

RSNA *News*



Image courtesy of Frank M. Bengel, M.D.

PET/CT Can Reveal Basic Mechanisms of Cardiac Gene Therapy

Also Inside:

- Interventional Oncology Symposium Offered at RSNA 2005
- Assembly Line Approach Could Boost Productivity in Radiology Suites
- Microbiology, Interventional Radiology and Cancer Research
All in a Day's Work for RSNA Grant Recipient
- IHE Moves EHR Goals Forward

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Two RSNA Editorial Fellows Chosen

RSNA has selected **Deborah Levine, M.D.**, from Beth Israel Deaconess Medical Center in Boston, as its 2005 William R. Eyer Editorial Fellow, and **Joseph P. Erinjeri, M.D., Ph.D.**, from the Mallinckrodt Institute of Radiology in St. Louis, as the 2005 Trainee Editorial Fellow.

The duration of the fellowship is one month and the trainee fellowship is one week. Each fellow will spend time with *Radiology* Editor Anthony V. Proto, M.D., in Richmond, Va., and with *RadioGraphics* Editor William W. Olmsted, M.D., in Bethesda, Md. Each will also meet with the publications,



Deborah Levine, M.D.



Joseph P. Erinjeri, M.D., Ph.D.

advertising, marketing and communications staff at RSNA Headquarters in Oak Brook, Ill.

“I believe that this experience will provide insight into the high standards

of academic medical publishing,” said Dr. Levine. “Entering an editorial fellowship at *Radiology* and *RadioGraphics* will allow me to become more involved in academic publishing, with the goal of dissemination of knowledge to improve the practice of medicine. I hope to improve not only my own scientific writing, but also the reviews I perform on other manuscripts.”

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

International Visiting Professor Teams Announced

The RSNA Board of Directors has announced four teams of International Visiting Professors (IVP) for 2006. They and their destinations are:

India – January 2006	
Alexander Norbash, M.D.	Boston Medical Center
Harris Cohen, M.D.	Stony Brook University Medical School
King C. Li, M.D., M.B.A.	NIH Clinical Center
Malaysia – June 2006	
Kimberley Applegate, M.D., M.S.	Riley Hospital for Children, Indiana
Sjirk Westra, M.D.	Massachusetts General Hospital
Santiago Medina, M.D.	Miami Children’s Hospital
Chile – October 2006	
John Strang, M.D.	University of Rochester School of Medicine
Thomas Lee Pope, M.D.	Medical University of South Carolina
Lithuania – October 2006	
Manohar Shroff, M.D.	The Hospital for Sick Children, Toronto
TBA	TBA

The volunteer radiologists will spend a week in a designated country, lecturing at a national radiology meeting and visiting with local radiology residents. The IVP program is administered by RSNA’s Committee on International Relations and Education (CIRE). RSNA provides each host institution with educational materials, including syllabi and CD-ROMs.

For more information about the IVP program, go to RSNA.org/international/CIRE/ivpp.html.

Introduction to Research for International Young Academics

Another CIRE program is Introduction to Research for International Young Academics, designed to encourage young radiologists from countries outside of the United States and Canada to pursue careers in academic radiology.

The program consists of a special seminar that is held during the RSNA annual meeting.

The 2006 participants are:

NAME	COUNTRY
Maria Lujan Abate	Argentina
Miguel Angarita	Colombia
Elton Cekaj	Albania
Antonio A. Lopez Cruz	Mexico
Hugo Cuellar-Saenz	Mexico
Rudra Ghimire	Nepal
Ieneke Hartmann	France
Rusudan Kharadze	Georgia
Javzandulam Natsag	Japan (Mongolia)
Andrada Popescu	Romania
Fatima Adenike Salami	Cote D’Ivoire
Wael Shabana	Belgium
Claudio Silva	Chile
Jadranka Stojanovska	Macedonia
Yon Mi Sung	Korea
Cheng-Hong Toh	Taiwan
Tsung-Hsien Yen	Taiwan

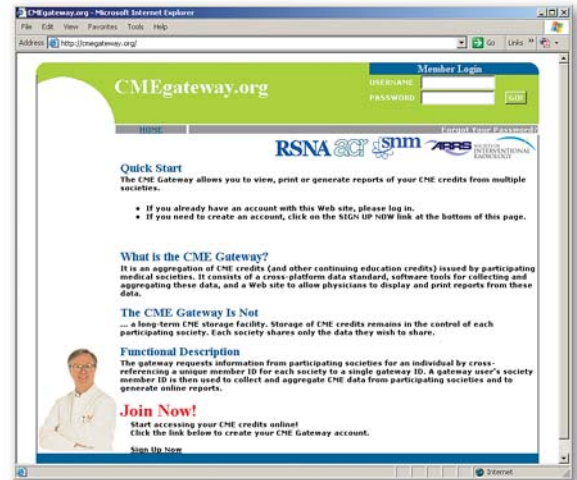
For more information or nomination forms, go to RSNA.org/international/CIRE/iyaseminar.html or contact Fiona Miller at (1-630) 590-7741 or at CIRE@rsna.org. The deadline for nominations each year is April 15.

SIR Joins CME Gateway

THE Society of Interventional Radiology (SIR) has joined the CME Gateway (CMEgateway.org). Launched in February 2005 by RSNA, American College of Radiology, Society of Nuclear Medicine and American Roentgen Ray Society, the CME Gateway provides a single access point for members of each society to view, print and generate reports of CME credits they have earned.

RSNA automatically deposits

CME credits earned from the Society into a member's account in the RSNA CME Repository (RSNA.org/cme). Members may also self-enter credits into their RSNA CME Repository account. The RSNA CME Repository has been available as a benefit of RSNA membership since 2002. As of May 1, 2005, more than 21,000 people had accessed the repository and about 3,500 members had created records in the self-entry portion.



NIH Awards to Medical Schools

The National Institutes of Health (NIH) has released its list of awards to medical schools for fiscal year 2004. The top 10 medical schools receiving NIH awards were:

RANK	MEDICAL SCHOOL	TOTAL AWARDS	AMOUNT
1	Johns Hopkins University	991	\$449,470,782
2	University of Pennsylvania	947	\$393,623,671
3	University of California, San Francisco	836	\$379,851,608
4	Washington University	820	\$371,719,472
5	University of Washington	689	\$307,873,069
6	Duke University	662	\$304,740,667
7	Yale University	741	\$287,811,325
8	University of California, Los Angeles	683	\$285,852,720
9	University of Pittsburgh	726	\$270,642,802
10	Stanford University	611	\$265,499,858

For a complete list, go to grants1.nih.gov/grants/award/rank/medttl04.htm.

Preventing Rupture of Vascular Access Devices from Power Injection

The U.S. Food and Drug Administration (FDA) has issued a reminder to radiologists, radiologic technologists, radiologic nurses and IV team nurses about the potential for serious patient injury when vascular access devices not designed to tolerate high pressures are used for power injection of CT or MR contrast media.

Several steps are recommended to avoid these incidents. For more information, go to www.fda.gov/cdrh/patientsafety/reminderrvad.html.



First R.A. Certification Exam in October

The American Registry of Radiologic Technologists (ARRT) will administer the first certification exam for radiology assistants (R.A.s) on October 28.



Certification eligibility requirements were released in July. Candidates must be ARRT-registered radiographers with at least one year of post-radiography-certification clinical experience, who hold a baccalaureate degree and have completed a recognized R.A. program. More information is available at www.arrt.org.

At the official business session at RSNA 2005, RSNA members will be asked to vote to amend the bylaws to create a new membership category for R.A.s. Information on the proposed bylaws change will be included in the October issue of *Radiology*.

Conti New SNM President

THE Society of Nuclear Medicine (SNM) has elected **Peter S. Conti, M.D., Ph.D.**, as its 2005–2006 president.

Dr. Conti is a professor of radiology, clinical pharmacy and biomedical engineering at the University of Southern California (USC).

He is also director of the PET Imaging Science Center at USC's Keck School of Medicine.



Peter S. Conti, M.D., Ph.D.

Utah Entrepreneurs of the Year

H. Ric Harnsberger, M.D., Anne G. Osborn, M.D., and Paul Scholtes have been named Utah Entrepreneur of the Year, Technology Division, for their company, Amirsys®, which quickly became a leading provider of radiology reference materials after the company launched its first product, the *Pocket Radiologist* series.

In addition to their positions at Amirsys, Dr. Harnsberger is a professor of radiology at the University of Utah Medical Center and holds the R.C. Willey Chair in Neuro-radiology. Dr. Osborn is the Distinguished Professor and William and Patricia Child Presidential Endowed Chairholder at the University of Utah and is the GE Healthcare Visiting Professor at the Armed Forces Institute of Pathology. She is also a member of the RSNA Research & Education Foundation Board of Trustees.



H. Ric Harnsberger, M.D., Anne G. Osborn, M.D., and Paul Scholtes

IN MEMORIAM:

John R. Cameron, Ph.D.

One of the founders of medical physics has died. **John R. Cameron, Ph.D.**, was honored during a memorial session at the American Association of Physicists in Medicine (AAPM) annual meeting in July.

In 1960, Dr. Cameron developed the photon absorptiometry method of measuring bone mineral *in vivo*. Seven years later, he authored the first book on thermoluminescent dosimetry. He was the founder and chair of the nation's first academic department of medical physics at the University of Wisconsin-Madison.

An RSNA member for almost 30 years, Dr. Cameron earned the RSNA Roentgen Centennial Commemorative Medal in 1995. He died in March at the age of 82.

New Executive Director for AHRA

Edward J. Cronin Jr., M.B.A., C.A.E., is the new executive director of the American Healthcare Radiology Administrators (AHRA). Cronin was previously the executive director of the American College of Prosthodontists.

Hitachi Medical Systems Names New CEO

Hitachi Medical Systems America has a new president and chief executive officer.

Donald Broomfield succeeds the retiring Richard L. Ernst, who has held the position since 1989.

White Earns Art of Listening Award

Robert I. White Jr., M.D., an interventional radiologist from the Yale University School of Medicine, has received a 2005 Art of Listening Award from the Genetic Alliance.

The award honors a medical professional who "models the importance of caring, receptive professionals in the lives of individuals and families living with genetic conditions."



Robert I. White Jr., M.D.

RSNA News Send your submissions for *People in the News* 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.

PET/CT Can Reveal Basic Mechanisms of Cardiac Gene Therapy

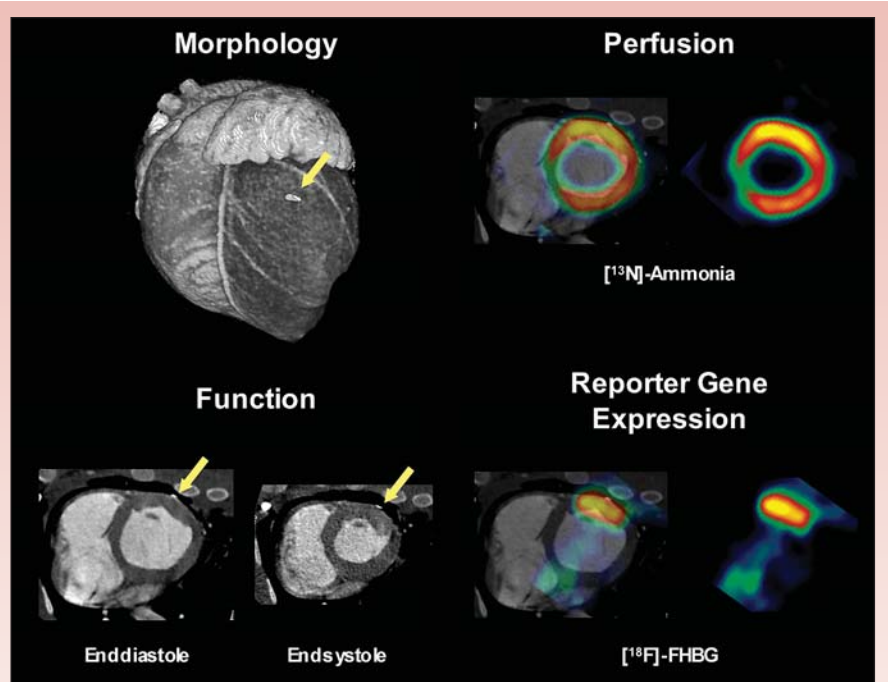
PROMISING research out of Germany shows PET/CT imaging of heart muscle may reveal details about its subcellular function and morphologic appearance that may ultimately lead to new treatments for heart disease. The research was presented during the annual meeting of the Society of Nuclear Medicine in Toronto last June.

“Radiologic morphologic imaging techniques, combined with functional imaging using tracers targeting subcellular events, provide unique noninvasive insights into mechanisms of disease and therapy, and thus has great future potential,” said senior author Frank M. Bengel, M.D., from the Nuclear Medicine Clinic at Technische Universität in Munich.

Dr. Bengel said this is one of the first studies using PET/CT for biologic characterization of a molecular intervention, showing the future potential of PET/CT as a translational imaging technique.

“Within a single PET/CT imaging session, we used recently developed tracer techniques that first target the expression of genes transferred to the heart muscle and then target the expression of proteins involved in the growth of new blood vessels,” he reported. “This was combined with techniques for measuring blood flow and with techniques for imaging the morphologic appearance and contractile function of heart muscle.”

A therapeutic gene was transferred to heart muscles in pigs by using an adenovirus vector. The transferred gene encodes for vascular endothelial growth factor (VEGF), which has been shown to induce angiogenesis. This approach



PET/CT molecular imaging two days after myocardial VEGF gene transfer.

