Ultrasound Could Aid in Skin Cancer Detection

ALSO INSIDE:
- SPECT Imaging Technique Promises Earlier Brain Tumor Detection
- Reaccreditation Underscores RSNA’s Commitment to Continuing Education
- Daily Chest X-rays Not Necessary in ICU
- New Website is Critical Companion to Medical Students

RSNA 2010 Course Enrollment Begins June 30
Pushing the Potential of MR Imaging to Evaluate Patients’ Response to Radiation Therapy for Prostate Cancer

Thanks to an RSNA R&E Foundation research grant, Dr. Westphalen gained protected time to develop a new line of investigation techniques and algorithms that can more definitely identify the biochemical nature of prostate cancer’s recurrence and help physicians and patients choose the best course of treatment.

Since 1984, the RSNA Research & Education Foundation has enabled the brightest minds in radiology and related sciences to discover new methods to fight disease, devise sophisticated new technologies, improve the patient care process and cultivate the workforce of the future.

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RSNA 2010 HONOREES NAMED

RSNA has announced the Society will honor the following individuals during RSNA 2010:

GOLD MEDALISTS
William R. Brody, M.D., Ph.D.
Baltimore

David H. Hussey, M.D.
Georgetown, Texas

Elias A. Zerhouni, M.D.
Pasadena, Md.

HONORARY MEMBERS
Claude Manelle, M.D.
Auch, France

Iain McCall, M.D.
Sherborne, United Kingdom

Kazuro Sugimura, M.D.
Kobe, Japan

RSNA MEETING PROGRAM DEDICATION
Peggy J. Fritzsche, M.D.

Boyd is Rutgers Distinguished Alum
A pioneer of fan-beam CT technology, Douglas P. Boyd, Ph.D., has been inducted into the Hall of Distinguished Alumni at Rutgers University in Newark, N.J. Dr. Boyd, a 1968 Rutgers graduate, went on to Bell Labs, Stanford University and the University of California at San Francisco, where he founded the Physics Research Laboratory in the Department of Radiology. The holder of 13 U.S. patents, Dr. Boyd founded Imatron and InVision Technologies and is currently CEO of TeleSecurity Sciences, Inc.

Horrow Receives Philadelphia Award
The Philadelphia Roentgen Ray Society has awarded its 2010 Mary S. Fisher Outstanding Educator Award to Mindy Horrow, M.D., section chief of body imaging at Albert Einstein Medical Center in Philadelphia. Dr. Horrow received Albert Einstein’s Outstanding Clinical Teacher Award in 1994 and 2004.

Pisano, Thrall Presented AUR Gold Medals
The Association of University Radiologists (AUR) awarded its 2010 gold medals to Erita D. Pisano, M.D., and James H. Thrall, M.D.

A renowned expert in mammography, Dr. Pisano is dean of the College of Medicine at the Medical University of South Carolina (MUSC) in Charleston, a member of AUR’s Public Information Advisors Network and an AUR past-president.

Dr. Thrall is radiologist-in-chief at Massachusetts General Hospital, a professor of radiology at Harvard Medical School and president of the American College of Radiology Board of Governors. He received the RSA Gold Medal in 2007.

Forensic Radiology among Topics for ASRT@RSNA 2010
ASRT@RSNA 2010, a 1½-day education program for radiologic technologists, will kick off with a session on forensic radiology and radiography—past, present and future. Technologists may earn continuing education credit through ASRT@RSNA 2010, which begins Wednesday afternoon and runs all day Thursday. ASRT@RSNA 2010 sessions are:

Wednesday, December 1
• Forensic Radiology and Radiography: Historical Perspective, Current Status, and Future Challenges
• Multimodality-Proficient Cardiac Imaging Technician
• Integrating Imaging into Radiation Therapy
• Current Trends in Imaging

Thursday, December 2
• The Improbable is Very Probable
• Multidisciplinary CT Operation Gap Analysis: Findings, Follow-through and Future Practice—A Canadian Perspective
• Trauma Care in the United Kingdom: The Changing Roles of Radiographers
• ACR and InterSectarian Accreditation Commission (IAC) Accreditation
• Digital Imaging: What Every Radiographer Needs to Know
• Lateral Violence and Bullying in the Workplace

Associated Sciences Program to Explore Ethical Dilemmas
Among the topics to be tackled during the RSNA 2010 Associated Sciences Program are regulatory and business ethics and the role of ethics in clinical excellence. The program is sponsored by the Associated Sciences Consortium, 12 organizations representing radiologic nurses and technologists, radiology business managers and administrators and other allied professionals. Associated Sciences sessions for RSNA 2010 are:

Monday, November 29
• Ethical Dilemmas: Regulatory and Business Ethics in Medicine Today
• Ethical Dilemmas: The Vital Role of Ethics in Clinical Excellence
• Picking Up the Pieces: Forensic Radiography Following Mass Disasters
• Imaging Facility Design in an Age of Diminishing Resources

Tuesday, November 30
• Who’s Driving Radiology: Trends in Hospital/Radiologist Alignment
• The Clinical Impact of Molecular Imaging
• New Regulations and Their Impact on Radiation Practice
• Managing Risk for Optimal Patient Safety

Wednesday, December 1
• Radiology’s Changing Dynamics
• Imaging through a Cross-cultural Lens: A Global Perspective on Ethics, Standards and Human Resource Issues

IN MEMORIAM
Frank Larkin Hussey Jr., M.D.
A leading radiation oncologist at the forefront of using radiation therapy in the fight against cancer, Frank Larkin Hussey Jr., M.D., died on April 26. He was 84.

Born in Milwaukee, Dr. Hussey spent most of his life in the Chicago area, working as an attending physician, radiologist and radiation oncologist from 1979 to 1995 at Lutheran General Hospital (LGH) in Park Ridge, Ill., and Alexian Brothers Hospital in Elk Grove Village, Ill. At LGH, he served as chair of the Department of Radiology from 1968 to 1971 and as president of the medical staff in 1974. Dr. Hussey was an attending radiation oncologist and conducted research at the Fermilab Cancer Treatment Center in Batavia, Ill.

