

RSNA *News*



Financial Debts Mount for Today's Medical Students

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- Report Urges Coordinated Effort on Use of Diagnostic Imaging Technology
- Radiologist Shortage Easing, Physician Shortage Growing
- Functional MRI Tests Working Memory in Brain-Injured Children
- Residents, General Radiologists Need More Mammography Training
- Trauma Imaging Faces Regional, Cultural Challenges

**Advance Registration for RSNA 2004
Opens April 26**

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British Institute of Radiology Honors Hricak

RSNA Board Liaison for Publications and Communications **Hedvig Hricak, M.D., Ph.D.**, will receive honorary membership in the British Institute of Radiology—the oldest radiologic society in the world. The ceremony will be held in May at the BIR President's Conference in London. At the meeting, Dr. Hricak will also lecture during a multidisciplinary symposium on prostate cancer.



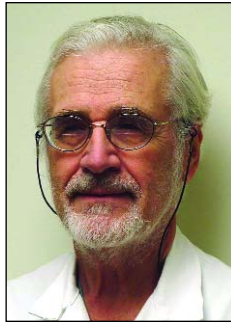
Hedvig Hricak, M.D., Ph.D.



Stewart R. Reuter, M.D., J.D.



Franklin J. Miller Jr., M.D.



Constantin Cope, M.D.

SIR Gold Medals

Stewart R. Reuter, M.D., J.D., and **Franklin J. Miller Jr., M.D.**, are the 2004 gold medalists of the Society of Interventional Radiology (SIR). They received their awards in March during the SIR annual meeting in Phoenix.

Dr. Reuter is the professor emeritus of radiology at the University of Texas Health Science Center at San Antonio.

Dr. Miller is the director of the Hereditary Hemorrhagic Telangiectasia Clinic at the University of Utah Medical Center in Salt Lake City.

Constantin Cope, M.D., received the 2004 Cardiovascular and Interventional Radiology Research and Education Foundation (CIRREF) Leaders in Innovation Award.



Erdem Yavuz, M.D., M.S.

Medical Student Honored at National Research Forum

Erdem Yavuz, M.D., M.S., who's pursuing a Ph.D. in biomedical engineering at the University of Miami, is the winner of the Award for Research in Biomedical Imaging and Bioengineering, presented by the Eastern-Atlantic Student Research Forum.

Dr. Yavuz presented research on adaptation of cochlear compound action potentials using very high stimulus rates.

Among the prizes were one-year subscriptions to *Radiology* and *RadioGraphics*.

AMA Honors Sood, Urso

Two radiologists are among the 2004 recipients of the American Medical Association's (AMA) Leadership Award presented by the AMA Foundation.

Ajay Sood, M.D., chief resident in the Department of Radiology at Cooper Hospital, University of Medicine and Dentistry of New Jersey in Camden, is a resident recipient. **James Urso, M.D.**, an interventional radiologist in Richmond, Va., is a young physician recipient.

The program honors leaders among America's medical students, residents and fellows, and young physicians who have demonstrated strong non-clinical leadership skills in medicine or community affairs. The awards were presented as a part of the AMA's National Advocacy Conference in March.

Dr. Sood received the RSNA Roentgen Resident/Fellow Research Award in 2002 and 2003. He is the founding chair of the Resident and Fellow Section of the Radiological Society of New Jersey, and is also a resident delegate to the Commission on Government and Public Relations of the American College of Radiology (ACR).

Dr. Urso is a past-president of the ACR Residents Section and an AMA delegate from the Pennsylvania Residents Section.



Ajay Sood, M.D.



James Urso, M.D.

AMA Foundation
AMERICAN MEDICAL ASSOCIATION FOUNDATION

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RSNA News

Send your submissions for *People in the News* to rsnanews@rsna.org, (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.

RSNA Hosts BIROW 2

Approximately 140 radiologists, physicists, bioengineers and radiologic scientists gathered in Bethesda, Md., in February for the second annual



G. Scott Gazelle, M.D., Ph.D. (left), and RSNA Board Liaison for Science Gary J. Becker, M.D., attended BIROW 2 in Bethesda, Md.

Biomedical Imaging Research Opportunities Workshop (BIROW 2). The workshops are designed to bring these disciplines together to identify challenges and opportunities in select areas of imaging research.

BIROW 2 focused on optical imaging, computerized image analysis, imaging gene expression and image-guided vascular intervention. Representatives from govern-

ment agencies that fund imaging research also participated in the discussions.

Participants worked together to craft a white paper that will be published simultaneously in the journals of each of the major sponsoring organizations. Last year's white paper is available at www.birrow.org.

RSNA was the lead sponsor of BIROW 2, along with American Association of Physicists in Medicine, Biomedical Engineering Society, Academy of Radiology Research and American Institute for Medical and Biomedical Engineering. The workshops are also supported by 20 other participating organizations and received partial funding from NIBIB and the Whittaker Foundation.



**Biomedical
Imaging
Research
Opportunities
WORKSHOP 2**



NCRP Hosts Session on Radiologic Terrorism

The 2004 annual meeting of the National Council on Radiation Protection and Measurements (NCRP), to be held this month in Arlington, Va., will focus on advances in counteracting the threat to human life created by acts of radiologic terrorism.

Major advances in several aspects of preparing for acts of radiologic terrorism will be described, including new radiation detection technologies, current and future biological dosimetry, recent advances in the development of chemical protectants and therapeutic agents for mitigating radiation health effects.

For more information, go to www.ncrp.com/Prog2004.html.

Update on the NIH Roadmap

National Institutes of Health (NIH) Director Elias A. Zerhouni, M.D., and other key NIH leaders participated in a briefing and Webcast in late February to provide updates and future opportunities in the NIH Roadmap for Medical Research. NIH Roadmap initiatives are designed to speed the movement of research discoveries from the bench into practice for the benefit of the public.

Materials, speaker presentations and a synopsis of the briefing are available on the NIH Roadmap Web site at nihroadmap.nih.gov.

NIBIB Requests Comments on Strategic Plan

The National Institute of Biomedical Imaging and Bioengineering (NIBIB) is soliciting broad public input as it builds its strategic plan. For more information and a list of some of the issues on which NIBIB wants feedback, go to www.nibib.nih.gov/about/SP/strategicplan.htm.



Elias A. Zerhouni, M.D.



Code of Ethics for Medical Device Industry

The Advanced Medical Technology Association (AdvaMed) has released an industry "Code of Ethics for Interactions with Health Care Professionals." AdvaMed represents nearly 90 percent of the diagnostic and medical device industry.

Jeff Ezell, director of media relations for AdvaMed, says the code will change the way sales and marketing professionals interact with physicians. "AdvaMed members adopted this new code of ethics in response to the rapidly changing health-care fraud enforcement environment. Our members are concerned about this situation because it presents risks to the industry itself, and to physicians and other healthcare industry professionals, who are so critical to the delivery of life-saving and life-enhancing therapies," he says.

Restrictions on entertainment, meals, meeting locations, donations and gifts are included, but collaborations between industry and physicians, such as consulting and research, are still allowed.

For more information, or to view the entire code, go to www.advamed.org/publicdocs/coe.html.

Medical Device Budget May Rise in FY'05

President Bush is requesting a \$216.7 million budget for the Food and Drug Administration's medical device program for fiscal year 2005. That's an increase of \$25.6 million over the current fiscal year's level.

The proposed budget increase would be augmented by \$33.9 million in user fees—a projected increase of \$2.3 million.

"This increase will ensure that the FDA succeeds in meeting the ambitious performance goals negotiated with the medical device industry for prompt review of safe and effective medical devices so that patients can enjoy the benefits of those products sooner," the FDA writes.



For more information, go to www.fda.gov/bbs/topics/NEWS/2004/NEW01012.html

NIBIB and CDRH Establish Joint Laboratory

The National Institute of Biomedical Imaging and Bioengineering (NIBIB) and the FDA's Center for Devices and Radiological Health (CDRH) have signed an interagency agreement establishing a joint Laboratory for the Assessment of Medical Imaging Systems (LAMIS).

The purpose of the joint effort is to assess and optimize high-resolution, multi-dimensional medical imaging systems.

"The joint agreement with CDRH is an exciting opportunity for NIBIB, and will provide us with another avenue for exploring innovative and high-quality technologies and interdisciplinary research that will lead to improved healthcare,"



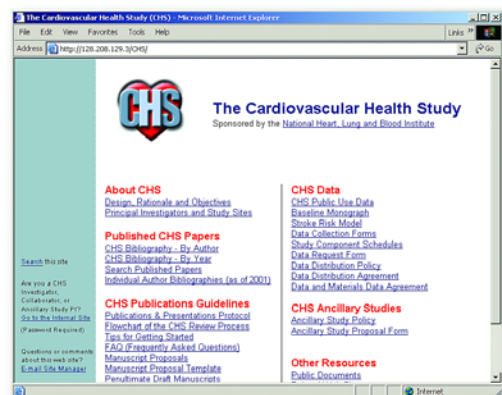
said NIBIB Director Roderic I. Pettigrew, M.D., Ph.D. "The CDRH medical imaging program is stellar and we are proud to collaborate with an organization of this caliber."

MR Data Available from Cardiovascular Health Study

The National Heart, Lung and Blood Institute is inviting radiologists and neuroradiologists to take advantage of the MR data available through its Cardiovascular Health Study (CHS).

CHS is a longitudinal study of risk factors for development and progression of coronary heart disease and stroke in people aged 65 years and older. The CHS database includes nearly 6,000 serial MR studies from nearly 4,000 participants.

These scans provide a robust database for the assessment of neurovascular risk factors, the influence of imaging findings on subsequent cerebrovascular or cardiovascular events, or the onset of dementia. They also provide an excellent



means for evaluating longitudinally the effects of aging on the brain.