(top, left) Volume rendered, contrast enhanced CT shows titanium-clip marked injection site of adenoviral vector in basal anterior wall. (bottom, left) Short-axis CT slices show lack of wall motion abnormalities at marked injection site. (top, right) PET perfusion imaging with N-13 ammonia shows enhanced regional perfusion at injection site. (bottom, right) PET imaging of the herpesviral thymidine kinase reporter gene, which was coexpressed with VEGF, shows successful regional gene transfer.

Images courtesy of Frank M. Bengel, M.D.

seeks to induce the growth of new blood vessels in areas of the heart that are ischemic due to severe coronary artery disease.

“Replication-defective adenoviral vectors are injected into the target region where they selectively infect tissue and transfer the therapeutic and reporter genes which they are carrying,” Dr. Bengel explained. “They do not replicate, so that they will not spread to other areas of the body. Adenovirus,

however, causes an immunogenic reaction that sooner or later results in elimination of the transferred genes. Therefore, other vectors are currently under development to overcome this problem and achieve a more enduring expression of transferred genes.”

PET/CT imaging showed that successful transfer of the VEGF gene results in an increase in tissue perfusion, without impairing cardiac contractile function or morphology. The

researchers obtained the information in a single, reproducible, noninvasive imaging session.

Value of PET/CT

Dr. Bengel said PET/CT may provide a better understanding of the basic mechanisms of cardiac gene therapy.

“CT provides high-resolution morphologic images and PET provides molecular-biologic information based on the distribution of specific tracers,” he said. “The combination will allow for a detailed dissection of therapeutic mechanisms from genomic/proteomic changes to physiologic effects and morphologic changes.”

Dr. Bengel pointed out that PET/CT is already a clinical reality, especially in cancer imaging. “Molecular cardiac PET/CT will be feasible in humans, and is at present only limited by complexity of tracer synthesis and lack of clearly defined practical indications.”

Richard L. Wahl, M.D., of Johns Hopkins University School of Medicine in Baltimore, said there is great interest in improving therapy for myocardial disease—moving beyond just repairing coronary arteries anatomically, or for example, expanding them with stents.

“There’s an interest in trying to use what we’re learning about vascular

biology to potentially grow new blood vessels, or to alter the behavior of existing blood vessels so that more blood can be delivered to the heart,” said Dr. Wahl, a professor of radiology and oncology and director of the Division of Nuclear Medicine/PET in the Russell H. Morgan Department of Radiology and Radiological Science at Johns Hopkins. “That’s what they were looking at here with VEGF as a tool to potentially induce vascular growth.”

Molecular cardiac PET/CT will be feasible in humans, and is at present only limited by complexity of tracer synthesis and lack of clearly defined practical indications.

Frank M. Bengel, M.D.

He said that the technology employed in the study by Dr. Bengel and colleagues could soon move into human testing.

“The technologies are all there to be used in human systems,” he said. “One of the key questions is, ‘Where are we with gene therapy?’ I think our challenge right now may be more the efficacy of the therapeutic genes that are being introduced than our ability to image. But I think that these techniques are eminently translatable to humans in the relatively short term.”

Dr. Wahl further suggested that imaging would be valuable in monitoring whether therapeutic genes are expressed in sufficient quantities and for a long enough period to be useful.

“The whole idea of gene therapy for

myocardial disease is that you want it for the long term to cause a positive physiological effect,” he said. “So if the gene only lasts a couple of days, it might not be there long enough to do a whole lot of good. You obviously can’t biopsy the heart or any tissue every day, so the ability to image the time-course of the expression and to quantify expression of the transduced proteins is a big step. To be able to do it noninvasively makes it even better.”

Future Potential

“The most exciting thing is that we have, nearly at our fingertips, the ability to image all the way from the molecular therapy, to the physiobiology induced by the therapy, to the ultimate functional outcome of the treatment,” Dr. Wahl added. “We have a really potent set of tools to look at the spectrum of very basic molecular events, all the way to the clinical function of an organ. This will help us guide trials of new innovative treatments over the next few years.” □

Summit on Molecular Imaging

In April, RSNA and the Society of Nuclear Medicine hosted a two-day Summit on Molecular Imaging in Oak Brook, Ill. The event brought together physicians, scientists and staff from 16 societies to begin long-term intersociety collaboration in such areas as molecular imaging education and research.

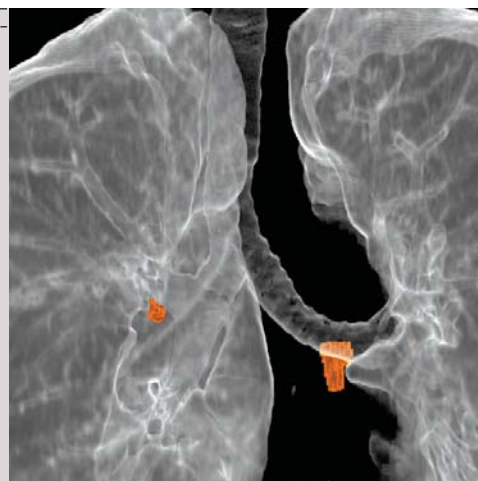
Mathew Thakur, Ph.D., and Brian C. Lentle, M.D., prepared a “Report of a Summit on Molecular Imaging” that is included in the September issue of *Radiology* and the *Journal of Nuclear Medicine*. To view the report, go to radiology.rsna.org/cgi/content/full/236/3/753.

SNM Image of the Year

A 3D IMAGE providing a fused picture of the body’s metabolism and structure is the 2005 Society of Nuclear Medicine’s Image of the Year.

The image is from the study “Novel 3-D Rendered FDG PET-CT Virtual Bronchoscopy and Colonography for Improved Lesion Localization and Pre-Surgical Evaluation” by researchers from the Department of Radiology at Stanford University.

“This study is intended to be an initial step in developing a new paradigm for reviewing and interpreting PET/CT images in a fully 3D-rendered format,” said senior scientist Sanjiv (Sam) Gambhir, M.D., Ph.D. “Our new strategy is to fuse PET and CT in order to travel through and around organs for improved visualization of the 3D anatomical and functional data sets.”



Interventional Oncology Symposium Offered at RSNA 2005

RSNA and the Society of Interventional Radiology (SIR) Foundation will offer a new, state-of-the-art program at RSNA 2005 on the science of interventional oncology.

“One of the most rapidly developing areas in radiology is interventional oncology,” said Gerald D. Dodd III, M.D., chairman of the RSNA Scientific Program Committee. “The decision to add an interventional oncology symposium in the RSNA scientific program not only helps members meet their professional development needs, but is also consistent with RSNA’s goal of collaboration with other medical societies.”

The Interventional Oncology Symposium is the first symposium presented at the RSNA annual meeting jointly sponsored with another medical society. “This collaboration will help RSNA establish a stronger and, perhaps, a more interesting venue for interventional radiologists,” said Dr. Dodd, a professor and chairman of the Department of Radiology at the University of Texas Health Science Center at San Antonio.

SIR Foundation Research Education Division Chair Michael C. Soulen, M.D., said that RSNA’s offer to host the program at RSNA 2005 was enthusiastically supported by the SIR Foundation.

“There is no better way to reach imaging scientists than at the RSNA annual meeting,” he said. “I really hope that this symposium will bring the interventional community in closer touch with the imaging community.”



Gerald D. Dodd III, M.D.
RSNA Scientific Program Committee Chairman



Michael C. Soulen, M.D.
SIR Foundation Research Education Division Chairman

Who Should Attend

The state-of-the art symposium on image-guided oncologic intervention is expected to attract private practice radiologists and academic radiologists who perform or wish to begin performing image-guided oncologic therapy. Other

Radiologists have a great opportunity to significantly impact the care of patients with cancer. The continued development and application of minimally invasive image-guided therapies place radiology at the leading edge of cancer treatment.

Gerald D. Dodd III, M.D.

expected attendees include residents who are going into interventional radiology and medical students who are interested in cutting-edge science.

Attendees will learn about image-guided tumor therapy techniques for the treatment of tumors involving the kidney, liver, lung and bones, as well as current science on image-guided oncologic therapies.

The symposium is included in the

RSNA annual meeting registration fee, which is free to RSNA members and residents with advance registration. Attendees must register for the symposium.

The Program

The four-and-a-half-day Interventional Oncology Symposium is a “meeting within a meeting” that will be held in the same room throughout the week. The first two days, Monday and Tuesday, are devoted to new developments in clinical interventional oncology. The second half of the program, Wednesday, Thursday and until noon on Friday, is focused on the basic science of image-guided interventional oncology.

The clinical portion of the program is organized by organ system. Monday’s session will focus entirely on the treatment of tumors involving the liver. Tuesday will be split into three parts to address tumors affecting the kidney, lung and bones. The ses-

sions will tightly integrate state-of-the-art lectures, scientific abstracts, CME-type lectures and panel discussions designed to place all of the materials presented into perspective.

The second half of the symposium is based on Innovation and Research in Interventional Radiology (IR²), developed by the SIR Foundation, which focuses on basic and translational research. This portion of the symposium will interest radiologists who want to know what to expect in the immediate future in terms of new technology and new applications. The target audience is academic radiologists, basic researchers, and clinical and translational researchers.

“The symposium content has been in development for about a year,” explained Betty Rohr, director of RSNA Program Services.

“RSNA is testing the meeting-within-a-meeting concept, as well as the new format that integrates related refresher course-type content with scientific abstract-type content,” Rohr said. “RSNA has not previously linked these two programs. It may be appealing to the audience conceptually to have instructional courses on a specific subject followed immediately by cutting-edge science presentations in the same subject area.”

SIR Foundation has already tested and adopted a program that puts clinical practitioners in the same room with basic scientists.

“That’s one of the reasons why our IR² programs have been so popular,” explained Dr. Soulen, who is a professor of radiology and surgery at the University of Pennsylvania. “IR² has joined tumor biologists, who understand biological targets for treating cancer, with imaging scientists and interventionalists, who know how to ‘see’ and deliver treatment to cancers. Putting these two groups in the same room creates a tremendous synergy.”

“The basic scientists say, ‘You can actually see these things and deliver treatment and see the effect.’ The

interventionalists say, ‘Yes, you just give us the targets, we’ll get there,’” Dr. Soulen added.

Both Drs. Dodd and Soulen are excited about the program and hope this type of collaboration will be popular with attendees.

“This symposium is very timely,” said Dr. Dodd. “Radiologists have a great opportunity to significantly impact the care of patients with cancer. The continued development and application of minimally invasive image-guided therapies place radiology at the leading edge of cancer treatment.”

“I think the future of our specialty in interventional oncology is going to be highly dependent upon a remarriage of interventional procedures with much more sophisticated imaging technology than we use in our normal day-to-day practice,” said Dr. Soulen. “I hope that by coming to this symposium and this venue, interventional radiologists will get up to speed on the latest techniques for marrying very sophisticated imaging technologies with interventional procedures.”

The symposium program is available on the RSNA 2005 Web site at rsna2005.rsna.org. In the What’s New section at the top, click on Interventional Oncology Symposium:



Interventional Oncology Symposium: RSNA/SIR Foundation

RSNA2005
Connecting for Lifelong Learning



MONDAY, NOVEMBER 28

Clinical Science of Interventional Oncology—Part 1

- Liver: Ablation 8:30 a.m. – 10:05 a.m.
- Liver: Transarterial Chemoembolization 10:25 a.m. – 12:00 p.m.
- Liver: Guidance and Imaging 1:30 p.m. – 3:35 p.m.
- Liver: Post RX Findings, Complications 3:55 p.m. – 6:00 p.m.

TUESDAY, NOVEMBER 29

Clinical Science of Interventional Oncology

- Kidney: Part 1 8:30 a.m. – 10:05 a.m.
- Kidney: Part 2 10:25 a.m. – 12:00 p.m.
- Lung 1:30 p.m. – 3:30 p.m.
- Bone 3:55 p.m. – 5:45 p.m.

WEDNESDAY, NOVEMBER 30

(IR)²:Basic Science of Interventional Oncology

- Tumor Biology for the Radiologist:
Part 1 8:30 a.m. – 10:00 a.m.
- Tumor Biology for the Radiologist:
Part 2 10:30 a.m. – 12:00 p.m.
- Animal Models for Image-Guided
Cancer Therapy 1:00 p.m. – 2:30 p.m.
- Tumor Imaging: Part 1 3:00 p.m. – 4:00 p.m.
- Tumor Imaging: Part 2 4:30 p.m. – 6:00 p.m.

THURSDAY, DECEMBER 1, 2005

(IR)²:Basic Science of Interventional Oncology

- Tumor Imaging: Part 3 8:30 a.m. – 10:00 a.m.
- Image Guidance for Oncologic
Intervention: Part 1 10:30 a.m. – 12:00 p.m.
- Image Guidance for Oncologic
Intervention: Part 2 1:00 p.m. – 2:30 p.m.
- Image Guidance for Oncologic
Intervention: Part 3 3:00 p.m. – 4:00 p.m.
- Materials Science and Drug Delivery 4:30 p.m. – 6:00 p.m.

FRIDAY, DECEMBER 2, 2005

(IR)²:Basic Science of Interventional Oncology

- Tumor Ablation Science 8:30 a.m. – 10:00 a.m.
- Catheter-Directed Therapies 10:30 a.m. – 12:00 p.m.

RSNA/SIR Foundation. To register for the symposium, click on the Register Now button.



Assembly Line Approach Could Boost Productivity in Radiology Suites

RADIOLOGY facilities could learn a thing or two from carmakers when it comes to improving workflow efficiency and cost effectiveness, according to two articles appearing in the August issue of *Radiology*.