A 1993 RSNA Gold Medal recipient, Dr. Hussey served as president of the Chicago Radiological Society (CRS) in 1976 and received CRS’s gold medal in 1990. Dr. Hussey was a dedicated supporter of the RSNA R&E Foundation, donating as a Pacesetter for the recent Silver Anniversary Campaign. Dr. Hussey was a member of RSNA’s Public Information Advisory Board. For 35 years, Dr. Hussey was involved with the American College of Radiology where he served on numerous boards, committees and delegations. He was also a longtime member of the American Medical Association.
Earlier this year in Tampa, Fla., T. Dotter Lecture at the SIR meeting held in Philadelphia, delivered the 2010 Dr. Charles Levin Professorship and Chair was established in the Department of Radiology at Jefferson University. A 2009 RSNA Gold Medal recipient, American Roentgen Ray Society. A new biography of Dr. Kaplan, written by Charlotte Jacobs and recently published by Stanford Press, Henry Kaplan and The Story of Hedy.

David C. Levin, M.D.
The Society of Interventional Radiology (SIR) presented gold medals to John D. Fulco, M.D., Irvin F. Hawkins Jr., M.D., and David C. Levin, M.D., for Continuing Medical Education (ACCME).

A three-year reaccreditation by the Accreditation Council for Continuing Medical Education (ACCME) resulted in nearly $2.3 million. A full list of recipients and their grant projects will be published in the October issue of RSNA News.

The Magic of a Mentor
Every radiologist can recount with a personal story why s/he decided to study radiology. Invariably the memory tracks to a mentor—mentoring is the ultimate joy of medicine. The ability to give to your mentees, so someday they can do likewise, is the true gift of education. One of my personal goals in medicine is to be just like those mentors who taught me. There were many, but the person who was most magical was Henry Kaplan, M.D.

Dr. Kaplan was a tough task master. He gave 100 percent, but I believed he expected 110 percent in return. His smile of approval was the needed reward; it was unreturnable to dispute point him. I was totally in awe when he was absolutely silent. Most magical was Dr. Kaplan’s sensitivity to his patients and his drive to find solutions to seemingly impossible problems. These characteristics defined his persona, which he imparted to his mentees. A student once said to Dr. Kaplan, “Most great achievements of man seem to originate from the greatness of spirit of their teachers. It is this which enables your followers to carry on your work and never let the torch fall.” All mentors should strive to embody these characteristics.


| RSNA Participates in AOCR

“Radiology—The Core of Healthcare” was the theme of the 13th Asian Oceanian Congress of Radiology (AOCR), held earlier this year in Taipei, Taiwan. Attendance at the meeting was estimated at about 2,000.

2010 RSNA President Nedwig Hricak, M.D., Ph.D., M.S. (front row, center), was among those who shared the latest breakthroughs—from the bench to the clinic—in the specialty worldwide.

Increasing numbers of radiologists from Asian countries are involved with RSNA, as members, authors of journal articles and annual meeting attendees. Dr. Hricak and RSNA Executive Director Mark G. Watson told the executive committee of the Asian Oceanian Society of Radiology.

A “China Presents” session highlighting the very latest in radiologic research happening in that country is planned for RSNA 2010. An article about the “China Presents” session will appear in the August issue of RSNA News.

SIR Bestows Honors
The Society of Interventional Radiology (SIR) presented gold medals to John D. Fulco, M.D., Irvin F. Hawkins Jr., M.D., and David C. Levin, M.D.

Past chief-of-staff of the Ellis Health System in New York and past-president of the Medical Society of the County of Schenectady, Dr. Fulco served as SIR’s first representative on the American Medical Association’s House of Delegates, beginning in 1991. He still holds the position today.

An internationally recognized pioneer in needle and catheter design, Dr. Hawkins is a professor of radiology and surgery at the University of Florida College of Medicine. He has received the silver and gold medals of the American Roentgen Ray Society. A 2009 RSNA Gold Medal recipient, Dr. Levin is professor and chair emeritus of radiology and surgery at the University of Pennsylvania School of Medicine in Philadelphia, delivered in 2010 the Charles T. Dentare Lecture at the SIR meeting held earlier this year in Tampa, Fla.
Ultrasound Could Aid in Skin Cancer Detection

Researchers in two separate projects have demonstrated the ability to diagnose skin cancer with more accuracy and efficiency using innovative ultrasound applications.

University of Missouri researchers are studying how photoacoustic ultrasound can help physicians identify melanoma cells in the sentinel lymph node, said John Viator, Ph.D., assistant professor in the Department of Biological Engineering and Department of Dermatology. The research is detailed in the July 2009 issue of Journal of Biomechanical Engineering.

The current method of detecting melanoma cells begins with the oncologist removing the lymph node, generally about the size of a lima bean, for examination by a pathologist, according to Dr. Viator, who added the process is time-consuming and costly.

“This pathologist performs histology on the lymph node and examines slices under a microscope,” Dr. Viator said. “But a histology slice is about six microns thick. With a lima bean-sized lymph node, you can take 1,000 or 2,000 different slices but typically only check five to 10. Obviously it’s possible to miss something.”

In the photoacoustic method, a tabletop device to scan a lymph node with laser pulses. About 95 percent of melanoma cells contain melanin, which reacts to the laser beam, absorbing the light. The laser causes the cells in the lymph node to expand and contract rapidly, generating a photoacoustic pulse, or popping sound detected by piezoelectric acoustic sensors located near the lymph node. Laser-induced ultrasound allows the clinician to precisely guide the slicing, saving time and money, and most importantly, leading to better patient care. “The laser method gives the clinician more information about the skin cancer patient, whether at stage 2 or stage 3, and allows him or her to be more certain about treatment,” Dr. Viator said.

In the study, Dr. Viator cultured a malignant human melanoma cell line and injected a healthy canine lymph node. He then used the laser to determine the best way to locate the cancer cells. Dr. Viator and his team are expanding photoacoustic research to cancer cells including breast and prostate. Because those cells have no color, researchers are developing a system using gold nanoparticles that magnetically attract to receptors on the cancer cells, allowing the laser system to detect them.

