exhibits

Technical Exhibit Hours
 Sun. - Wed. 10:00 AM - 5:00 PM
 Thursday 10:00 AM - 2:00 PM

Lakeside Learning Center Hours
 Sunday 8:00 AM - 6:00 PM
 Mon. - Thu. 7:00 AM - 10:00 PM
 Friday 7:00 AM - 12:45 PM

Programs Key

- Multisession Courses
- Plenary Sessions
- Refresher Courses
- Scientific Sessions
- Special Focus Sessions



Product News

PRODUCT UPGRADE

Anti-Infection Central Venous Access

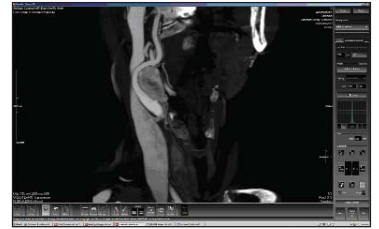
ARROW INTERNATIONAL (www.arrowintl.com) has added ChloroPrep to the majority of its U.S.-distributed central venous access kits. Orange-tinted ChloroPrep highlights the prepped area and comes with a sterile applicator containing 2 percent chlorhexidine, recommended by the Centers for Disease Control and Prevention, which delivers antibacterial activity for at least 48 hours even in the presence of blood and organic matter. The applicator's triangular head allows for precise prepping around catheter lines and is designed for hands-off application. Manufactured by Enturia, Inc., ChloroPrep is included exclusively with Arrow International kits.



PRODUCT UPGRADE

Embedded MIP and MPR Tools

NovaRad Corporation (www.novapacs.com) has released NovaPACS 6.6 with embedded MIP (maximum intensity projection) and MPR (multiplanar reconstruction) tools to build and view 3D images directly from the picture archiving and communication system (PACS) workstation.



Traditionally, post-processing reconstructions are not completed on the PACS, but at a proprietary workstation at or near the PACS workstation. Radiologists can reconstruct any study, in any format, directly from NovaPACS.

A Health Insurance Portability and Accountability Act (HIPAA)-compliant fingerprint touch login solution known as BIOPOD is also now available for NovaPACS and its companion radiology information system, NovaRIS. The secure touch login eliminates the need for passwords.

FDA CLEARANCE

Faster Uterine Fibroid Treatment

InSightec Ltd. (www.insightec.com) has received FDA approval for software that significantly speeds up the treatment time of its ExAblate® 2000 MR-guided focused ultrasound (MRgFUS) system, while ensuring safety and efficacy. The FDA also approved the ExAblate 2000 to be used with a 3.0 Tesla MR scanner, in addition to 1.5 Tesla units.



Used to treat uterine fibroids, the new version of the ExAblate 2000 uses an "interleaved" mode of treatment, targeting different parts of the fibroid to allow recently ablated tissue to cool while the focus moves to other areas. This reduces the cooling time required. Another new feature, allowing physicians to leverage the beam steering a phased array transducer, maximizes the energy in the focal point and allows significantly more volume to be treated for the same amount of energy applied.

maximizes the energy in the focal point and allows significantly more volume to be treated for the same amount of energy applied.

FDA CLEARANCE

Patient Positioning Capability

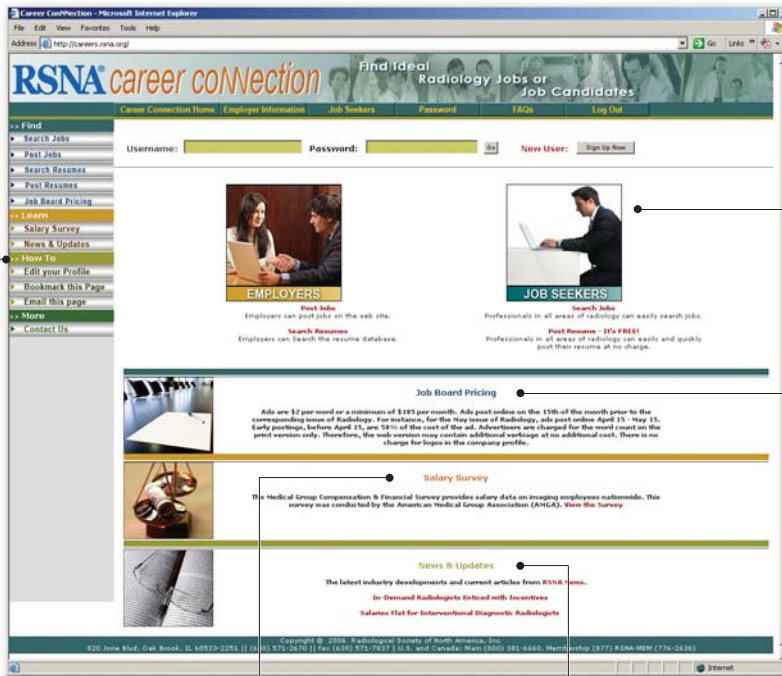
Varian Medical Systems (www.varian.com) has received FDA clearance for the patient position monitoring capabilities added to its RPM™ respiratory gating system. The system is used to synchronize imaging and radiation therapy treatment with a patient's respiratory cycle. The new feature detects any motion that may compromise the accuracy of the treatment.

The RPM system works by placing a reflective marker box on the patient's chest or abdomen and monitoring its motion using special cameras positioned in the treatment room. While the previous system monitored the motion of the marker block only in the vertical dimension, the new version of the RPM system analyzes the marker block motion as it moves up and down, forward and back and side to side. A new display on the system's console immediately alerts the radiation therapy technologist if the patient shifts in any direction beyond the natural range of motion and should be repositioned.

