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“Wearable PET,” Time-of-Flight Technology Aid Brain and Cancer Research

ALSO INSIDE:

- Submarine Technology Advances
Stroke Diagnosis, Treatment
- Animal, Human Interaction Reduce
MR Imaging Anxiety
- Radiology Could Play Major Role
as Japan’s Recovery Continues
- “Rebound” Research Could Aid
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See Page 1**

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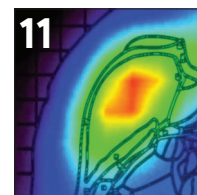
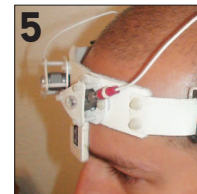
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RSNA 2011 LECTURERS ANNOUNCED



ANNUAL ORATION IN DIAGNOSTIC RADIOLOGY

Neuroimaging and the Search for a Cure for Alzheimer's Disease

Jeffrey R. Petrella, M.D.
Durham, N.C.

ANNUAL ORATION IN RADIATION ONCOLOGY

Proton Beam Therapy: Applications and Future

Stephen M. Hahn, M.D.
Philadelphia

NEW HORIZONS LECTURE

Mechanistic Imaging—MR-PET, 7.0 T MRI, and Beyond

A. Gregory Sorensen, M.D.
Cambridge, Mass.

OPENING SESSION

Bleeding Edge Imaging and Therapy in Vascular Disease

Zahi A. Fayad, Ph.D.
New York

CT Angiography: 20 Years Old and All Grown-Up

Geoffrey D. Rubin, M.D.
Durham, N.C.

SPECIAL LECTURE

Memory and the Aging Brain

Gary W. Small, M.D.
Los Angeles

AAPM SYMPOSIUM

Japan Nuclear Crisis

Marvin S. Fertel
Washington, D.C.

CT 2020

Norbert J. Pelc, Sc.D.
Stanford, Calif.



Petrella



Hahn



Sorensen



Fayad



Rubin



Small



Fertel



Pelc

PQRS Maintenance of Certification Incentive Available Via ABR

The Centers for Medicare & Medicaid Services (CMS) has conditionally qualified the American Board of Radiology (ABR) for participation in the 2011 Physician Quality Reporting System (PQRS) Maintenance of Certification (MOC) Program Incentive, clearing the way for ABR MOC participants to have access to the additional incentive.

Effective for calendar 2011, physicians who meet certain requirements may have their applicable PQRS quality incentive increased by 0.5 percent. ABR

will provide an annual submission of physician MOC participation data directly to the CMS to qualify MOC participants already participating in the PQRS to receive the additional payment incentive. This is the only pathway by which the MOC PQRS incentive may be obtained.

Specific requirements for participating in the MOC PQRS program incentive for diagnostic radiology and radiation oncology time-limited and lifetime certificate holders can be found at www.theabr.org.

RSNA News Tablet App Now Available

Users of tablet PCs can now download the *RSNA News* app—a new, easy-to-navigate way to experience important radiology news and essential RSNA information:

To download the *RSNA News* app, search “RSNA News” on the Android Market or iTunes, or go directly to the following URLs:

- Android Market: market.android.com/details?id=air.org.rsna.rsna-news
- iTunes: itunes.apple.com/us/app/rsna-news/id444083170?mt=8&ls=1

RSNA Editorial Fellows Announced

John A. Carrino, M.D., M.P.H., an associate professor of radiology and orthopedic surgery and section chief for musculoskeletal radiology at The Johns Hopkins University, has been named the 2011 RSNA Eyer Editorial Fellow. **Tara Ann Morgan, M.D.**, a fourth-year resident in the University of Maryland (UM) Department of Radiology, is the 2011 Trainee Editorial Fellow.

Dr. Carrino has served as principal investigator on several grant projects, including a current one funded by the National Institutes of Health to study image overlay for MR-guided needle insertions. Author and co-author of more than 30 peer-reviewed publications, review articles and book chapters, Dr. Carrino serves on the editorial boards of the *Journal of Digital Imaging* and *Seminars in Musculoskeletal Radiology*, is an associate editor of *Arthritis and Rheumatism Imaging* and conducts peer-review for numerous other journals.

“My personal career goal is to develop a balance among the traditional academic triumvirate of research, clinical work and education,” Dr. Carrino wrote in his Eyer fellowship application. “Administration has become the fourth tier of an academic career. To me, radiology journalism is an amalgam of these facets of academic medicine.”

Dr. Morgan will begin a fellowship in abdominal imaging next year at the University of California, San Francisco. She is currently working on a project comparing the role of conventional and advanced MR imaging in spinal cord injuries.

A reviewer for *RadioGraphics* since December 2010, Dr. Morgan also serves as the news magazine cover editor for the Society of Imaging Informatics in Medicine. Her article, “Acute Traumatic Aortic Injuries: Post-therapy Multidetector CT Findings,” in the July 2010 issue of *RadioGraphics* was among the first in the imaging literature to allow the reader to interact with the full dataset online.

“I found the innovative and pioneering aspects of this project to be truly inspirational,” Dr. Morgan wrote in her application. “I have since become excited about the future of radiology publications, especially the use of interactive material that attempts to simulate the experience of the radiologists at the workstation.”

Both fellows will work with *Radiology* Editor Herbert Y. Kressel, M.D., in Boston and *RadioGraphics* Editor William W. Olmsted, M.D., in Bethesda, Md.



Carrino



Morgan

The Eyer fellowship lasts one month and trainee fellowship lasts one week. Each fellow will also visit the RSNA Publications and Communications Division at RSNA Headquarters in Oak Brook, Ill. Dr. Carrino will also work with the RSNA editorial team at RSNA 2011.

ESGAR Honors Maglinte

Dean D.T. Maglinte, M.D., Distinguished Professor of Radiology and Imaging Sciences at Indiana University School of Medicine in Indianapolis, was awarded honorary fellowship by the European Society of Gastrointestinal and Abdominal Radiologists (ESGAR) at the 22nd Annual Meeting and Postgraduate Course held in Venice, Italy, in May. Dr. Maglinte is a frequent contributor to *Radiology*.



European Society of Gastrointestinal and Abdominal Radiologists (ESGAR) President Yves Menu, M.D., (left) and founding member and ESGAR past-president Nickolas Gourtsoyiannis, Ph.D., (right), introduce Dean D.T. Maglinte, M.D., (center) at the society's award ceremony. Image courtesy of Nuno Saraiva/European Society of Gastrointestinal and Abdominal Radiologists (ESGAR)

Congress Sees Latest in Medical Imaging Technology

U.S. SENATORS AND HOUSE REPRESENTATIVES gathered in Washington in May to learn about the latest developments in medical imaging and the need to continue funding imaging research.

The "Impact of Imaging Research, Technology & Patient Care" event was presented by the Coalition for Imaging & Bioengineering Research (CIBR). RSNA is among the many societies represented on CIBR, a permanent partnership of academic research departments, scientific societies, patient advocacy organizations and imaging equipment manufacturers leading education and advocacy efforts for imaging research. CIBR seeks to link the benefits of imaging to improvements in patient care and show the potential cost savings of advanced imaging technologies.

Members of Congress talked with patient advocates, academic researchers and manufacturers and viewed displays explaining CT, novel MR imaging and decision support software. CIBR representatives focused on conveying how imaging research changes the detection, diagnosis and treatment of disease from which real patients suffer. Attendance of approximately 300 was more than double of that for the 2010 event.

RSNA Liaison-designate for Science Richard L. Ehman, M.D., of the Mayo Clinic in Rochester, Minn., introduced U.S. Sen. Amy Klobuchar (D-MN), who talked of the need for America to re-commit to an innovation economy led by the National Institutes of Health (NIH). Arthur Cassano, a CIBR patient advocate whose advanced imaging diagnosis at the University of Virginia helped him survive a brain aneurysm, called on policymakers to consider his story an example of how research is literally saving lives and reducing long-term care.

Keynote speaker and NIH Director Francis Collins, M.D., Ph.D., told members of Congress about recent accomplishments in imaging research, including CT to help diagnose Alzheimer disease and the success of the National Lung Screening Trial. Dr. Collins described his vision for the proposed National Center for Advancing Translation Sciences (NCATS) at NIH and explained how advanced imaging techniques can expedite promising new treatments for patients.

The Academy of Radiology Research, a non-profit organization dedicated to building a legislative and financial environment that favors imaging research, created CIBR in 2006 so that the voice in favor of imaging research would be both unified and diverse. In addition to the annual medical imaging showcase, CIBR sponsors briefings on Capitol Hill and facilitates Congressional visits to the NIH campus. RSNA Board Liaison for Science N. Reed Dunnick, M.D., is a member of the CIBR Steering Committee.

Forbes Elected ABRF Chair

Glenn S. Forbes, M.D., has been elected chair of the American Board of Radiology Foundation (ABRF) for a two-year term beginning this month. Dr. Forbes is a professor of radiology at Mayo Medical School, Rochester, Minn., where he has served as chair of the Department of Radiology, chair of the Executive Board of Mayo Clinic Rochester and as a member of the Board of Governors and Board of Trustees of Mayo Clinic. Past-first vice-president of RSNA, Dr. Forbes is a past-president and gold medalist of the American Society of Neuroradiology. He replaces **William R. Hendee, Ph.D.**, who is completing a two-year term of service.



RSNA Board Liaison-designate for Science **Richard L. Ehman, M.D. (center)**, talks with **William J. Heetderks, M.D., Ph.D.**, director of extramural science programs with the National Institute of Biomedical Imaging and Bioengineering (NIBIB), and **Cynthia H. McCollough, Ph.D.**, director of the CT Clinical Innovation Center at the Mayo Clinic in Rochester, Minn.



U.S. Sen. **Amy Klobuchar (D-MN)**, talked of the need for America to re-commit to an innovation economy led by the National Institutes of Health (NIH).

WEB EXTRAS

To view additional images from the Coalition for Imaging & Bioengineering Research event, go to rsnanews.RSNA.org.

Numbers in the News

2.5

Percent of patients who are unable to complete their MR exams due to anxiety, claustrophobia and other stress, costing institutions thousands of dollars per year.

Turn to Page 9 to learn about non-pharmaceutical means—including animal-assisted therapy and rapport and hypnotic techniques—being developed to help patients overcome these obstacles and complete the exams.

15.1

Percentage improvement in lesion detection in the lungs with time-of-flight (TOF) PET imaging, versus standard PET. TOF PET yielded an improvement in liver lesion detection of 8.3 percent. Read more about this technology to improve PET spatial resolution on Page 11.

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RSNA Research & Education Foundation Roentgen Resident/Fellow Research Awards made this year. Roentgen Awards recognize and encourage residents and fellows, nominated by their program directors or department chairs, who have played active and outstanding roles in radiologic research. See RSNA.org/Foundation/Roentgen.cfm for a list of awardees.

15,000

Estimated number of people killed by the earthquake and tsunami that struck Japan on March 11. Another 10,000 are believed missing. See Page 7 to learn how radiology could make its greatest contribution to the disaster recovery as the rebuilding continues and electricity and Internet are gradually restored.

My Turn

Deer in the Headlights: Lessons from Cardiac CT

Cardiac CT is a disruptive technology. As a result of its power, promise and public appeal, it is squarely in the crosshairs of the "less is more" crusaders aiming to redistribute dwindling resources. As such, the case of cardiac CT provides lessons on the challenges that our discipline as a whole is about to face.