Elastography Could Reduce Biopsies

Combining high-frequency ultrasound with elastography has the potential to improve the efficiency of skin cancer diagnosis by reducing the need for biopsies, according to Elliot Siegel, M.D., co-author of a study presented at RSNA 2009.

“The questions were, number one, could we determine the extent of the skin lesions below the surface using high-frequency ultrasound and, number two, could we differentiate between benign and malignant skin lesions by determining their elastographic properties,” said Dr. Siegel, professor and vice-chair of the Department of Radiology at the University of Maryland School of Medicine. Bahar Daaghi, M.D., a dermatologist at Wayne State University in Detroit, co-authored the study.

These early findings are significant considering the growing number of patients battling skin cancer. More than 1 million cases of skin cancer are diagnosed in the U.S. every year, according to the American Cancer Society.

Dr. Siegel and Daaghi took images of 50 patients with an ultrasound system that utilizes a transducer capable of operating at a frequency up to 16 megahertz. While unable to penetrate deeply enough to image internal organs, the high-frequency transducer produces detailed anatomic images of the skin, Dr. Siegel said.

Using the transducer to also measure the elasticity ratio of the lesions and adjacent normal skin, researchers found that malignant tissue was five or more times harder than surrounding normal tissue and benign tissue was consistently three or less times harder than adjacent normal tissue in each case. “We had 100 percent sensitivity, 100 percent specificity and 100 percent accuracy in our testing when we applied the elasticity ratio,” Dr. Siegel said. High-frequency ultrasound with elastography could reduce the guesswork, cost and invasive technique currently involved with taking a biopsy of skin lesions, Dr. Siegel said.

“When the decision is made to excise a lesion, the potential for high-frequency ultrasound-guided surgery has been another important implication of our research for clinical dermatologists,” Dr. Siegel said.

Dr. Daaghi, who has begun training medical students on the ultrasound technology, will continue her research at the National Institutes of Health.

The need is there for dermatologists to use imaging to examine skin lesions,” Dr. Daaghi said. “The need and the market are there for technology to detect microscopic skin cancer cells.”

For more information about the studies cited in this article and to view a video featuring John Viator, Ph.D., explaining photoacoustic ultrasound, go to rsnanews.org.

The laser method gives the clinician more information about the skin cancer patient, whether at stage 2 or stage 3, and allows him or her to be more certain about treatment.”

John Viator, Ph.D.
The technique, which uses a Compton camera to acquire images faster using less radioactive material, could eventually allow clinicians to combine SPECT scanning with MR imaging to create more effective imaging studies, according to researchers with Project ProSPECTus. The project is led by the University of Liverpool in England with the nuclear physics research group and technology department at the Science and Technology Facilities Council (STFC) at Daresbury Laboratory in Cheshire, England.

Currently in the simulation stage, phantom imaging utilizing ProSPECTus protocol is expected to begin in about a year. SPECT imaging now utilizes an Anger camera, which relies on a collimator—a filtering device with many pinholes that allows some of the gamma rays through and uses geometry to identify exactly where they are coming from—to build a 3-D picture of the biological process at work. With a Compton camera, a tiny amount of a radioactive pharmaceutical is injected into the body and the gamma rays from the material are detected by the camera. Because the Compton camera identifies the origin of the gamma rays without the collimator, less radioactive material is necessary.

“The technique is 100 times more sensitive than that of the traditional Anger camera,” said project spokesman Andy Boston, Ph.D., senior lecturer in the Department of Physics at the University of Liverpool. “The SPECT/MR imaging multimodal-ity is hugely important as it allows for performance of simultaneous anatomical and functional imaging studies.”

Experts Reserve Judgment

Although he believes the ProSPECTus project has considerable potential, one nuclear medicine instrumentation expert said the jury will be out until Liverpool researchers can produce images to back up their predictions.

“This is not a new approach,” said Simon R. Cherry, Ph.D., professor of biomedical engineering at the University of California at Davis and chair of the Nuclear Medicine Committee. “People have been trying Compton cameras for decades and so far no one has demonstrated superior performance to conventional gamma cameras for clinical applications.

“It is true that because they don’t have a collima- tor they will detect a lot more events, so it would appear that the sensitivity is higher,” Dr. Cherry continued. “But each event actually carries less position information—more of an event from a standard SPECT scan, and therefore, the true benefit of the improved sensitivity still needs to be demonstrated.”

As Dr. Boston explains, the primary issues with the Compton camera—achievable noise level, energy resolution and position resolution in the scatter-sensor—are addressed by the new technology. Utilizing recently available state-of-the-art digital electronics and optimized low-noise sensing elements, ProSPECTus is able to combine these three crucial elements in order to deliver on the camera’s potential. The objective of ProSPECTus is to demonstrate this experimentally.

Promise Lies In Combining SPECT, MR Imaging

Although he agrees that images from phantoms are necessary to accurately assess the technology, SPECT expert Homer A. Macapinlac, M.D., said ProSPECTus stands to make a significant change in medical imaging if it succeeds.

“Clinically we need all the help we can get with SPECT imaging,” said Dr. Macapinlac, a professor and chair of nuclear medicine at M.D. Anderson Cancer Center in Houston and chair of the Nuclear Medicine Subcommittee of RSNA’s Scientific Program Committee. “Its greatness lies in its traces; its Achilles’ heel is the poor sensitivity of the imaging technique.”

While Dr. Macapinlac compares the injected radio pharmaceutical in SPECT to a Ferrari engine, he points out that the imaging tech-nique—which acts as the wheels that put trac-tion on the road—is poor in terms of the sensi-tivity. It takes too darn long to complete a study. We want an image that can take a snapshot. The faster we can do it the better.

The potential for merging SPECT and MR imaging is the greatest promise of the ProSPECTus technology, he said.