Researchers measured and compared workflow times for radiologic technologists (R.T.s) using both computed radiography (CR) and direct radiography (DR) at four different hospitals. In addition, they compared economic aspects of equipment configurations, productivity levels and patient waiting times for CR and DR.

Two of the authors, Bruce I. Reiner, M.D., and Eliot L. Siegel, M.D., said their research may help radiology facilities become more efficient, give radiology and PACS administrators a better idea about what type of equipment to buy, and provide hospital architects with ideas for more efficient workflow designs.

CR vs. DR

Despite increased use of CT and MR, general radiography accounts for 65–70 percent of radiology department exam volumes nationwide, according to statistics cited. This figure does not include mammography and fluoroscopy. CR and DR are the two leading digital radiography technologies. CR is typically a storage phosphor cassette-based system. With DR, the cassette is replaced by an electronic detector that sends the radiographic image directly to a monitor for immediate review by an R.T.

In the first article, researchers recorded the time R.T.s took for patient



Eliot L. Siegel, M.D. (left), and Bruce I. Reiner, M.D., from the University of Maryland.

preparation, positioning, exposure and postacquisition imaging processing.

“The research reaffirms what the market has come to accept—that DR is more efficient and significantly faster than CR. A CR exam takes four to 11 minutes. The time required to perform an entire DR exam is consistent with manufacturer claims of 2.5 to 5.2 minutes,” said Dr. Siegel, director of imaging for the Veterans Affairs (VA) Maryland Healthcare System and professor and vice-chairman of radiology at the University of Maryland School of Medicine in Baltimore. “In our research, we documented that DR exam times are significantly faster than previously published results.”

He said the difference in the time wasn’t so much the process of acquiring the image, but the post-processing steps.

“We found a tremendous degree of variability within institutions and between institutions. One site had two times the number of workflow steps than another with CR,” said Dr. Reiner, director of radiology research at the Maryland VA Healthcare System and associate professor of radiology at the University of Maryland Medical Center.

Economics of CR vs. DR

In the second article, the researchers compared economic aspects of equipment configurations, productivity levels and patient waiting times.

They used data from the four sites to calculate the CR-DR crossover point—the point at which the cost-effectiveness of DR equals CR. Utilization rates in examination rooms were taken into account, along with a model that included economic penalties for

long waiting times. Using these two parameters, researchers found that the crossover point at which the increased cost of a DR unit was justified was not achieved until the room utilization rates approached or exceeded 80 percent.

Dr. Reiner said while the first study validates that DR is quicker, the second shows CR is more cost-effective in the majority of imaging departments, "There is also lot of room for productivity gains."

Workflow Optimization Often Overlooked

He said that unfortunately, the most prevalent approach has been to concentrate on the technology first and only secondarily on the integration of the technology with other systems. "We depend on the individual vendors and the information technology (IT) departments," explained Dr. Reiner. "However, multiple vendors may not be willing to cooperate with each other. Some IT departments don't have the inherent resources and expertise to optimize workflow using relevant standards and 'integration profiles' such as those specified by IHE. Consequently, workflow optimization is often almost entirely overlooked."

Even with identical equipment, there are significant differences in efficiency from one

department to the next. Paradoxically, the researchers found that one of the sites with the highest room utilization rate was also the most inefficient. Some R.T.s are very efficient and can multi-task. This adds to productivity, but potentially may introduce errors too. Dr. Reiner said it's important for each facility to look at the capabilities of its specific workforce and staff allocation. Other factors include centralized versus distributed design of the department and commonly overlooked

Highly trained radiologic technologists are in short supply. They should be focusing their time on image acquisition, not on shuttling patients back and forth and doing clerical work.

Bruce I. Reiner, M.D.

factors such as location of patient changing areas.

Assembly Line Approach

Dr. Reiner said radiology facilities may not want to hear this, but they should consider an assembly

line approach to improve workforce efficiency. "Highly trained R.T.s are in short supply. They should be focusing their time on image acquisition, not on shuttling patients back and forth and doing clerical work. These tasks should be given to other staff. By each person doing

one or two tasks only, your radiology suite will become incredibly efficient," he said.

One example of this approach is the use of aides who sweep through rooms

to pick up CR cassettes and deliver them to a centralized plate-reading center. Another idea is employing five R.T.s using four general radiology rooms. That allows for 15 minute breaks, creates a more reliable process and increases utilization rates.

Patient Waiting Times

Dr. Siegel said it's difficult to quantify waiting times and the economic cost of patient dissatisfaction. "Unlike in many vendor productivity models, in real life, patients are not always lined up outside exam rooms waiting for their study. They tend to arrive in clusters," he said. "This type of sporadic pattern of arrival can be studied and modeled to help make predictions about equipment and personnel resources in order to minimize costs, as well as patient waiting times."

Dr. Reiner added that in a VA system or an HMO, the patient is in a captive market and is willing to accept

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CR-DR Cost Differential and Characteristics at Four Sites

Cost Parameter	Lahey Clinic	MSKCC	WMIS	BVAMC
CR				
Equipment cost	80 000	80 000	172 000	200 000
Annualized equipment cost*	9378	9378	20 164	23 446
Annual service contract cost	6400	6400	13 760	16 000
Examination time (sec)	520	258	523	348
Patient capacity per day†	69	138	68	103
DR				
Equipment cost	440 000	360 000	440 000	360 000
Annualized equipment cost*	51 581	42 203	51 581	42 203
Annual service contract cost	39 500	48 000	39 500	48 000
Examination time (sec)	272	153	347	126
Patient capacity per day†	131	233	103	283
Annual cost differential (DR – CR)	75 303	74 425	57 157	50 757

Note: All costs are in U.S. dollars. *Assuming 3% interest rate and one annual end-of-year payment yearly for 10 years. †Based on examination time (multiplied by the retake factor) and 10 hours of operation. MSKCC = Memorial Sloan-Kettering Cancer Center, WMIS = Westchester Medical Imaging Services.

CR and DR Utilization Rates at Four Sites

Utilization Parameter	Lahey Clinic	MSKCC	WMIS	BVAMC
Mean daily room examination volume	21	34	25	29
CR capacity	69	138	68	103
DR capacity	131	233	103	283
Implicit CR utilization rate (%)	30.4	24.6	36.8	28.2
Implicit DR utilization rate (%)	16.0	14.6	24.3	10.2

MSKCC = Memorial Sloan-Kettering Cancer Center, WMIS = Westchester Medical Imaging Services.

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IHE Moves EHR Goals Forward

THERE is increasing momentum within the U.S. government for widespread use of electronic health records (EHRs) by 2014, and RSNA's Integrating the Healthcare Enterprise (IHE®) initiative stands to play an important role in the process.

President Bush has repeatedly emphasized that EHRs could help reduce medical errors, increase efficiency and enhance the quality of patient care. Health and Human Services (HHS) Secretary Michael O. Leavitt has echoed the statements, adding that, "While other industries like shipping, retail and banking have successfully transformed the way they do business through the use of information technology, the healthcare industry's use of information technology has lagged."

Leavitt touted the financial benefits of EHRs during a Senate Budget Committee hearing in July, "Economists believe that up to a third of healthcare spending—more than half a trillion dollars a year—is wasted because of poor or redundant care or other problems."

The newly established National Health Information Technology Office, headed by David Brailer, M.D., Ph.D., is developing a strategic plan to guide the implementation of EHRs in both the public and private healthcare sectors.

Dr. Brailer is a professed admirer of IHE, an initiative developed eight years ago by RSNA and the Healthcare Information Management Systems Society (HIMSS). IHE improves patient care by standardizing the way health systems exchange information.

At several high-profile events, Dr. Brailer used IHE as an example of how the nation could achieve EHR adop-

tion, interoperability and streamlined information systems.

In June, Dr. Brailer's office issued four requests for proposals (RFPs) seeking organizations willing to play specific roles in EHR deployment. One RFP is for the Standards Harmonization Process. The chosen organization(s) would develop, create prototypes for, and evaluate a process to unify and harmonize industrywide health IT standards.

RSNA and HIMSS have joined with the American College of Cardiology, American National Standards Institute and 14 other organizations to submit a response, of which IHE is a core element. IHE's mission has always been "to foster effective sharing of medical information across the enterprise and build the infrastructure of the EHR." The RFP awardees will be announced this month.



EHR Challenges

The public has mixed feelings about EHRs. A national Harris Interactive survey found that 45 percent of adults believe that tools to track and maintain their own personal medical information with an EHR system are very important, but they worry that computerization could increase rather than decrease medical errors and that federal health privacy rules will be reduced in the name of efficiency.

Dr. Brailer has identified some key challenges in developing a Nationwide



HHS Secretary Mike Leavitt testifies before the Senate Budget Committee about ways his department is encouraging greater adoption of health information technology.

HHS photo by Chris Smith

Health Information Network (NHIN), including the need for additional and better refined standards, addressing privacy concerns, paying for development and operation of NHIN, accurately matching patients' identities and addressing discordant inter- and intra-state laws regarding health information exchange.

Researchers reporting in the August 2 issue of the *Annals of Internal Medicine* estimated that it would cost \$156 billion in capital investment over five years to achieve an NHIN, plus \$48 billion in annual operating costs.

Real-world challenges that users continue to face in the implementation of EHRs include installation of a new workflow process at their organization, variability in vendor support and cost of required systems upgrades. However, acceptance is growing throughout the healthcare community that the benefits of IHE-compatible systems far outweigh the costs.

The many benefits achieved with IHE-compatible systems are wide-



R. Norris Orms, C.H.E., C.A.E., (at left), HIMSS executive vice-president and chief operating officer, welcomed more than 200 representatives from healthcare institutions and industry to the IHE Education Workshop in Oak Brook, Ill.

spread. For the radiology department they include:

- Improvement in report turnaround time
- Reduction in the number of lost images and reports
- Improved physician satisfaction with regard to being able to access reports anytime/anywhere
- Reduction in film costs

In addition, institutions are finding that systems with IHE capabilities are generally less complex to install than those without.

IHE Education Workshop

June 28–29, RSNA held an IHE Education Workshop in Oak Brook, Ill. More than 200 representatives from healthcare institutions and industry attended to discuss and promote current and future stages of IHE acceptance and implementation. The first-ever IHE Radiology User’s Handbook, which provides an overview of IHE implementation, strategies and procedures, was distributed to attendees on CD-ROM. The handbook is also available online for free download at www.ihe.net/

Resources/upload/ihe_radiology_users_handbook_2005edition.pdf.

Nogah Haramati, M.D., spoke about IHE implementation in the care setting. Dr. Haramati explained how the radiology department at Montefiore Medical Center in the Bronx, N.Y., has been able to make IHE technology work.

In its radiology purchasing agreements, Montefiore requires that all systems must be IHE compliant or that vendors submit to a time schedule backed with penalties for non-performance. Before hospital administrators actually purchase systems, they install them in their facility to test and confirm that the new systems cooperate as they should with existing systems.

This scenario builds upon what vendors come together to do each year at the RSNA Connectathon. RSNA invites all interested vendors to Society head-

quarters to “plug in” to each other’s systems to find out if their technology communicates effectively with that of other vendors.

In his lecture, Dr. Haramati emphasized that users need to make specific requests so that vendors can respond with the appropriate technology. This is yet another aspect of harmonized standards that constitute the IHE objective. Sample RFPs for hospital administrators and equipment purchasers are included in the IHE Handbook.

While other industries like shipping, retail and banking have successfully transformed the way they do business through the use of information technology, the healthcare industry’s use of information technology has lagged.

Michael O. Leavitt

Paul Nagy, Ph.D., spoke about the progress that IHE has made in terms of global acceptance. He postulates that it is currently in the “early adopter” phase and is beginning to gain momentum, having worked through the innovation stage where many of the kinks were

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smoothed. "I would theorize that the diffusion of innovation for picture archiving and communication systems is in the early majority phase, and for it to get to late majority, it needs better standards adherence to bring down its total cost of ownership," said Dr. Nagy,

director of informatics research at the University of Maryland Medical System.

A 2002 study conducted by the Gartner group of the PACS industry reported that by 2005, the basic functionality between PACS vendors would be similar and the major differentiator between vendors would be their ability to interoperate. IHE has made this a reality.

When IHE was launched in 1997, radiology and information technology were the

pioneers. Now participating medical specialties have grown substantially to include everything from radiation oncology and ophthalmology to cardiology and medical physics. IHE programs have also been developed in 14 countries.

Paying for Interoperability

Physicians tend to support the concept



Nogah Haramati, M.D. (left), and Paul Nagy, Ph.D. (right), spoke at the IHE Education Workshop during a breakout session on implementing IHE in intra-enterprise care settings. Dr. Haramati provided an implementation case study and Dr. Nagy described obstacles to implementation.

of truly integrated systems, but the thought of paying for the upgraded systems is daunting. In June, the American Medical Association (AMA) House of Delegates passed a resolution calling for greater flexibility in how physicians are allowed to finance the integration of technology.

Because of Stark and anti-kickback laws, physicians cannot generally get financial assistance from a hospital for information technology.

The AMA resolution urges the association to support legislation and other "appropriate initiatives" that would allow incentives for physicians purchasing technology, as long as those providing the assistance don't try to wield power over the physicians as a

result. The resolution also calls for financial assistance to be provided through other outlets, such as low-cost loans and tax incentives.

Despite the challenges, Leavitt is confident the 2014 goal will be met.

