# RSIA News



March 2010 Volume 20, Number 3



MEG Imaging Results Are Possible Autism Biomarker

#### ALSO INSIDE:

Business Focus Fosters Healthy
Radiology Practices
Cost-Effectiveness Critical in Lung
Cancer Screening Recommendations
Medical Myths, Maxims "Busted"
Embracing Technology Equals Profit
Amid Healthcare Reforms

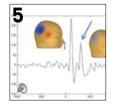
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RSNA News proudly celebrates 20 years of providing high-quality, timely coverage of radiology research and education and critical issues in private and academic practice, along with comprehensive information about RSNA programs, products and other member benefits.



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# IT'S ALL IN THE NAME: THE RSNA'S BRAND NEW IMAGF

When you received this month's issue of RSNA News in the mail or opened it in your Web browser, you may have noticed that not only has the cover been redesigned, but also that the RSNA logo itself has undergone a slight makeover. As medical imaging evolves, we believe it is appropriate for the RSNA to evolve also—so we have updated our look.



George S. Bisset III, M.D. **RSNA Board of Directors** 

services.

of the RSNA?

Radiology, RadioGraphics, the annual meeting,

technology. We have been gratified to receive

positive comments and information that helps

us improve RSNA programs, products and

It almost goes without saving that any

organization is more than the sum of its parts.

From their experiences with individual RSNA activities, members of the radiology community

develop a sense of the whole Society. Although

we recognize that the views of the RSNA as a

whole vary from person to person, we wanted to understand the general pattern of opinion.

How do people perceive the RSNA? What do

radiology organizations? What do they expect

they think of the RSNA in relationship to other

of the RSNA? What value do they place on the

Society? What comes to mind when they think

In 2008, we asked members, nonmem-

community view the RSNA as a trustworthy,

cutting-edge, collaborative, and visionary orga-

nization. They see the Society as global in its

scope, scale and connections. They associate the

online education resources, and informatics

Far from sim- RSNA with high quality, innovation and dedication to its mission of research and education. They change, the new RSNA logo is value the opportunities the RSNA offers for professional development the culminaat all levels and in all subspecialties tion of an effort to understand of radiology, for keeping up with what people technologic innovation and scientific advances, for networking with believe about the RSNA. The colleagues and advancing radiologic science, technology and clinical Society regularly care through education, collaborareaches out to its members and tion and leadership. attendees to find Our research into people's out what they

think of its prod-

ucts and services.

which include

perceptions of the RSNA disclosed that the Society's name or brand is strong as we approach the 100th anniversary of its founding. In addition, as I noted above, the RSNA has evolved along with the profession it represents, and so we have also updated or "refreshed" the RSNA logo. The new logo features a unique font, symbolizing the strength and historical foundation of the Society. The triangle accent mark and radiant line reflect illumination by and hopes for medical imaging. The upward movement of the line reflects the Society's dynamic leadership in advancing the science and technology of radiology and shaping the future of our specialty.

Our research also disclosed that, while many people understand, use and appreciate various RSNA products and services, they don't always associate them with the RSNA or

bers, volunteers, leaders, North Americans and international colleagues to share with us united all Society products and services in a their thoughts about the RSNA. Their answers robust, consistent structure with the refreshed and comments convey their perception of the RSNA logo, forming an "RSNA family" of products and services. We learned that members of the radiology

I thank all the members and colleagues who took time to convey their thoughts about the RSNA in surveys and interviews. I also thank Hedvig Hricak, M.D., Ph.D., Dr. h.c., RSNA President, who spearheaded our brand

Radiological Society of North America

RSNA News RSNA Journals RSNA Education

KSNA Weekly

Career Connect

RF Buzz

RSNA Membership





relate them to one another. Therefore we have study and redesign, and Sarah S. Donaldson, MD, Liaison for Publications and Communications, who has guided the implementation of the redesign throughout the RSNA.

> George S. Bisset III, M.D. Chairman RSNA Board of Directors

## Welcome to the redesigned RSNA News.

As Dr. Bisset notes, a redesign of RSNA News coincides with the update of the RSNA logo. At the same time we are also celebrating the 20th anniversary of

Editor's Note

RSNA News, and have a great opportunity to reflect upon how many aspects of our profession have changed in the last

two decades—and how the vast majority of those changes have been undeniably positive. In this same spirit of continuous growth and evolution, we begin a new chapter in RSNA News history with our fresh new look.