“MR imaging offers exquisite resolution of the anatomy as well as some functional images for blood flow, but if you could combine it with the SPECT tracers, there are innumerable things you could measure,” Dr. Macapinlac said. “Researchers could view the function and the anatomy in a single sitting.”

Operating SPECT scanners simultaneously with MR imaging is not a current option due to MR imaging’s strong magnetic field and the metal parts included in traditional scanners, Dr. Boston said.

With ProSPECTus, it would be possible to fit the SPECT system retroactively to the approximately 350 imaging scanners across the U.K.,” Dr. Boston said.

For patients, it would mean fewer appointments and earlier and more effective diagnosis of tumors, which means a higher probability of effective treat-ment, Dr. Boston added.

Phantom Imaging Expected Within Year

Researchers are building the cutting-edge detectors that will be used to gather images from phantoms, according to Ian Lazarus, Ph.D., of STFC’s Nuclear Physics team at Daresbury Laboratory.

“We have simulated the detector in order to prove that the Compton imaging technique will produce data from which we can produce superior images,” Dr. Lazarus said. “We’ve made Compton images for other projects including a small animal PET scanner using similar techniques. Right now the detectors are being fabricated.”

At the end of two years, researchers aim to demon-strate the images on phantoms, Dr. Lazarus said. “Within the scope of this project, the trials will only be on phantoms,” he said. “After that, we’re ready to do whatever is necessary to take it to the market.”

The SPECT/MR imaging multimodality is hugely important as it allows for performance of simultaneous anatomical and functional imaging studies.”

Andy Boston, Ph.D.
Reaccreditation Underscores RSNA’s Commitment to Continuing Education

While many organizations are opting to forego reaccreditation with the Accreditation Council for Continuing Medical Education (ACCME), RSNA not only sought reaccreditation, but received the renewal for six years—the longest possible term.

In its letter of compliance and commendation, ACCME credited RSNA with “demonstrating that yours is a learning organization and a change agent for the physicians you serve.” The reaccreditation reaffirms RSNA’s unique role as a leader in the increasingly complicated world of continuing medical education (CME), said Richard L. Baron, M.D., chair of radiology at The University of Chicago Medical Center and RSNA Board Liaison for Education.

“I’ve been involved myself in preparing ACCME applications for organizations for more than 20 years, and I have seen the full spectrum of responses from the ACCME,” Dr. Baron said. “I have never before seen such a positive process where there were virtually no issues raised by the examiner and only laudatory comments. That is truly exceptional.”

“The outstanding evaluation from ACCME reflects the talent and effort of the staff and of our volunteer faculty who help design and deliver all of our educational products,” Dr. Baron added.

During the yearlong reaccreditation process RSNA demonstrated how it has implemented ACCME’s 2006 Updated Accreditation Criteria, how the Society’s educational planning and programming result in measurable outcomes, and how CME plays an integral role in RSNA’s collaborative relationships and practice improvement initiatives.

“RSNA demonstrated compliance in all 22 ACCME criteria, including educational planning, evaluation and improvement, and engagement with the environment. The reaccreditation extends to March 2016. Thousands of physicians turn to RSNA for their continuing medical education each year. In 2009 alone, RSNA issued 122,462 CME credits to physicians—representing anywhere from one to 90.75 credits each—and nearly 2,000 more to other radiologic healthcare professionals. “We’re continually looking to take materials that we’ve peer reviewed and vetted—like self-assessment modules (SAMS)—and package them so that they’re readily available to meet the changing needs of the world as we face them,” Dr. Baron said.

At its December board meeting, ACCME reported that 142 medical education providers in 2009 either lost their accreditation or did not apply for renewal. Thirty-three organizations had their accreditation end during the past 12 months.

While the American Board of Radiology (ABR) and third-party payers are putting more pressure on radiologists to earn certified education credits, fewer organizations are available to deliver them, Dr. Baron continued. “So it becomes even more important to our community that RSNA remains strong and vital to be able to meet all their expectations and needs.”

The increasing complexity involved with reaccreditation as well as the difficulty of demonstrating measurable outcomes have resulted in more organizations withdrawing from the process, Dr. Baron said.

“In the last three or four years, ACCME has gradually increased oversight and compliance requirements and it’s gotten very difficult to measure outcomes,” he said. “They’re no longer willing to just accept your word that you’re offering a good program and the word of your registrants who say ‘I liked it.’ They’re now asking, ‘What are the outcomes?’ How can you show us that you’re improving patient care by raising the educational level? It’s gotten so difficult to document that many organizations are not going through the process.”

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Richard L. Baron, M.D.
Daily Chest X-rays Not Necessary in ICU

Although new research has added to mounting evidence that abandoning daily routine chest X-rays in the intensive care unit (ICU) would not adversely affect patient outcomes, investigators said it isn’t likely the protocol will be eliminated any time soon.

In a meta-analysis of eight clinical trials held over a 12-year period, Yuji Oba, M.D., and Tareq Zaza, M.D., of the University of Missouri-Columbia concluded that abandoning daily routine chest X-rays in the ICU did not adversely affect a patient’s mortality or length of stay. The study, “Abandoning Daily Routine Chest Radiographs in the Intensive Care Unit,” was published in the May 2010 issue of Radiology (RSNA.org/Radiology).

Because of a long-standing protocol based largely on American College of Radiology (ACR) Appropriateness Criteria recommending daily chest radiographs for mechanically ventilated patients—and more if necessary—Dr. Zaza said the practice is likely to remain solidly entrenched in the majority of ICUs.

“As a senior pulmonary and critical care fellow I have been asked many times by residents and students whether we really need to give an ICU patient daily chest X-rays,” Dr. Zaza said. “Traditionally the answer is ‘yes’ based on ACR guidelines and a practice that has been widely adopted in ICUs.

After researching the literature, we found that there is more and more evidence that at least calls into question the practice of administering daily routine chest X-rays in the ICU.”

Along with the ACR guideline, Dr. Oba says that research from the 1980s and 90s likely exaggerated the usefulness of daily chest radiographs, compounding reliance on the daily protocol, he said. “Once a certain practice is considered or established as a standard of care, clinicians tend to stick to it even if it is not supported by solid scientific evidence,” Dr. Oba said.