To inquire about the steps needed to access the electronic database, contact David M. Yousem, M.D., M.B.A., at dyousem1@jhu.edu. For more information on CHS, go to <http://128.208.129.3/CHS/>.

Report Urges Coordinated Effort on Use of Diagnostic Imaging Technology

The growth of diagnostic imaging has been one of the most visible and costly technological advances over the last 25 years. Using it wisely and maximizing the benefits of diagnostic imaging technology requires a coordinated effort from all segments of the healthcare system, according to a new report from the Blue Cross and Blue Shield Association (BCBSA).

"The point we're trying to make in this paper is, on the one hand, we really value the clinical advances that have come with diagnostic imaging," says Barbara Rothenberg, Ph.D., senior consultant for BCBSA. "At the same time, there is evidence to suggest that diagnostic imaging is not always used wisely."

Utilization of radiology services for diagnosis and treatment increases by about nine percent a year, according to one estimate cited in the report. In addition, strategy and technology consultant Booz Allen Hamilton estimates that in 2000, expenditures for medical technology equaled \$150–\$200 billion. Diagnostic imaging, the largest category of expenditures, was valued at \$65–\$75 billion.

Dr. Rothenberg adds that, "According to the *Verispan 2003 Diagnostic Imaging Center Market Report*, diagnostic imaging centers in 1999 generated about \$60 billion in revenue, or five percent of total healthcare spending." Data for 1999 is the

latest available.

The BCBSA report points out that advances in medical technology may drive up the cost of healthcare by offering safer and less invasive procedures that can greatly increase the number of patients who want to use them.

"There's no question that patient expectation has a lot to do with the escalation in costs of healthcare," says William T. Thorwarth Jr., M.D., president of the American College of Radiology (ACR), chairman of the ACR Commission on Economics and chair of the RSNA Medical Legal Committee. "I think that the direct marketing to patients by the pharmaceutical industry and by some of the imaging industry, frankly, creates an expectation."

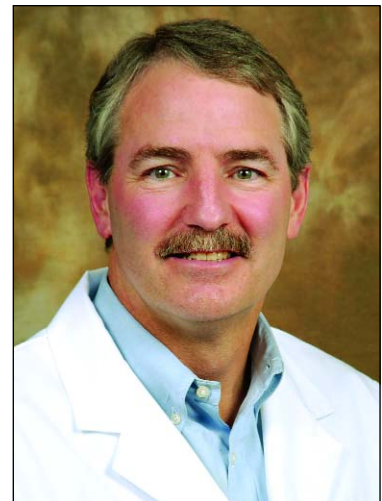
He adds that a large portion of the growth of imaging costs is related to

[Radiologists] should work cooperatively with their referring physician population—both from a standpoint of educating the physicians on appropriate use, and consulting with them on individual patients to guide them to the appropriate test.

William T. Thorwarth Jr., M.D.

self-referral by physicians who put imaging equipment in their offices. "The growth rate of that segment of imaging costs is far outpacing the growth of imaging performed on a referral basis by radiologists," Dr. Thorwarth says. "Payers need to demand that any physician performing imaging exams is appropriately qualified, uses quality equipment and employs certified technologists."

The BCBSA report points to the



William T. Thorwarth Jr., M.D.

increasing popularity of imaging examinations, such as whole body CT scans for which patients pay out of pocket.

A statement adopted by ACR in May 2003 says there is not sufficient evidence demonstrating that the use of whole body CT is efficacious in prolonging life or improving health. The statement also says, "The ACR is concerned that this procedure will lead to the discovery of numerous findings that will not ultimately affect patients' health, but may cause patient anxiety and may result in unnecessary follow-up examinations, treatments and significant wasted expense."

"It's important that the public be very wary of those examinations rather than thinking they're only some sort of glorified physical examination," Dr. Thorwarth says. "When those kinds of exams hit the lay press and some of the TV talk shows, it creates a less-than-informed interest in the public to pursue these. As a result, it drives up costs."

With the growth rate of the medical imaging industry not likely to slow, BCBSA offers four recommendations for maximizing the benefits of diagnostic radiology:

1 *It is essential to ensure access to diagnostic imaging when it is clinically indicated. At the same time, consumers need to understand that the newest, most expensive technology is not always necessary and in many cases will not improve the quality or results of their care.*

“Probably the best person to give them that message is their own physician, who they can trust and who knows the specifics of their clinical situation,” Dr. Rothenberg says.

2 *Physicians need to reaffirm their commitment to evidence-based medicine and evaluate whether an additional diagnostic test will change their treatment plans before ordering the test.*

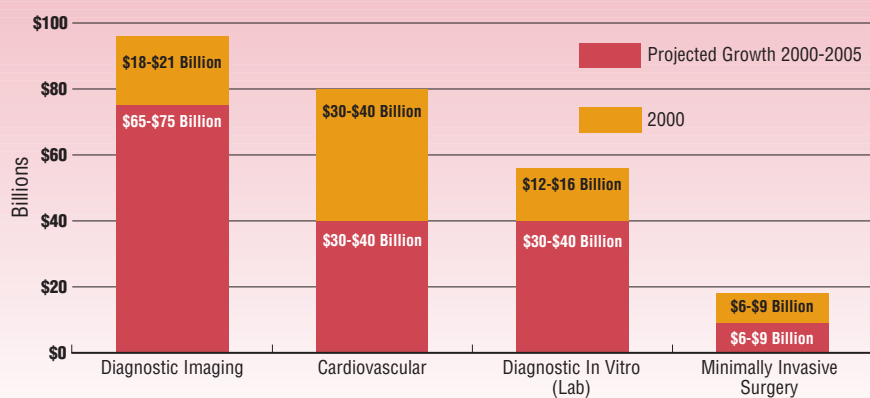
Dr. Rothenberg says guidelines created by physician societies can help get out the latest information in a field that is changing very rapidly, “If, for example, you’re a primary care provider and you see some unusual case that you only see a few times a year, it may be difficult to keep up with all the information on what’s the best approach.”

Dr. Thorwarth says ACR has developed appropriateness criteria. “Multi-specialty panels have taken a large number of common clinical presentations, like low back pain or a urinary tract infection, and developed recommendations for tests that are particularly effective, and tests that are less than effective,” he says. “These are available in print form, in electronic form suitable for a PDA.”

3 *Hospitals and other providers should refrain from engaging in a “medical arms race,” where every facility wants to have every technology, even if doing so will create substantial excess capacity.*

ACR has not taken a position on this issue because of the great variabil-

Expenditures for Technology in 2000 and Projected Growth 2000-2005



Source: From Medical Technology as a Driver of Healthcare Costs: Diagnostic Imaging © Blue Cross Blue Shield Association. Reprinted with permission.

ity among locales. “Certain states still have state-evaluated certificate of need processes and try to promote community health planning and appropriate installation of new technologies by that method,” Dr. Thorwarth says. “And many states have, in essence, an open market model saying that the marketplace will drive an appropriate, optimal number of scanners or outpatient facilities.”

He suggests that facilities can benefit from planning and cooperation, realizing that there will be competition among facilities, but at the same time, not over-expanding.

4 *Health plans can leverage information on how and where costs and utilization are rising and share it in partnership with providers to ensure access to services while reducing unnecessary utilization.*

Dr. Rothenberg says it is important to look at the whole picture. “We’re not focusing just on diagnostic imaging. We’ve also done reports on the drivers of healthcare costs overall. We’ve done a separate report on the impact of phar-

maceutical marketing to physicians. And we’ve even looked in our own house, and looked at what our own administrative costs are,” she says.

“The other thing is that our plans really are working with providers to try to bring both our strengths to the table, to figure out ways that some of these issues can be addressed in a constructive fashion,” she adds.

Dr. Thorwarth says he believes the key for radiologists is to promote themselves as consultants with the most expansive knowledge of the capabilities of imaging equipment. “They should work cooperatively with their referring physician population—both from a standpoint of educating the physicians on appropriate use, and consulting with them on individual patients to guide them to the appropriate test,” he says. “That’s the way, I think, radiologists can make the most direct impact on the appropriate use of imaging technology.” □

Note: To view the BCBSA report, go to onlinepressroom.net/bcbsa/, then click on “Healthcare Cost Research” and then “Medical Technology as a Driver of Healthcare Costs.”

On April 14, the National Electrical Manufacturers Association will launch a new Web site, *Medical Imaging.org*, to portray the value of medical imaging in its many dimensions. An expanded story will appear in a future edition of *RSNA News*.



Radiologist Shortage Easing, Physician Shortage Growing

For years, radiologists have been concerned about the growing shortage of diagnostic radiologists. However, new research from the American College of Radiology (ACR) suggests the workforce crisis may be easing.

A study published in the February 2004 issue of the *American Journal of Roentgenology (AJR)* reports the shortage of candidates for faculty positions in academic radiology programs has decreased.

Jonathan Sunshine, Ph.D., ACR's senior director for research and lead author of the study, says he's not sure why there are fewer vacancies in the radiology job market. "A lot of people are breathing more readily, but few feel the problem is definitely resolved," he says.

Dr. Sunshine and three other researchers studied job advertisements in *AJR* and *Radiology* for September–November 2003. They found a 28 percent decrease in the number of jobs advertised—848 listed for that time period in 2003, compared to 1,186 job vacancies listed in 2002.

C. Douglas Maynard, M.D., study co-author and chairman emeritus of the Radiology Department at Wake Forest University School of Medicine in Winston-Salem, N.C., conducts an annual survey of academic radiology departments. He found that vacancies in academic radiology have gone down over the last three years. In 2001, there were 5.4 vacancies per academic department. In 2002, the number dropped to 5.1. In 2003, it was down to 3.9.

Dr. Maynard, an RSNA past-presi-



Jonathan Sunshine, Ph.D.



C. Douglas Maynard, M.D.

dent, says he's not ready to declare an end to the shortage: "I tend to be a little pessimistic. I don't know if the shortage will persist or if this is a one-time correction."