Radiation from cardiac CT has been a pre-eminent talking point for pundits of various factions who meanwhile have broadened the discussion to encompass all radiologic imaging. Journal submissions projecting doomsday scenarios of radiation-related cancer deaths, however flimsy their premise and methodology, have a foolproof chance of getting published. The discussion about radiation, which we should naturally own, has largely been taken out of our hands. Yet our response is mostly reactionary and apologetic. Our field all too readily bought into the unsubstantiated claim that radiation from CT is harmful and promised to repent, instead of initiating a data-driven, forceful public discussion on the very real benefits of our diagnostic procedures.

Over its short history, cardiac CT has withstood various attempts to curb its growth. Meanwhile, growth in imaging as a whole is portrayed as the source of all

“We forget that we grow because we are good.”

U. Joseph Schoepf, M.D.

evil in rising healthcare costs. Again, we scurry to take measures to limit our own growth, without any compelling evidence that imaging is indeed overused. Why are we apologizing? In our culture, growth is an indicator of success and most leaders of industry would be deeply confused by the notion of deliberately limiting growth. Instead of caving in to outsiders opining, we should move front and center our diagnostic skills and the technology that underpins the state-of-the-art care that patients and physicians have come to rely on. We forget that we grow because we are good.

We should certainly subscribe to efforts aimed at reducing radiation; that

is an easy choice. Also, no one can argue with the goal of enhancing the appropriateness of imaging. But the motivation for such measures must not be driven by outside forces. Currently, we rush to decisions and make sweeping changes in an information vacuum, because others tell us to. The anti-imaging pundits, vociferous as they may be, do not have much evidence to support their claims. What our field needs is a unified front to assess the available evidence and offer objective conclusions about the true benefits and risks of medical imaging.

U. Joseph Schoepf, M.D., is a professor of radiology and cardiology and director of CT research and development in the Department of Radiology and Radiological Science at the Medical University of South Carolina. He is a member of the Cardiac Subcommittee of the RSNA Scientific Program Committee.



In Memoriam: Gabriel H. Wilson, M.D.

Gabriel H. Wilson, M.D., a pioneer in the neuroradiology subspecialty, died Feb. 18 at the age of 82.

Dr. Wilson was a professor of radiology at the University of California, Los Angeles, and served as chief of staff of the Radiology Department and chair of the Department of Radiological Sciences. He retired as professor emeritus in 1987.

Dr. Wilson helped found the Western Neuroradiological Society (WNRS) in 1968 and served as the organization's first president from 1968 to 1971. WNRS awards a scholarship in Dr. Wilson's name each year to the writer of a winning scientific paper. Dr. Wilson was also an early president of the American Society of Neuroradiology. He had been a member of RSNA since 1966.

Also a commander in the U.S. Navy, Dr. Wilson piloted amphibious aircraft and P-2 Neptune Patrol Bombers and served in the Navy reserve for more than 20 years.



CMS TO COVER MR IMAGING IN PATIENTS WITH APPROVED PACEMAKERS

The Centers for Medicare & Medicaid Services (CMS) will now cover MR imaging in Medicare beneficiaries with implanted permanent pacemakers, provided the pacemakers are used according to U.S. Food and Drug Administration (FDA)-approved labeling for use in an MR environment.

CMS formerly covered MR imaging in a Medicare beneficiary with a pacemaker only if the beneficiary was enrolled in a clinical trial. CMS changed its coverage guidelines after a re-examination at the request of a manufacturer of a pacemaker approved by the FDA for use in the MR environment.

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Submarine Technology Advances Stroke Diagnosis, Treatment

A prototype device based on submarine technology might become an important aid in detecting stroke without using radiation, according to University of Toronto researchers.

DEVELOPED BY RADIOLOGISTS and U.S. Navy sonar experts, the portable device utilizes motion detecting accelerometers—such as those used in a submarine—to sense minute distortions in blood flow through the brain. A headset and laptop-based console can be used to detect, identify and locate a stroke or brain trauma with high sensitivity and specificity without radiation, according to research presented at the Society of Interventional Radiology's recent annual meeting.

The device measures a patient's complex brain pulsations to provide information on the type and location of an abnormality in the same way sonar works on submarines, said Kieran J. Murphy, M.D., a professor and vice-chair, director of research and deputy chief of radiology at the University of Toronto and University Health Network in Toronto.

"In the normal situation, two carotids pump symmetrically to the brain," Dr. Murphy said. "When a person suffers a stroke, brain motion becomes asymmetric. The accelerometers in this device are sensitive enough to pick up those changes."

"This is not like ultrasound where you are putting the energy in," Dr. Murphy continued. "This is a completely passive way of sensing a stroke that doesn't use ionizing radiation."

In a pilot study involving 40 stroke patients and 30 normal controls, the prototype correctly identified stroke in 97.3 percent of cases and correctly ruled out stroke in 98.8 percent of normal patients. The system was also able to separate patients with specific stroke conditions or vascular abnormalities into unique categories like ischemia, hemorrhage, aneurysm, stenosis and arteriovenous malformations.

Additions to the signature library will likely increase the location capability and capacity to detect other neurologic conditions with a high degree of sensitivity and specificity, researchers said.

Ambulance, Military Setting Among Uses

The device's portability and speed of initial diagnosis create enormous potential for use, Dr. Murphy said. The technology could differentiate normal from life-threatening conditions such as hematoma and bleeding hemorrhage, allowing a physician to determine whether to begin treatment immediately. In addition, the device's continuous monitoring capability—unique in neurodiagnostics—could allow immediate detection of changes in a patient's condition.



A prototype device developed by retired U.S. Navy sonar experts, using submarine technology, could become a new paradigm for the detection, diagnosis and monitoring of stroke. Above: a headset and laptop-based console can be used to detect, identify and locate a stroke or brain trauma with high sensitivity and specificity without radiation.

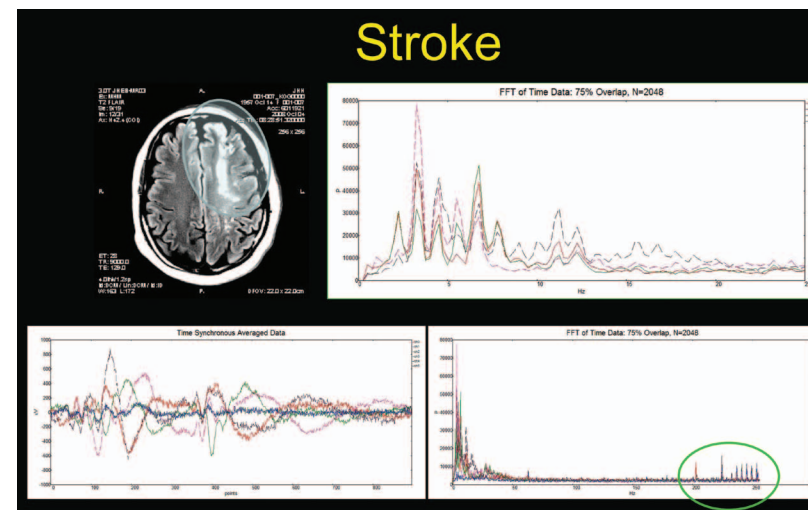
Image courtesy of the Society of Interventional Radiology.

"This technology could be of great benefit for use in ambulances, in operating rooms—for people on cardiac bypass, for example—or in a hospital where a high-risk patient is being monitored," Dr. Murphy said. "Eventually, it could be used in the patient's home."

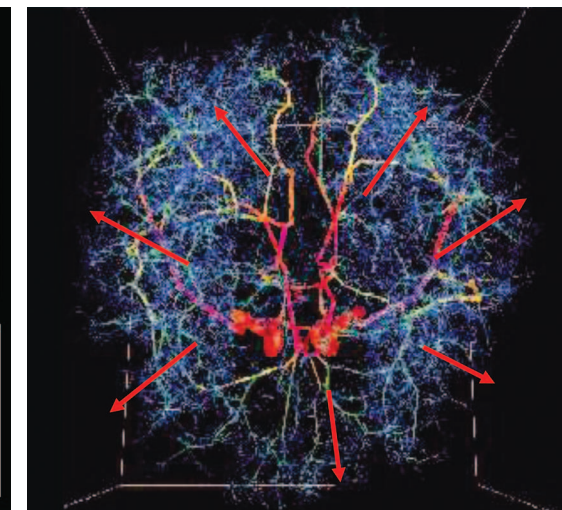
Another possible use for the device is in a battlefield setting where military doctors need to assess situations quickly and efficiently, Dr. Murphy said.

“This is not like ultrasound where you are putting the energy in. This detects the motion of the brain.”

Kieran J. Murphy, M.D.



Normal brain motion is symmetric while stroke is asymmetric. The patient has a left frontal infarct and the asymmetric acceleration is detected by the accelerometers with abnormalities in the frequency and time domain that are characteristic of ischemia.



The systolic pressure wave causes a force to be transmitted from the arteries of the circle of Willis into the capillaries and the brain expands. This is the "brain as a pump that drives cerebrospinal fluid (CSF) flow." That force is transmitted through the CSF to the calvarium and detected by the accelerometers. These accelerometers are EKG gated to avoid superficial temporal artery and occipital artery pulsations.

Other potential applications include diagnosing stroke at rural centers that don't have CT scanners and perhaps monitoring for shunt malfunction in children with hydrocephalus, Dr. Murphy said.

With further development, the device could be refined and algorithms automated, Dr. Murphy said. Larger studies are needed to validate its accuracy, he added.

"We have evidence that this device works, which is a major first step," Dr. Murphy said. "Now we need to perfect it further. We need to make it easier to wear and use and interpret."

Role of CT Perfusion in Treatment Triage

Other recent stroke research shows that CT perfusion-(CTP) based criteria in ischemic stroke may improve patient selection for intra-arterial interventions—even after longer time intervals from symptom onset than would normally be considered safe.

"Current recommendations for the recanalization of patients with acute ischemic stroke are based on defined time parameters," said lead researcher Aquilla S. Turk, D.O., director of neurointerventional surgery at Medical University of South Carolina (MUSC), Charleston. "Using an imaging-based approach, we can assess patients who are well outside any time windows and outside of conventional approaches."

Results of research showing that CT perfusion-(CTP) based criteria in ischemic stroke may safely and effectively allow patient selection for intra-arterial interventions—regardless of time of symptom onset—will be presented by Dr. Turk and colleagues as part of the Neuroradiology Series: Stroke, at RSNA 2011.

Researchers retrospectively assessed 53 ischemic stroke patients from the MUSC emergency depart-

ment regardless of the time of symptom onset. CTP maps were qualitatively assessed for the presence of penumbra and infarction. Selected patients underwent mechanical aspiration of their occlusion using the Penumbra System. Researchers then recorded functional outcome using the modified Ranking scale at 90 days or closest follow up to 90 days.

Patients were divided into two groups: six or fewer hours and more than six hours from symptom onset to endovascular procedure. Results showed no difference in functional outcome between the two groups, Dr. Turk said.

"What we really care about is how much of the brain is viable," Dr. Turk said. "If a patient has a large area of the brain at risk due to a prolonged transit time but no area appears to be infarcted on the blood-volume maps, that patient is a good candidate to be treated, no matter what the time point."

The method could allow physicians to identify viable patients who present with stroke characteristics lasting for one to two hours—a potentially dangerous amount of time using traditional standards, Dr. Turk said. CTP could be especially beneficial in community or rural settings where getting patients to the facility, identifying the stroke and determining a course of treatment is often very time-consuming.