"Our nation is facing an economic and humanitarian imperative in health-care—we must become more efficient or face losing our economic prosperity and precious human lives. Nothing short of transformation of our health-care system will do," he said. □

Assembly Line Approach Could Boost Productivity in Radiology Suites

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a longer waiting time. However, in a major metropolitan area with competitive hospital systems, the patient may not be willing to wait. In those facilities, there is a built-in preference for faster technology.

Dr. Siegel said that in the future, more departments will have more realistic expectations for the much-improved potential for high patient

throughput in digital radiology rooms that are no longer based on previous expectations from a film-based environment. This will serve to increase general radiography examination room utilization rates. Under Dr. Siegel's leadership, the VA Maryland Healthcare System was the first healthcare system in the nation to go filmless. □

■ RSNA members and *Radiology* subscribers can view the full text of the two studies online. "Multi-institutional Analysis of Computed and Direct Radiography: Part I. Technologist Productivity," is available at radiology.rsna.org/cgi/content/full/236/2/413. "Multi-institutional Analysis of Computed and Direct Radiography: Part II. Economic Analysis," is available at radiology.rsna.org/cgi/content/full/236/2/420.



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Report No. 149, A Guide to Mammography and Other Breast Imaging Procedures

This Report is intended to be a practical guide to physicians who interpret mammographic images, technologists who perform mammographic examinations, as well as medical physicists who monitor mammographic facilities, evaluate image quality, and determine radiation dose. Mammography is one of the most difficult radiographic examinations technically. Both specialized equipment and the correct use of that equipment are essential to the achievement of satisfactory results. Facilities should not perform the examination if they are unable or unwilling both to: (1) provide and maintain x-ray equipment, image receptors, film processors, and viewing conditions capable of producing the necessary images at acceptable dose levels; and (2) ensure that the examination is performed with the proper technique factors, patient positioning, and compression. In fact, the implementation of MQSA (1992) has made it illegal for facilities to continue to perform mammography unless these conditions are fulfilled. This Report contains several major sections, a summary, and conclusions, and an extensive bibliography.

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BOOK

Report No. 147, Structural Shielding Design for Medical X-Ray Imaging Facilities

This Report includes a discussion of the various factors to be considered in the selection of appropriate shielding materials and in the calculation of barrier thicknesses. The Report presents the fundamentals of radiation shielding, discusses "shielding design goals" for "controlled" and "uncon-

trolled" areas in or near x-ray imaging facilities, and defines the relationship of these "goals" to the NCRP effective dose limits for radiation workers and members of the public. The Report includes a detailed discussion of the recommended shielding design methodology for x-ray imaging facilities, and provides an extensive collection of shielding data and sample shielding calculations for various types of x-ray imaging facilities.

The Report is mainly intended for those individuals who specialize in radiation protection. However, it will also be of interest to architects, hospital administrators, and related professionals concerned with the planning of new facilities that use x-rays for medical imaging. 194 pp.

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BOOK

Report No. 145, Radiation Protection in Dentistry

This Report provides radiation protection guidance for the use of x-rays in dental practice, including advice on shielding design for dental x-ray facilities. It supersedes NCRP Report No. 35, *Dental X-Ray Protection*, which was issued in March 1970.

Dentists who conduct their radiology practices in accordance with the requirements and suggestions in this Report can obtain maximum benefit to the oral health of their patients and minimum radiation exposure to patient, operator and the public. All of the factors addressed in this Report are important and interrelated. Quality practice dictates that none be neglected. The technical factors, including office design and shielding, equipment design, clinical techniques, image receptors, darkroom procedures, and quality assurance are essential. However, the professional skill and judgment of the dentist in prescribing radiologic examinations and interpreting the results are paramount.

Informed consent requires that dental patients be provided with information as to the benefits and risks of dental procedures, including dental radiography. This Report provides the dentist with data on the magnitude of effective doses from typical dental x-ray procedures. General statements are given that can be used to inform the patient about the nature of risks associated with these doses. 191 pp.

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BOOK

Report No. 133, Radiation Protection for Procedures Performed Outside the Radiology Department

This Report includes five sections, two appendices, a glossary, and references. Section 1 introduces sources of occupational radiation exposure and compares occupational exposures in medicine with other sources of occupational exposure. Section 2 describes radiologic medical procedures that are often performed outside the radiology department and categorizes the procedures according to their potential for occupational exposure. Section 3 addresses conditions that affect potential occupational exposure such as time, distance, shielding, and orientation of radiation source, patient and operator. Section 4 addresses medical personnel monitoring and Section 5 briefly addresses the responsibility of management to provide safe conditions for both employees and patients. Appendix A provides information on the philosophy of radiation protection and the biological effects of medical x-rays. Appendix B describes the x-ray imaging process for various imaging devices. 104 pp.

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BOOK

Report No. 128, Radionuclide Exposure of the Embryo/Fetus

This Report is designed to provide information on radiation dose to the embryo/fetus from radionuclides in the mother. The Report has 10 sections making up some 92 pages consisting of an introduction, sources of exposure, review of recommendations and regulations regarding exposure of the embryo/fetus, prenatal development, maternal-fetal exchange, prenatal irradiation effects, fetoplacental concentrations and radiation doses, estimation of embryo/fetus dose in radiation protection practice, research needs, and a summary and conclusions. A large part of this Report, 125 pages, provides biological information, fetal/placental information and radiation dose estimates for 83 radionuclides. The Report contains a glossary of terms, 40 pages of references, and an index. 287 pp.

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BOOK

Report No. 116, Limitation of Exposure to Ionizing Radiation

This Report is the latest in the long series of reports on basic radiation protection criteria that began in 1934. It supersedes the predecessor in the series, NCRP Report No. 91, which was published in 1987. The current Report takes advantage of new information, evaluations and thinking that have developed since 1987, particularly the risk estimate formulations set out in NCRP Report No. 115. While the recommendations set out in this Report do not constitute a radical revision of the basic criteria, they do represent a refinement of the system enunciated in Report No. 91. Important changes include the utilization of revised tissue/organ weighting factors and the introduction of radiation weighting factors. Also noteworthy is the introduction of an allowable reference level of intake. Noteworthy too is the recommendation of an age-based lifetime limit for control of occupational exposures and a major simplification of limits aimed at controlling the exposure of the embryo and fetus. This Report, after outlining the goals and philosophy of radiation protection and the basis for exposure limits, goes on to review, in some detail, absorbed dose, equivalent dose, radiation weighting factors, and effective dose. Committed equivalent dose and committed effective dose are also introduced. Risk estimates for radiation exposure are presented and then the dose limits are enunciated. The Report also covers exposure in excess of the limits, limits for unusual occupational situations, guidance for emergency occupational exposure, and remedial action levels for naturally occurring radiation. 88 pp.

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BOOK

Report No. 113, Exposure Criteria for Medical Diagnostic Ultrasound: I. Criteria Based on Thermal Mechanisms

This Report is the second in a series treating the use of ultrasound in medicine. The first Report, NCRP Report No. 74, provided a comprehensive review of biological effects and mechanisms of action of ultrasound and an analysis of their implications for medical applications. This

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Report follows Report No. 74 with the first set of criteria for medical diagnostic ultrasound exposure—criteria based on thermal mechanisms.

Report No. 113 develops quantitative guidelines based on computed upper limits to the temperature rise produced by ultrasound during medical procedures. From estimates of these upper limits for different acoustical conditions, together with information on the biological consequences of hyperthermia, result in criteria expressed in acoustical parameters. Major sections of the Report cover:

- hyperthermia and life processes
- heat generation by ultrasound in mammalian tissues
- experimental studies of ultrasonically produced temperature elevation and associated biological effects
- the interrelationship of thermal and nonthermal ultrasonic process
- intensity and power needed in diagnostic ultrasound

Appendices to the Report provide background for calculations and information on approximations and assumptions employed in the Report. 278 pp.

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BOOK

Report No. 105, Radiation Protection for Medical and Allied Health Personnel

This Report is intended to meet the needs generated by the many changes in medical practice and procedures that have occurred since the publication of NCRP Report No. 48. The Report provides information about radiation, its effects on humans, protection against radiation, and regulatory control requirements and is aimed, primarily, at individuals who have limited expertise in radiation protection terminology and principles. The first seven sections of the Report provide, for all readers, general information on radiation and its uses in medicine. A subsequent section provides pertinent job related information for personnel involved with radiation sources, with each subsection addressing individuals in a particular job category. Included are subsections for administrators, animal care personnel, clinical/research laboratory personnel, diagnostic x-ray technologists, escort personnel, housekeeping personnel, maintenance and engineering personnel, in-house fire crews, nuclear medicine technologists, nursing personnel, pathologists/morticians, physicians (nonradiation specialists), radiation therapy technologists, security personnel, shipping and receiving personnel, and ultrasonographers.

Treated in appendices of the Report are emergency procedures, special considerations for patients containing sealed or unsealed therapy sources, definitions, and sources of nonionizing radiation in medical facilities. 129 pp.

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Organized by findings to reflect how radiologists really work, this abundantly illustrated book offers more than 2,000 magnetic resonance images depicting commonly seen congenital and acquired disorders, as well as many rare and unusual cases. Along with the radiographic findings, you will enjoy brief tabular summaries of essential demographic, pathologic, and clinical features of each disease. 654 pp., 1,964 illus., 2002

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This book and companion CD richly illustrate the basic principles of cardiovascular MR imaging techniques, while also providing a comprehensive review of the clinical applications of these techniques. The book is conveniently organized into seven main chapters covering congenital heart disease, aortic anomalies, cardiac masses, valvular diseases, pericardial diseases, and cardiomyopathy. 196 pp., 165 illus., 2003

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Ultrasound Diagnosis of Fetal Anomalies

Entezami

This well-referenced teaching atlas is a comprehensive and practical overview of fetal ultrasound technology, providing up-to-date diagnosis and examination guidelines for the most clinically important anomalies and diseases. Incorporating an impressive collection of sonographic images and plates, the book provides an invaluable visual aid in recognizing even the most difficult-to-interpret ultrasound findings. 371 pp., 488 illus., 2003

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BOOK

Practical MR Mammography

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From one of the leading centers in MR mammography comes this hand-

some, practice-oriented teaching atlas that does much more than present pictorial information. Written for radiologists in advanced training or continuing education, it contains more than 500 illustrations that offer clear answers to the questions: When should I use MR mammography? How do I conduct the examination? How do I make an accurate diagnosis? 211 pp., 398 illus., 2003

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Breast Imaging: A Correlative Atlas

Hashimoto

The book highlights the importance of high-resolution sonography and its cross-correlation with mammography by providing a broad spectrum of imaging entities, from common pathologies to rare breast abnormalities. You'll also get helpful information on normal anatomy, new technology, instrumentation, and management issues. 536 pp., 1,089 illus., 2002

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BOOK

Cranial Neuroimaging and Clinical Neuroanatomy, 3rd edition

Kretschmann

Written by experts in the field, this beautifully illustrated text/atlas provides the tools you need to directly visualize and interpret cranial CT and MR images. It reviews with exacting detail the normal anatomic brain structures identified on sagittal, coronal, and axial imaging planes. Use this book to make accurate and complete neurological assessments at the earliest possible stages—before reaching the sectioning or operating table. 451 pp., 664 illus. (most in color), 2004

RSNA Member Price \$179.96

BOOK

Imaging Strategies for the Shoulder

Maeurer

This book presents radiology of the shoulder in a unique didactic concept, with careful organization of material under headings, using margin comments that summarize the most important information. 168 pp., 167 illus., 2004

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Imaging of the Head and Neck, 2nd edition

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A bestseller at the 2004 RSNA meeting! More than 3,700 illustrations and systematic coverage of the latest technical developments make the new edition of Valvassori's world-famous text your complete guide to head and neck imaging. With thorough coverage of the newest imaging modalities, an abundance of high-quality graphics, and the expertise of worldwide leaders in the field, this is the reference of choice on head and neck imaging for experienced practitioners and residents-in-training. 866 pp., 3,750 illus., 2004

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BOOK

Ultrasound in Obstetrics and Gynecology, Volume I: Obstetrics, 2nd edition

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BOOK

Bone Dysplasias An Atlas of Genetic Disorders of Skeletal Development Second Edition

Jurgen W. Spranger, Paula W. Brill and Andrew K. Poznanski

Many advances have been made in understanding skeletal dysplasias since the first edition of this classic text appeared in 1974. The second edition has been completely renovated, with the help of two new co-authors, to incorporate these advances. The book's format is similar to the original but the number of conditions covered has almost doubled and molecular information has been added wherever available. The number of figures has been increased to the limit of economic wisdom. As in the first edition, the illustrations have been selected and sequenced to illustrate both the degree of variability of a given disorder and its changes with age.

This book is designed for physicians involved in the evaluation and treatment of patients with skeletal dysplasias, including radiologists. Its main goal is to assist in the diagnosis of specific conditions and the care of affected individuals. Though mutations of specific genes can produce dysplasias with very different phenotypes and prognoses, the primarily clinical aim of this book dictated a phenotypic classification in general, with compromises on etiologic grounds where necessary. Hardback, 632 pp., 2002

RSNA Member Price \$131.25



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Review of Nuclear Medicine Technology

Ann M. Steves, MS, CNMT, FSNMITS and Patricia C. Wells, MAE, CNMT

The Review of Nuclear Medicine Technology and its companion book, *Preparation for Examinations in Nuclear Medicine Technology*, have been helping nuclear medicine technology students prepare for national certification examinations for 12 years. Now these two books have been newly updated and combined into one invaluable reference.