No Magic Bullet

In 2001, ACR established a blue ribbon taskforce to assess the radiologist shortage and to recommend steps to ease the growing crisis, such as increasing the

number of residents and encouraging recently retired radiologists to return to work. At the time, the taskforce admitted that there would be no "magic bullet" to resolve the crisis.

Dr. Maynard says these small steps have helped to some extent. "Radiologists aren't retiring as quickly, more retirees are agreeing to part-time work and radiologists have learned to be more efficient with their workload," he explains. "We are losing some turf to

other specialties, but the volume of radiology procedures is increasing. So the question becomes, have we used up all the little pieces?"

One of Dr. Maynard's greatest concerns is for the long-term health of academic radiology. "In order to keep up with the ever-increasing number of procedures, academic productivity has gone down," he says. "There are fewer papers being written, fewer talks and a reduction in the amount of time for teaching medical students and residents. That's okay in the short-term, but bad for radiology in the long-term."

One of the attractions of an academic position is that in exchange for lower pay, that person is supposed to be allowed to teach and to conduct research. "But with an increasing demand for radiology services, there is less time for teaching and research," Dr. Sunshine explains. "As people leave academics, a greater burden is placed on those who stay. It becomes a vicious spiral."

Drs. Maynard and Sunshine agree that it is very important to continue to

I tend to be a little pessimistic. I don't know if the shortage will persist or if this is a one-time correction.

C. Douglas Maynard, M.D.

track the market because past experience has shown a number of up and down cycles. They will now investigate potential reasons for the current easing, such as PACS and teleradiology.

As ACR presses legislators to increase the number of radiology slots, some radiology departments are using creative ways to add slots without government funding. Dr. Sunshine says a local radiology practice may fund the last year of training in exchange for a resident's promise to work for the practice after his or her residency ends. He says there are a number of other innovative program possibilities to support radiology as a valuable and interesting field of work.

Physician Shortage Acknowledged

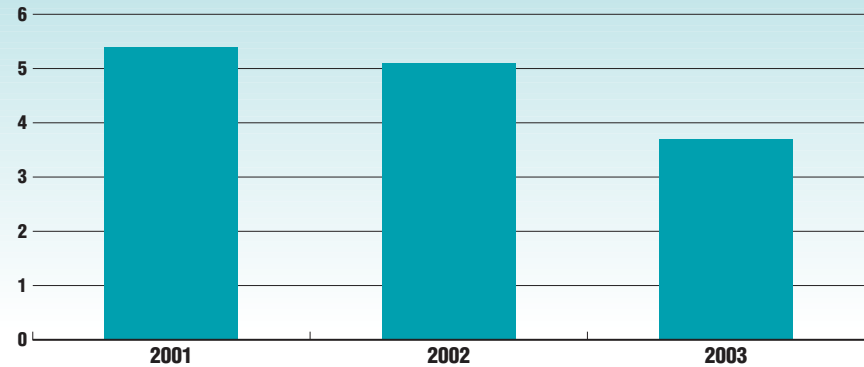
Radiology may have been hit first, but the shortage of all physicians is becoming more widespread. In a report in the December 10, 2003, issue of *The Journal of the American Medical Association (JAMA)*, Richard A. Cooper, M.D., and colleagues questioned medical school deans in the United States and Puerto Rico to assess the adequacy of the physician supply.

They found that of the 70 deans responding from mainland schools, 62 (89 percent) cited shortages of physicians in at least one specialty.

Dr. Cooper says for years, all the data showed an impending shortage, but few read it right. "This is one of the giant screw ups of healthcare planning and no one wants to take the blame. This poor forecasting and the entire process should be examined by medicine," he says.

Dr. Cooper, director of the Health Policy Institute at the Medical College of Wisconsin, says a telltale sign appeared late last year when the Council on Graduate Medical Education (COGME) changed its position 180 degrees and called for an expansion of spaces in medical schools and slots for residents. "One day, COGME said there were 100,000 too many physicians. The next day, COGME said there

Vacancies Per Academic Department



Source: Data from C. Douglas Maynard's annual survey of academic departments. These data were included in *AJR* 2004; 182:301-305

were 100,000 too few. There was no change in the data, just a different way of looking at it," he explains.

Jonathan Sunshine adds: "The typical approach to planning assumed that the number of physicians required per 100,000 Americans would remain constant—except for the effects of the aging population. But this is really an assumption that there will be no progress in medicine. 'No change' is a completely foolish assumption belied by the history of healthcare for the last half century or more. In reality, over the decades, medicine makes great advances. In simple terms, that means physicians can do more for patients. This, in turn, means more physicians are needed."

The American Medical Association adopted a policy statement in December acknowledging a physician shortage in some areas of the country and in some specialties. "Previous estimates of physician oversupply were based on assumptions regarding the impact of managed care insurance plans; such assumptions have been shown since to be erroneous," an AMA statement says. The AMA also issued a directive to support current programs to alleviate shortages in many specialties and the maldistribution of physicians in the United States.

Also in December, the Association of American Medical Colleges announced that it had established a new Center for Workforce Studies to assess

the supply, demand, use and distribution of physicians.

Dr. Cooper says more difficult days lie ahead: "We are in the relatively early stages of a shortage. It's just shallow enough now that we feel a little bit off. However, in 10 years, there will be a huge shortage and a little fine tuning just won't help."

He says one solution is to open more medical schools. In Texas, a new medical school is being built but it won't open until 2007, Dr. Cooper says. The first students will graduate in 2011 and residency training won't be complete until 2015.

"Radiologists won't be as bad off as other specialties in the future because radiology foresaw the problem and has been trying to fix it. Radiology will be able to fix the problem, but the larger solution won't come for another 15 years," Dr. Cooper adds. □

Notes: To view the abstract of the *AJR* article, "Update on the Diagnostic Radiology Shortage," go to www.ajronline.org/cgi/content/abstract/182/2/301. To view the abstract for the *JAMA* report, "Perceptions of Medical School Deans and State Medical Society Executives About Physician Supply," go to jama.ama-assn.org/cgi/content/abstract/290/22/2992.

Trauma Imaging Faces Regional, Cultural Challenges

Imaging plays an important role in emergency care around the world, but the type of imaging used varies by region.

Some of the differences in emergency radiology arise from an inadequate supply of radiologists and equipment; other differences stem from the political climate and disease prevalence.

The RSNA Committee on International Relations and Education (CIRE) held a refresher course at RSNA 2003 to provide a more complete understanding of emergency radiology on a global scale. Practitioners from several major geographical areas described trauma imaging in their respective regions.

“The course was well attended and people thanked RSNA for providing them with an insight into how environmental conditions, as well as economics, have an impact on trauma care,” says CIRE Chairman Barry B. Goldberg, M.D. “For example, in the United States, many traumas result from accidents. But in Latin America, especially in Colombia, we learned that shootings were responsible for most trauma cases. Other regions are dealing with war.”

Dr. Goldberg says CIRE felt that since emergency care is such a complicated issue, it would be valuable to share insights about how emergency imaging is handled in other parts of the world.

Europe

Mariano Scaglione, M.D., from Cardarelli Hospital in Naples, Italy, described emergency services in Europe. He explained that emergency care is provided at three levels—basic



Mariano Scaglione, M.D. (left), with session moderator Barry B. Goldberg, M.D.

care hospitals, special care hospitals and maximum care centers.

Along with the trauma surgeon and anesthesiologist, Dr. Scaglione says the radiologist is a key member of the trauma team and that interventional radiology is frequently part of the management plan. He says a chest x-ray is always part of the basic work-up, following physical examination.

“Second-line imaging studies in cases of blunt trauma include a choice between ultrasound and CT scanning,” Dr. Scaglione says. “In contrast to America, where CT is much more preferred as a screening measure, ultrasound remains popular in Europe. Certainly, CT should not be used routinely in all trauma victims. Radiation expo-

sure, feasibility in a busy trauma center and cost are relevant considerations when choosing a modality.”

In contrast to America, where CT is much more preferred as a screening measure, ultrasound remains popular in Europe.

Mariano Scaglione, M.D.

He adds that a radiologist’s task is to decide which is most appropriate for a given patient in the current clinical status.

European radiologists believe strongly that ultrasound should remain part of the clinical algorithm for trauma patients, according to Dr. Scaglione. “It is fast, relatively inexpensive, can be repeated, and may be carried out at the bedside. Considering the growing demand for trauma care, screening ultrasound can lower the number of CT scans that will be required,” he says.

Asia

Severe shortages of both manpower and equipment prevail throughout the Asian continent. There is no such subspecialty as emergency radiology, and most nations in the region have no national program to develop quality emergency services. "The present situation in Asia, with respect to emergency radiology as a subspecialty, is either non-existent or currently at an early stage of development," says Lillian F.L.Y. Leong, M.D., M.B.A., chief of service in the Department of Radiology at Queen Mary Hospital in Hong Kong, and an honorary clinical associate professor at the University of Hong Kong.

Common trauma cases in Asian countries include:

- Traffic accidents, often involving bicyclists and motorcyclists
- Occupational injuries and industrial accidents
- Injuries from land mine explosions
- Terrorist attacks
- Natural disasters
- Attempted suicide

Ultrasound is widely used in Asia as an initial imaging method. Strokes are increasing, presumably because Asians are incurring more dietary and other risk factors, Dr. Leong explains. For acute stroke, she says CT or MR imaging would be the appropriate initial imaging study. If severe acute respiratory syndrome (SARS) is suspected, a chest x-ray should be taken, reserving CT for the management phase, she adds.

Sub-Saharan Africa

Peter D. Corr, M.D., a professor and chief of radiology at the University of KwaZulu Natal in Durban, South Africa, says there are only 750 radiologists in Sub-Saharan Africa—more than half in South Africa. He says the region includes some of the poorest countries in the world and is heavily populated by children.