"Utilizing CTP for selecting stroke patients allows us to treat many patients who otherwise would not be considered good candidates for therapy," Dr. Turk said. "We treated many patients 16 to 18 hours out—well outside of any time window—and now they're basically normal. And those patients had what could have been a devastating or life-ending stroke." □

RSNA 2011 FEATURES STROKE SESSION

The RSNA 2011 Neuroradiology Series: Stroke, features the following sessions:

- Perfusion Methods in Practice
- Emergency Stroke CT: Imaging and Intervention
- Advanced Stroke MR Protocols
- Stroke Imaging Triage: The Golden Hour
- Advanced Imaging Algorithm for Brain Tumors

Registration for these and other RSNA 2011 courses is under way at RSNA.org/register.

WEB EXTRAS

To view a PowerPoint presentation and video of Kieran J. Murphy, M.D., presenting "Use of Submarine Technology to Detect Stroke: Initial Clinical Experience," at the Society of Interventional Radiology's recent annual meeting, go to rsnanews.RSNA.org.

Radiology Could Play Major Role as Japan's Recovery Continues

While radiologists played a vital role in responding to the nuclear crisis that resulted from the earthquake and tsunami in Japan last March, the specialty could make its greatest contribution as the rebuilding continues and electricity and Internet are gradually restored, experts say.

"THE USEFULNESS OF RADIOLOGISTS in Japan has been somewhat limited so far," said Kei Yamada, M.D., a representative of the Japanese College of Radiology (JCR) and an associate radiology professor with the Kyoto Prefectural University of Medicine, Japan, speaking on the conditions in the country in late May. "I think it is from now on that we become most effective."

The March 11 disaster left an estimated 25,000 dead or missing, uprooted more than 117,000 people from their homes and destroyed much of northern Japan's infrastructure. Damage to the Fukushima Daiichi nuclear power plant added a radiation crisis to the devastation.

Radiologist Yoshiko Hayashida, M.D., was among doctors enlisted by the Japanese government to help after the disaster. Dr. Hayashida, with the Department of Radiology at the University of Occupational and Environmental Health, Kitakyushu, said she witnessed overcrowded living conditions, filthy portable toilets and questionable drinking water—even in areas where plumbing had been restored.

As she volunteered her services as a general physician at the Japanese Red Cross Hospital, Dr. Hayashida encountered patients suffering from a range of ailments, from bronchitis, conjunctivitis, vertigo and headaches to nervous conditions such as post-traumatic stress disorder. Possible infection from the seemingly endless clouds of dust left in the earthquake's wake was a constant threat.

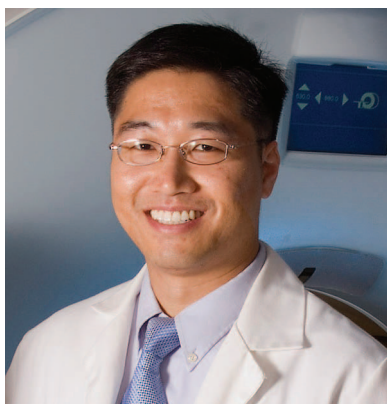
"The dust came from the rubble of the collapsed old buildings, contaminated by dead fish and slime as the tsunami struck the fishing towns," said Dr. Hayashida. "The air there was so stinky. You couldn't breathe without a mask."

The vital triage and initial care provided by personnel like Dr. Hayashida made up the first two phases of the aftermath, Dr. Yamada said. Now the next three phases are under way: restoring electricity, re-establishing Internet and rebuilding damaged hospitals. Internet services are particularly critical for radiologists, who initially were able to provide only limited services via mobile CT and X-ray. With the Internet, better information exchange and teleradiology become possible, Dr. Yamada said.

As of late May, Tohoku, the coastal region hit hardest by the tsunami, was still in the midst of restoring electricity and Internet. In the meanwhile some radiologists volunteer to work as primary care



Yamada



Choy

physicians. "We are just beginning to rebuild and would appreciate support from anywhere around the world," Dr. Yamada said.

Specifically, donations of money and new radiology equipment such as ultrasound, CT and MR imaging scanners are sought, Dr. Yamada said.

Global Radiology Offers Equipment, Education

Physicians worldwide have donated time and equipment and supported education efforts. The JCR immediately assembled a volunteer team to provide information on radiation exposure, relocate cancer patients requiring continuation of radiotherapy and provide remote image reading services.

U.S. radiologists were among those to volunteer their teleradiology expertise in many cases, said Garry Choy, M.D., M.S., of the Diagnostic Radiology departments

“Japanese hospitals and healthcare systems are very advanced and have state-of-the-art equipment. However, due to the earthquake, local radiology equipment has been damaged or destroyed.”

Garry Choy, M.D., M.S.



Radiologists are among the healthcare workers aiding recovery efforts in Japan following the devastation that destroyed much of the country's infrastructure, left an estimated 25,000 dead or missing and uprooted more than 117,000 people. **Top right:** Radiologist Yoshiko Hayashida, M.D., (in mask), was among doctors enlisted by the Japanese government to help after the disaster. **Bottom right:** Medical volunteers, including radiologists, volunteered their services at the Japanese Red Cross in Mayagi, Japan.

at Massachusetts General Hospital and Harvard Medical School in Boston. Dr. Choy also serves as a consultant on radiology and radiation issues for *MedHelp.org*, an online, global health community.

As co-founder of the Massachusetts General Imaging Global Health Programs and International Radiology Exchange, Dr. Choy immediately reached out to JCR as it attempted to procure portable scanning equipment for the country and remains on standby to help with volunteer teleradiology services.

"Japanese hospitals and healthcare systems are very advanced and have state-of-the-art equipment," said Dr. Choy, who also helped connect JCR with vendors willing to donate equipment or obtain portable CT or X-ray equipment. "However, due to the earthquake, much of the local radiology equipment has been damaged or destroyed."

Japan needs new equipment and also more doctors, said Dr. Hayashida. Specifically, primary-care physicians who can triage patients at evacuation centers, industrial physicians and physicians with knowledge of radiation exposure are in demand, she said.

Education Critical in Japan and Abroad

As vague and contradictory reports emerged about the damage to Fukushima Daiichi nuclear power plant, organized radiology in the U.S. mobilized considerable resources to educate a nervous worldwide public about radiation emergencies and response. Members of RSNA's Public Information Advisors Network (PIAN) provided expert commentary and information to media outlets throughout the world, while RSNA's peer-reviewed scientific journal, *Radiology*, offered free access to "Medical Response to a Major Radiologic Emergency: A Primer for Medical and Public Health Practitioners," published in March 2010.

RSNA recently issued to its members a "Statement on the Health Effects of Radiation from a Nuclear Accident," available online at myRSNA.org.

RSNA will continue to offer its expertise as necessary as Japan continues its rebuilding process, said RSNA's Public Information Committee (PIC) Chairman Mary C. Mahoney, M.D., director of breast imaging at the University of Cincinnati Medical Center.

"When a crisis such as the Fukushima nuclear power plant failure occurs and radiation safety issues are of concern, we consult with experts from the PIAN and make them available as sources to media and others who need solid context and credible information," Dr. Mahoney said. "It's critical to have these expert resources available to get accurate information in the news and help reduce public over-reaction and panic."

The American College of Radiology (ACR) also provided experts to educate the public on radiation risk and safety issues, said Brad Short, ACR's senior director of member services and a member of the ACR Foundation International Outreach Program. "The main thing we've done since the tsunami is to make experts available to discuss radiation effects and radiation safety," Short said. Through its international volunteer website (international.service.acr.org), ACR is working with JCR to notify U.S.-based radiologists of volunteer needs in Japan as the country struggles to rebuild, Short said.

As Japan's recovery continues, Dr. Hayashida—who continues to educate the public and other physicians on radiation safety—is grateful for the volunteer efforts of people throughout the world.

"I really appreciate the help that so many countries have given to Japan during this disaster," Dr. Hayashida said. "We Japanese realize that we are not alone and we have been supported by a lot of countries. We will not forget your kindness forever." □

WEB EXTRAS

☑ To access "Medical Response to a Major Radiologic Emergency: A Primer for Medical and Public Health Practitioners," in the March 2010 issue of *Radiology*, go to RSNA.org/Radiology. To access RSNA's position statement on Japan, go to myRSNA.org, click Add Stuff and scroll to "Position Statements."

Animal, Human Interaction Reduce MR Imaging Anxiety

Waiting to undergo her first MR imaging exam last year, 15-year-old Allison Ruchman was feeling nervous, anxious and a bit claustrophobic. Determined to complete the procedure, Allison turned her mind to a familiar source of stability and comfort: her 5-year-old dog, Wally.

THOUGHTS OF petting and walking Wally immediately calmed Allison's nerves and she was able to complete the MR exam with no problems. Wondering whether her experience would translate to other patients, Allison approached her father, Richard Ruchman, M.D., chair of radiology at Monmouth Medical Center in Long Branch, N.J., about developing a research project to determine whether animal-assisted therapy alleviates patient anxiety before an MR imaging exam.

"I talked to my dad about bringing Wally to the hospital to help patients who were waiting for an MR imaging exam," Allison said.

The resulting study, "Animal-Assisted Anxiolysis Prior to MRI," authored by Allison, Dr. Ruchman and colleagues, demonstrated that animal-assisted therapy decreased the anxiety levels of patients in a pre-MR imaging setting. The study, presented at the 2011 annual meeting of the American Roentgen Ray Society, may be the first animal-assisted therapy project conducted in a radiology department, Dr. Ruchman said.

"It is always better not to administer anxiety medication if you don't have to and this is a very natural therapy," Dr. Ruchman said. "I'd like it to become a regular feature in our department."

In fact, alternative therapies may become more common as patients seek noninvasive methods to complete the estimated 30 million MR imaging exams administered each year. Of that number, approximately 2.5 percent are unable to complete the exams, primarily due to stress, according to Elvira Lang, M.D., an associate professor of radiology at Harvard Medical School in Boston who researched the effects of training staff in patient rapport and relaxation techniques prior to MR imaging.

"This is becoming a major healthcare issue, considering the number of MR exams performed each year," Dr. Lang said. "Incorporating stress-reducing techniques into the workflow makes sense for the health of the patient and the financial health of the institution."

Dog Therapy Replaces Medication

In the Ruchmans' study, 28 patients scheduled to undergo outpatient MR imaging interacted with the therapy dog at various levels of intensity for 15 minutes about half an hour before their scheduled exam. Six patients underwent no intervention of any kind, including with a therapy dog.



Anxiety about her own MR imaging exam prompted Allison Ruchman, (seated, right) to research whether animal-assisted therapy decreases patient stress before an MR imaging exam. Using her dog Wally (shown with patient Kisha Shelton), Allison and other researchers, including her father, radiologist Richard Ruchman, M.D., (standing), demonstrated that animal-assisted therapy decreased patient anxiety in a pre-MR imaging setting. "I'd like it to become a regular feature of our department," Dr. Ruchman said.

Image courtesy of Richard Ruchman, M.D.

"I believe we are beginning to move in other, noninvasive directions, such as animal-assisted therapy."

Richard Ruchman, M.D.

"All the patients really seemed to love being around Wally," said Allison, a certified animal therapist who conducted the therapy sessions and assisted in the study design, data collection and writing. "He is a sweet, calm dog and all the patients were less nervous after spending time with him."

Before and after therapy, the Spielberger State-Trait Anxiety Inventory (STAI) was administered to patients to measure current anxiety level on a scale of 20 to 80. The average STAI state anxiety level for working adults is 35.72 for men and 35.20 for women.

The 28 patients who completed the animal-assisted therapy had a mean STAI state anxiety score of 43 before and 29 after animal therapy. Control patients received no intervention and had no significant change in anxiety. Those patients had a mean STAI state anxiety score of 32.67 before and 32.83 after no intervention. All patients completed the exams without anxiety medication.

"The most significant aspect of our findings was the fact that animal-assisted therapy could substitute for anxiety medication often needed to assist patients having an MR imaging exam," Dr. Ruchman said.