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RSNA Member Price \$62.10

BOOK

Clinical Practice of Molecular Radiotherapy

Published in January 2005, the *Clinical Practice of Molecular Radiotherapy* supplement offers a collection of reviews on targeted radionuclide therapy, providing a snapshot of the current status of modern clinical applications of therapeutic nuclear medicine. Earn CME, VOICE, and CPE credit(s) by reading and taking the exams for selected articles. CE credit exams are available online at www.snm.org/ce_online.

The supplement, edited by Steven M. Larson, M.D., and Eric P. Krenning, M.D., Ph.D., includes:

- A fundamental summary of suggested patterns of practice for common radionuclide therapies.
- A forecast of near-term opportunities likely to determine practice in the next few years. Softcover, 206 pp., 2005

RSNA Member Price \$48.60

BOOK

Nuclear Cardiac Imaging: Terminology and Technical Aspects

Elpida S. Crawford, MS, CNMT and Syed Sajid Husain, MD, MS, MAS

This newly released book is an educational resource for those learning

nuclear cardiology or a reference tool for clinicians who have already incorporated nuclear cardiology into their practices. This authoritative book is a must-have technical resource that focuses on the basic principles and technical aspects of all nuclear cardiac imaging studies, including normal and abnormal scan patterns. Softcover, 130 pp., 2003

RSNA Member Price \$72.00

BOOK

PET/CT: Imaging Function and Structure

Published in January 2004, this state-of-the-science overview of the new field of positron emission tomography fused with computed tomography (PET/CT) features current information from the experts. Earn up to 10 category 1 CME credit hours by reading and taking the test for each article at www.snm.org/education/ce_online.html. Softcover, 103 pp., 2004

RSNA Member Price \$45.00

BOOK

A Clinician's Guide to Nuclear Medicine

Andrew Taylor, MD, David M. Schuster, MD, and Naomi Alazraki, MD

This book builds on and expands the basic concepts found in *Fundamentals of Nuclear Medicine*. This introduction to the diagnostic and therapeutic uses of nuclear medicine procedures is a must have for clinicians, residents, interns, medical students and referring physicians. It reviews nuclear medicine procedures, available alternatives, advantages and limitations of each, and provides patient information to aid in preparing patients. Softcover, 410 pp., 2000

RSNA Member Price \$40.50

BOOK

A Tabulated Summary of the FDG PET Literature

Sanjiv S. Gambhir, MD, PhD, Johannes Czernin, MD, Judy Schwimmer, MBA, MA, Daniel H.S. Silverman, MD, PhD, R. Edward Coleman, MD, and Michael E. Phelps, PhD

This supplement to *The Journal of Nuclear Medicine* provides a comprehensive literature review of the use of FDG PET in oncology, cardiology, and neurology. This supplement has proven useful for health care providers, administrators, and health economists who wish to better understand the role of FDG PET in the medical management of patients. Softcover, 93 pp., 2001

RSNA Member Price \$13.50

BOOK

Self-Study Program III: Nuclear Medicine Cardiology

Series Editor: Elias H. Botvinick, MD

Whether you're a nuclear medicine resident preparing for your board exams or a veteran clinician, the *Nuclear Medicine Self-Study Program Series in Nuclear Medicine Cardiology* will meet your self-assessment needs. Each book includes an extensive list of annotated references, questions and answers with critiques, along with an authoritative

syllabus review of the topic.

Topic 1: Physical and Technical Aspects of Nuclear Cardiology
Softcover, 95 pp., 1997

RSNA Member Price \$31.50

Topic 2: Pharmacologic Stress

Softcover, 195 pp., 1998

RSNA Member Price \$56.70

Topic 3: Cardiac PET Imaging and Topic 4: Radionuclide Assessment of Congenital Heart Disease
Softcover, 127 pp., 1998

RSNA Member Price \$44.10

Topic 5: Myocardial Perfusion Scintigraphy—Technical Aspects
Softcover, 218 pp., 2001

RSNA Member Price \$107.10

Topic 6: Myocardial Perfusion Scintigraphy—Clinical Aspects
Softcover, 396 pp., 2001

RSNA Member Price \$163.80

BOOK

Self-Study Program IV: Oncology

Series Editor: Thomas P. Haynie, MD

This new anthological volume demonstrates the interplay of nuclear medicine with oncology and the progression of the field in the last eight years. Each topic is presented in a consistent format: educational material, annotated reference list, multiple-choice test and answers—with explanations—to the test questions. Qualifies for Category 1 continuing education credit. Softcover, 416 pp., 2004

RSNA Member Price \$56.70

BOOK

Guide for Diagnostic Nuclear Medicine and Radiopharmaceutical Therapy

Jeffry Siegel, PhD

Combination reference manual for nuclear medicine professional who want to bring their departments and institutions into compliance with the recently revised requirements of 10 CFR Part 35. This guide surveys the Nuclear Regulatory Commission (NRC) regulations and radiation protection policies applicable to diagnostic and therapy nuclear medicine and includes interpretations and specific, step-by-step measures that practitioners may use to facilitate implementation and ongoing compliance. Softcover, 110 pp., 2004

RSNA Member Price \$49.50

CD-ROM

Basic Science Module

The *Basic Science Module* CD-ROM offers 22 hours of education toward the requirement mandated by the Nuclear Regulatory Commission for program requirements for residency education in nuclear medicine. This training module covers the basic science associated with the field of nuclear medicine including radiation science, radiation detection and instrumentation, the operation of the gamma camera, emission tomography, radiochemistry and radiopharmacy, radiation biology and radiation safety.

RSNA Member Price \$17.95

Continued from previous page



Medical Physics Publishing

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■ 4513 Vernon Blvd.
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BOOK & CD-ROM

Intensity-Modulated Radiation Therapy: The State of the Art

Jatinder Palta and T. Rockwell Mackie, eds.

Presents a snapshot of the current IMRT planning and delivery technology. Discusses issues that confront safe implementation of IMRT and encourages reflection on its future. A "handbook" that will aid both experienced radiation oncology physicists and newcomers to the field.

RSNA Member Price \$80.00

BOOK

The Expanding Role of Medical Physics in Diagnostic Imaging

G. Donald Frey and Perry Sprawls, eds.

Provides a broad-based review of the status of radiographic and fluoroscopic imaging and emphasizes the expanding functions that medical physicists are providing in the transition from the traditional imaging environment to the fully digital imaging environment. 583 pp.

RSNA Member Price \$60.00

BOOK

Practical Digital Imaging and PACS

Anthony Seibert, Larry Filipow and Katherine Andriole, eds.

Emphasizes the new advances in imaging technology, covering all of the inherently digital imaging modalities such as computed radiography, CT, MRI, ultrasound and nuclear medicine. 577 pp.

RSNA Member Price \$50.00

BOOK

General Practice of Radiation Oncology Physics in the 21st Century

Almon Shiu and David Mellenberg, eds.

Includes specifications, performance expectations, quality-assurance testing, works-in-progress/ futures and general philosophies and is designed to enable readers to begin the implementation of these technologies at their facilities. 368 pp.

RSNA Member Price \$60.00



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■ Suite 1102
Fo Tan Industrial Center
26-28 Au Pui Wan Street
Fo Tan, Shatin, Hong Kong

Order online at: app.tech-ex.com/share/RSNASubform2003E.pdf

JOURNAL

International Medical Devices (IMD)

International Medical Devices (IMD) furnishes China's healthcare field with vital information on the latest developments in this vibrant industry. IMD is distributed to general and military hospitals across China. It is supported by the Department of Pharmaceutical Administration of State Economic and Trade Commission and the Bureau of Drugs and Medical Instruments of Health Department of General Logistics Department of the PLA, etc. (12 issues)

RSNA Member Price \$58.80



Medical Interactive

■ 370 Calle La Montana
Moraga, CA 94549
(925) 284-1024
www.medinter.com/rsna.htm

CD-ROM

Gamuts in Radiology Version 4.0

By Maurice M. Reeder, M.D., with MRI Gamuts by William G. Bradley Jr. and Ultrasound Gamuts by Christopher R. Merritt

The innovative and versatile *Gamuts In Radiology 4.0* contains the entire *Gamuts in Radiology 4th Edition* textbook, plus more than 5,000 radiographic images. *Gamuts 4.0* covers every modality of radiologic imaging, including ultrasound, CT, MRI, mammography, angiography and plain films.

- A 19-member expert editorial board has reviewed, expanded and updated the existing gamuts, including references, and then added over 300 new gamuts (primarily in ultrasound, MRI and CT). *Gamuts 4.0* now has more than 1,700 lists of differential diagnoses!
- Over 4,000 new images have been added. *Gamuts 4.0* now totals over 5,000 teaching images, making it the ultimate teaching resource for radiologist and resident training, and board review.
- Using its exhaustive database of over 6,500 individual diagnoses and disease entities, *Gamuts 4.0* combines the strengths of artificial

and human intelligence. The highly innovative Computer-Assisted Radiological Diagnosis System contained on the CD allows the radiologist to accurately make diagnoses or suggest a very limited differential diagnosis in problem cases. *Gamuts 4.0* is an essential component of any PACS or RIS system for solving complex cases and making diagnoses at the viewbox.

RSNA Member Price \$247.00

CD-ROM

Essentials of Radiology

By Judith Korek Amorosa, M.D.

The *Essentials of Radiology* is designed to teach the basics of current radiology practice. It is useful for medical students (starting at any level), residents of all specialties, clinical colleagues, physician assistants, nurse practitioners, nurses, technologists, hospital administrators, managed care administrators, lawyers and lay support groups. This CD-ROM contains over 330 interactive cases using the well-established teaching methods of Dr. Lucy Squire. In all, there are over 900 questions included in the course and over 2,300 images (including x-ray, CT, HRCT, MRI, nuclear imaging, static ultrasound, real-time ultrasound and real-time fluoroscopy). This is truly a comprehensive overview of the essentials of radiology and represents over 50 hours of radiology instruction for the beginning student.

RSNA Member Price \$125.00



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CD-ROM

Interactive Head & Neck

Bary Berkovitz, Claudia Kirsch, Bernard J. Moxham, Ghassan Alusi, Tony Cheeseman

Detailed and labeled 3D model of the head and neck that can be rotated and layers of anatomy added or stripped away. 3D model is supplemented by text, MRI, clinical slides, video clips and 3D animations.

RSNA Member Price: \$250.00

CD-ROM

Interactive Spine

Hilali Noordeen, Hazem Elsebaie, Alan Crockard, Robert B. Winter, John Lonstein, Ben Taylor, Roger Soames, Peter Renton, Stewart Tucker, Lester Wilson, Joseph J. Crisco

Detailed and labeled 3D model of the entire spine that can be rotated and layers of anatomy added or stripped away. 3D model is supple-

mented by text, MRI, clinical slides, video clips and 3D animations.

RSNA Member Price: \$250.00

CD-ROM

Interactive Shoulder

Stephen Copeland, Louis U. Bigliani, Roger Emery, Andrew Amis, Andrew Chippindale, David W. Stoller

Detailed and labeled 3D model of the shoulder, forearm and elbow that can be rotated and layers of anatomy added or stripped away. 3D model is supplemented by text, MRI, clinical slides, video clips and 3D animations.

RSNA Member Price: \$250.00

CD-ROM

Interactive Hip

Andrew Chippindale, Fares Haddad, Jorge Gallante, Marchi Maheson, Sarah Muirhead-Allwood, Edmund Chao, David W. Stoller

Detailed and labeled 3D model of the hip joint and upper leg that can be rotated and layers of anatomy added or stripped away. 3D model is supplemented by text, MRI, clinical slides, video clips and 3D animations.

RSNA Member Price: \$250.00

CD-ROM

Interactive Knee

Paul Aichroth, Vishy Mahadevan, Justin M. Harris, David W. Stoller

Detailed and labeled 3D model of the knee that can be rotated and layers of anatomy added or stripped away. 3D model is supplemented by text, MRI, clinical slides, video clips and 3D animations.

RSNA Member Price: \$250.00

CD-ROM

Interactive Foot & Ankle

Vishy Mahadevan, Robert Anderson, Lloyd Williams, Penny Renwick, David W. Stoller

3D model of the foot and ankle that can be rotated and layers of anatomy added or stripped away. 3D model is supplemented by text, MRI, clinical slides, video clips and 3D animations.

RSNA Member Price: \$250.00

CD-ROM

Interactive Hand

D.A. McGrouther, Judy C. Colditz, Justin M. Harris, David W. Stoller

3D model of the hand, wrist, forearm and elbow that can be rotated and layers of anatomy added or stripped away. 3D model is supplemented by text, MRI, clinical slides, video clips and 3D animations.

RSNA Member Price: \$250.00

CD-ROM

Sports Injuries: The Knee

Paul Aichroth, Roger Wolman, Tracy Maunder, Andrew Amis, Anthony Bull

3D model of the knee that can be rotated and layers of anatomy added or stripped away. 3D model is supplemented by sports injuries, rehabilitation and biomechanics text, clinical slides, video clips and 3D animations.

RSNA Member Price: \$250.00

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Journal Highlights

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

Obstructive Sleep Apnea in Pediatric Patients: Evaluation with Cine MR Sleep Studies

OBSTRUCTIVE sleep apnea is a common cause of morbidity in children and is associated with a number of cognitive and medical problems. Cine MR imaging sleep studies are helpful in depicting both anatomic causes of obstructive sleep apnea and dynamic patterns of airway collapse—data that can be helpful in surgical decision making.