Dr. Zaza and Oba recommend that ICUs develop an on-demand approach in which chest X-rays are taken when clinically indicated—a protocol that would reduce workload, radiation exposure to staff and patients, and healthcare costs.

Analysis Included More than 7,000 Patients

The meta-analysis of randomized, controlled or observational trials compared outcome efficacy of daily routine versus clinically indicated chest X-rays in patients admitted to an adult medical or surgical ICU. Research comprised 7,078 ICU patients—3,429 who received daily chest X-rays and 3,649 who received clinically indicated chest X-rays—and included hospital or ICU mortality, ICU or hospital length of stay or ventilator days between the on-demand and daily routine groups, the analysis determined.

Researchers failed to find any subgroup that benefited from daily routine chest X-rays in the ICU—an area Drs. Oba and Zaza said still needs further study.

Abnormal Findings Fuel Reliance on Daily X-Rays

Two schools of thought about the usefulness of routine X-rays still exist, according to Dr. Oba, who attributes opposing opinions to differences in patient population, enrollment criteria and the degree of reliance on radiographic findings.

While the meta-analysis showed that chest X-rays in the ICU often revealed abnormal findings, rarely did they affect patient management, Drs. Oba and Zaza said. One radiologist whose research was included in the meta-analysis said he believes those abnormal findings are the crux of the reluctance to abandon daily routine chest X-rays.

In a meta-analysis that included more than 7,000 patients, University of Missouri-Columbia researchers Yuji Oba, M.D. (top left), and Tareq Zaza (top right), concluded that abandoning daily routine chest X-rays in the ICU did not adversely affect a patient’s mortality or length of stay. Jaap Stoker, M.D., Ph.D., (bottom right), agrees with the conclusion and urges the American College of Radiology to review its current recommendations on the practice.

Eliminating daily chest X-rays did not affect either hospital or ICU mortality and there was no statistically significant difference in ICU or hospital length of stay or ventilator days between the on-demand and daily routine groups, the analysis determined. Researchers failed to find any subgroup that benefited from daily routine chest X-rays in the ICU—an area Drs. Oba and Zaza said still needs further study.

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In a meta-analysis of eight clinical trials held over a 12-year period, Yuji Oba, M.D., and Tareq Zaza, M.D., of the University of Missouri-Columbia concluded that abandoning daily routine chest X-rays in the ICU did not adversely affect a patient’s mortality or length of stay. The study, “Abandoning Daily Routine Chest Radiographs in the Intensive Care Unit,” was published in the May 2010 issue of Radiology (RSNA.org/Radiology).

Because of a long-standing protocol based largely on American College of Radiology (ACR) Appropriateness Criteria recommending daily chest radiographs for mechanically ventilated patients—and more if necessary—Dr. Zaza said the practice is likely to remain solidly entrenched in the majority of ICUs.

“As a senior pulmonary and critical care fellow I have been asked many times by residents and students whether we really need to give an ICU patient daily chest X-rays,” Dr. Zaza said. “Traditionally the answer is ‘yes’ based on ACR guidelines and a practice that has been widely adopted in ICUs.

After researching the literature, we found that there is more and more evidence that at least calls into question the practice of administering daily routine chest X-rays in the ICU.”

Along with the ACR guideline, Dr. Oba says that research from the 1980s and 90s likely exaggerated the usefulness of daily chest radiographs, compounding reliance on the daily protocol, he said. “Once a certain practice is considered or established as a standard of care, clinicians tend to stick to it even if it is not supported by solid scientific evidence,” Dr. Oba said.

Dr. Zaza and Oba recommend that ICUs develop an on-demand approach in which chest X-rays are taken when clinically indicated—a protocol that would reduce workload, radiation exposure to staff and patients, and healthcare costs.

Analysis Included More than 7,000 Patients

The meta-analysis of randomized, controlled or observational trials compared outcome efficacy of daily routine versus clinically indicated chest X-rays in patients admitted to an adult medical or surgical ICU. Research comprised 7,078 ICU patients—3,429 who received daily chest X-rays and 3,649 who received clinically indicated chest X-rays—and included hospital or ICU mortality, ICU or hospital length of stay or ventilator days between the on-demand and daily routine groups, the analysis determined. Researchers failed to find any subgroup that benefited from daily routine chest X-rays in the ICU—an area Drs. Oba and Zaza said still needs further study.

Abnormal Findings Fuel Reliance on Daily X-Rays

Two schools of thought about the usefulness of routine X-rays still exist, according to Dr. Oba, who attributes opposing opinions to differences in patient population, enrollment criteria and the degree of reliance on radiographic findings.

While the meta-analysis showed that chest X-rays in the ICU often revealed abnormal findings, rarely did they affect patient management, Drs. Oba and Zaza said. One radiologist whose research was included in the meta-analysis said he believes those abnormal findings are the crux of the reluctance to abandon daily routine chest X-rays.
New Website is Critical Companion to Medical Students

While radiology plays an increasingly important role in managing patient care, the specialty is generally relegated to an elective status in many medical schools, often leaving medical students lacking information about the essential principles of diagnostic imaging.

A new online tool allows medical students to explore the basic principles of diagnostic imaging while accessing information to aid in diagnosing and caring for patients in everyday practice at the point of care. Recently launched by RSNA, the Clerkship Companion acts as a “companion” to assist medical students in their clinical core rotations and electives, according to the site’s developer, Judith K. Amorosa, M.D.

“There really was no practical way of teaching radiology,” Dr. Amorosa said. “Teaching film libraries are very expensive and cumbersome. With this online resource, the information is right at a student’s fingertips, whether he or she wants to spend in-depth study time or simply use it as a quick reference.”