Team Training Improves MR Noncompletion Rates

In her research, published in the January 2010 issue of *Academic Radiology*, Dr. Lang and colleagues designed a team training model in advanced rapport and hypnotic techniques for a large, freestanding MR imaging facility that did not have a sedation license for intravenous medication.

With a goal of reducing the facility's MR noncompletion rate, researchers trained a portion of the staff in interpersonal skills and mind-body techniques designed to be applied within the regular workflow. Skills included:

- Building confidence
- Validating the patient by acknowledging his/her state of mind
- Adapting to the patient's preferred modes of verbal and nonverbal communication by emphasizing the sensory categories of the patient's preferred mode of perception (for example, visual, auditory, kinesthetic).

Team members were also trained to use what Dr. Lang describes as "comfort talk" in which they substitute negative words such as "hurt," "bad" and "panic button," with positive terms such as "sensation," "comfort" and "call button."

"We are essentially relearning the way we talk to patients," Dr. Lang said. "We say the same things but not in a way that sends up red flags in the patient's mind."

For the hypnosis segment, trainees practiced extensively with a variety of scripts, managing distress and pain, use of metaphors and ego-strengthening.

Before training, 1.2 percent, or 80 of 6,654 patients, could not complete exams due to claustrophobia. After training, 0.74 percent, or 52 of 7,008 patients, could not complete their procedures, researchers found. Noncompletion on the open magnet—on which the most anxious patients were scanned—decreased from 3.43 percent (37 of 1,078 patients per quarter) to 1.45 percent (19 of 1,098 patients per quarter), results showed.

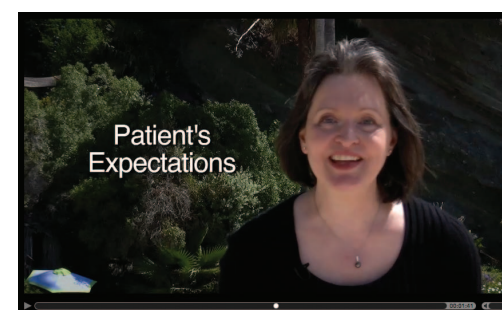
The program proved financially effective for the facility, which initiated the project to reduce lost annual revenue, which can be considerable. Currently Dr. Lang is working with a facility that estimates losing \$900,000 each year to MR noncompletion.

"We're pretty confident that with training we can cut noncompletion rates in half for most facilities," said Dr. Lang, an interventional radiologist who now



WEB EXTRAS

Videos of Janet Epstein, R.N., (top) at Northshore Medical Imaging, Peabody, Mass., demonstrating the team training model in advanced rapport and hypnotic techniques and Elvira Lang, M.D., (bottom) of Harvard Medical School in Boston, discussing "Comfort Talk," are available at rsnanews.RSNA.org.



specializes in developing such programs for facilities seeking to cut noncompletion rates.

While staff members are sometimes skeptical of such alternative methods, the program's format—lectures, group discussions and microteaching methods—as well as the fine-tuning that comes with daily repetition in the patient-care setting, quickly engrains the program into a facility's routine, Dr. Lang said.

"It takes a full-fledged effort, but the results can be significant," she said.

Behavioral Techniques on the Rise

While the advent of wide open-bore MR scanner has improved the patient experience somewhat, problems still exist, Dr. Lang said. "Patients are less confined, but other problems can arise, including a patient being overweight, which is happening more frequently."

Another significant drawback: Image quality can be inferior with open-bore scanners, Dr. Lang said.

Although anxiety medication is still commonly used, alternative methods will become increasingly attractive as research backs up the effectiveness of such techniques. Relying less on medication and more on human—or animal—interaction is likely to become more common.

"I believe we are beginning to move in other, noninvasive directions, such as animal-assisted therapy," Dr. Ruchman said.

Currently, Wally the beagle is lending his therapy skills at Monmouth Medical Center on a limited basis, but Allison and Dr. Ruchman would eventually like to see the program expand at this facility and at others nationwide.

"I hope that hospitals across the country will hear about this and consider adopting an animal-assisted therapy program at their facilities," said Allison, who blogs about her research in "Wally's Diaries" on National Public Radio's Talking Science website at talkingscience.org. "Spending 15 minutes with a dog can really make a difference." □

WEB EXTRAS

For more information on the research cited in this article, go to rsnanews.RSNA.org.

“Wearable PET,” Time-of-Flight Technology Aid Brain and Cancer Research

A miniature “wearable” portable PET scanner tested on rats and time-of-flight (TOF) technology to improve PET spatial resolution are poised to break new ground in brain and cancer research.

WHILE PET STUDIES in rats have long aided researchers, progress has been limited because the animals must be anesthetized before the scan, disrupting normal brain function and preventing scientists from scanning the rats’ brains while simultaneously observing their behavior.

Researchers at the U.S. Department of Energy’s Brookhaven National Laboratory in Upton, N.Y., have overcome this barrier by developing a “wearable” portable PET scanner, providing a new tool for simultaneously studying brain function and behavior in fully awake, moving animals. Known as the Rat Conscious Animal PET, or RatCAP, the miniature scanner contains 12 PET detectors worn like a collar on the rat’s head.

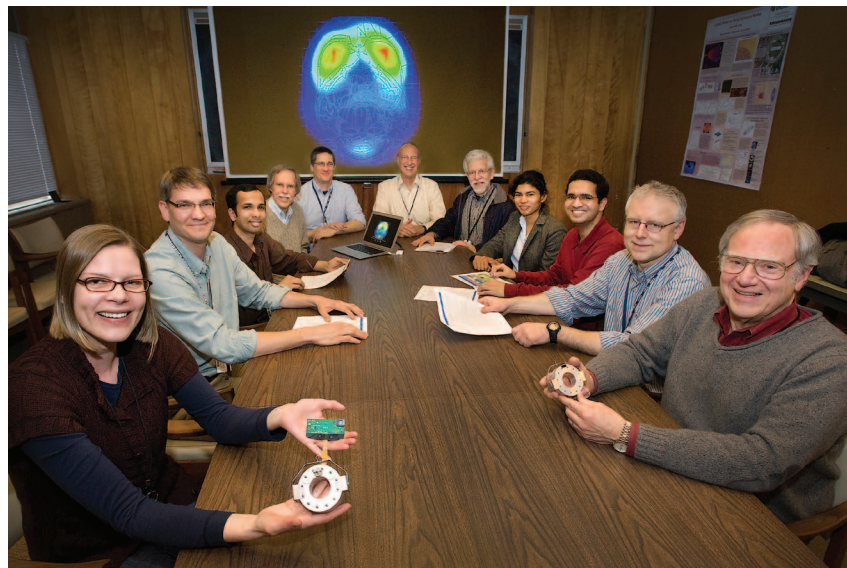
“A single flexible fiber attached to the back of the ring provides power to the scanner and also returns the signals back to the processors,” said researcher Paul Vaska, Ph.D., a physicist at Brookhaven. “The scanner weighs about the same as an average-sized rat but has a system of springs and motion stabilizers to allow the animal freedom of movement.”

Advances in microchip and photosensor technology paved the way for developing the scanner, which took about 10 years, according to Dr. Vaska. “The photosensor is the key to miniaturization,” he said. “Most systems use photomultiplier tubes, but with the RatCAP we used photosensors that are only about one millimeter thick.”

Radiotracers Identify Brain Neurochemicals

Researchers used the radiotracer carbon-11 raclopride for RatCAP validation studies published in the April 2011 issue of *Nature Methods*.

Raclopride binds receptors for dopamine, a neurotransmitter associated with motivation and



Brookhaven National Laboratory researchers have developed a miniature “wearable” PET scanner that will allow integrated, simultaneous study of behavior and brain function in animals. The research team, clockwise: Daniela Schulz, Paul Vaska, Ph.D., Srilalan Krishnamoorthy, Craig Woody, Sean Stoll, Fritz Henn, Paul O’Connor, Bosky Ravindranath, Sri Harsha Maramraju, Martin Purschke and David J. Schlyer.

reward. A low PET signal indicates dopamine release in that particular part of the brain. Results showed that rat activity levels were inversely related to dopamine levels.

“This was the first time tracers were used in rats that are fully awake,” Dr. Vaska said. “We were able to compare the animals, look at their behavior and correlate the behavior with the binding potential of the tracer. The most interesting finding for us was this correlation between behavior and neurochemistry.”

“The scanner weighs about the same as an average-sized rat but has a system of springs and motion stabilizers to allow the animal freedom of movement.”

Paul Vaska, Ph.D.

ON THE COVER

From left, physics associate Sean Stoll, Stony Brook University graduate student Bosky Ravindranath and Paul Vaska, Ph.D., examine components of the RatCAP scanner for studying brain function and behavior in fully awake, moving animals.



In the future, the Brookhaven scientists plan to improve the scanner’s spatial resolution while studying rats with different tracers. They are also exploring MR-compatible versions of the scanner, including a larger device that can be used in conjunction with MR imaging in breast cancer screening.

“It would be a great advantage to be able to measure function with two different modalities,” Dr. Vaska said.

TOF PET Could Improve Cancer Detection

For more than a decade, Joel S. Karp, Ph.D., an associate professor of radiologic sciences at the University of Pennsylvania (UP) School of Medicine in Philadelphia, and colleagues have been studying TOF technology—which offers advantages over conventional PET scanners—as a means of improving PET spatial resolution.



“With TOF, you record position and energy as you do with conventional PET but you also record time difference,” he said. “This improves the signal-to-noise ratio.”

Research published in the March issue of *The Journal of Nuclear Medicine (JNM)* shows that TOF fluorodeoxyglucose (FDG) PET scans yielded significant improvements in lesion detection of lung and liver cancers over all contrasts and body mass indexes.

In the study, Dr. Karp and colleagues compared TOF with conventional PET in 100 patients. “We took a group of normal patients and mathematically added lesions to the data,” Dr. Karp said. “We adjusted the contrast of the lesions, applied a mathematical observer and used it to measure detectability with or without TOF.”

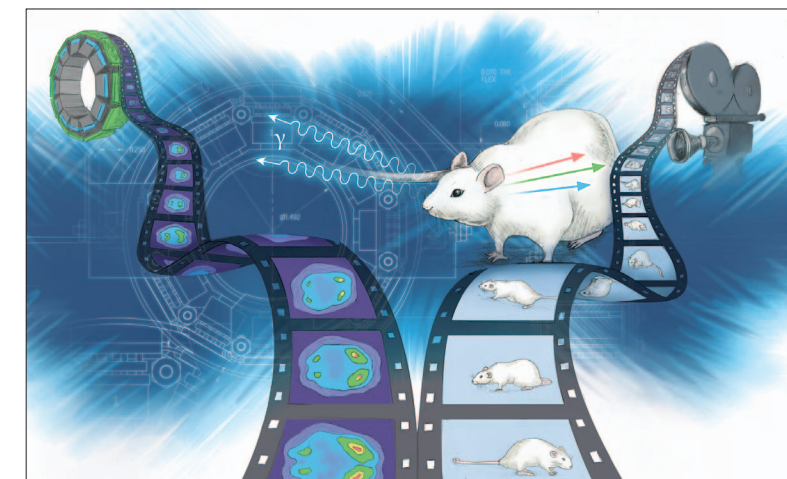
TOF PET yielded an improvement in lesion detection of 8.3 percent in the liver and 15.1 percent in the lungs compared with standard PET, results showed. Improvement in detection was greatest for the lowest lesion contrast.

“This is a very important development because it allows us to separate a lesion from a noisy background,” Dr. Karp said.