Radiology

In a “How I Do It” report in the

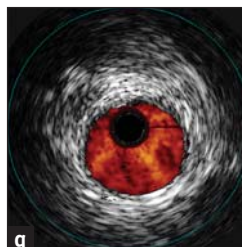
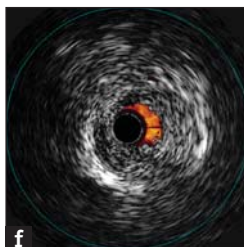
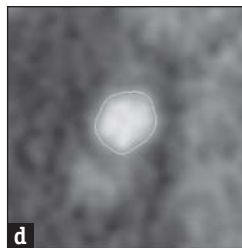
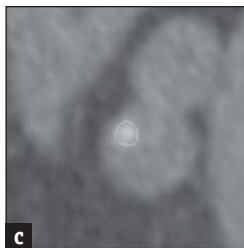
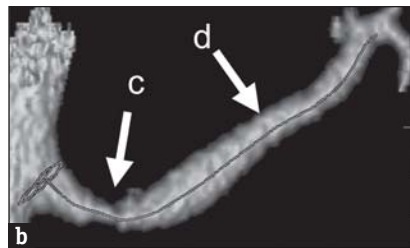
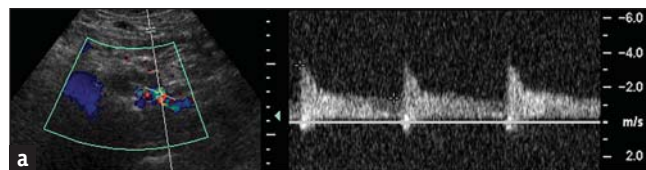
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Sagittal midline T1-weighted SE MR images illustrate terminology and definitions for anatomy of the supraglottic airway.

(a) Anatomy in a 14-year-old boy with cerebral palsy. Nasopharynx (light green) is defined as the aerated space bordered by soft palate anteriorly, adenoids posteriorly, and nasal turbinates anteriorly and superiorly. The inferior border is defined by the inferior tip of the uvula. Oropharynx (gray) is defined as the aerated space bordered by hard palate superiorly, tongue inferiorly, and soft palate posteriorly. Hypopharynx (dark green) is defined as the aerated space bordered by posterior aspect of tongue anteriorly, posterior pharyngeal wall posteriorly, and inferior aspect of soft palate anteriorly. The inferior border is defined by the inferior extent (or base) of the tongue. (b) More typical configuration encountered during normal sleep in a 9-year-old boy. The mouth is closed and the oral cavity (small arrowheads) is collapsed. The hypopharynx (arrows) and nasopharynx (large arrowhead) are patent.

(Radiology 2005;236:768-778) © 2005 RSNA. All rights reserved. Printed with permission.



Quantitative Vascular Measurements in Arterial Occlusive Disease

ACCURACY in quantifying arterial occlusive disease requires an understanding of the relevant technical considerations and familiarity with the strengths and weaknesses of various imaging modalities in this setting.

Digital subtraction angiography (DSA) has long been the standard of reference for quantitative measurement. However, other imaging modalities, such as multi-detector row CT angiography, MR angiography, ultrasonography (US), and intravascular US are also used for vascular analysis. Under some conditions, DSA may not be the standard of reference.

RadioGraphics

In an article in the September-October

Continued on page 20

Left renal artery stenosis in a 65-year-old woman.

(a) Duplex US image shows a peak systolic velocity of 328 cm/sec in the left renal artery, a finding that suggests significant stenosis. (b) VR image (20° left anterior oblique angle) from multidetector CT data shows the levels at which cross-sectional images were obtained (c, d). (c, d) Cross-sectional images demonstrate a stenosis (c) causing 62 percent diameter reduction and 85 percent area reduction relative to the reference site (d). (e) DSA image (20° left anterior oblique angle) obtained prior to angioplasty shows 65 percent diameter stenosis in the left main renal artery. (f, g) Intravascular US images obtained at the stenotic site (f) and the distal reference site (g) show 60 percent diameter stenosis and 80 percent area stenosis with thick plaque (red-orange area).

Radiology in Public Focus

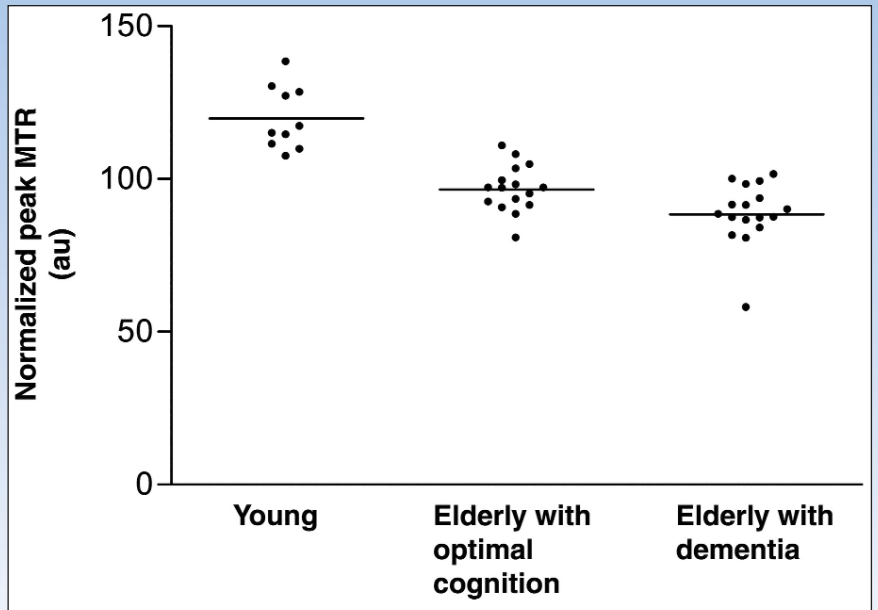
A press release has been sent to the medical news media for the following article appearing in the September issue of *Radiology* (rsna.org/radiologyjnl):

Structural Brain Damage and Total Cerebral Blood Flow in Patients with Late Onset Dementia

RESearchers from Leiden University Medical Center in the Netherlands have found more evidence that vascular factors contribute to dementia at old age.

Aart Spilt, M.D., and colleagues prospectively studied 17 patients over the age of 75 with a diagnosis of dementia, 16 subjects of the same age with optimal cognitive function, and 15 young healthy individuals.

While significantly lower total brain volume was found in all of the elderly people, those with dementia had significantly more white matter hyperintensities and lower magnetization transfer parameters, indicating more structural brain damage. Patients with dementia also had the lowest cerebral blood flow of the three groups.



Individual estimates of normalized peak magnetization transfer ratio in young subjects, elderly subjects with optimal cognitive function, and elderly subjects with dementia. Horizontal lines indicate the group mean. au=arbitrary units.

(*Radiology* 2005;237:990-995) © 2005 RSNA. All rights reserved. Printed with permission.



RSNA press releases are available at RSNA.org/media.

Media Coverage of Radiology

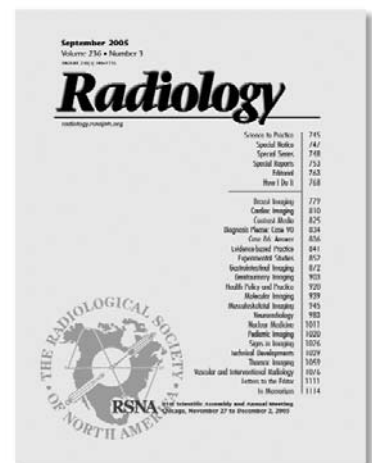
In July, more than 60 media outlets carried news stories generated from articles appearing in *Radiology*. These stories reached an estimated 65 million people.

Incidental findings at virtual colonoscopy (*Radiology* 2005;236:519-526) was featured in the *Los Angeles Times*. Other print coverage included *Charlotte Observer*, *South Florida Sun-Sentinel* and *The State*. The use of MR spectroscopy to improve breast cancer detection (*Radiology* 2005;236:465-475) was carried by Ivanhoe Broadcast News.

Previous stories continued to receive media attention. fMRI for presurgical

evaluation of patients with seizure disorder (*Radiology* 2005;236:247-253) was covered by *Suncoast News* (Fla.), United Press International and Reuters. Defensive medicine and mammography (*Radiology* 2005;236:37-46) was carried in the *Chicago Daily Herald* and *Kingsport Times-News* (Tenn.) and on radio station WIUS-FM (Ill.).

Online coverage included *latimes.com*, *baltimoresun.com*, *washingtontimes.com*, *Forbes.com*, *dallasnews.com*, *detnews.com* and Yahoo News!



Working For You

RSNA Membership Cards

ALL RSNA members were recently sent RSNA membership cards. These durable cards display your name and membership number. Keeping this number handy will help provide you with easy online access to RSNA benefits, such as *Radiology*, *RadioGraphics*, Education Center material and InteractED, annual meeting registration, and

access to your continuing medical education (CME) credits in the RSNA CME Credit Repository (RSNA.org/cme).

Important RSNA contact information is printed on the back of the cards, including the toll-free membership number, e-mail address and Web site information.



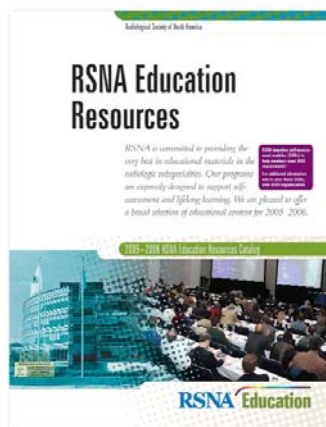
Look for Your RSNA Education Resources Flyer

A flyer highlighting the latest RSNA Education Center products, as well as some popular favorites, will be mailed with the September-October issue of *RadioGraphics*.

The flyer includes information about 2005 syllabi and CME programs that are available in print, online or on CD-ROM. Product descriptions include content codes to make it easier for RSNA members to identify their subspecialty area of interest.

RSNA members receive discounts on the Society's education products.

A comprehensive listing of RSNA education products is available online at RSNA.org/education/catalog.

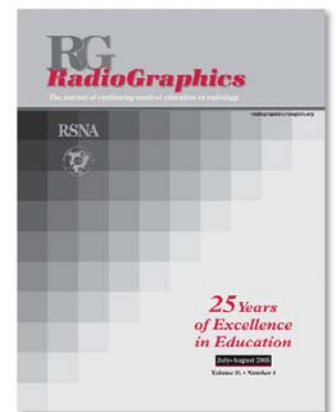


RadioGraphics Celebrates Silver Anniversary

Twenty-five years ago, RSNA launched *RadioGraphics*—a peer-reviewed journal devoted to radiology education. *RadioGraphics* debuted as a quarterly journal and included the best education exhibits offered at the RSNA annual meeting. Over the years, *RadioGraphics* expanded to a bimonthly journal, almost doubled in size and more than doubled in content (including a yearly subspecialty monograph issue), and added articles from the Armed Forces Institute of Pathology, continuing medical education (CME) activities, articles based on refresher courses and plenary sessions at the annual meeting, and a section on learning techniques.

For 25 years, *RadioGraphics* has been the source for quality radiology education. With the American Board of Radiology's new maintenance of certification requirements, *RadioGraphics* has become an even more important resource for physicians with CME exercises and self-assessment module (SAM) content.

In an editorial in the July-August issue of *RadioGraphics*, Editor William W. Olmsted, M.D., gives a brief history of the publication, describes the relevance of *RadioGraphics* in today's professional education environment, and provides his hopes for the future of the journal. To read the editorial, go to radiographics.rsna.org/cgi/content/full/25/4/879.



Continued on next page

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 Subscription Department at (1-877) RSNA-MEM [776-2636] (U.S. and Canada), (1-630) 571-7873 or membership@rsna.org.

Working For You

Continued from previous page

RSNA Advertising Department

ADVERTISEMENTS in RSNA publications not only support the Society's publishing and meeting activities financially, they also help fulfill RSNA's educational mission by keeping members informed about new products and services entering the market. The \$1.5 million in annual revenue from advertising provides support for the peer-reviewed journals, *Radiology* and *RadioGraphics*, and other benefits of membership, and allows the Society to produce a substantial number of informational materials about the RSNA annual meeting.

In addition to making sales calls to advertisers and potential advertisers, the Advertising Department works closely with the journal editors to ensure that the content of the advertisements is appropriate for a professional audience. The department also manages classified ads, a resume



(from left)
Jim Drew, Director
Judy Kapicak
Peggy Wingo-Wuchitech

Working for you
 DEPARTMENT PROFILE

database through RSNA Career Connection (RSNA.org/careers), and M.J. Mrvica Associates, east coast advertising representatives for the RSNA journals.

The Advertising Department reports to RSNA Assistant Executive Director Roberta E. Arnold, M.A., M.H.P.E.

Obstructive Sleep Apnea in Pediatric Patients: Evaluation with Cine MR Sleep Studies

Continued from page 17

September issue of *Radiology* (RSNA.org/radiologyjnl), Lane F. Donnelly, M.D., from Cincinnati Children's Hospital Medical Center, describes a program for the use of cine MR sleep studies in the evaluation of obstructive sleep apnea in children with certain categories of pathologic conditions. Discussion includes:

- Clinical indications
- Patient preparation

- Anatomic considerations
- MR technique
- Technical issues
- Image interpretation
- Commonly encountered diagnoses
- Volume segmentation processing of data
- Controversial areas

The article also includes "Essentials" or highlighted points to help busy readers recognize important information at a glance.