Dr. Corr says one way they are dealing with the shortage of radiolo-



Lillian Leong, M.D., M.B.A., explained that severe shortages of manpower and equipment prevail throughout Asia.

gists is through teleradiology, which makes it possible for a radiologist anywhere in the world to evaluate images at any time. Patients that present to the emergency department in Sub-Saharan Africa are oftentimes suffering from HIV/AIDS, lower respiratory infections or tuberculosis. He says injuries from wild animals remain a real menace—crocodiles being major culprits. Motor vehicle injuries connected with drinking are another common cause of trauma.

He says trauma centers are available in some urban areas, but in rural sites nurses and nurse assistants mainly provide medical care. Ultrasound is widely used as an initial imaging procedure. "One of the challenges facing those evaluating emergency patients is the maintenance of the imaging equipment," Dr. Corr explains. "Other challenges are acquiring mobile and versatile equipment, and training more technicians—especially in ultrasound."

Emergency Radiology at RSNA 2004

Overall, Dr. Goldberg says the course showed that imaging is an important early tool in helping clinicians decide

how to best treat trauma patients. He says CIRE plans to host a similar course at RSNA 2004, titled "Radiology Triage of Trauma During War and Peace."

"We want to provide information about how trauma imaging is handled, not only in developed areas, but also in emerging areas and underdeveloped areas," he says. "This type of symposium allows physicians to make more efficient decisions and set goals for future patient care."

Dr. Goldberg, who is the director of the Division of Ultrasound and a professor of radiology at Thomas Jefferson University Medical Center and Hospital in Philadelphia, is also the recipient of a "Teach the Teachers" grant from the RSNA Research & Education Foundation.

Emergency radiology will also be the subject of the 2004 Categorical Course in Diagnostic Radiology. □

Note: This article was adapted from a feature in the RSNA 2003 Daily Bulletin.

Functional MRI Tests Working Memory in Brain-Injured Children

In the United States, more than 200,000 children are hospitalized each year for head trauma. About 30,000 suffer permanent disability. Most children make the majority of their recovery within the first 12 months.

Researchers in Houston have found children with poor recovery following a traumatic brain injury (TBI) have more focal patterns of activation using functional MR imaging (fMRI). Their early research was presented in a scientific paper at RSNA 2003.

Jill V. Hunter, M.B.B.S., section head for pediatric neuroradiology in the Department of Diagnostic Imaging at Texas Children's Hospital in Houston, and colleagues tested four right-handed girls and one right-handed boy, with a mean age of 12.7 years, who had moderate to severe TBI caused three to 51.5 months prior to the imaging procedure. The children were each matched for age and sex with five healthy right-handed children, with a mean age of 13.2 years and with parents of similar socioeconomic status and education.

The researchers used an N-back working memory task with letters to check the memories of the children. In that test, participants see a series of items, each appearing one at a time, followed by the next object in the series. The children learn to press a button when the item shown is the same as the one shown a certain number (N) of items earlier. For example, in a 1-back test, a button has to be pressed if it matches the one immediately prior.

The load was increased incrementally from 1- to 2- to 3-back after the successful completion of 75 percent or greater responses. Dr. Hunter says the 75 percent rate was used to avoid pure chance. Responses were recorded electronically with a left or right push button control fed to the laptop computer projecting an image. All the test subjects reached their maximum level of competence two hours before their fMRI. In addition, all the children underwent neuropsychological, IQ, language and math testing outside of the time of their fMRI study.

fMRI showed that three of the TBI patients, who could complete only the 1-back task successfully, had a different and more focal pattern of frontal activation than the fourth and fifth TBI patients and the five control patients. The fourth and fifth TBI patients and the five control patients showed a more neuro-anatomically distributed pattern of activation, even at the 1-back level. Dr. Hunter notes that as the children age and the time since their injury

passes, scores increase and brain activity becomes less focal and more distributed.

"While performing equivalent working memory tasks, the children with poor recovery

following TBI had a more focal pattern of brain activation than either normal, age-matched controls or the child who had good recovery after TBI," Dr. Hunter says. "These findings may have important prognostic and management implications for children sustaining



Jill V. Hunter, M.B.B.S.
Texas Children's Hospital, Houston

closed head injury. Treatment options could include parent counseling and earlier implementation of therapy."

Dr. Hunter, who is also an associate professor of radiology at Baylor College of Medicine, says she and her colleagues will now conduct a longitudinal study to confirm that children with impaired working memory following TBI demonstrate a different pattern of brain activation. □

Note: This article was adapted from a feature in the RSNA 2003 Daily Bulletin.

These findings may have important prognostic and management implications for children sustaining closed head injury.

Jill V. Hunter, M.B.B.S.

Residents, General Radiologists Need More Mammography Training

A new study suggests radiology residents, and even some general radiologists, need more training and experience in breast imaging. Meanwhile, a second study shows that while breast implants interfere with mammography, cancer outcomes remain unchanged.

More Training Needed

During a scientific paper session at RSNA 2003, Gillian M. Newstead, M.D., provided an assessment of current screening mammography training in residency programs.

“I undertook this study as part of a larger ongoing evaluation of radiologist performance in the breast imaging arena,” says Dr. Newstead, an associate professor of clinical radiology and clinical director of breast imaging at the University of Chicago. “Now that breast imaging education is included in the training, my colleagues and I wanted to compare how residents are doing by year of training.”

In a simulated mammography screening exercise, the researchers evaluated the performance of radiology residents enrolled in two large university training programs and compared it with the performance of 100 general practice radiologists and three mammography experts.

“The residents read 100 mammograms containing 50 cancers mounted on motorized viewers,” she explains. “They read them individually and recorded their interpretations on an answer sheet.”

The mean sensitivity of cancer detection for first-year residents was 35 percent. For second-year residents it was 51 percent. For those in their third year, it was 40 percent, and for fourth-

year residents, it was 57 percent.

The overall resident performance was lower than the general radiologist performance (72 percent). The general radiologist performance was also significantly lower than the expert mammography interpretations (82 percent).

“I wasn’t sure how the residents were going to perform, compared with general radiologists,” Dr. Newstead says. “I thought the senior residents might have done better than they did. But I think it just points to the fact that we need to stress training and screening during residency programs and have some kind of performance measures during residency.”

While some have recommended additional requirements, the president of the Society of Breast Imaging says another approach is needed. “I am concerned that the regulatory requirements in mammography already exceed those that are part of other subspecialty areas in radiology and medicine in general,” says D. David Dershaw, M.D., a professor of radiology at Cornell University Medical College and director of breast imaging at Memorial Sloan-Kettering Cancer Center in New York. “Additional

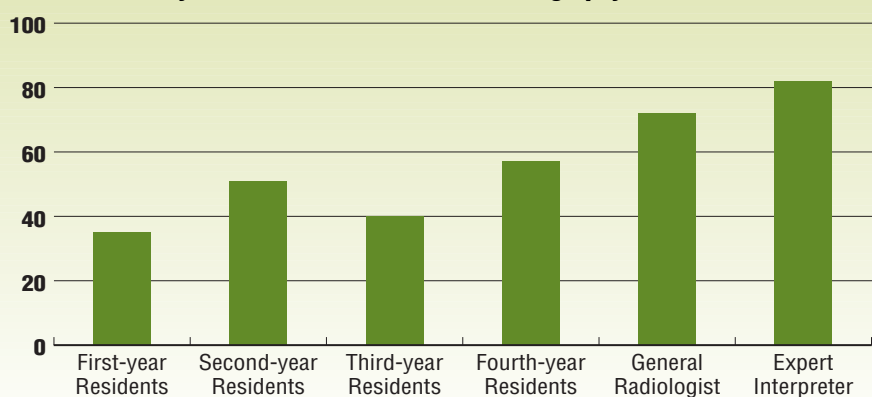


Gillian M. Newstead, M.D.
University of Chicago

requirements will further discourage physicians from choosing breast imaging as a field in which to work. Because of the shortage of both radiologists and technologists, this could seriously impact availability of services. There is also little or no evidence to suggest that increasing the number of mammograms that a radiologist needs to read to participate in mammography improves the quality of film interpretation.”

Continued on next page

Mean Sensitivity for Cancer Detection on Mammography



Source: Adapted from data from Gillian M. Newstead, M.D.

Continued from previous page

Mammography screening is such an important issue that the Institute of Medicine (IOM) of the National Academies, under direction from Congress, has embarked on a 15 month study of mammography standards. The IOM will evaluate ways to improve physicians' interpretation of mammograms, without impairing access. The study will also cover audits, technical quality, supply of personnel, mandates for monitoring and assessing quality and access, and steps to make available new technology.

The IOM report is expected to be finalized prior to the scheduled 2005 Mammography Standards Quality Act reauthorization.

Implants Affect Mammography Sensitivity

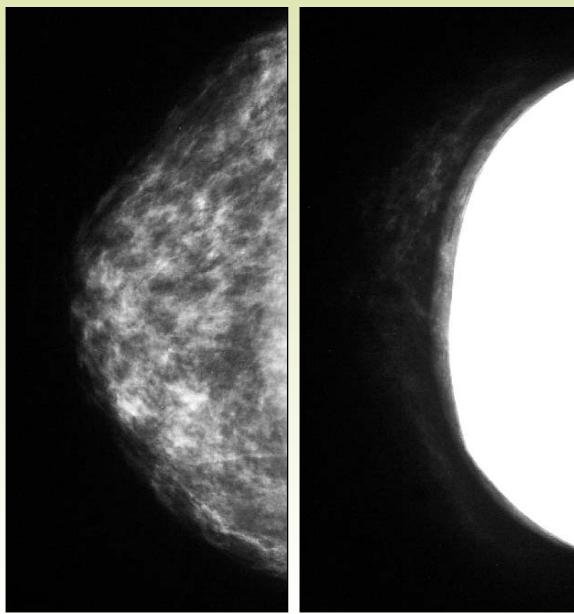
A large national study published in the January 28 issue of *The Journal of the American Medical Association (JAMA)* confirms that breast implants interfere with the detection of breast cancers by screening mammography. However, the

study also found that augmentation does not increase the false-positive rate nor does it seem to influence the prognostic characteristics of tumors.