Another important advantage of TOF is better lesion detection in heavier patients. Lesion detection improved by 11.1 percent in patients with a body mass index (BMI) of 30 or more, compared with 9.8 percent in patients with a BMI of less than 30, researchers discovered.

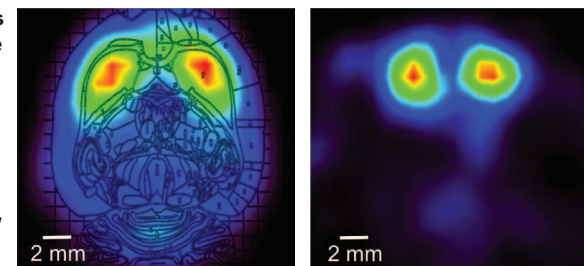
“Attenuation of gammas is a significant problem in heavier patients,” Dr. Karp said. “They have fewer counts because gammas are absorbed. Quality of the image and signal-to-noise ratio improved in larger patients without compromising other aspects of PET imaging.”

In a follow-up study published in the May 2011 issue of *JNM*, Dr. Karp and colleagues replaced the mathematical observer of the March study with human observers to localize and detect lesions in realistic patient anatomic backgrounds.



This sketch represents the RatCAP system’s ability to simultaneously acquire information about brain chemistry through PET scanning, which tracks the radiotracer using gamma rays, and behavior through classical video monitoring, which tracks animal motion using visible light.

PET scans of a rat’s brain made with the RatCAP scanner (horizontal view superimposed on a rat brain atlas figure, left, and a coronal slice, right). The rainbow scale (red = high, violet = low)



indicates the level of a radiotracer that binds to receptors for dopamine, which are concentrated in the striatum, a brain region involved in reward and motivation.

PET IS HOT TOPIC AT RSNA 2011

“PET Imaging in Breast Cancer” is the focus of a Hot Topic session at RSNA 2011. Registration for RSNA 2011 is under way at RSNA.org/register.

“We used experienced clinicians and produced findings very similar to the earlier study,” he said. “This research shows that TOF PET is a sensitive examination that provides earlier disease detection.”

Other potential TOF PET benefits include reduced scanning time and radiotracer exposure, increasing patient comfort, minimizing patient motion and reducing the exposure to radiation for patients and healthcare workers, Dr. Karp said. □

WEB EXTRAS

Vaska Discusses “Wearable PET”

To view a video of Paul Vaska, Ph.D., explaining the Rat Conscious Animal PET, or RatCAP, a new tool for simultaneously studying brain function and behavior in fully awake, moving animals, go to rsnanews.RSNA.org.

For more information on the studies cited in this article, go to rsnanews.RSNA.org.

“Rebound” Research Could Aid Tumor Treatment

A University of Wisconsin (UW) researcher is investigating ways to exploit “rebound” phenomena in tumors treated with antiangiogenic agents, adding radiation therapy at the time when it’s most effective.

“WE’RE LOOKING AT optimal ways to combine therapies,” said Kevin R. Kozak, M.D., Ph.D., of the Department of Human Oncology at the UW School of Medicine and Public Health in Madison. With groundwork laid by a \$30,000 Philips Healthcare/RSNA Research & Education (R&E) Foundation Research Seed Grant in 2009, Dr. Kozak and his team are investigating tumor response to vascular endothelial growth factor receptor (VEGFR) inhibitors and examining “rebound”—the rapid proliferation of tumor cells after therapy is discontinued. “What we’ve found so far is that all key biochemical markers of rebound are present in this model, and we’re now in the process of determining in what ways this phenomenon might be exploited,” Dr. Kozak said.

Using tumors in mouse models, investigators are testing responses to clinically promising VEGFR inhibitors—mostly sunitinib and axitinib—comparing the merits of continuous VEGFR therapy versus cyclic therapy and investigating whether it’s useful to continue therapy when tumors demonstrate resistance. “We’re using a combination of traditional biochemical methods and immunohistochemistry to study the rebound phenomena,” Dr. Kozak said.

“Recently we’ve started to investigate PET as a noninvasive way to measure rebound,” Dr. Kozak continued. “That’s particularly exciting because it represents a potential method to tailor combined therapy to individual patients.”

Ultimately, researchers hope the data will enable clinicians to identify tumor cell rebound and deliver radiation therapy at the ideal time.

New molecularly targeted therapies such as those using antiangiogenic agents have changed the face of oncologic practice, said Rakesh Jain, M.D., the Andrew Werk Cook Professor of Tumor Biology at Harvard Medical School and director of the Edwin L. Steele Laboratory for Tumor Biology at Massachusetts General Hospital in Boston.

“Nevertheless, the benefits remain small and a cure in many cases is still elusive,” said Dr. Jain, a world leader in quantitative tumor assessment who mentored Dr. Kozak in his research. “Knowing how to prevent tumor rebound after such treatments is a high priority in cancer research because it may inform oncologists how to better use these therapies in combination with radiation.”

R&E Grant Lays Project’s Foundation

Although research is still in the early stages, Dr. Kozak said his R&E Foundation grant laid the foundation for the critical initial work.

“The seed grant was absolutely essential to the project I proposed,” Dr. Kozak said. “Because the

GRANTS IN ACTION

NAME:

Kevin R. Kozak, M.D., Ph.D.

GRANT RECEIVED:

\$30,000 Philips Healthcare/RSNA Research Seed Grant, 2009

STUDY:

“Exploiting Angiogenic Rebound with Ionizing Radiation”

CAREER IMPACT:

The R&E grant was crucial to developing the building blocks necessary for the research project to compete on a broader scale for continued funding, Dr. Kozak said. “Because the project was promising and the bedrock was laid through RSNA support, we were able to compete successfully for future funding,” he said.

CLINICAL IMPLICATIONS:

By investigating tumors’ response to vascular endothelial growth factor receptor (VEGFR) inhibitors and examining “rebound”—the rapid proliferation of tumor cells after therapy is discontinued—researchers will define the timing of angiogenic rebound and guide radiation experiments.

For more information on all R&E Foundation grant programs, go to RSNA.org/Foundation or contact Scott Walter, M.S., Assistant Director, Grant Administration at 1-630-571-7816 or swalter@rsna.org.



project was promising and the bedrock was laid through RSNA support, we were able to compete successfully for future funding.”

In 2010, Dr. Kozak received the Damon Runyon-Genentech Clinical Investigator Award for the project, “Radiosensitization with Antiangiogenic Therapy” along with UW colleague Paul M. Harari, M.D.

The \$450,000 award will support the team’s continued research through 2013.

“That’s the point of the seed grant,” Dr. Kozak added. “It allows researchers the critical development of a foundation so the project can continue to blossom. For me, the R&E grant was crucial to developing the first key building blocks for the project to compete on a broader scale for continued funding.”

Unfortunately, an entire generation of highly trained and skilled scientists such as Dr. Kozak is threatened by deficits in research funding, Dr. Jain said.

“This comes at a time when we are witnessing what are arguably the most exciting developments in cancer biology,” Dr. Jain said. “We must support junior researchers in order to rapidly make the strides in cancer therapy that we are capable of.”

“We’re looking at optimal ways to combine therapies.”

Kevin R. Kozak, M.D., Ph.D.

R&E to Fund Record \$2.7 Million in Grants

In 2011, the RSNA Research & Education Foundation will fund 74 grants totaling \$2.7 million. Dollars spent on grants annually increased over last year and have climbed significantly in the past 10 years.

“The RSNA R&E Foundation extends its deep appreciation to all our contributors who have made this year’s level of grant support possible,” said Theresa C. McCloud, M.D., chair of the Foundation Board of Trustees. “Such ongoing support of image-based research ensures the careers of talented young investigators, promotes the future of our specialty and ultimately makes a difference in patient’s lives.”

Among the 46 different institutions represented by this year’s grant recipients are some to which the Foundation has given frequently. Many of those same organizations give back to RSNA, presenting their research at the annual meeting and publishing in *Radiology* and *RadioGraphics*.

Grant recipients at many of these institutions also contribute to RSNA and the radiologic specialty with continued research through additional funding from

other sources including the National Institutes of Health. Surveys show for each R&E dollar awarded, grant recipients receive an additional \$30 from other sources—to date the Foundation has awarded 883 grants to individuals in more than 120 institutions, totaling \$34.4 million. With the 30:1 return on investment, the Foundation has enabled more than \$1 billion in radiologic research.

“The record amount of grant giving supported by the R&E Foundation this year highlights the commitment of the RSNA membership and RSNA Board of Directors to imaging related research and to the young investigators who represent our specialty’s future,” said 2011 RSNA President Burton P. Drayer, M.D.

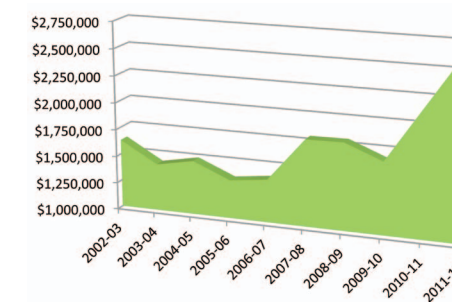
Research funded by the RSNA R&E Foundation represents a broad spectrum of anatomical areas, modalities,

techniques and topics, as well as various research types. The latest round of grants is no exception.

Also included in the 2011 grants is one named for 2003 RSNA President Peggy J. Fritzsche, M.D., and funded with donations made in her memory to honor her life’s work in radiology. Candice Bookwalter, M.D., Ph.D., of Case Western Reserve University will receive the grant award for her project on motion artifact removal for MR abdominal imaging. Dr. Fritzsche was one of the Foundation’s biggest supporters and chaired the Foundation Board of Trustees in 2006.



1 Increase in RSNA R&E Foundation Grant Funding

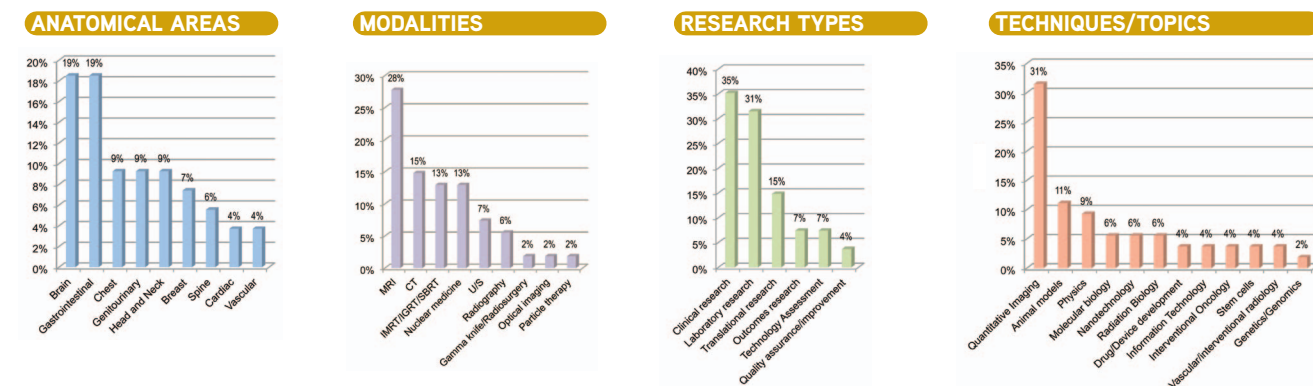


2 Top 10 Institutions Funded by the RSNA R&E Foundation

(In total dollars awarded 1987-2011)

INSTITUTION	TOTAL DOLLARS AWARDED
Washington University in St. Louis	\$2,303,000
Massachusetts General Hospital/Harvard Medical School	\$1,867,000
University of Michigan	\$1,752,000
University of Pennsylvania	\$1,719,000
University of California, San Francisco	\$1,422,000
Stanford University	\$1,377,000
The University of Texas MD Anderson Cancer Center	\$1,229,000
University of Wisconsin	\$1,052,000
University of Virginia	\$1,047,000
Thomas Jefferson University	\$1,030,000

3 RSNA R&E Foundation Grants, 2011*



*Percentages may not add up to 100%; some grants do not fall into the defined categories.