Dr. Amorosa led a 100-plus member team from the Robert Wood Johnson Medical School/University of Medicine and Dentistry of New Jersey (UMDNJ) in Newark, in creating the Clerkship Companion, which was funded with two RSNA R&E Foundation Grants totaling $150,000. The grants were awarded to Dr. Amorosa and Alliance for Medical Student Educators and Radiology (AMSER) colleagues, Josh Becker, M.D., James Choi, M.D., Kitt Shaffer, M.D., Petra Lewis, M.D., Beverly Wood, M.D., Henry Goldberg, M.D., and Marcia Mecrow, M.D., from 2005 to 2007. The grants were sponsored by GE Healthcare.

“A unique program feature, the Image Bank, allows users to pull up specific images to aid in diagnosis based on topic areas. AMSER members will review all content to ‘address the issue of new methods and rapidly evolving technology in the field of imaging,’ said Dr. Amorosa, an AMSER past-president.

Medical Students Help Craft Content

Input from medical students will continue to play a vital role in developing new materials, as it was from the outset in creating and developing the Clerkship Companion. Anthony Burgess, M.D., was one of those students looking to get involved in a research project while in medical school, and after a “very exciting meeting” with Dr. Amorosa, became hooked.

“If we can capture just a small part of a medical student’s study time to expose them to the relevance of radiology in all aspects of medicine, I think students stand to learn a great deal,” said Dr. Burgess, now in practice at Radiology Associates of Wyoming Valley and Wilkes-Barre General Hospital in Pennsylvania.

“For all, a picture says a thousand words and sometimes after a long OB-GYN shift, for example, when the study day has just begun for some students, hopefully, the Clerkship Companion can help them get their learning time in with fewer words,” Dr. Burgess said.

Jaskirat Virk, M.D., a recent graduate of UMDNJ who will be a radiology resident at Mount Sinai Medical Center in New York after a medical internship, also played a significant role in developing the Web tool.

“As a first-year medical student, I recall spending time looking at X-rays and CT scans which were included in Netter’s Atlas of Human Anatomy,” Dr. Virk said. “I was fascinated with the detail with which the human body could be imaged and thought that I should contact someone to further explore my curiosity in radiology.”

He e-mailed Dr. Amorosa, who directed him to Dr. Burgess, who involved Dr. Virk in editing and adding details to the website’s content.

“Not only is this project a great resource for learning about radiology, it also serves as a great tool to review pathophysiology and management of these diseases,” Dr. Virk said. “I believe this site can be of great benefit to students rotating through clerkships and who want some exposure to radiology. It may also attract some students to radiology as a career.”

Project has Global Reach

Because a primary goal is making the website available to as many students as possible, organizers are notifying medical educators and spreading the word through organizations including AMSER, the Association of Program Directors in Radiology and the Society of Chairs of Academic Radiology Departments. Facebook and Twitter will be used to spread the word, Dr. Amorosa said.

Continued on Page 18
Collaborative Radiologic and Histopathologic Assessment of Fibrotic Lung Disease

Idiopathic interstitial pneumonias (IIPs) are a seemingly disconnected collection of diseases usually associated with the presence of pulmonary fibrosis. Classification of IIPs continues to be problematic despite recent attempts to refine the diagnostic criteria and suggest that rather than separate diseases, these pneumonias represent a spectrum of injury and abnormal repair of the alveolar wall.

In the June issue of Radiology (RSNA.org/Radiology), Jeffrey R. Galvin, M.D., of the Armed Forces Institute of Pathology in Washington, D.C., and colleagues describe the collaborative diagnostic process in which data from radiologic and histologic assessments are combined, allowing a more reliable identification of the predominant pathways leading to pulmonary fibrosis. Specifically, the authors discuss the distribution of cysts and smoking-related interstitial lung disease.

“Histopathologic process combined with the distribution as assessed with radiologic imaging provides important information regarding the likely etiology, especially in cigarette smokers, in whom there is often a combination of cystic change related to emphysmas and associated fibrosis,” the authors concluded.

A “How I Do It” video demonstration of the procedures and techniques described in this article is available at RSNA.org/Radiology.

RadioGraphics Readers Urged to Explore Interactive Literature

In a continuing effort to expand the online experience for journal readers, RadioGraphics (RSNA.org/RadioGraphics) is featuring two articles in the July issue that invite readers to explore the potential of interactive radiology literature.

In the article, “Accurate Acute Aortic Injuries: Postoperative Multidetector CT Findings” and “Imaging Evaluation of Penetrating Neck Injuries,” readers will be able to navigate the full dynamic dataset allowing identification of all findings as they explore the original image data, multiplanar reformations and even prebuilt volume-rendered models. RadioGraphics Editor William Olmsted, M.D., and Associate Editor Adam Flanders, M.D., selected the articles.

“Technical requirements do not differ from those needed to use any of the journal’s current online offerings. “These articles represent a potential technologic leap forward in advancing the online experience by offering a new dimension in interaction with educational material,” writes Elliot L. Siegel, M.D., and colleagues in a July editorial introducing the articles.

RadioGraphics

Screen captures of radiologic images demonstrate a real-time collaborative diagnosis rendered using the Adobe Connect Web-based application.

Printed with permission.

Consulting Editor William Olmsted, M.D., and Associate Editor Adam Flanders, M.D., selected the articles.

Pediatric Liver Masses: Radiologic-Pathologic Correlation—Part 1. Benign Tumors

Although most primary liver tumors in children are malignant, one-third of such lesions are benign. Among the most common benign pediatric tumors are infantile hemangioendothelioma, focal nodular hyperplasia, mesenchymal hamartoma, nodular regenerative hyperplasia and hepatocellular adenoma.

In the May-June issue of RadioGraphics (RSNA.org/RadioGraphics), Ellen M. Chung, Col., M.C., of the Uniformed Services University of the Health Sciences in Bethesda, Md., and colleagues review the clinical, pathologic, and imaging features of these common benign pediatric tumors.

In a retrospective, Health Insurance Portability and Accountability Act-compliant study, Vartan M. Vartanian, M.D., of Harv ard Medical School, and colleagues discovered that modifying the outpatient electronic radiology order-entry (OE) system to require that all examinations with low-yield decision support scores be personally authorized by the responsible clinician resulted in an overall decrease (5.43 to 1.92 percent) in the fraction of low-yield CT, MR imaging and nuclear medicine examinations ultimately performed. The probability that a low-yield request would be cancelled or abandoned increased 3.5-fold after the policy change, the study showed.