The study, which included data from seven mammography registries across the country, showed that 55 percent of cancers were missed in asymptomatic women with augmentation, compared

with 33 percent in similarly aged nonaugmented women.

"We were surprised to find that there were no differences in cancer characteristics given the large difference in screening mammography," says lead author Diana L. Miglioretti, Ph.D. "I think it's very worrisome to find out that so many cancers were missed via mam-



Submuscular Breast Implant

(left) Right craniocaudal implant displaced view.
(right) Right craniocaudal full view.

Image courtesy of Robert Rosenberg, M.D.

mammography, but on the other hand, this didn't seem to result in more advanced cancers at diagnosis."

Dr. Miglioretti, affiliate assistant professor with the Department of Biostatistics at the University of Washington in Seattle and an assistant investigator with the Center for Health Studies, Health Cooperative, says there may be several explanations for the similarity in cancer characteristics between women with breast augmentation and those without it.

"Women with breast implants may have the socioeconomic edge, and therefore may be getting better healthcare," she says. "Also, women with implants may have less native breast tissue and the implants push the tissue up against the skin which may make it easier to feel a lump. Augmented women are told to check their breasts often for any problems with the implant, so they may be more likely to find lumps on their own."

Dr. Miglioretti and her colleagues also were surprised by the finding that, while the sensitivity of screening mammography was reduced, specificity was one percentage point higher among women with implants.

Co-author Robert Rosenberg, M.D., a professor of radiology at the University of New Mexico in Albuquerque, says even though the study demonstrates the limitations of screening, it brings

good news, "Even though mammography sensitivity is lower in women with implants, there is no evidence that this results in more advanced disease at diagnosis."

Both Drs. Rosenberg and Miglioretti emphasize the importance of using displacement views when filming augmented women. "That is the standard of care," says Dr. Miglioretti, "but in this study we don't know if the women got implant displacement views. I'd be really curious, if we could do another study, to go back and see if displacement views were performed in all women because they do improve the accuracy of mammography."

Dr. Rosenberg adds that these data reflect the performance of radiologists in the community and therefore should be representative of general practice. "These were not data coming out of referral centers or specific clinics. This is the standard mix of patients in the United States," he says. The authors expressed their gratitude to all of the radiologists who contributed to the study by participating in the Breast Surveillance Consortium. □

Notes: To view the abstract of the JAMA study, "Effect of Breast Augmentation on the Accuracy of Mammography and Cancer Characteristics," go to jama.ama-assn.org/cgi/content/abstract/291/4/442. A portion of this article was adapted from a feature in the RSNA 2003 Daily Bulletin.

Financial Debts Mount for Today's Medical Students

This year's medical graduates will leave academia with more than an M.D. and a hearty handshake.

The majority face daunting amounts of educational debt—more than any generation before them. The Association of American Medical Colleges (AAMC) reports that more than half of last year's graduates owe more than \$100,000, and 80 percent of graduates have some degree of financial debt.

“Medical school is an investment that will pay for itself many, many times over,” says Erik Thurnher, M.D., C.F.P., an emergency room physician and certified financial planner for Physicians' Financial Advisors in Newport Beach, Calif. “It has the highest rate of return and graduates have to think of this long term.”

Dr. Thurnher's clients include fellow physicians who often are discouraged by such an overwhelming debt load. But even during the penny-pinching days of medical school and early residency, he encourages them to keep an eye on their total financial picture—week by week, month by month.

He suggests creating a master filing system, with a different file folder for each loan and all of its corresponding paperwork. “Open every letter you get from lenders,” he says. “When I was a resident I was working 15 to 18 hours a day in the trauma unit. I was so busy that the mail piled up in my apartment. Afterwards, I realized I hadn't paid my credit card bills or even read mail from lenders. Some bills went into collection and it left a black mark on my credit report for a while. I

tell that story to people so they realize how important it is to stay on top of things.”

Dr. Thurnher also encourages residents to get a calendar and mark all key dates regarding their loans. That way, filing deadlines and repayment schedules will remain fresh in their minds even under sometimes crushing workloads.

It's important too to understand exactly how much you owe and how much interest you will pay, he suggests. Many Web sites provide calculators to help figure the total cost of loans. Some lenders offer online loan tracking, allowing borrowers to determine exactly where they stand in total indebtedness. There's a wealth of information on loans, repayment programs and interest. The Internet, library and medical school searches produce comprehensive debt-management publications, full-service Web sites, targeted workshops and online discussion forums for physicians seeking guidance in managing medical school debt and

starting the repayment process. Some medical schools make debt management seminars part of their pre-gradua-

Start paying off credit or consumer high-interest debt first and move down to low-interest student debt.

Erik Thurnher, M.D., C.F.P.



J. Michael Moody, M.B.A.

tion offerings. Any financial aid office can point current students and graduates in the right direction for advice on issues related to debt repayment.

“What they're facing is a marathon, not a sprint,” says J. Michael Moody, M.B.A., president and co-founder of National Tax and Investment Seminars, the nation's largest sponsor of financial education programs for healthcare associations. “Spend your time before you spend your money,” Moody advises. He says residents should sit down and thoughtfully create a financial plan, including current needs and future goals.

Continued on next page

Paying to Practice

2003 Medical Graduate Debt

	Public Schools	Private Schools	All Schools
Average Debt	\$97,275	\$129,392	\$109,457
Graduates with Debt	84%	79.4%	82.1%

Average new physicians' debt load increased 5.4% over 2002.

Source: Association of American Medical Colleges

Continued from previous page

“Be specific. Write it down. Break down your goals,” he advises.

- Short-term goals – less than a year
- Intermediate goals – 2 to 8–10 years
- Long-term goals – 10 years or more

Most students apply for and receive government-backed Stafford loans, says Dr. Thurnher. They’re the most attractive because of their low interest rates, grace periods and deferments that usually cover the period of residency. Many students reach the federal borrowing limits before their schooling is complete and take out additional, private loans, often at competitive but higher interest rates.

Sample repayment schedules put together by AAMC last year show that on \$100,000 in typical medical student loans, monthly payments ranged from \$1,274 a month to \$1,740 a month, depending on interest rates. “Intimidating numbers for some, but on a physician’s salary, that should be doable,” says Dr. Thurnher. “Start paying off credit or consumer high-interest debt first and move down to low-interest student debt. Pay off the highest interest loans first.”

“There are the fiscal imperatives,” Moody adds. “You have to meet your loan deadlines and your other obligations such as food, rent and clothing. But there is often a psychological imperative too. Some people find that huge debt just burns a hole in their soul and they are motivated to pay it off as soon as possible.”

Because of today’s low interest rates, Moody says this is a great time

to be paying off student debt. “Returns on traditionally conservative investment tools, such as CDs and money market accounts, make paying off loans more practical,” he says. However, physicians who enter higher-paying specialties may have a decision to make about where to put their assets—into loan repayment or other, higher-interest yielding investments.

Dr. Thurnher likes to present clients with options, such as putting some of their new income in funds that have higher rates of return so clients can see that taking a longer payoff path can actually earn them money.

Borrowers who want to streamline the payoff process are turning to consolidation loans, says Moody. The rules are specific and the process is different for those holding federal loans and those with loans from several sources. He says borrowers can contact either the loan servicer or the current entity holding the loan. “It’s important to read the fine print before changing a loan payment program,” he says. “Be cautious of any fees charged with consolidation. Make sure they take into account payments already made and be sure there are no pre-pay-

ment penalties.”

As any financial advisor would, Moody reminds young physicians to walk before they run. “It’s nice to drive a BMW or buy Armani, but at age 25, do you need an expensive car?

If you meet your debt, then create savings. In a couple of years you can drive around in a nice car that you paid for with cash. You can tackle it all in a methodical way,” he concludes.

The American Medical Association (AMA) is studying feasible strategies for creating new and/or expanded loan programs, specifically for the health professions. A report is expected later in the year.

In addition, the AMA supports further expansion of state loan repayment programs and the expansion of those programs to cover physicians in non-primary care specialties. The AMA is also urging state medical societies to actively solicit funds for the establishment and expansion of medical student scholarships. □

Managing your Debt and Loan Repayment

- Understand your loan repayment terms and conditions
- Determine which loans to target for early repayment
- Be aware of your repayment options
- Consolidate wisely and evaluate consolidation/ refinancing options
- Consider a forgiveness or repayment program as an option
- Tailor your repayment strategy to your circumstances, personal and professional goals

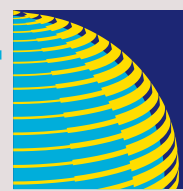
Source: Association of American Medical Colleges

RSNA Education Center Financial Seminars

The RSNA Education Center will again host two financial seminars prior to RSNA 2004 in Chicago. The seminars will be on Saturday, November 27 at McCormick Place. They are “Protecting

Assets from Creditor Claims,” led by Barry Rubenstein, B.S., J.D., L.L.M., and “Effective Real Estate Investment Strategies,” led by J. Michael Moody, M.B.A.

RSNA'04
RADIOLOGY'S
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FORUM



November 28 –
December 3, 2004
McCormick Place,
Chicago

Working For You

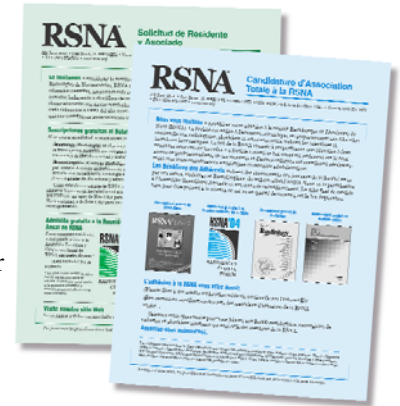
Educating Developing Nations

RSNA's Committee on International Relations and Education provided 59 gratis subscriptions to *Radiology* and *RadioGraphics* to institutions in 30 developing nations in 2003 as part of its Educational Materials and Journal Award program. Educational materials were also sent to three institutions. Each recipient is required to evaluate the impact of the program.