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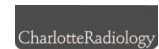
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Radiology Imaging Associates, P.C.
Denver

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Medical Center Radiologists, Inc.
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Continued on Page 17

Journal Highlights

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

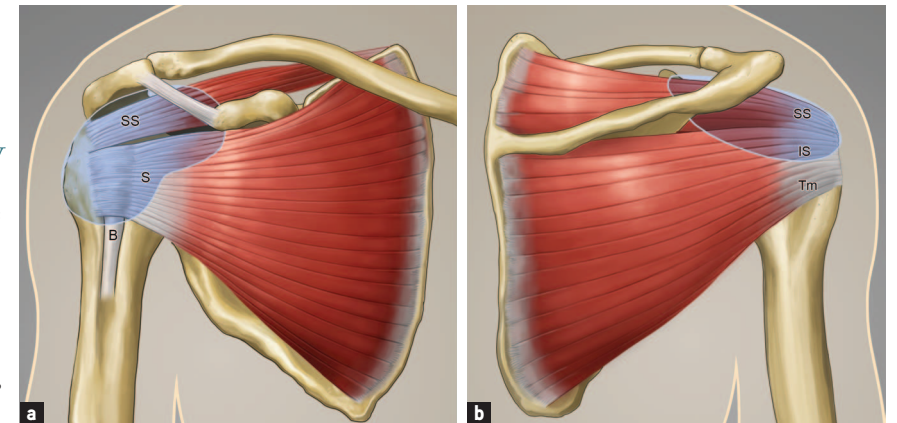
Shoulder Ultrasound: Anatomy, Technique, and Scanning Pitfalls

BECAUSE THE accuracy of shoulder US is largely dependent on examination technique, an understanding of pertinent anatomy and potential pitfalls related to the ultrasound technique is necessary. A protocol-driven approach to shoulder ultrasound technique will ensure a comprehensive and efficient examination.

In a How-I-Do-It article in the July issue of *Radiology* (RSNA.org/Radiology) Jon A. Jacobson, M.D., of the University of Michigan Medical Center in Ann Arbor, and colleagues emphasize key shoulder anatomy, describe a step-by-step ultrasound technique effective in evaluating the shoulder and outline important pitfalls including anisotropy. A video showing a live demonstration of shoulder ultrasound technique accompanies the article.

"... keys to a successful shoulder ultrasound examination include understanding the anatomy, imaging the structures of interest in long and short axis, eliminating artifacts, and then evaluating for disease, following a standardized imaging protocol. This will ensure a thorough, comprehensive and efficient evaluation of the rotator cuff," the authors concluded.

Radiology



Shoulder anatomy. Illustrations of (a) anterior and (b) posterior shoulder show supraspinatus, infraspinatus, subscapularis, teres minor, and long head of the biceps brachii tendon. Subacromial-subdeltoid bursa is overlying the rotator cuff (light blue).

(Image courtesy of Carolyn Nowak, Ann Arbor, Mich.) (Radiology 2011;260:1:6-16) ©RSNA, 2011. All rights reserved. Printed with permission.

Imaging Assessment of Congenital and Acquired Abnormalities of the Portal Venous System

THE SPECTRUM of abnormalities of the portal venous system is broad and includes potentially life-threatening conditions such as portal venous gas, portal venous trauma and pylephlebitis. Familiarity with the high-resolution CT, ultrasound and MR imaging characteristics of such abnormalities allows greater confidence in diagnosis and more informed guidance of surgical procedures and percutaneous interventions.

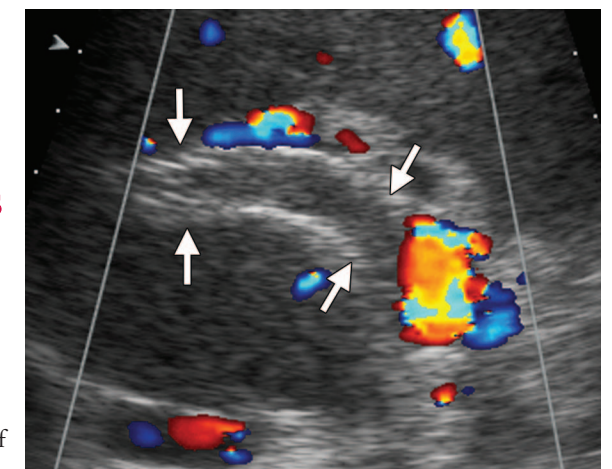
RadioGraphics

In the July-August issue of *RadioGraphics* (RSNA.org/RadioGraphics), Wai-Kit Lee, M.B.B.S., of St. Vincent's Hospital, University of Melbourne, Australia, and colleagues:

- Review the embryologic development, normal anatomy and anatomic variants of the portal venous system
- Describe the characteristic ultrasound, CT and MR imaging findings of congenital and acquired portal venous abnormalities
- Discuss imaging-based assessment of the portal venous system after interventional procedures such as transjugular intrahepatic portosystemic shunt creation, portal vein embolization and islet cell transplantation

The key to successful detection of portal venous system abnormalities depends on knowledge of the normal and variant anatomy and the characteristic imaging findings of pathologic conditions affecting the portal venous system, the authors write.

"State-of-the-art contrast-enhanced CT or MR imaging combined with Doppler ultrasound permits a comprehensive evaluation of morphologic and functional abnormalities of the portal venous system. Awareness of the presence of anatomic variants is crucial for adequate planning of surgical and percutaneous interventional procedures," the authors conclude.



Occluded transjugular intrahepatic portosystemic shunts (TIPS) in a 48-year-old man with cirrhosis and recurrent variceal bleeding. Oblique Doppler sonogram shows complete absence of flow within the TIPS (arrows), a finding indicative of occlusion.

(RadioGraphics 2011;30:905-926) ©RSNA, 2011. All rights reserved. Printed with permission.

YOUR DONATIONS IN ACTION

With an RSNA R&E Foundation grant, **Joshua D. Dowell, M.D., Ph.D.**, is studying ways to image the Plectin-1 biomarker in pancreatic ductal adenocarcinoma to improve early detection, staging, patient care and monitoring of treatment response.



Education and Funding Opportunities

2011 AAPM CT Dose Summit

October 7–8
Westin Denver

RSNA is cosponsoring, along with the Medical Imaging & Technology Alliance and American College of Radiology, the 2011 AAPM CT Dose Summit.

Rapid developments in CT technology over the last decade have yielded new clinical capabilities and substantial improvements in patient care. The greater complexity of today's CT scanners, however, creates considerable challenges for CT users, who must master a wide range of equipment features and clinical applications.

This summit will demonstrate how scan acquisition and image reconstruction parameters should be selected and managed to improve image quality and reduce radiation dose. Faculty will explain the essential criteria for specific diagnostic tasks and participants can practice the selection of optimum scan protocols. The goal of the summit is to provide practical information that will help users operate their CT scanners wisely, improving the quality and usefulness of CT images while reducing the radiation dose to patients.

Learn more at www.aapm.org/meetings/2011CTS.

CORE Workshop

October 28–29, 2011
Oak Brook, Ill.
Registration Deadline
September 23

FORMERLY THE Revitalizing the Radiology Research Enterprise (RRRE) program, the newly named Creating and Optimizing the Research Enterprise (CORE)

workshop will be held Friday and Saturday, Oct. 28 and 29 in Oak Brook, Ill. The workshop will focus on strategies for developing and expanding research programs in radiology, radiation oncology and nuclear medicine departments. The CORE program features a combination of presentations, case studies and group discussions. Register now at RSNA.org/CORE.



R&E Foundation Individual Donors

Continued from Page 15

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Medical Meetings

September–October
2011

SEPTEMBER 7–10
Academy of Molecular Imaging (AMI), 2011 World Molecular Imaging Congress (WMIC), San Diego Convention Center, Calif. • www.wmicmeeting.org

SEPTEMBER 8–11
Australasian Society for Ultrasound in Medicine (ASUM), 41st Annual Congress in Medical Ultrasound, Crown Conference Centre, Melbourne, Australia • www.asum.com.au

SEPTEMBER 14–17
American Society of Emergency Radiology (ASER), Annual Scientific Meeting, Ritz Carlton, Key Biscayne, Miami • www.erasd.org

SEPTEMBER 21–24
International Skeletal Society (ISS), Annual Meeting, Hotel del Coronado, San Diego • www.internationalskeletalsociety.com

SEPTEMBER 24–27
North American Society for Cardiac Imaging (NASCI), 39th Annual Meeting, Hilton Baltimore Hotel, Md. • www.nasci.org

OCTOBER 13–16
International Urogenital Radiology, joint meeting of European Symposium on Urogenital Radiology (ESUR) and Society of Uro-radiology, Hotel Dubrovnik Palace, Croatia • www.esur2011.com.hr

OCTOBER 16–19
Radiology Business Management Association (RBMA), Fall Educational Conference, Aria Resort & Casino Las Vegas • www.rbma.org

Radiology in Public Focus

A press release was sent to the medical news media for the following article appearing in the latest issue of *Radiology*.

Incidence of Nephrogenic Systemic Fibrosis after Adoption of Restrictive Gadolinium-based Contrast Agent Guidelines

THE ABSENCE OF nephrogenic systemic fibrosis (NSF) cases after adoption of restrictive gadolinium-based contrast agent (GBCA) guidelines suggests that these guidelines are effective in preventing NSF, researchers found.

In the study, Yingbing Wang, M.D., of Massachusetts General Hospital in Boston, and colleagues examined the incidence of NSF after restrictive GBCA administration guidelines were adopted at the hospital in May 2007. The guidelines require a recent serum creatinine level measurement in any patient age 60 years or older and/or at risk for renal disease, limit the maximal weight-based GBCA dose administered to any patient with an estimated glomerular filtration rate (eGFR) lower than 60 mL/min/m² to 20 mL, and prohibit the administration of any GBCA in patients who have an eGFR lower than 30 mL/min/m² and/or are undergoing chronic dialysis treatment, except in emergency situations.

Researchers reviewed the hospital's medical records during the pre-guideline and transition period (January 2002 through December 2007) and post-adoption period (January 2008 to March 2010). Prior to adoption of the guidelines and during the transition period, 113,120 contrast-enhanced MR imaging exams were performed and 34 cases of NSF were subsequently identified. During the post-guideline period, 52,954 contrast-enhanced MR imaging exams were performed with no new cases of NSF identified, results showed.

"... we believe that the adoption of restrictive GBCA guidelines probably prevented the occurrence of new cases of NSF at our institution and that it facilitates the safe use of gadopentetate dimeglumine, even in patients who are undergoing chronic dialysis treatment and/or have eGFRs lower than 60 mL/min/m²," researchers concluded.

- 1 Consider alternative examinations that do not require administration of GBCA.
- 2 Use lowest amount of GBCA necessary to obtain clinical information.
- 3 Avoid double- and triple-dose studies.
- 4 Avoid Group 1 GBCAs, which are associated with the highest rates of NSF.
- 5 Inform referring physicians and patients of the risks of GBCA use and proceed with contrast-enhanced MR examinations only if both referring physicians and patients agree to stated risks.

American College of Radiology recommendations for administering gadolinium-based contrast agents (GBCA) when imaging high-risk patients. Group 1 recommendations are listed above.