“This relatively simple and minimally disruptive alteration in the architecture of the ROE systems can enhance the effectiveness of decision support and improve patient care by decreasing the use of low-yield examinations,” the authors concluded.

A decision support feedback screen showing a low utility score. After hard stop on red (HSOR) intervention, nonclinician support staff users who click on “Proceed With Exam” are taken to the screen, indicating the examination has been locked.

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Vanguard Program

Companions supporting endowments and term funding for (one or more) Academic Centers of Excellence.

Bronze Visionary ($10,000)

Bronson, M.D., University of California, San Francisco.

Silver Visionary ($100,000)

GE Foundation.

Gold Visionary ($1 million–$4.9 million)

Grants received: RSNA R&E Foundation Grants totaling $150,000, awarded from 2005 to 2007; sponsored by GE Healthcare.

Studies: “Developing a Radiology Clerkship Curriculum for Medical Students,” “Developing a Radiology Clerkship Curriculum for Medical Students, Stage II.”

Career Impact: The grant gave Dr. Amorosa a unique opportunity to observe how medical students learn by helping to develop materials that incorporate their understanding of radiology and skill sets and encouraged her to create additional learning materials for medical students and other healthcare providers.

Clinical Implications: Dr. Amorosa’s development of the online tool for the clerkship curriculum may allow students to explore the basic principles of diagnostic imaging while accessing information to aid in diagnosing and caring for patients in everyday practice.

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RSNA PoC Learning Tool Enables On-the-Job CME

RSNA members researching procedures while at work can earn CME at the same time, with a new myRSNA tool to facilitate point-of-care (PoC) learning.

To ensure physicians can properly claim AMA PRA Category I Credits™, RSNA has created an online tracking mechanism that meets the American Medical Association’s (AMA) guidelines for the three-step PoC Learning cycle.

1. Using your mySearch function on your personal myRSNA page, perform your search on the clinical question at hand. Among the search results will be a subset of resources identified on the PoC CME tab, yielded by peer-reviewed literature identified by RSNA as having content integrity.
2. From among the resources identified on the PoC CME tab, select the most relevant pieces of literature applied to your finding.
3. After reviewing the article, click the PoC link and answer every question in order to claim your credit. PoC learning is entirely self-directed and driven by the needs of the individual physician’s practice—important components of adult learning. Because it is structured, PoC learning also conforms to AMA-based, peer-reviewed literature. RSNA’s PoC tool also offers a step-by-step form to ensure credit can be claimed, enables the user to instantly print a CME certificate and files the credit in the RSNA CME Credit Repository for access at any time.

RSNA Grant Writing, Clinical Trials Workshop Furthered Academic Career

A part of every academic radiologist’s life, good grant writing requires a lot of training. The University of California in San Francisco (UCSF) was very supportive and I took the RSNA Advanced Grant Writing Course as part of a 1-32 National Institutes of Health training grant. Although I cannot say I am an experienced grant writer, I certainly feel less anxious with the idea of having to work on a proposal.

During this time, I submitted one of my projects to RSNA as part of my application for the Clinical Trials Methodology Workshop. My goal was to improve this project and submit it for funding, which proved to be a good strategy as the project was eventually funded by the Research & Education (R&E) Foundation. Both experiences were extremely valuable and worth every bit of effort I put into them. I currently have a Career Development (K) Award and I am enrolled in the master’s program in clinical research at the Department of Epidemiology and Biostatistics at UCSF. This progress would not have happened without these RSNA programs that offer unique opportunities to have your work reviewed and critiqued in a constructive way rarely available in our home institutions.

See Page 20 for more information on these RSNA programs.

An RSNA member since 2003, Antonio C. Westphalen, M.D., is an assistant professor of radiology in the Department of Radiology and Biomedical Imaging at the University of California in San Francisco.

Member Question of the Month

Who do you consider the most influential figure in radiology, past or present?

E-mail us your answer at tellus@rsna.org. Respondents featured in an upcoming issue of RSNA News will receive a small gift featuring the new RSNA logo.

RSNA Hosts Comparative Effectiveness Research Workshop

More than 30 experts gathered at the RSNA/NIBIB Workshop on “Comparative Effectiveness Research (CER) for Diagnostic Radiology” held recently at RSNA Headquarters in Oak Brook. The goal of the workshop—devoted exclusively to CER for the evaluation of diagnostic imaging—was to discuss the main methodologic issues and possibilities involved with CER and to examine concrete examples of studies that address CER aims.

RSNA Derek Harwood-Nash International Fellowship

International radiologists three to 10 years beyond training are invited to apply for this six- to 12-week fellowship at a North American institution. One or two fellows will be selected.

The application for this program is available at RSNA.org/international/CIRE/more.cfm. For more information, contact Fiona Miller at fmiller@rsna.org or 1-630-590-7741.

RSNA/AUR/ARRS Introduction to Academic Radiology Program

Sponsored by RSNA, the American Roentgen Ray Society (ARRS) and Association of University Radiologists (AUR), the Introduction to Academic Radiology program introduces second-year residents to academic radiology, demonstrates the importance of research in diagnostic radiology, illustrates the excitement of research careers and introduces residents to successful clinical radiology researchers. Successful applicants will be assigned to either a seminar held during RSNA 2010 or the ARRS annual meeting in 2011. More information and an application/tomination form are available at RSNA.org/learn/educational_courses.cfm.

RSNA Advanced Course in Grant Writing

Applications are now being accepted for this course designed to help participants, generally junior faculty members, prepare and submit a National Institutes of Health (NIH), National Science Foundation (NSF) or equivalent grant application by the October 2011 deadline. The course will be held at RSNA Headquarters in Oak Brook, Ill, will consist of four multiday sessions: October 15-16; January 28-29, 2011; March 25-26, 2011; and May 20-21, 2011.

For more information and an application, go to RSNA.org/learn/educational_courses.cfm or contact Fiona Miller at 1-630-590-7741 or fmiller@rsna.org.