In addition to a redesigned cover and Table of Contents, you'll see some changes in the way information is presented in RSNA News,

- Features at the back of the magazine are now collected under the heading News You Can Use.
- In this newly designed area you'll find information about your RSNA member benefits in a section now called For Your Benefit.
- The Education and Funding Opportunities section provides

you with a plethora of programs, grants and meetings on a variety of topics to support your research and education endeavors. The Medical Meetings list, previously published on the magazine's back cover, now appears in this section. The RSNA News redesign also

**RSNA**°

brings a new look to our monthly features—you'll still read about the very latest in radiologic science, technology, education and research, but with new layouts that really showcase the intriguing people and images from these stories.



Editor, RSNA News

#### TELL US WHAT YOU THINK.

Have an opinion about the new look of the RSNA and RSNA News?
We want to hear from you. Write to us at tellus@rsna.org. Selected responses will appear in an upcoming issue of RSNA News.

## **R&E** Foundation Exceeds Silver Anniversary Goal

The RSNA Research & Education (R&E) Foundation surpassed its goal to raise \$15 million by the Foundation's 25th anniversary in 2009.

In raising more than FOUNDATION \$15.6 million from 2005 to 2009, the Foundation received:

- \$7.7 million in individual gifts
- \$6.7 million in corporate gifts
- \$1.2 million from Visionaries in Practice private practice donors

"The support of the RSNA community has been incredible," said Jack E. Price, chair of the Foundation's board of trustees. "To know that the results of this campaign will have a direct impact on grant funding—that is something to celebrate.'



#### White Receives ISET 2010 Career **Achievement Award**

Robert White Jr., M.D., a professor of diagnostic radiology at the Yale University School of Medicine and director of the Yale Vascular Malformation Center, received the 2010 Career Achievement Award from the International Symposium on Endovascular Therapy (ISET).

Dr. White is credited with developing new procedures in vascular interventional radiology including embolization of pulmonary arteriovenous malformation

and varicocele and percutaneous valvuloplasty for pulmonary valve stenosis and coarctation restenosis.

Dr. White has also been honored with a gold medal and Leaders in Innovation Award from the Society of Interventional Radiology, of which he is a past-president. He delivered the 1985 RSNA New Horizons Lecture. "Interventional Radiology: Reflections and Expectations."

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RSNA—its reputation or brand.

#### My Turn

## Mind Your Business

Diagnostic and interventional radiologists, radiation oncologists and medical physicists train for years to gain the knowledge and skills to deliver sophisticated components of healthcare. Residency and fellowship programs, certification processes and continuing education courses are designed to ensure clinical competency in making diagnoses and/or restoring patient health. As you provide this high quality care, don't take the health of the business aspects of your practice for granted. Some critical things to keep in mind:

First, everyone providing care must have a fundamental understanding of how their work results in billable charges. Dictated reports of diagnostic imaging exams, interventional procedures or radiation therapy care are the basis on which accurate billing is generated—and audited claims are defended. As per procedure reimbursement is reduced it is even more important that these dictations not only convey clinical information but also include all necessary description and

terminology to result in proper payment. Understanding what terms are necessary to justify codes submitted on claims is absolutely

Second, the partners in your practice must become involved beyond clinical care. Involvement in staff committees, such as those for credentials and quality care, and leadership make your practice integral in the eyes of your clinical colleagues and the hospital administration. Radiologists are ideally positioned to get to know most of

the medical staff and, with dedication and commitment, can demonstrate their willingness to serve and contribute. You then will be viewed as a resource and not just a name on a report. Your practice must foster a culture of supporting those who get involved.

Third, and of great importance for longevity, is cultivating the next generation of leaders. We must identify those with the aptitude for—and interest in assuming business functions. One person as the identity of a practice



newest member of the RSNA Board of Directors, serving as liaison-designate for publications and communications. A nationally recognized expert on radiology economics and reimbursement, Dr. Thorwarth has practiced radiology for 25 years with Catawba Radiological Associates in Hickory, N.C. • Read "Business Focus Fosters Healthy

Radiology Practices" starting on Page 7.

creates tremendous vulnerability when that individual is no longer available. Transition planning is key to any long-term business plan.

Our subspecialties and profession are best served when individual practices provide great service and manage themselves successfully. Be sure you "mind your business" as well as you care for your patients.