Membership Applications in Español and Française

RSNA membership applications are now available in Spanish and French for distribution to potential members. An international application form is also being developed to make it easier for non-English-speaking candidates to apply for membership.

To request a membership application in Spanish or French, contact the RSNA Membership and Subscription Department at (877) RSNA-MEM [776-2636] (U.S. and Canada), (630) 571-7873 or *membership@rsna.org*.



Continued on page 25

SERVICE TO MEMBERS:

RSNA Link was one of the first radiologic Web sites. Launched at RSNA 1994, it consists of multiple sites today, with accredited educational programs available on demand, browser-based request forms, online membership applications, and interactive meeting resources, including the scientific program, floor plan and exhibitor database, as well as applications for handheld computers. In light of last year's worldwide simulcast of the Sunday Image Interpretation Session, who knows what the future holds?

I'm involved in onetime, recurrent and ongoing projects that support the RSNA strategic plan by means of Internet technology. I help to make RSNA

resources available through browsers. As Webmaster, I have many roles: information gathering, design, content tagging, implementation, quality control, maintenance, correspondence, guidance and planning. Like the annual meeting, *RSNA Link* depends on teamwork. I'm one of many behind the scenes.

WORK PHILOSOPHY:

To make life easier, do things in phases. Meet deadlines. Balance freshness with familiarity so members will feel at home when they visit. Clarify expectations. We're always trying to improve navigation to help members find what they need on the site. I try to think long term and focus on the short term. Our biggest challenge may be trying to please someone who may not exist—the average user. Some are physicians and others are patients, students, reporters or



NAME:
Ken Schulze
POSITION:
Webmaster

WITH RSNA SINCE:
May 15, 1989

technical exhibitors. Some prefer text and others, graphics. Some have fast connections and some still use modems. Some have high resolution; others, low. Some rarely surf the Web and others use it every day. We try to find a "happy" medium. The latest technology isn't necessarily the best. On any site, think before you click—it may save you time.

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

Radiology in Public Focus

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

Breast Cancer Treated with US-guided Radiofrequency Ablation: Feasibility Study

Ultrasound-guided percutaneous radiofrequency (RF) ablation of small invasive breast carcinomas is feasible and safe.

Bruno D. Fornage, M.D., and colleagues from the University of Texas M.D. Anderson Cancer Center in Houston performed RF ablation on 21 malignant lesions in 20 patients immediately before a scheduled lumpectomy or mastectomy.

They found that in all 21 cases, complete ablation of the target lesion was visualized at ultrasound. There were no adverse effects.

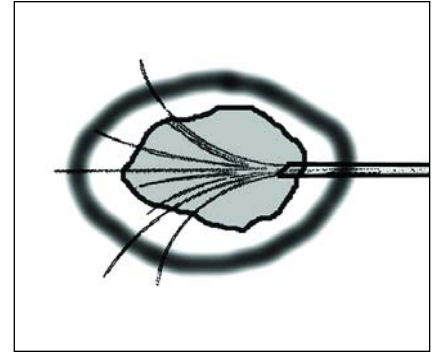
“A high level of three-dimensional accuracy is required to correctly place the device inside the tumor volume. Thus, we believe that the best results will be obtained if the procedure is performed by an operator who is fully trained and experienced in interventional breast ultrasound,” the



Intraoperative photograph shows insertion of the needle electrode into the lesion, with the needle electrode as parallel to the chest wall as possible. This technique is similar to the needle insertion technique used to perform core-needle biopsy.

researchers write. “Whether RF ablation can be used satisfactorily as a treatment replacement for lumpectomy of small breast cancer remains to be confirmed.”

(*Radiology* 2004; 231:215-224)



Drawing illustrates the RF ablation device correctly placed so as to produce a thermal lesion volume (black outline) that is concentric to the tumor and that encompasses the tumor and a sufficient margin of noncancerous tissue.

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Aortoiliac Insufficiency: Long-term Experience with Stent Placement for Treatment

Aortoiliac stent placement for treatment of chronic lower-extremity ischemia is a durable, low-risk revascularization option.

Timothy P. Murphy, M.D., from Rhode Island Hospital in Providence, and colleagues describe their long-term experience with the procedure.

Between February 1992 and March 2001, the researchers treated 505 lesions—88 occlusions and 417 stenoses. They report that hemodynamic success was achieved in 98 percent of the limbs (484/496) for which

postprocedural translesion pressure gradients were available.

The researchers write, “Although initially introduced as a method to salvage failed balloon angioplasty, stents have been proved to allow the indications for percutaneous interventions to be extended to include treatment of lesions that previously were not considered suitable for balloon angioplasty and these devices are now accepted as a primary therapy.”

(*Radiology* 2004; 231:243-249)



RSNA press releases are available at www2.rsna.org/pr/pr1.cfm.



Journal Highlights

Multiple Myeloma: Clinical Review and Diagnostic Imaging

In the past decade, important advances in the understanding of multiple myeloma (MM) and the therapeutic options available to MM patients have resulted in improved survival. Current imaging technologies, in particular

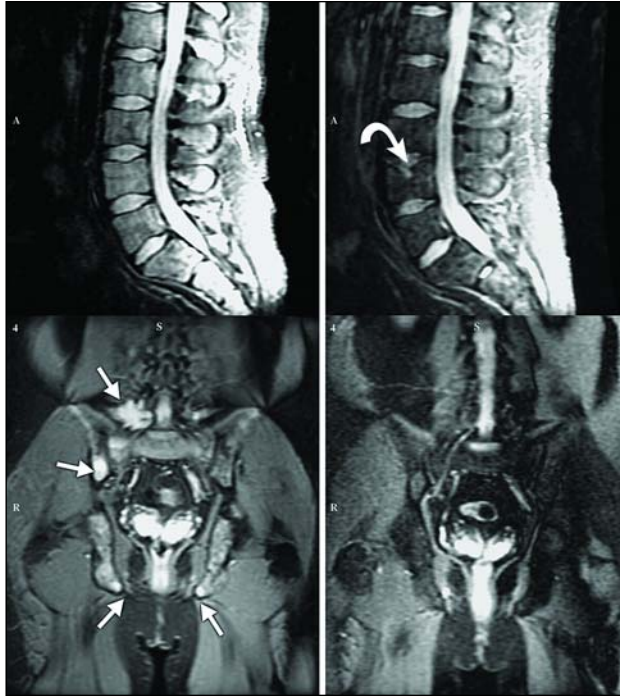
Radiology

bone marrow surveys with MR, have made it easier to detect disease involvement, the results of treatment, areas of potential complications and sites of focal disease for safe bone biopsies.

In an article appearing in the April issue of *Radiology*, Edgardo J.C. Angtuaco, M.D., and colleagues from the University of Arkansas for Medical Sciences in Little Rock, review:

- clinical presentation
- clinical staging and prognosis
- imaging studies used to detect MM
- perspectives in treatment

To access this article online, go to radiology.rsnaajnl.org.



Complete resolution of diffuse and focal lesions. Left: Pretreatment sagittal (top) and coronal (bottom) STIR MR images (2,000/150/20) of lumbar spine and pelvis show diffuse disease with focal lesions (straight arrows) in pelvis. Right: Follow-up sagittal (top) and coronal (bottom) STIR MR images (2,000/150/20) of lumbar spine and pelvis show complete resolution of both diffuse and focal lesions. Note normal MR appearance of diffuse hypointensity without focal lesions. Superior end-plate fracture at L4 (curved arrow) has developed.

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Importance and Effects of Altered Workplace Ergonomics in Modern Day Radiology Practice

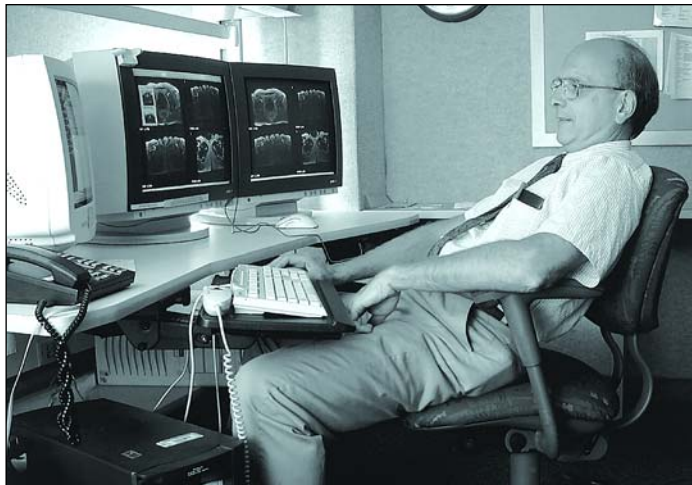
Picture archiving and communication systems (PACS) have revolutionized the practice of radiology and have dramatically increased workflow. But in addition to updated technology,

RadioGraphics

the radiology suite also needs updated ergonomics to help maximize throughput and minimize radiologist fatigue.

In an article appearing in the March-April issue of *RadioGraphics*, Mukesh G. Harisinghani, M.D., and colleagues from Massachusetts General Hospital in Boston discuss and illustrate ergonomic deficiencies that commonly exist in the current PACS environment with respect to:

- vision
- posture
- temperature
- ventilation
- sound
- ambient lighting



Slouching constitutes suboptimal and ergonomically poor posture and puts undue strain on the lower back and intervertebral disk spaces.

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They also review ergonomic challenges, discuss injury potential and propose possible solutions.