Tip of the Month

CR imaging plates can suffer damage over time and cause artifacts. A good quality control program includes exposing the plates to a uniform radiation source and looking for artifacts as well as making sure the exposure indicators are reasonably consistent among the plates.

RSNA News September 2010
Course Enrollment Begins June 30
The Advance Registration, Housing and Course Enrollment brochure will be available online and in print starting June 30. RSNA will mail the brochure to all RSNA/AAPM members and all non-member registrants as of June 7, except those who “opted out” of a printed copy at the time of online registration. The brochure can be viewed and printed from RSNA.org/register.

Use this brochure to make the most of your RSNA 2010 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.

Guarantee Your Seat!
Tickets are required for various meeting components, including refreshers, multisession and financial courses, workshops and RSNA tours and events.

New at RSNA 2010:
All ticketed courses must be confirmed prior to November 24 to guarantee a seat. RSNA ticketed courses fill up fast, so ensure you get the courses 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.

Check out Session Information in Enhanced Online Program
• More content earlier: Information on hundreds of refreshers and multisession courses and financial workshops will be available by the end of June (ticketed offerings), with details about scientific presentations and education exhibits (non-ticketed offerings) to be added later this year.

RSNA 2010 Registration
How to Register
There are four ways to register for RSNA 2010:

1. Go to RSNA.org/register
2. FAX (US only) 1-800-521-6017
3. TELEPHONE
   (Mon-Fri 8:30 a.m. - 5:00 p.m. CDT) 1-800-450-7018
4. MAIL
   Experient/RSNA 2010
   568 Airum Drive
   Vernon Hills, IL 60061 USA

For more information about registering for RSNA 2010, visit RSNA2010.RSNA.org, e-mail reginfo@rsna.org or call 1-800-381-6660 x7862.

Save on This Year’s Airfare, Enter to Win Next Year’s
RSNA attendees who book air travel through Gant Travel by October 1 will be entered into a drawing to receive a $500 (USD) travel credit toward their RSNA 2011 airfare on United Airlines. Benefits of using Gant Travel for RSNA 2010 include:

• Up to a 15 percent discount on available fares on United Airlines
• Fare-checker technology (checking for lower fares until your return flight home)
• Seat-checker technology (checking for best available seats per your preference)
• Emergency availability assistance by phone

For more information, contact Gant Travel at 1-877-631-1192, international +1-610-323-3873, or RSNA@ganttravel.com.

Chicago Stars at RSNA 2010
RSNA will once again offer a series of exciting Chicago tours and events during RSNA 2010, enrollment begins June 30. Get your tickets soon as many of the popular evening symphony and theatre events sell out quickly.

Product News
X-ray Technology Provides Soft Tissue Image
Riveram Medical (www.riverammedical.com) has received FDA clearance for its SoftView Enhanced Chest Imaging technology that uses existing X-ray equipment to provide a soft tissue image for digital chest X-rays.

SoftView suppresses ribs and clavicles on chest X-rays to produce a soft tissue image that increases clarity and improves detection of lung nodules. SoftView delivers no additional radiation dose to the patient and does not require any additional patient procedures or specialized equipment.

SoftView uses image processing and pattern recognition technologies to suppress bone in the chest X-ray. The resulting soft tissue image improves the visibility of tissue within the lung.

RSNA2010.RSNA.org, a division of the DMS Group, has released the Platinum, a new remote-controlled table for increased physician productivity and workflow. From technology and mechanics to ergonomics and design, all of the elements of this table have been conceptualized to fit together in a seamless, yet powerful and reliable package capable of performing all radiology applications.

The Platinum includes independent movement of the X-ray tube and the detector block, a brushless motor with absolute encoders for fast and accurate positioning, as well as a generator fully integrated into the table’s control panel. The Platinum also integrates an innovative control system based on PC server technology that permits monitoring and automatic control of the table and the collimator.

For Product News, see the RSNA News (www.rsnawire.com); to submit product news, send your information and a non-reusable color photo to RSNA News, 620 Jorie Blvd, Oak Brook, IL 60523 or e-mail to rsnanews@rsna.org. Information may be edited for purposes of clarity and space.
RSNA.org

RSNA 2010 Registration

Registration for RSNA 2010 is underway. To register, go to RSNA.org/register.

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FDA Launches Radiological Health Transparency Site

The U.S. Food and Drug Administration (FDA) has launched the Center for Devices and Radiological Health transparency website, fda.gov/aboutfda/centersoffices/cdhr/cdrh.

Transparency, as part of its ongoing transparency campaign to provide information on medical devices and radiation-emitting products. The site also features a searchable database that integrates pre- and post-market medical device information from multiple data sources into a single snapshot and includes a feedback feature allowing the FDA to collect input and suggestions from the public.

COMING IN JULY

From Twitter and Facebook to any number of radiology-oriented blogs, social networking forums are offering radiologists new ways to network, interact and stay connected to others within the specialty. Next month, RSNA News will examine the impact of social media on radiology, including RSNA’s contribution to the ever-evolving online revolution.

Flashback: 2001

Supported by RSNA, Effort to Increase Mammography Access Still Fails

A bill introduced into the U.S. Senate in March 2001 sought to remedy problems with Medicare reimbursement for mammography, many of them identified during a teleconference organized by RSNA during the 2000 annual meeting. Decrying a reimbursement rate that fell far short of the real cost of mammography, teleconference participants spoke of many centers shutting their doors completely, leaving remaining centers to deal with a backlog of patients while operating at a loss. “We are not in a crisis at the moment, but all this does not portend well for the future,” said panelist Dieter R. Ermann, M.D. The Assurance Access to Mammography Act of 2001 proposed increasing Medicare reimbursement for screening mammography by 30 percent, boosting Medicare graduate medical education funding for radiology residency slots and adding money to allied health profession loan programs in order to increase the supply of qualified radiologic technicians available to perform mammography. The bill did not become law at that time, nor did it pass when introduced in subsequent sessions of Congress.
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