(*Radiology* 2011;260;1:105–111) ©RSNA, 2011. All rights reserved. Printed with permission.

Media Coverage of RSNA

In May 2011, media outlets carried 1,040 RSNA-related news stories. These stories reached an estimated 558 million people.

May print coverage included Associated Press, Dow Jones International Newswires, *Austin Daily Herald*, *Arizona Daily Sun* and *The Wichita Times*.

Broadcast coverage included WJAC-TV (Johnstown, Pa.), KTUU-TV (Anchorage), WWLP-TV (Springfield, Mass.), WYFF-TV (Greenville, S.C.), WPSD-TV (Paducah, Ky.), WTVA-TV (Tupelo, Miss.) and WJAR-TV (Cranston, R.I.).

Online coverage included Yahoo! News, *ABC-News.com*, *NPR.com*, *MSNBC.com*, *FOXNews.com*, *San Francisco Examiner* – Online, *WashingtonPost.com*, *Forbes.com*, *Reuters.com*, *Businessweek.com*, *iVillage.com* and *Science Daily*.



July Public Information Activities Highlight Emergency Preparedness

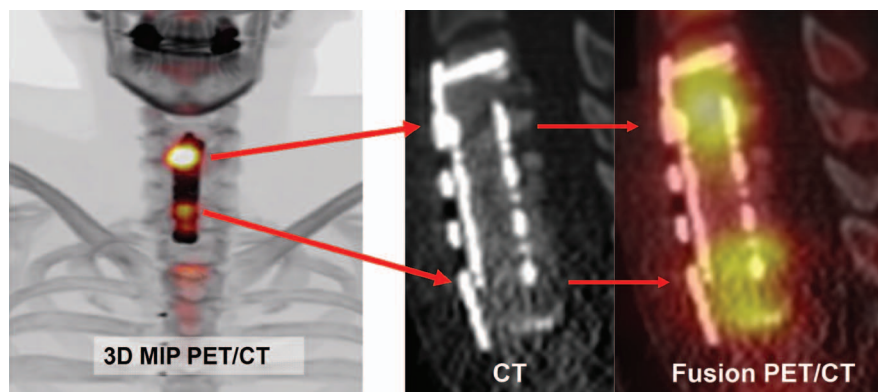
In July, RSNA's "60-Second Check-up" radio segments focused on the different types of nuclear and radiation emergency and the medical responses needed following such incidents.

Check the Latest Content on RadiologyInfo.org

New procedure descriptions are continually being posted on *RadiologyInfo.org*. Visit the site to see the latest procedure descriptions on foreign body retrieval, MR enterography, scintimammography and CT enterography.

Radiology in Public Focus

Other Radiology Headlines



¹⁸F-NaF PET/CT Evaluation of Cervical Spine Fixation Hardware

PET/CT Evaluation of Spinal Fixation Hardware Named SNM Image of the Year

The Society of Nuclear Medicine's (SNM) 2011 Image of the Year illustrates the ability of PET/CT scans to identify abnormal bone reaction in patients who have received spinal fixation hardware implants. Researchers selected this image from more than 1,800 studies presented over the course of four days during the SNM annual meeting in San Antonio in June.

Each year, SNM chooses an image that exemplifies the most cutting-edge molecular imaging research and demonstrates the ability of molecular imaging to detect and diagnose disease and help select the most appropriate therapy.

Andrew Quon, M.D., assistant professor of radiology and chief of clinical PET/CT for the molecular imaging program at Stanford University in Stanford, Calif., and lead author of the study that yielded this year's image, said the image "reminds us that the future of molecular imaging lies

not just in cancer imaging but in a wide range of disease processes beyond oncologic applications."

For the prospective study, 20 patients presenting with spinal pain were evaluated with PET/CT using F-18 sodium fluoride (NaF) at least eight months after surgery. A total of 24 bone or tissue abnormalities were found in 17 of the 20 subjects. Of the original 20 patients, 12 received exploratory surgery and four participants received local anesthetic nerve blockade, a common and minimally invasive treatment that numbs the affected nerve, providing short-term pain management as an alternative to surgery. The research indicated that F-18 NaF PET/CT is highly effective for the evaluation of pain after spinal surgery—in more than 85 percent of cases, the exact source of patient's pain was identified.

Improved Interpretation of Large Datasets, Fewer Errors are Goals of New SIIM Project

The Society for Imaging Informatics in Medicine (SIIM) has launched the next chapter in the Transforming the Radiological Interpretation Process (TRIP™) initiative, aimed at making the interpretation of large data sets more efficient, improving the timeliness and effectiveness of communication and decreasing medical errors.

The latest TRIP project will define an imaging workflow lexicon so that standardized terms can be used to compare imaging practices, improve efficiencies and foster development of best practices. The project will also create a standard methodology to define and track such factors as patient waiting times, report turn-around times and technologist and radiologist efficiency.

TRIP is chaired by Bradley J. Erickson, M.D., Ph.D., who serves on the RSNA Radiology Informatics Committee and subcommittees focused on the Integrating the Healthcare Enterprise (IHE®) initiative and the RadLex® radiology lexicon. Dr. Erickson is also a member of the RSNA Imaging Informatics Coalition Subcommittee, which works with SIIM to plan collaborative activities between the two organizations.

RadLex and TRIP are complementary, Dr. Erickson said. RadLex contributors have identified anatomic terms and imaging device terms and are working on the "playbook" which will name examinations, while "TRIP is working on terms that describe the actual workflow steps, and if it goes well, these would become a part of RadLex," Dr. Erickson said. "TRIP is being done by many of the same people that are doing RadLex—SIIM and RSNA have a history of working well together."

Imaging equipment manufacturers are also working with TRIP as they develop processes and dashboards to improve provider performance and enhance quality patient care.

Users can go to trip-workflow.siiimweb.org to pull down data from the TRIP cloud-based dataset and use their own analytics tools to explore key performance indicators and workflow events from the research database.

Annual Meeting Watch

Career Burnout, Leadership Skillbuilding Sessions New for RSNA 2011



Workshop to Address Professional and Personal Renewal

A NEW WORKSHOP at RSNA 2011 will help participants examine their life and job satisfaction and assist them in creating their own strategic career plan.

"Career Renewal for Radiologists," a four-hour workshop to be offered Saturday at McCormick Place, is designed to help physicians combat burnout, facilitate career transitions and restore the joy of practicing medicine. The workshop, limited to 50 participants, will include a workbook.

The course will be presented by Peter S. Moskowitz, M.D., a clinical professor of radiology at the Stanford University School of Medicine, staff radiologist at the Lucile Packard Children's Hospital at Stanford and certified professional and organizational coach. Dr. Moskowitz is the founder and executive director of the Center for Professional and Personal Renewal in Palo Alto, Calif.

Profound changes in American healthcare are affecting physicians as never before, leading to increasing career dissatisfaction, burnout, disruptive behavior, medical errors, medical malpractice and premature retirement from practice, according to Dr. Moskowitz. Training programs in diagnostic imaging rarely address the topics of strategic career planning, physician wellness, or strategies for work-life balance, he said, leaving physicians unprepared to cope with the stresses of practice or the need to proactively manage their careers.

To be covered in the course:

- The six domains of work-life balance and how to sustain them
- The cyclical nature of medical careers and how to take advantage of the cycle of change
- Values-based time and money management for authentic living

General RSNA 2011 registration is under way and course enrollment begins July 6 at RSNA2011.RSNA.org.

New Refresher Course Track Focuses on Leadership

CURRENT AND PAST RSNA Board members are among those scheduled to present sessions as part of a new leadership refresher course track debuting at RSNA 2011.

"As the world of medicine and radiology become more complex, there is an increasing need for people with leadership and management skills," said RSNA Refresher Course Committee Chair Valerie P. Jackson, M.D., the Eugene C. Klatt Professor and chair of the Department of Radiology and Imaging Sciences at the Indiana University School of Medicine in Indianapolis.

"The Leadership Track will cover a variety of topics to help prepare radiologists, administrators, and others for leadership roles," said Dr. Jackson, adding that most sessions will include speakers from both private practice and academic radiology.

Sessions and presenters are:

Recruiting and Retaining Radiologists and Staff (RC 132)

James P. Borgstede, M.D.
C. Douglas Maynard, M.D.
R. Gilbert Jost, M.D.
William T. Thorwarth Jr., M.D.

Managing Conflicts of Interest (RC 232)

Jonathan S. Lewin, M.D.
Richard B. Gunderman, M.D., Ph.D.
Richard L. Ehman, M.D.

Compensation Plans (RC 332)

Ronald L. Arenson, M.D.
Pablo R. Ros, M.D., M.P.H., Ph.D.
Vincent P. Mathews, M.D.

How to Avoid Failure: Qualities of a Successful Leader (RC 432)

Norman J. Beauchamp Jr., M.D., M.H.S.
Arl Van Moore Jr., M.D.
Richard L. Baron, M.D.

Managing the Problem Employee (RC 532)

Valerie P. Jackson, M.D.
William G. Bradley Jr., M.D., Ph.D.
Paul A. Craig, J.D., R.N.

Radiologist-Hospital Relations (RC 632)

Cynthia S. Sherry, M.D.
Vijay M. Rao, M.D.
David M. Yousem, M.D.
Jason N. Itri, M.D.

Culture Trumps Strategy (RC 732)

Michael N. Brant-Zawadzki, M.D.
N. Reed Dunnick, M.D.
Sarah S. Donaldson, M.D.

Assessing, Recruiting, and Hiring Foreign-trained Radiologists (RC 832)

Stephen R. Baker, M.D.
Johan G. Blickman, M.D., Ph.D.

Continued on Page 22

Annual Meeting Watch

Enroll Now for Courses

COURSE ENROLLMENT for RSNA 2011 is under way. Online enrollment occurs instantly, while faxed or mailed registration forms are processed in the order they are received. The RSNA 2011 Advance Registration, Housing and Course Enrollment brochure was mailed in June and is also available at RSNA.org/register. Use this brochure to make the most of your RSNA 2011 experience. RSNA has organized the information in the course brochure to help you complete your enrollment in just a few steps. Find the courses you need, build your schedule and enroll quickly and easily online or via the print form. You must be registered for RSNA 2011 in order to enroll for courses.

Guarantee Your Seat!

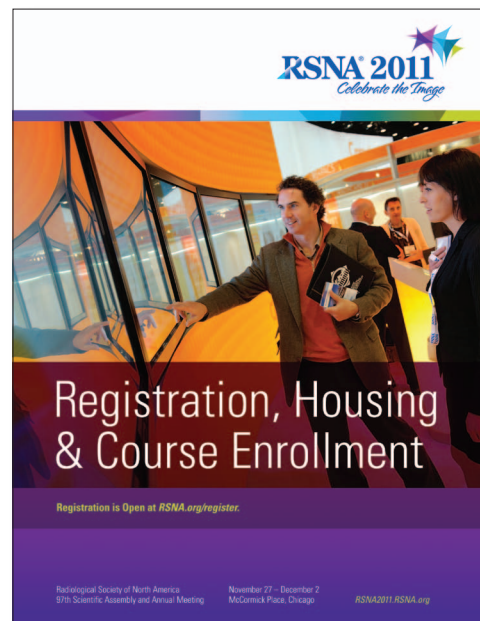
Tickets are required for various meeting components, including refresher and multi-session courses, informatics workshops and RSNA tours and events. All ticketed courses must be confirmed prior to November 23 to guarantee a seat. RSNA ticketed courses fill up fast, so ensure you get the selections you need by enrolling at RSNA.org/register. Onsite course ticketing has been eliminated. Registrants without tickets will be allowed entrance into a course after all ticketed registrants have been seated.