#### Search Committee Seeks Kaplan is Subject of New Book RadioGraphics Editor

The RSNA Search Committee for the Editor of RadioGraphics is accepting curricula vitae from interested individuals. The deadline for receipt of submissions is May 1, 2010.

The editor is responsible for developing the overall educational mission and editorial policies for the journal, soliciting high-quality educational manuscripts, developing policies and processes

for and conducting peer review, releasing

### **RadioGraphics**

manuscripts on a timely basis for publication, and cooperating with the RSNA Board of Directors and staff in maintaining fiscal responsibility. The editor is expected to spend 60 percent of his or her time on RadioGraphics.

Interested physicians are invited to send their curricula vitae (marked "confidential") to:

Sarah S. Donaldson, M.D. Radiological Society of North America 820 Jorie Blvd Oak Brook, IL 60523

The career of internationally known radiation oncologist Henry Seymour Kaplan, M.D., is detailed in a new book, "Henry Kaplan and the Story of Hodgkin's Disease," to be released April 1 by Stanford Press.

Authored by Charlotte Jacobs, M.D., a professor of medicine at Stanford University, the book explores Kaplan's life as a foremost physician-scientist who changed the course of a once fatal, now curable, cancer. The book recounts the history of Hodgkin's, including serendipitous discoveries of radiation and chemotherapy, improving cure rates and unanticipated toxicities.

A longtime RSNA member, Dr. Kaplan presented the inaugural Annual Oration in Radiation Oncology (then the Erskine

Memorial Lecture), "Hodgkin's Disease: Multidisciplinary Contributions to the Conquest of a Neoplasm," at RSNA 1976. Dr. Kaplan was the first radiologist elected to the National Academy of Sciences in 1972.

A Stanford professor for 35 years, Dr. Kaplan co-developed the first linear accelerator for cancer treatment in the Western Hemisphere. He died in 1984.

## Question of the Month

• What is the radiation dose to the fetus during a CT pulmonary angiogram and a ventilation perfusion scintigram performed on a pregnant patient?

[Answer on page 23.]

#### RSNA News

March 2010 • Volume 20, Number 3 Published monthly by the Radiological Society of North America, Inc. 820 Jorie Blvd., Oak Brook, II 60523-2251. Printed in the USA.

POSTMASTER: Send address correction "changes" to: RSNA News, 820 Jorie Blvd., Oak Brook, IL 60523-2251

Non-member subscription rate is \$20 per year; \$10 of active members' dues is allocated to a subscription of RSNA News.

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PAPER

#### Reactor Restart Delaved

The restart of the National Research Universal (NRU) reactor at Chalk River Laboratories may be delayed until later this year, according to Atomic Energy of Canada Limited (AECL).

The reactor, safely shut down in May 2009 after workers detected a small heavy water leak, produces about a third of the world's medical isotopes.

"Every effort is being made to return the NRU to service as soon as possible," according to a report from AECL. "However, the program to return the NRU to service must be driven by safety, producing a quality repair, conservative decision making and completing all of the necessary analysis before executing any of the repairs."

Updates on the restart project are available at www.nrucanada.ca/ en/home/projectrestart/statusupdates.

#### **IOM Urges Stricter Resident Hours**

In an effort to help prevent fatigue-related errors, the Institute of Medicine (IOM) recommends further restrictions on duty hours for resident physicians, according to an article in the January 2010 issue of the Journal of the American College of Radiology

In 2003, the Accreditation Council for Graduate Medical Education (ACGME) set duty hour limits across all specialties nationally to promote safe patient care and resident well-being. At the request of Congress, IOM studied the issue and recently issued a report calling for further restrictions on resident duty hours, better resident supervision and new federal oversight of the ACGME in monitoring resident duty hours.

An abstract of the article, "Resident Duty Hour Limits: Recommendations by the IOM and the Response From the Radiology Community," appears at www.jacr.org. A full report on the recommendations will appear in the April issue of RSNA News.

#### Haskal Named JVIR Editor

Ziv J. Haskal, M.D., has been named editor of the Society of Interventional Radiology's (SIR) flagship

publication, the Journal of Vascular and Interventional Radiology (JVIR), for a five-year term. Dr. Haskal is vice-chair and a professor of radiology and surgery, chief of vascular and interventional radiology and director of interventional oncology and image-guided therapy for the University of Maryland Medical Center in Baltimore. He has held a long-standing role as editor and then deputy

editor-in-chief of CardioVascular and Interventional Radiology and has served as reviewer for numerous peer-reviewed journals including Radiology.