To access this article online, go to radiographics.rsnaajnl.org.

Program and Grant Announcements

NEW!

Cleveland Clinic Institutional Clinical Fellowship in Cardiovascular Imaging

Through a grant from the RSNA R&E Foundation, the Cleveland Clinic Foundation is accepting applications for its 2005-2006 RSNA clinical fellowship in cardiovascular imaging. This position will be within the one-year cardiovascular tomography fellowship program currently in place.

The fellowship experience will emphasize integrated non-invasive cardiovascular imaging with state-of-the-art MR imaging and multide-

tector CT within a busy clinical service.

For more detailed information, contact Richard D. White, M.D., at (216) 444-2740 or at whiter@ccisd1.ccf.org.



Leadership Strategies for Radiology Practices

Register online (www.rsna.org/education/shortcourses) for this dynamic, interactive RSNA course directed by Lawrence R. Muroff, M.D.

The course will be held July 23-25, 2004, at the Chicago Marriott Downtown. It is designed for current and future leaders in radiology and focuses on relevant topics including financial issues, strategic planning, billing, compliance and legal matters. Didactic morning lectures are followed by split interactive breakout sessions for academic or private practice strategic planning in the afternoon.

Registration Fees:

RSNA member: \$695
 RSNA member-in-training: \$295
 Non-member: \$795



For more information, contact the RSNA Education Center at (800) 381-6660 x3747 or at ed-ctr@rsna.org.

NEW!

Stanford Cardiovascular Imaging Fellowship

Also through a grant from the RSNA R&E Foundation, Stanford University is accepting applications for a one-year fellowship in non-invasive cardiovascular imaging. Fellows will receive detailed training in the principles and use of multidetector row CT and cardiovascular MR imaging systems within the context of a busy clinical cardiovascular imaging service.

Active participation in research is expected and dedicated research time is a key component of the fellowship.

For more detailed information, contact Geoffrey D. Rubin, M.D., at (650) 725-4325 or at grubin@stanford.edu.

Nomination Deadline

June 15 is the nomination deadline for the RSNA 2004 Outstanding Researcher and RSNA 2004 Outstanding Educator awards. For more details and application/nomination forms, go to www.rsna.org/research/foundation.

■ For information about RSNA Research & Education Foundation Grant programs, contact Scott Walter at (630) 571-7816 or at swalter@rsna.org.

DETAILS COMING SOON!

Digital Presentation Skills for the Radiologist

August 7 at
 RSNA Headquarters
 in Oak Brook, Ill.



Product News

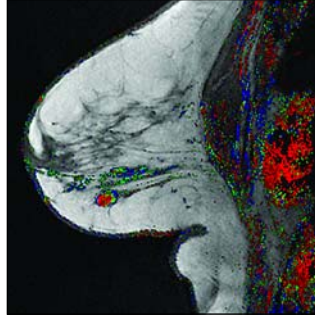
FDA CLEARANCE

Software Facilitates Rapid Detection of Breast Cancer

After receiving FDA approval, the privately held company 3TP LLC has started distributing its promising new software that helps radiologists more easily interpret contrast-enhanced MR studies of the breast.

Professor Hadassa Degani of the Weizmann Institute developed the three-time point (3TP) model based on the wash-in and wash-out properties of contrast media in tissue. Her unique, patent-protected formula measures tissue permeability and extracellular volume fraction on a pixel-by-pixel basis at three distinct time points. The software assigns a color to each pixel.

“I look forward to continuing the research and to the international collaboration in extending the 3TP methodology to other malignancies and pathological conditions,” she said.



An MR breast image after 3TP processing. The bright red color mapping is indicative of a malignant lesion.

NEW PRODUCT

New Age in Ultrasound Equipment

Royal Philips Electronics has launched a new generation of “smarter” ultrasound equipment. The Philips iU22 system, with



The Philips iU22 system displays a 4D ultrasound image of a fetus with its foot in its mouth.

intelligent control and advanced ergonomic design, offers a wide range of high-performance features including next generation, real-time 4D imaging, voice-activated control and annotation, and automated image optimization technologies.

“Clinicians have been looking for a revolutionary leap forward in ultrasound performance and workflow.

The new Philips iU22 system meets that criteria, going far beyond excel-

lent image quality,” said Barbara Franciose, CEO of ultrasound for Philips Medical Systems.

The Philips iU22 system is also designed to reduce the repetitive stress injuries common to sonographers.

ACQUISITION

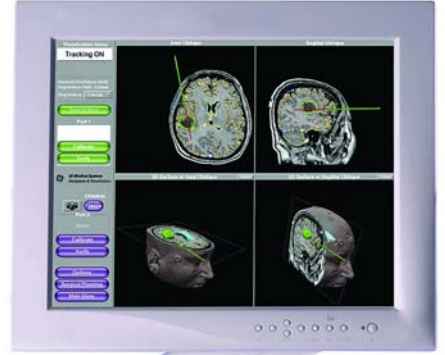
Advanced Visualization Expands Applications for Image-Guided Surgery

GE Healthcare has acquired CBYON®, Inc.’s specialized surgical navigation technology and intellectual property for neurosurgery, spine, and ear, nose and throat (ENT).

“By integrating CBYON’s virtual endoscopy and surgical perspective volume rendering features, with GE’s unique electromagnetic tracking technology, we can help treat a broader range of medical conditions and diseases less

invasively through our image-guidance surgical product,” said Lewis Dudley, general manager of surgery at GE Healthcare.

“We are also pleased to further expand our capabilities in our neurosurgery, spine and ENT surgical offerings through this acquisition and resultant integration of CBYON’s leading edge surgical software applications with GE’s InstaTrak® product.”



GE’s InstaTrak® surgical navigation system allows physicians to clearly visualize the position of surgical instruments inside the body in real-time and without a large incision in the patient.

NEW PRODUCT

New High-Resolution Vascular Imaging Technology

Toshiba America Medical Systems has introduced a new version of 3D vascular imaging technology for its Infinix-i series line of vascular x-ray systems. Developed in conjunction with neuroradiologists, Philippe Gailloud, M.D., and Kieran J. Murphy, M.D., from Johns Hopkins University School of Medicine, previous 3D digital subtraction angiography (3D-DSA) technology is improved with a new 3D fusion digital subtraction angiography (3D-FDSA) technology.

The new technology illustrates both intracranial vascular anomalies and detailed anatomic correlation with surrounding bone structures.



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News about RSNA 2004

Advance Registration and Housing Opens April 26

Advance registration for RSNA 2004 opens April 26 for RSNA and AAPM members. General registration begins May 24.

Four Ways to Register for RSNA 2004

1 Internet

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

2 Fax (24 hours)
(800) 521-6017
(847) 940-2386

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

4 Mail

ITS/RSNA 2004
108 Wilmot Rd., Suite 400
Deerfield, IL 60015-0825 USA

New Security Measures

The United States has adopted new security measures designed to protect the safety of U.S. citizens and international visitors at airports and seaports. The U.S. Department of Homeland Security promises that these new measures will be quick and efficient, requiring no more than seconds in most cases. For more information, go to www.dhs.gov/us-visit.

Accessing a Brochure

Version one of the *Advance Registration and Housing* brochures will be available in electronic format only. There are two ways to get a copy:

1 RSNA Link

Go to www.rsna.org/register and click on the PDF file.

2 Request a faxed copy

Call the fax-on-demand server at (847) 940-2146. Enter your fax number (including 1 or 011, plus city and country codes). Enter your telephone number and extension. Select a document:

- Enter 1300 for the entire brochure.
- Enter 1375 for the registration form only.

Course enrollment information will be mailed in late June and also will be available on *RSNA Link* in electronic format.

Important Dates for RSNA 2004

April 15	Deadline for abstract submission
April 26	RSNA and AAPM member registration and housing opens
May 24	General registration and housing opens
June 21	Refresher course enrollment opens
Nov. 5	Final housing deadline
Nov. 12	Advance conference registration deadline
Nov. 28– Dec. 3	RSNA 90th Scientific Assembly and Annual Meeting

■ CME Update: Earn up to 80.5 category 1 CME credits at RSNA 2004!

Apply Early for Your Visa!

Visa applications are now subject to greater scrutiny. All visa applicants are advised to apply for a visa as soon as travel to the United States is contemplated and no later than three to four months before November 28, 2004. This means that **international delegates should start their visa process July–August**. See the following Web sites for more information:

- Do you require a visa?
travel.state.gov/vwp.html
- How to apply for a visa?
travel.state.gov/visa_services.html or
www.nationalacademies.org/visas
Click on Traveling to the U.S.
- Check the status of a pending visa:
www.nationalacademies.org/visas
For visa application over 30 days old, click on Visa Questionnaire, complete and submit.

Registration Fees

BY 11/12	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 Refresher Course Instructor, Paper Presenter, Poster Presenter, Education or Electronic (<i>infoRAD</i>) Exhibitor
\$110	\$210	Non-Member Resident/Trainee
\$110	\$210	Radiology Support Personnel
\$520	\$620	Non-Member Radiologist, Physicist or Physician
\$520	\$620	Hospital Executive, Research and Development Personnel, Healthcare Consultant, Industry Personnel
\$300	\$300	One-day badge registration to view only the Technical Exhibits area

For more information about registration at RSNA 2004, visit www.rsna.org, e-mail reginfo@rsna.org, or call (800) 381-6660 x7862.