Quantitative Vascular Measurements in Arterial Occlusive Disease

Continued from page 17

issue of *RadioGraphics* (RSNA.org/radiographics), Hideki Ota, M.D., from the Tokohu University Graduate School of Medicine in Japan, and colleagues:

- Review technical considerations in the quantitative measurement of arterial occlusive disease

- Discuss and illustrate the use of imaging modalities, as well as various postprocessing techniques in this setting
- Highlight specific issues relating to the quantification of arterial occlusive disease in selected arteries

(*RadioGraphics* 2005;25:1141-1158)
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Program and Grant Announcements

NEW!

NIH Requests Information on Plan to Recognize Multiple PIs

The deadline is September 16, 2005, for input on a plan to permit multiple principal investigators (PIs) on applications and awards for federal research support.

Because modern biomedical research increasingly requires multidisciplinary or interdisciplinary teams, the National Institutes of Health (NIH) wants advice from the scientific community on various concepts associated with permitting more than one PI to be associated with an NIH-funded grant, contract or cooperative agreement.

Comments and opinions can be submitted online at grants.nih.gov/cfdocs/mult_pi/add_mult_pi.htm.



NEW!

Revitalizing the Radiology Research Enterprise

October 21-22, 2005 • Chicago Marriott Oak Brook

This RSNA program focuses on the challenges of and strategies for conducting research in radiology and radiation oncology departments. Geared toward department chairs and department research directors, the program will feature presentations, case studies and group discussions. As many as two representatives from each department may attend.

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

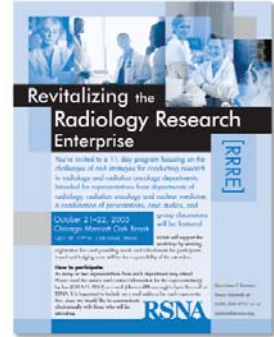


Image-Guided, Minimally Invasive Diagnosis & Treatment of Prostate Cancer

October 27-29, 2005 • Loews L'Enfant Plaza Hotel, Washington, D.C.

The 3rd international public conference on Innovative Solutions for Prostate Cancer Care will be held this fall in Washington, D.C. The goal of "Image-Guided, Minimally Invasive Diagnosis & Treatment of Prostate Cancer" is to review the current state of the art in and to expedite development and implementation of new technologies in the areas of prostate imaging and image-guided treatment.

This conference is sponsored and organized by AdMeTech, in cooperation with the National Cancer Institute and National Electrical Manufacturers Association.

For more information, go to www.admetech.org/conferences.php.

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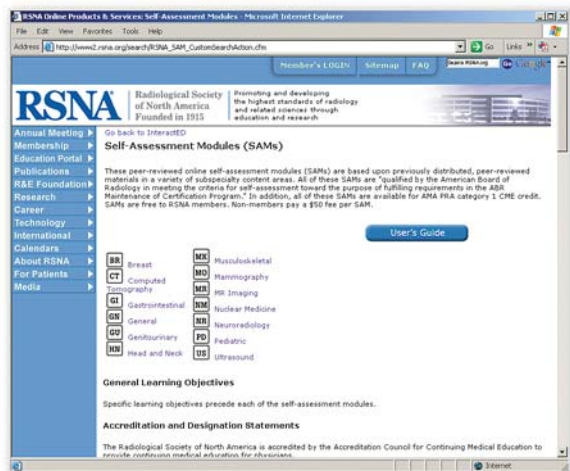
RSNA Business Strategies for Radiology Leaders

More than 100 people attended RSNA's Business Strategies for Radiology Leaders course in Chicago July 29-31.



Program and Grant Announcements

Continued from previous page



RSNA Online SAMs

RSNA began offering self-assessment modules (SAMs) in July to help members meet maintenance of certification (MOC) requirements.

New SAMs

- Post-Operative Breast
- Imaging of the Acute Upper Abdomen
- Imaging of the Middle and Inner Ear
- Bone and Joint Masses
- Head, Neck and Intracerebral Malignancy

SAMs Launched in July

- Pediatric CNS Neoplasms
- Thyroid & Parathyroid Scintigraphy
- Imaging of Adrenal Glands

These SAMs, plus others that will be available, are “qualified by the American Board of Radiology in meeting the criteria for self-assessment toward the purpose of fulfilling requirements in the ABR Maintenance of Certification Program.” Each SAM qualifies for 1 SAM credit, in addition to CME credits.

For more information, go to RSNA.org/education.

Now on InteractED

RSNA is now offering online CME courses from RSNA 2004. To view the refresher courses and cases of the day in specialties such as neuroradiology, ultrasound, pediatrics and breast, go to RSNA.org/education and click on InteractED.

Personal Financial Management Strategies Seminars

November 26, 2005 • McCormick Place, Chicago

RSNA is offering two personal financial management seminars prior to the RSNA annual meeting. **There is absolutely no sales pitch.**

Protecting Assets From Creditor Claims, Including Malpractice Claims

10:00 a.m. – 12:00 p.m.

Presented by Barry Rubenstein, B.S., J.D., L.L.M.

IN TODAY’S tort claim environment, a practitioner’s exposure to potential malpractice and creditor claims in excess of insurance coverage has dramatically increased. This course addresses, in essential detail, how to minimize and even avoid that exposure and protect hard-earned assets from creditor attack. *Includes a textbook written specifically for the course.*

Effective Real Estate Investment Strategies

1:00 p.m. – 5:00 p.m.

Presented by J. Michael Moody, M.B.A.

ASTUTE investors know that investment real estate pays steadier and higher cash returns than stocks do and that no other investment offers the combined advantages of cash flow, appreciation and tax shelter. This course will provide attendees with a strong foundation and working knowledge of investment real estate. *Includes a textbook written specifically for the course.*

For seminar questions, contact the RSNA Education Center at (1-800) 381-6660 x3747 or at ed-ctr@rsna.org. To register, go to RSNA.org/register.



Microbiology, Interventional Radiology and Cancer Research All in a Day's Work for RSNA Grant Recipient

WHEN ASKED how he would describe his career, Gordon McLennan, M.D., will tell you that he “casts a fairly wide net.” That’s safe to say, given that in addition to his teaching responsibilities as an assistant professor of radiology at Indiana University Medical Center (IU), he also directs IU’s Interventional Radiology Research Lab and its Radiology Research Program.

Dr. McLennan is among a handful of diagnostic radiologists focusing their research on the molecular basis of disease and translating this research into the development of therapies for use by interventional radiologists. In fact, he was hired by IU to expand the medical center’s program to incorporate molecular biology research into the work being done by their interventional radiologists.

Soon after joining the IU staff, Dr. McLennan developed a full-scale microbiology laboratory in the Department of Radiology, hired a microbiologist to work with him in the laboratory, and set out to develop molecular biology research projects geared toward achieving funding from the National Institutes of Health, the National Cancer Institute and other funding agencies.

“Our lab operates more like a surgical lab than a radiology research facility,” said Dr. McLennan. “I don’t do research in imaging. I perform research in therapies and how they affect their targets, whether that is venous stenosis or cancer. To be effective, you really have to know what’s happening at the cellular level as well as at the gross CT or imaging level.



Gordon McLennan, M.D.
Indiana University Medical Center

Molecular imaging is an attempt by radiologists to use imaging to answer questions, but the spatial resolution is never going to be the same as what you can see on a microscope on a dead piece of tissue.”

The lab at IU is currently bustling with government and corporate-funded research projects. The first grant of Dr. McLennan’s medical career was the 2002 RSNA Research Scholar Grant, which he received to examine the role of apoptosis in the occurrence of vein narrowing experienced by some dialysis patients.

Dr. McLennan and his team successfully created in pigs the equivalent of a human dialysis graft that induced vein narrowing. They then studied the

rate of cell death in the narrowed area of the vein as compared to the normal part of the vein. Dr. McLennan was surprised to find the opposite of what he had hypothesized about cell death. He found that cells in the narrowed area underwent more cell death than in the normal vein.

“Each time I go back to these data I try to figure out the reasons for that,” said Dr. McLennan. “My suspicion is that there is a balancing issue involved. In normal veins, many cells die because not many new cells are created. But in the narrowed area of the vein, a large number of new cells are created and many of them are dying. It’s probably that there are more cells being created than are dying.”

Continued on next page

**FUNDING
RADIOLOGY'S
FUTURE**



Continued from previous page

He considers the validation of his dialysis graft model to be a real accomplishment and said he thinks his work provided some good basic data that will be a valuable tool for future research.

At some point Dr. McLennan would like to return to this work on venous stenosis to further examine his balance theory, but for now, he is finalizing work on a promising new cancer therapy that has proved successful in producing high rates of apoptosis in rabbit tumors. The drug is metabolized by the liver into its inactive form, which allows it to attack cancer while still protecting the healthy liver.

"The anti-cancer drugs we've been working on for the last three to four years are very promising and may allow us to completely kill off certain types of cancer," said Dr. McLennan. "It's all a matter of time and resources. When you get a grant that pays, that's the one you're going to be working on."

Dr. McLennan says that his RSNA research really led him on a circuitous path to cancer research. "My focus on apoptosis translated easily from venous stenosis to cancer," he explained. "The disease often exists because cancer cells don't die properly. If we can induce these cells to be apoptotic, then we can shrink cancerous tumors."

In addition to scrambling to finalize projects, actively scouting and applying for promising research grants, and managing ongoing research projects, Dr. McLennan spends a good deal of his time fostering the career development of the talented professionals who work with him in his lab.

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Gordon McLennan, M.D.


"Dr. McLennan is the type of academic radiologist that will help our profession move ahead in the future," said Valerie Jackson, M.D., chair of the IU Department of Radiology. "He is not only an excellent interventional radiologist and popular

teacher, but he also gets people excited about radiologic research and has been a wonderful mentor to medical students, radiology residents and interventional radiology fellows."

Dr. McLennan said that the RSNA

Research Scholar Grant opened his eyes to the idea of using grants offered by various medical societies to further the research careers of capable young medical professionals. "I benefited from the system, and when I became an established faculty member I began to look for ways to bring the students along," he said. "I figure if I can generate one or two new physician-scientists every couple of years, that's not a bad start."

Dr. McLennan attended The John Hopkins University before pursuing his medical degree at the Medical College of Virginia. He completed his residency in diagnostic radiology at Mercy Catholic Medical Center, his fellowship in interventional radiology at IU and then worked as a visiting lecturer before joining the IU staff in 2000. □

 For more information on R&E Foundation grants, to to RSNA.org/research/foundation/programs.html.

2005-2006 New Grant Awards

THE RSNA Research & Education Foundation will provide \$1.1 million in fiscal year 2005-2006 for 24 new grants and two continuing grants.

New Grants

TYPE	NUMBER
Research Scholar Grant	1
Research Fellow Grant	1
Research Resident Grant.	7
Research Seed Grant.	7
Holman Pathway Research Resident Seed Grant	2
World Wide Web-Based Educational Program Grant.	2
Institutional Fellowship in Radiologic Informatics	1
Institutional Clinical Fellowship in Cardiovascular Imaging.	2
RSNA/AUR/APDR/SCARD Radiology Educational Research Development Grant.	1

Continued Grants

Research Fellowship in Basic Radiologic Sciences.	1
International Radiology Education Program Grant to "Teach the Teachers" from Emerging Nations	1



Research & Education Foundation Donors

THE BOARD OF TRUSTEES of the RSNA Research & Education Foundation and its recipients of research and educational grant support gratefully acknowledge the contributions made to the Foundation **July 1 – 28, 2005.**

For more information on Foundation activities, a quarterly newsletter, *Foundation X-aminer*, is available online at RSNA.org/research/foundation/newsletters/x-aminer/x-aminer.pdf.

VISIONARIES IN PRACTICE

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EXHIBITOR'S CIRCLE

DeJarnette Research Systems



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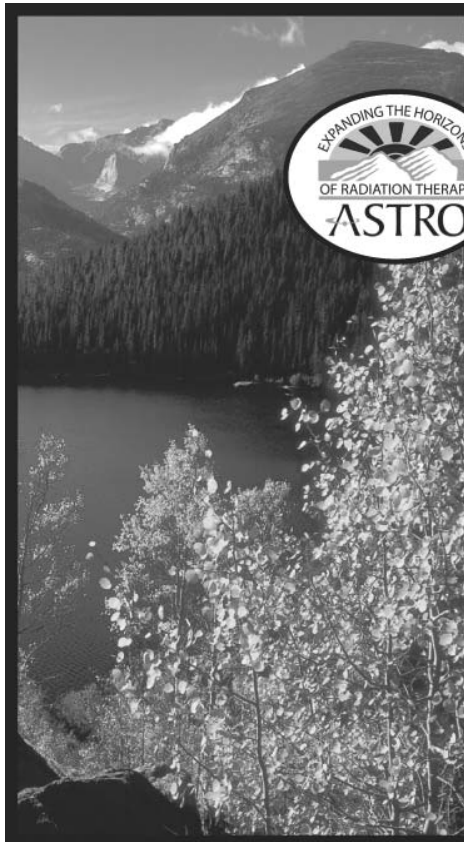
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Register online at www.astro.org/annual_meeting.

Product News

NEW PRODUCT

New PET/CT Scanner

GE HEALTHCARE (www.gehealthcare.com) has introduced a new PET/CT system designed to help physicians detect, diagnose and monitor treatment of cancer and other diseases more accurately and earlier in the disease process.

The Discovery STE is a fusion of the high-speed, high-resolution capabilities of GE's CT scanner with the metabolic and physiologic capabilities of its industry leading PET scanner.