RSNA.org

The New Career Connection

Check out changes to the RSNA job Web site at RSNA.org/career.



The left-hand taskbar includes new "How To" links and can serve as a quick to do list.

Larger icons help Career Connection visitors zero in on what they want to do.

In response to requests from users, information about the cost to advertise on Career Connection has been placed prominently on the page.

Information about the latest salary trends can help employers and job seekers alike.

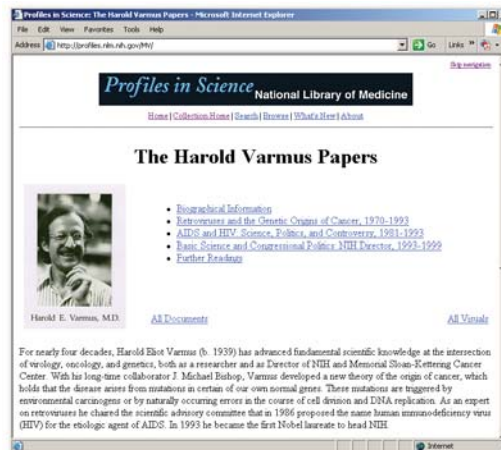
Quick links to RSNA News stories help all Career Connection users keep up-to-date on what's happening in radiology practice.

OTHER WEB NEWS

Papers of Nobel Prize Molecular Biologist Available

THE National Library of Medicine, a part of the National Institutes of Health, has released an extensive selection from the papers of molecular biologist and science administrator Harold E. Varmus, M.D., on its Profiles in Science Web site at www.profiles.nlm.nih.gov. The Profiles now include the personal and professional records of 21 notable scientists.

In 1989, Dr. Varmus and his long-time collaborator J. Michael Bishop, M.D., shared the Nobel Prize in Physiology or Medicine for their "discovery of the cellular origin of retroviral oncogenes."



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Medical Meetings

May – June 2007

MAY 6-9

Radiology Business Management Association (RBMA), 2007 Radiology Summit, America's Center, St. Louis
• rbma.org/conferences/radiology_summit/index.php

MAY 6-11

American Roentgen Ray Society (ARRS), 107th Annual Meeting, Grande Lakes Orlando, Fla. • www.rrs.org

MAY 14-18

World Conference on Interventional Oncology (WCIO) and Society of Thermal Medicine (STM), Joint Annual Meeting, Washington Hilton Hotel • www.wcio2007.com

MAY 16-19

German Radiology Society, 88th German Radiology Congress, Messe Berlin • www.roentgenkongress.de

MAY 19-23

American College of Radiology (ACR), Annual Meeting and Chapter Leadership Conference 2007, Hilton Washington
• www.acr.org

MAY 19-25

International Society for Magnetic Resonance in Medicine (ISMRM) and European Society for Magnetic Resonance in Medicine and Biology (ESMRMB), Joint Annual Meeting, International Congress Center, Berlin • www.ismrm.org

MAY 25-28

Radiology Society of Puerto Rico (SRPR), 11th Annual Meeting, Westin Rio Mar Beach Resort, Río Grande • www.srpr.org

MAY 26-29

American College of Medical Physics, Annual Meeting, Renaissance Harborplace Hotel, Baltimore • www.acmp.org/meetings.php

JUNE 1-4

American Society of Radiologic Technologists (ASRT)/ Association of Educators in Imaging and Radiologic Sciences (AEIRS), Annual Conference, Hyatt Regency Albuquerque, N.M.

• www.asrt.org/content/eventsandconferences/annual_conference2007/ac07startpage.aspx

JUNE 2-6

Society of Nuclear Medicine (SNM), Annual Meeting, Washington
• interactive.snm.org

JUNE 3-7

European Society of Pediatric Radiology (ESPR), 44th Annual Congress, The Meliá Barcelona Hotel, Spain
• www.espr2007.info

JUNE 7-10

Society for Imaging Informatics in Medicine (SIIM), Annual Meeting, Rhode Island Convention Center, Providence
• www.siim2007.org

JUNE 7-10

Caribbean Society of Radiologists, 14th Congress, Grand Barbados Beach Resort, Carlisle Bay • www.csor.org

JUNE 9-14

American Society of Neuroradiology (ASNR), 45th Annual Meeting and Neuroradiology Education and Research Foundation Symposium 2007, Hyatt Regency Chicago
• www.asnr.org/2007

JUNE 11-13

UK Radiological Congress (UKRC), Annual Meeting, G-MEX and Manchester International Convention Centre, United Kingdom • www.ukrc.org.uk

JUNE 15-16

American Society of Interventional and Therapeutic Neuro-radiology (ASITN), 5th Annual Practicum, Sheraton Chicago Hotel & Towers • www.asitn.org

JUNE 21-24

Clinical Magnetic Resonance Society (CMRS), Annual Meeting, Hilton La Jolla Torrey Pines, California • www.cmrs.com

JUNE 28-JULY 1

Canadian Association of Radiologists (CAR), Annual Meeting, St. John's, Newfoundland • www.car.ca

NOVEMBER 25-30

RSNA 2007, 93rd Scientific Assembly and Annual Meeting, McCormick Place, Chicago • RSNA2007.rsna.org

FEBRUARY 18-20, 2008

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