2004 Preliminary Program Grid

	SATURDAY 11/27	SUNDAY 11/28	MONDAY 11/29	TUESDAY 11/30	WEDNESDAY 12/1	THURSDAY 12/2	FRIDAY 12/3		
8:30 a.m.		Opening Session & President's Address 8:30-10:15	Refresher Courses 8:30-10:00	Case-Based Review 8:30-10:00	Refresher Courses 8:30-10:00	Case-Based Review 8:30-10:00	Essentials Course 8:30-10:00	Refresher Courses 8:30-10:00	Refresher Courses 8:30-10:00
9:00									
9:30									
10:00	Protecting Assets from Creditor Claims, Including Malpractice Claims* 10:00-12:00	Technical Exhibits 10:00-5:00	Technical Exhibits 10:00-5:00	Technical Exhibits 10:00-5:00	Technical Exhibits 10:00-5:00	Technical Exhibits 10:00-5:00	Technical Exhibits 10:00-2:00		
10:30		Scientific Sessions 10:45-12:15	Jury Trial 10:45-4:00	Scientific Sessions/Associated Sciences Symposium 10:30-12:00	Case-Based Review 10:30-12:00	Essentials Course 10:30-12:00	Scientific Sessions 10:30-12:00	Scientific Sessions 10:30-12:00	Scientific Sessions 10:30-12:00
11:00									
11:30									
12:00 p.m.	AAPM/RSNA Physics Tutorial for Residents 12:00-2:00	Lunch Break 12:00-1:00	Lunch, Poster Session & Visit Exhibits 12:00-1:30	Lunch, Poster Session & Visit Exhibits 12:00-1:30	Lunch 12:00-1:00	Lunch, Poster Session & Visit Exhibits 12:00-1:30	Lunch 12:00-1:00	Lunch, Poster Session & Visit Exhibits 12:00-1:30	Lunch & Visit Education Exhibits 12:00-12:45
12:30									
1:00	Effect. Real Estate Investment Strategies* 1:00-5:00	Grant Writing 1:00-5:00			Essentials Course 1:00-2:30		Essentials Course 1:00-2:30		Imaging Symposium 12:45-3:15
1:30			Plenary Session (New Horizons)** 1:30-2:45	Case-Based Review 1:30-3:00	Physics Symposium 1:30-3:30	Plenary Session (Annual Oration in Diagnostic Radiology)** 1:30-2:45	Case-Based Review 1:30-3:00		
2:00		Refresher Courses 2:00-3:30						Plenary Session (RSNA/AAPM Symposium)** 1:30-2:45	
2:30	AAPM/RSNA Physics Tutorial on Equipment Selection 2:15-5:15		Scientific Sessions 3:00-4:00	Case-Based Review 3:30-5:45	Physics Symposium 3:45-5:45	Scientific Sessions 3:00-4:00	Case-Based Review 3:30-6:00	Essentials Course 2:45-4:15	
3:00								Essentials Course 2:45-4:15	
3:30									Focus Sessions 3:00-4:00
4:00		Image Interpretation Session 4:00-5:45							
4:30			Focus Sessions 4:30-6:00						
5:00				Refresher Courses 4:30-6:00		Oncodiagnosis Panel and Focus Sessions 4:30-6:00			
5:30								Refresher Courses 4:30-6:00	
6:00									

*An additional fee is charged for these courses.

** Awards/Ceremonies to begin at opening of Plenary Session (1:30-1:45)

RSNA 2004 Exhibitor News

Exhibitor Prospectus

The RSNA 2004 Exhibitor Prospectus was mailed in late March. To achieve maximum available space and assignment points, send your completed application to RSNA Headquarters as soon as possible. The first-round space assignment deadline is May 10, 2004.

June Exhibitor Planning Meeting

Booth assignments will be released June 22 at the Exhibitor Planning Meeting and Luncheon. All exhibitors for RSNA 2004 are invited to attend at Rosewood Restaurant and Banquets near Chicago's O'Hare International Airport.

Advertising at RSNA 2004

Many opportunities exist for exhibitors to promote their exhibits at RSNA 2004—the world's largest annual medical meeting. For more information, see www.rsna.org/advertising/index.html or contact:

■ Jim Drew

Director of Advertising
(630) 571-7819
jdrew@rsna.org

■ Judy Kapicak

Senior Advertising Manager
(630) 571-7818
jkapicak@rsna.org



November 28 – December 3, 2004
McCormick Place, Chicago



RSNA 2003 included 668 exhibiting companies, 69 of them from outside of North America.



Important Exhibitor Dates for RSNA 2004

May 10	First-round space assignment deadline	Nov. 12	Exhibitor advance badge request deadline
June 22	Exhibitor Planning/Booth Assignment Meeting	Nov. 28– Dec. 3	RSNA 90th Scientific Assembly and Annual Meeting
July 6	Technical Exhibitor Service Kit available online		

■ For more information, contact RSNA Technical Exhibits at (800) 381-6660 x7851 or e-mail: exhibits@rsna.org.

■ For up-to-date information about technical exhibits at RSNA 2004, go to www.rsna.org/rsna/te/index.html.

Working For You

Continued from page 15

Revised IHE Technical Framework

Later this month, the Integrating the Healthcare Enterprise (IHE) initiative will publish an updated radiology technical framework (rev. 6.0) for trial implementation. In February, the framework was available for public comment.



IHE technical frameworks are a resource for users, developers and implementers of healthcare imaging and information systems. They define specific implementations of established standards to achieve effective systems integration,

facilitate appropriate sharing of medical information and support optimal patient care. They are expanded annually, after a period of public review, and maintained regularly by the IHE Technical Committees through the identification and correction of errata.

In addition to radiology, technical frameworks are now published in the domains of IT infrastructure and laboratory. A cardiology technical framework will be published later this year. The documents can be found at www.rsna.org/IHE.

PDFs for Journal Authors

Manuscript authors for *Radiology* now receive portable document files (PDFs) of their edited journal manuscripts. The process began in late February. *RadioGraphics* authors have been receiving PDFs for about a year. Previously, the edited manuscripts were sent by FedEx. The electronic transmission of the documents helps to expedite the publication process and reduce costs.

www.rsna.org

RSNA 2004

Spring heralds the arrival of two annual features on *RSNA Link*:

- The Exhibitor Prospectus for technical exhibitors appeared on *RSNA Link* in March.
- Advance registration for RSNA and AAPM members opens Monday, April 26.

You can access any of the annual meeting pages through the upper left-hand corner of the home page, www.rsna.org.

Refresher Course enrollment opens June 21. Details about RSNA 2004 will be posted on *RSNA Link* as they become available during the year.



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Community of Science
www.rsna.org/research/cos.html
History of the RSNA Series
www.rsna.org/about/history/index.html
Membership Applications
www2.rsna.org/timssnet/mbrapp/main.cfm

Medical Meetings

May – June 2004

APRIL 27–MAY 1

Society for Pediatric Radiology (SPR), Westin Savannah Harbor, Savannah, Ga. • www.pedrad.org

APRIL 28–MAY 1

Asian Oceanian Congress of Radiology, 10th Annual Meeting, Raffles City Convention Centre, Singapore
• lennytan@nus.edu.sg

MAY 2–7

American Roentgen Ray Society (ARRS), 104th Annual Meeting, Fontainebleau Hotel Resort and Towers, Miami Beach
• www.rrs.org

MAY 8–13

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

MAY 15–21

International Society for Magnetic Resonance in Medicine (ISMRM), 12th Scientific Meeting and Exhibition, Kyoto International Conference Hall, Kyoto, Japan • www.ismrm.org

MAY 19–22

German Radiology Congress, Deutsche Röntgenkongress 2004, Wiesbaden, Germany • www.drg.de

MAY 20–22

34th Annual Conference on Chest Disease, The Fleischner Society for Thoracic Imaging and Diagnosis, Orlando, Fla.
• www.fleischner.org

MAY 20–23

Society of Computer Applications in Radiology, SCAR 2004, Vancouver Convention & Exhibition Centre, British Columbia
• www.scar.net.org

JUNE 5–11

American Society of Neuroradiology (ASNR), 42nd Annual Meeting, Washington State Convention & Trade Center, Seattle
• www.asnr.org

JUNE 6–8

U.K. Radiological Congress 2004, UKRC, Manchester, U.K.
• www.ukrc.org.uk

JUNE 12–16

American Medical Association (AMA), House of Delegates Annual Meeting, Hyatt Regency, Chicago • www.ama-assn.org

JUNE 15–18

European Society of Gastrointestinal and Abdominal Radiology (ESGAR), 15th Annual Meeting and Postgraduate Course, Geneva, Switzerland • www.esgar.org

JUNE 19–23

Society of Nuclear Medicine (SNM), Pennsylvania Convention Center, Philadelphia • interactive.snm.org

JUNE 20–22

American Institute of Ultrasound in Medicine Annual Meeting (AIUM), Marriott's Desert Ridge Resort & Spa, Phoenix
• www.aium.org

JUNE 21–22

BECON/BISTIC SYMPOSIUM: Informatics for Clinical Decision-making in the 21st Century, Natcher Auditorium, NIH Campus, Bethesda, Md. • www.becon.nih.gov/becon_symposia.htm

JUNE 23–26

Computer Assisted Radiology and Surgery (CARS), 18th International Congress and Exhibition, Chicago • www.cars-int.de

JUNE 24–25

Institute of Electrical and Electronics Engineers (IEEE), 17th IEEE Symposium on Computer-based Medical Systems (CBMS 2004), Hotel Four Points by Sheraton, Bethesda, Md.
• www.cvia.ttu.edu/Conferences/cbms2004/cbms2004.html

JUNE 25–29

International Congress of Radiology (ICR), hosted by the Canadian Association of Radiologists, Palais des Congrès de Montréal, Montreal, QC, Canada • www.icr2004.com

JULY 23–25

Leadership Strategies for Radiology Practices, RSNA Education Center, Chicago Marriott Downtown
• www.rsna.org/education/shortcourses

AUGUST 7

Digital Presentation Skills for the Radiologist, RSNA Education Center, RSNA Headquarters, Oak Brook, Ill.
• www.rsna.org/education/shortcourses

NOVEMBER 28–DECEMBER 3

RSNA 2004, 90th Scientific Assembly and Annual Meeting, McCormick Place, Chicago • www.rsna.org

RSNANews

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