"The PET image shows concentrations of cancer cells in a color spectrum just as weather radar shows varying concentrations of precipi-

tation. The anatomical image generated by the CT scan acts as the 'map' showing physicians precisely where the cancer is located. The Discovery platform combines both of these images and, like television radar, pinpoints activity and location fused into one image," said Hadi Moufarrej, general manager of global functional imaging at GE Healthcare.



NEW PRODUCT



Expanded DICOM Product for Portable Media

ETIAM medical imaging (www.etiam.com) has updated its DICOM LiteBox viewer for portable media with new features, including annotation tools, an extended MPR function and enhanced measurement options.

DICOM LiteBox is a universal DICOM viewer that integrates with DICOM portable archiving systems, such as CD/DVD recorders, and other offline media distribution appliances, so that radiologists and referring physicians can easily select, visualize, compare and assess DICOM media content.

NEW PRODUCT

Updated Voice Recognition Software

MedQuist Inc. (www.medquist.com) has released version 1.1 of its voice recognition software SpeechQ for Radiology™.

The updated version includes new features, such as enhanced auto-text, alternative words, voice-enabled instructions for notes to the transcriptionist, and enhanced command and control options that allow hands-

free scrolling, navigating and editing.

"The enhancements and new features in the SpeechQ for Radiology product provide radiologists with even more control of their report creation process and streamlines an already efficient workflow," said Terry Cameron, MedQuist's senior vice-president of marketing.

FDA APPROVAL

Versatile Digital Radiography System

Eastman Kodak Company (www.kodak.com/go/health) has received 510(k) clearance from the Food and Drug Administration (FDA) for the new KODAK DIRECTVIEW DR 7500 system.

The digital radiography (DR) system offers increased flexibility, enabling medical facilities of any size to configure a digital x-ray solution that meets their individual space, application, workflow and budget requirements.

The DR 7500 system features a unique wall stand capable of three-axis movement to capture a wide range of upright, hori-



zontal and cross-table projections. The system also features a floor-mounted table that elevates and has a four-way float that provides flexible patient positioning. Auto-positioning capability moves the equipment to predefined positions with a press of a button.

News about RSNA 2005

Registration Materials

NORTH AMERICANS who register for RSNA 2005 by **November 11** will have their registration materials mailed to them in advance of the annual meeting. International attendees will have their materials mailed to them if their registration forms are received by **October 28**. If registered after October 28, international documents will be available for pick-up onsite at Professional Registration.

The registration materials are sent in a badge wallet that includes:

- Name badge and holder
- Attendance vouchers for category 1 CME credit and Category A CE credit
- Refresher course and *infoRAD* tickets (if requested)
- Tours and events tickets (if requested)
- Coupon book
- ExpoCard™
- *Pocket Guide*
- Airport shuttle discount coupon
- Free pass for the Metra Train System

Name Badge

You must wear your name badge at McCormick Place to attend RSNA courses or events, or to enter the exhibit halls. The bar code on the name badge will be scanned upon entry and exit of the exhibit halls. Data accumulated from the scanning process will be used only by RSNA to determine exhibit hall activity.

Enroll for Courses

Seats are still available in many of the courses at RSNA 2005. Online registration occurs instantly while faxed or mailed registration forms are processed in the order of receipt. The Advance Registration, Housing and Course Enrollment brochure and online registration are available at rsna2005.rsna.org.

An Interventional Oncology Symposium, cosponsored by RSNA and the SIR Foundation, is being offered at RSNA 2005 and can be found under the course enrollment section. More information about the symposium is avail-

able on pages 6-7.

A new Digital Mammography Training and Self-Assessment Workshop will be held in the Lakeside Center of McCormick Place. The course will be offered several times per day, each day Sunday – Thursday. Since enrollment is limited to 24 per session, advance registration is advised. More information about the workshop will be included in the October issue of *RSNA News*.

You must be registered for RSNA 2005 in order to enroll for courses.

Earn up to 83 AMA PRA category 1 CME credits at RSNA 2005

24 per session, advance registration

How to Register

There are four ways to register for RSNA 2005:

1 Internet

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

2 Fax (24 hours)

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

3 Telephone

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

4 Mail

ITS/RSNA 2004
108 Wilnot Rd.,
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Deerfield, IL
60015-5124
USA

Registration Fees

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

For more information about registration at RSNA 2005, visit RSNA.org, e-mail reginfo@rsna.org or call (1-800) 381-6660 x7862.

Important Dates for RSNA 2005

- Oct. 28** International deadline to have full-conference badge and tickets mailed in advance
- Nov. 7** Final housing reservation deadline
- Nov. 11** Advance registration deadline
- Nov. 27– Dec. 2** RSNA 91st Scientific Assembly and Annual Meeting



RSNA2005
Connecting for Lifelong Learning

91st Scientific Assembly and Annual Meeting
November 27 – December 2, 2005
McCormick Place, Chicago

RSNA 2005 Exhibitor News

Update Your Exhibitor Listing

TECHNICAL EXHIBITORS at RSNA 2005 should update their company contact information by **September 30, 2005**, to ensure the latest information is printed in the *Meeting Guide* section of the *RSNA Daily Bulletin*. The *Meeting Guide* will be available in newspaper bins located throughout McCormick Place.

The *Meeting Guide* will include your company name, address, phone and fax numbers, Web site address and booth number. The *Meeting Guide* will also include floor maps of McCormick Place and important schedules of events.

To update a company profile, go to rsna2005.rsna.org, click on Already an Exhibitor in the right-hand section, and then click on Update Your Exhibitor Listing.



Submission Deadline for New Products

All exhibitors can take advantage of a free promotional outlet for the new products and services they will be offering at RSNA 2005.

The *RSNA Daily Bulletin* features a daily *New Products and Services* section.

The deadline to submit materials for the section is **October 12, 2005**. For specific details and submission requirements, see the Technical Exhibitor Service Kit at RSNA.org/rsna/te/servicekit/service-kit.htm.

Free Promotional Tools for Exhibitors

As part of the Technical Exhibitor Service Kit, RSNA has included free promotional tools to help exhibitors make customers and potential customers aware of their booth location at the annual meeting.

Postcards and flyers can be customized with an exhibitor's logo, message and exhibit location. Downloadable images are also available for the creation of other customized promotional materials.



Important Exhibitor Dates for RSNA 2005

Sep. 2	Deadline for submission of freeform/peninsula/mobile exhibit plans
Sep. 19	Target move-in assignments released
Oct. 12	RSNAnet early bird deadline News Products submission deadline
Oct. 14	Exhibitor Appointed Contractor Request Form deadline
Oct. 21	Attendee mailing list request deadline
Oct. 28	Exhibitor booth giveaways approval deadline
Oct. 28	Raffle notification form deadline
Oct. 28	Exhibitor badge order deadline
Nov. 4	Housing changes and cancellations deadline Exhibitor individual housing deadline Function space requests deadline
Nov. 11	Technical exhibit space assignments close
Nov. 27-Dec. 2	RSNA 91st Scientific Assembly and Annual Meeting

For up-to-date information about technical exhibits, go to rsna2005.rsna.org.

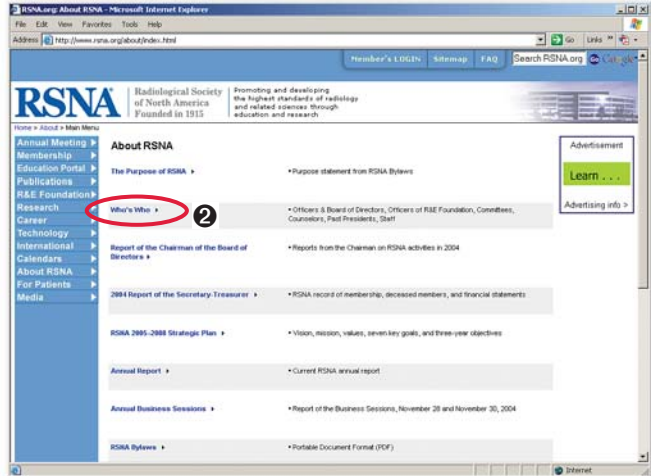
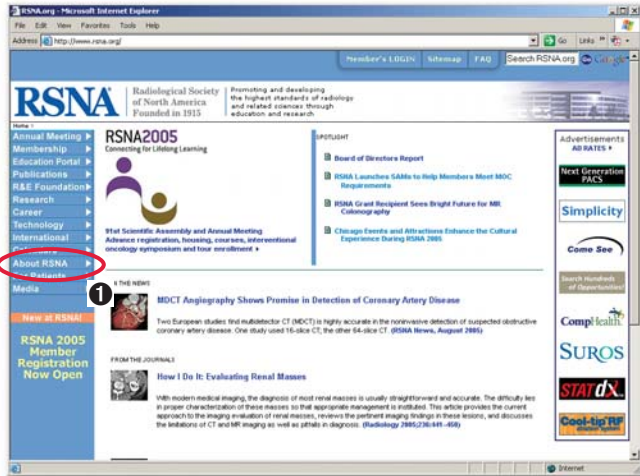
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■ For more information, contact RSNA Technical Exhibits at (1-800) 381-6660 x7851 or e-mail exhibits@rsna.org.

RSNA.org



Who's Who at RSNA

WANT to know more about the physicians who generously volunteer their time, talent and expertise to RSNA and the RSNA Research & Education Foundation?

Go to *RSNA.org* and click on About RSNA ① in the left-hand column, and then click on Who's Who. ②

If you click on the names of the Board members, you can view a short biography, or you can scroll down and click on Committees for 2005 ③ to view the RSNA Committees and members of those committees.



Connections

Your online links to RSNA

RSNA.org

Radiology Online
RSNA.org/radiologyjnl

Radiology Manuscript Central
RSNA.org/radiologyjnl/submit

RadioGraphics Online
RSNA.org/radiographics

RSNA News
rsna-news.org

Education Portal
RSNA.org/education

CME Credit Repository
RSNA.org/cme

CME Gateway
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RSNA Medical Imaging Resource Center
RSNA.org/mirc

RSNA Career Connections
RSNA.org/careers

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Register for RSNA 2005
RSNA.org/register

RSNA 2005
rsna2005.rsna.org

Medical Meetings

October – November 2005

SEPTEMBER 28–OCTOBER 1

International Skeletal Society (ISS), 32nd Annual Refresher Course, Raffles City Shopping and Convention Centre, Singapore • www.iss2005.com

SEPTEMBER 29–OCTOBER 2

Canadian Association of Radiology (CAR), 68th Annual Scientific Meeting, Fairmont Château Lake Louise, Alberta, Canada • www.car.ca

OCTOBER 5–8

II Iberian Forum on Telemedicine: Teleradiology in the Digital Era, Expoveiras, Viseu, Portugal • www.fitelemed.org

OCTOBER 6–8

Society of Chairmen of Academic Radiology Departments (SCARD), Fall Meeting, Silverado Resort, Napa, Calif. • www.scardonline.org

OCTOBER 8–11

North American Society for Cardiac Imaging (NASCI), 33rd Annual Meeting & Scientific Sessions, Ritz-Carlton, Amelia Island, Fla. • www.nasci.org

OCTOBER 9–12

Radiology Business Management Association (RBMA), Fall Educational Conference, Westin, Seattle • www.rbma.org

OCTOBER 12–15

Sociedad Panameña de Radiología, 25th Central American Congress of Radiology, Hotel Continental, Panama City • www.spri.org.pa

OCTOBER 16–20

American Society for Therapeutic Radiology and Oncology (ASTRO), 47th Annual Meeting, Colorado Center, Denver • www.astro.org

OCTOBER 19–21

Spanish Society of Breast Imaging (SEDIM) and Interamerican College of Radiology (CIR), 9th International Course and 1st Iberoamerican Congress of Breast Imaging, Hotel Meliá-Castilla, Madrid, Spain • www.sedim.es

OCTOBER 20–23

International Society for Magnetic Resonance in Medicine (ISMRM) & Sociedad Mexicana de Radiología e Imagen (SMRI), 1st Joint Course on Magnetic Resonance: State of the Art, Royal Pedregal Hotel, Mexico City • www.ismrm.org

OCTOBER 21–23

Royal College of Radiologists & Hong Kong College of Radiologists, 13th Annual Scientific Meeting, Hong Kong Academy of Medicine Jockey Club Building, Aberdeen, Hong Kong • www.hkcr.org

OCTOBER 27–29

Image-Guided, Minimally Invasive Diagnosis & Treatment of Prostate Cancer, AdMeTech/National Cancer Institute/National Electrical Manufacturers Association, Loews L'Enfant Plaza Hotel, Washington, D.C. • www.admetech.org

OCTOBER 27–29

International Society for Therapeutic Ultrasound (ISTU), 5th Annual Meeting, Harvard Medical School Conference Center, Boston • www.istu2005.org

OCTOBER 28–30

Society of Radiologists in Ultrasound (SRU), 15th Annual Meeting, Fairmont Hotel, Chicago • www.sru.org

OCTOBER 30–NOVEMBER 3

Federation of European Cancer Societies, European Cancer Conference (ECCO 13), Palais de Congres, Paris • www.fecs.be

NOVEMBER 12–14

Colégio Brasileiro de Radiologia, 34th Congresso, Meliá, Brazil • cbr.org.br

NOVEMBER 26

Protecting Assets From Creditor Claims, Including Malpractice Claims, RSNA Education Center, McCormick Place, Chicago • RSNA.org/education

NOVEMBER 26

Effective Real Estate Investment Strategies, RSNA Education Center, McCormick Place, Chicago • RSNA.org/education

NOVEMBER 27–DECEMBER 2

RSNA 2005, 91st Scientific Assembly and Annual Meeting, McCormick Place, Chicago • rsna2005.rsna.org

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