Exclusive Airline Discounts

RSNA has secured a special discount agreement with United Airlines not available to the general public. *United.com* offers a 5 percent discount on select United Airlines and United Express qualifying flights. Use promotional code 553SB to check schedules, make reservations or learn about ticketing information at *United.com*. You can also call United (1-800-521-4041) or your personal travel agent and mention the United promotional code to be eligible for discounted fares.

International Travelers

Receive up to a 20 percent discount with the Star Alliance network. Simply call the reservation office of any participating Star Alliance member airline and quote the event code UA10S11. Booking office information can be found at www.staralliance.com/conventionsplus. Gant Travel has been RSNA's official domestic travel agency for the past 11 years. Custom travel itineraries may be booked by phone and e-mail Monday-Friday, 7 a.m. to 6 p.m. Central Time. Additional taxes and booking fees will apply to airline ticket prices and after-hours emergency assistance.



Book with Gant Travel for a chance to win!

RSNA attendees who book air travel through Gant Travel by September 30, 2011, will be entered into a drawing to receive a \$500 (USD) travel credit good toward future travel on United Airlines. Contact Gant at 1-877-613-1192, international +1 011 630-227-3873, or RSNA@ganttravel.com.

Experience Christmas Around the World

Celebrate 70 years of the Christmas Around the World and Holidays of Light exhibit at the renowned Museum of Science and Industry.

What began as a United Nations Day salute to America's World War II allies in 1942 is now a beloved Chicago holiday tradition featuring more than 50 dazzling trees and displays decorated by communities across the city to reflect holiday customs from around the world. Dancing, singing, storytellers, school choirs and other festivities are sure to inspire the holiday spirit. The Museum of Science and Industry is located at 57th Street and Lake Shore Drive. For more information, go to www.msichicago.org.



Career Burnout, Leadership Skillbuilding Sessions New for RSNA 2011

Continued from Page 20

New Program Targets Hospital Administrators

A NEW, HALF-DAY SYMPOSIUM at RSNA 2011 seeks to educate hospital administrators about the workings and contributions of the radiology department and to create new synergies between radiologists and administrators in the era of healthcare reform.

The Hospital Administrators Symposium, offered Wednesday afternoon, will be moderated by Jonathan Berlin, M.D., M.B.A. Sessions and presenters are:

Radiology Capital Equipment
William E. Shiels II, D.O.

Thriving Under Radiology Future Payment Systems
Bibb Allen Jr., M.D.

Predicting and Capitalizing on New Imaging Technology
Robert P. Maliff, M.B.A.

Changing Radiologist-Hospital Relationships
Michael N. Brant-Zawadzki, M.D.

An open question and answer session with the presenter panel will conclude the symposium.

While geared toward hospital administrators, the symposium can help anyone interested in running an effective radiology department and maximizing relationships between the department and hospital administration, said Dr. Berlin, a clinical associate professor of radiology at the University of Chicago Pritzker School of Medicine.

"This program will be a mix of the very practical—as in the nuts and bolts of radiology capital budgeting—and strategic planning in terms of the changes coming in radiology payments and imaging technology," Dr. Berlin said. "There is a shift among radiologists into doing activities beyond film interpretation. They are a resource to administrators for cost containment and efficiency."

General RSNA 2011 registration is under way and course enrollment begins July 6 at RSNA2011.RSNA.org.



RSNA 2011 Registration

How to Register

There are four ways to register for RSNA 2011:

Fastest way to register!

1 INTERNET

Go to RSNA.org/register

2 FAX (24 hours)

1-800-521-6017

1-847-996-5401

3 TELEPHONE

(Mon.-Fri. 8:00 a.m. – 5:00 p.m. ct)

1-800-650-7018

1-847-996-5876

4 MAIL

Experient/RSNA 2011

568 Atrium Drive

Vernon Hills, IL 60061 USA

Registration Fees

	BY NOV. 4	AFTER NOV. 4	
\$ 0	\$100	RSNA/AAPM Member	
0	0	RSNA/AAPM Member Presenter	
0	0	RSNA Member-in-Training, RSNA Student Member and Non-Member Student	
0	0	Non-Member Presenter	
165	265	Non-Member Resident/Trainee	
165	265	Radiology Support Personnel	
750	850	Non-Member Radiologist, Physicist or Physician	
750	850	Hospital or Facility Executive, Commercial Research and Development Personnel, Healthcare Consultant and Industry Personnel	
300	300	One-day registration to view only the Technical Exhibits	

Important Dates

October 21	International deadline to have full-conference materials mailed in advance
November 4	Final discounted advance registration, housing and course enrollment deadline to have full-conference materials mailed in advance
Nov. 27 – Dec. 2	RSNA 97th Scientific Assembly & Annual Meeting

For more information about registering for RSNA 2011, visit RSNA2011.RSNA.org, e-mail reginfo@rsna.org or call 1-800-381-6660 x7862.

For Your Benefit

Honoring a Life Dedicated to Learning

Although he officially retired in 1997, radiology pioneer Jesse T. Littleton III, M.D., never stopped learning.

In fact, in 2011 alone—the year he turned 94—Dr. Littleton was awarded 5 *AMA PRA Category 1 Credits™*

The Value of Membership from RSNA for courses reflecting his lifelong commitment to head and neck, chest and skeletal radiology. When he passed away in May—his remarkable intellect and diagnostic skills intact—Dr. Littleton was still looking ahead to that next course, still seeking the knowledge he craved for the duration of his life.



Littleton

“His commitment to continuing education was just in his nature, part of his makeup,” said his wife, Mary Lou. She noted that throughout his career, Dr. Littleton was active in not only obtaining CME himself, but also providing it to others in the field.

Beginning in the 1970s, many of Dr. Littleton’s courses were approved for CME credit. As formal documentation of CME grew, he began earning certification from the Accreditation Council for Continuing Medical Education (ACCME) through various organizations.

A professor of radiology at the University of South Alabama, College of Medicine, from 1977 until he retired, Dr. Littleton earned a reputation as a straight-forward, hands-on teacher. He sought many RSNA courses of special interest to him and greatly appreciated the broad spectrum of radiology education offered at RSNA annual meetings, his wife said. He attended every RSNA meeting from 1951 until 2000, often as a presenter or an exhibitor. He did extensive research on emergency room radiology and designed an emergency X-ray device that was demonstrated on the RSNA technical exhibits floor for about 10 years.

Possessing an inventive and mechanical mind, Dr. Littleton was a pioneer in

pluridirectional tomography, the body section imaging that preceded CT. He later became the first radiologist to show that cancerous lung masses would enhance when a patient was injected with a contrast media.

Despite his gradually declining health and technological barriers, Dr. Littleton remained committed to seeking the latest medical information until his final days.

“His commitment to continuing education was just in his nature, part of his makeup.”

Mary Lou Littleton

Ultimately, his passionate commitment to learning was a perfect match for the lifelong partnership he shared with RSNA, his wife said. “Many of his former residents have said that basic radiology elements they learned from Dr. Littleton will stay with them forever,” she said. “He was a forward-looking man who was very physically and mentally active in all areas, so of course that included continuing education. RSNA was a great asset in that regard.”

EDITOR’S NOTE

Jesse Talbot Littleton III, M.D., passed away May 22, at his home in Theodore, Ala. He was 94. *RSNA News* honors Dr. Littleton’s lifelong devotion to radiology, continuing education and RSNA. A full obituary on Dr. Littleton will appear in an upcoming issue of *Radiology*.

Residents & Fellows Corner

Additional Physics Learning Modules Now Available

Now available on *RSNA.org* are 15 new RSNA/AAPM Online Physics Modules to supplement 30 released last year.

The online modules are designed to educate radiologists and radiology residents about important concepts in physics as identified in the AAPM Physics Curriculum. Each module was developed by a team of individuals including at least one physicist and one radiologist with an extensive peer review process for content and quality. The modules are self-guided and include self-testing features to create a comprehensive experience for the user.

The 15 new titles are:

- Interaction of Ultrasound Tissue
- Medical Image Perception, Performance Evaluation, and CAD
- Interactions of Radiation and Tissue
- Image Display
- Fundamentals of Radiation Protection
- Digital X-Ray Imaging
- Atoms, Radiation and Radioactivity
- Foundations of Medical Image Quality: Contrast, Sharpness, and Noise
- Evaluation and Derivatives of Medical Image Quality
- X-Ray Tubes and Spectra
- MRI: Image Artifacts
- Image Processing and Reconstruction
- CT in Pediatrics
- PACS
- MRI: Concepts and Tissue Properties

RSNA/AAPM Online Physics Modules are available free to RSNA members as a benefit of membership. To access the modules, go to RSNA.org/Education/physics.cfm.

RSNA.org

Enroll for RSNA 2011 Courses Online

Course enrollment for RSNA 2011 is now under way at RSNA.org/register. Highlights from this year’s lineup of refresher, informatics and multisession courses include:

- Leadership Refresher Course Track
- Case-based Review Breast and Ultrasound
- Resident/Fellows Symposium
- Hospital Administrators Symposium
- Career Renewal for Radiologists Workshop
- Diagnosis Live: The Audience Participation Game

Tickets are required for various meeting components including refresher and multi-session courses, informatics workshops and RSNA tours and events. All ticketed courses must be confirmed before November 23 to guarantee a seat. Onsite course ticketing has been eliminated.

For more information on course enrollment, see Annual Meeting Watch on Page 21.

The screenshot shows the RSNA 2011 website interface. At the top, it says "RSNA 2011 Celebrate the Ties" and "97th Scientific Assembly and Annual Meeting November 27 - December 2, McCormick Place, Chicago". The main navigation includes Home, Attendees, Technical Exhibits, Meeting Program, Meetings, and Newsroom. The primary content area is titled "Registration, Housing & Course Enrollment" and includes links for "RSNA Members & Presenters", "AAPM Members", and "Non-Members". There are also links for "Registration Documents", "Registration Brochure", "Registration & Housing Form", and "Airline Discounts". A table titled "Important Dates & Deadlines" lists key dates: May 4 (RSNA/AAPM member registration and housing opens at 8:30 a.m. CT), June 1 (General registration and housing opens at 8:30 a.m. CT), July 6 (Course enrollment opens at 8:30 a.m. CT), and November 4 (Final discounted advance registration, housing and course enrollment deadline to have full conference materials mailed in advance). A note at the bottom states: "Register by November 4 to receive the discounted registration fee and full conference materials mailed to you in advance. International visitors must register by October 21 to receive these materials in advance. Registrations received after November 4 will be processed at the increased fee and conference materials must be obtained at the McCormick Place Convention Center."

Web Tip

myPortfolio Bolsters Resident Resources

Resident archiving and file uploading have been added to the long list of resources available on RSNA’s free Web-based Resident Learning Portfolio, available through myRSNA®.

Residents can now upload files (PowerPoints, PDFs, Word and Excel documents, images) to every page of the portfolio, providing a more robust functionality.

Designed for program directors and coordinators, the archiving feature automatically hides—or archives—a resident from the administrator’s portfolio after the resident has graduated. Although the resident’s portfolio is archived, the portfolio information remains intact and can be restored to the administrator’s account.

The ever-evolving site also features new redesigned flow for better ease of use.

Users can submit comments, concerns or questions about myPortfolio to residents_portfolio@rsna.org.

COMING NEXT MONTH

Brimming with vitality year-round, Chicago simply sparkles during the holiday season with a full spectrum of attractions including art, music, dining and world-renowned museum exhibits. Next month, *RSNA News* will spotlight the full roster of Chicago events including our Insider’s Guide to Chicago’s Best Deals featuring the many free activities available in the Windy City.

IDEAS > GRANTS > PRACTICE

R&E



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