#### Federle Receives SGR Medal

Michael P. Federle, M.D., a professor of diagnostic radiology at Stanford University, has been named the

2010 Society of Gastrointestinal Radiologists (SGR) Walter Bradford Cannon Medalist. Dr. Federle was honored during the 2010 Abdominal Radiology Course in Orlando, Fla.,



as part of the SGR awards ceremony. SGR president from 2006-2007, Dr. Federle is the author of several books and more than 300 scientific manuscripts and chapters and has presented hundreds of lectures to radiologists around the world.

#### Maglinte Named Distinguished Professor

In recognition of his contributions to gastrointestinal and abdominal imaging, Dean Maglinte, M.D., has been named Distinguished Professor of Radiology and Imaging Sciences at Indiana University School of Medicine in Indianapolis. Dr. Maglinte was named the 2008 Society of Gastrointestinal Radiologists (SGR) Walter Bradford Cannon

Medalist and received SGR's 2006 Richard H. Marshak International Lecturer Award.

### **Numbers in the News**

Number, in millions, of visitors in 2009 to Radiology Info.org, the patient information Web site sponsored by RSNA and the American College of Radiology. The number of visitors increased almost 20 percent over 2008.

life year gained, to add annual MR imaging to mammography screening, according to a study published in the March issue of Radiology. (See Radiology in Public Focus, Page 16.)

Value, in millions of dollars. of CT contrast agents sold in the U.S. in 2009, according to a new report from healthcare market research firm Kalorama Information.

Amount in dollars awarded to the Integrating Healthcare Enterprise (IHE®) radiation oncology program by the state of Florida. The American Society for Radiation Oncology (ASTRO) will apply the funding to two interoperability efforts: expediting the development of standards and building test tools software to reduce medical errors in radiation oncology.

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## MEG Imaging Results Are Possible Autism Biomarker

New research shows that a fractional delay in a child's ability to process sound and language may serve as a biomarker for autism. Measuring magnetic signals that mark this delay could become part of standardized diagnosis.

In findings reported in the January 2010 online version of Autism Research, a research team led by Timothy P.L. Roberts, Ph.D., vice-chair of radiology research at Children's Hospital of Philadelphia, used magnetoencephalography (MEG) to detect magnetic fields in the brain similar to the way electroencephalography detects electrical fields. Using a helmet that surrounded the child's head, the team presented a series of recorded beeps, vowels and sentences. As the child's brain responded to each sound, noninvasive detectors in the MEG machine analyzed the brain's changing magnetic fields.

Researchers compared 25 children with autism spectrum disorders (ASDs), with a mean age of 10 years, to 17 age-matched typically developing children. Children with ASDs had an average delay of 11 milliseconds (just over 1/100 of a second) in brain responses to sounds compared to control children. In the ASDs group, delays were similar whether or not the children had language impairments.

ASDs are childhood neurodevelopmental disorders that impair verbal communication, social interaction and behavior. Dr. Roberts presented early findings on this research at RSNA 2008.

"This delayed response suggests that the auditory system may be slower to develop and mature in children with ASDs," Dr. Roberts said. "An 11-millisecond delay is brief but it means, for instance, that an ASD child who hears the word 'elephant' is still processing the 'el' sound while other children have moved on. Delays may cascade as conversational skills develop and the child may lag behind typically progressing peers."

MEG imaging could conceivably be used to classify autism spectrum disorders and could possibly lead to therapeutic approaches such as slowing speech when communicating with autistic children, Dr. Roberts said.

#### Science Moves to Clinical Setting

The importance of the research was acknowledged by T. Jason Druzgal, M.D., Ph.D., a research fellow in the Department of Radiology at the University of Utah in Salt Lake City, who presented research at RSNA 2009

#### ON THE COVER

A patient reads instructions on a screen while seated with his head surrounded by the MEG's magnetic detectors.



titled "Regional Homogeneity Analysis of Resting State BOLD fMRI Demonstrates Differences between Autistic and Typically Developing Control Patients: Can We Clinically Image Cognitive Pathology?"

"What I like about Dr. Roberts' work is that it's starting to show effects using very simple paradigms," Dr. Druzgal said. "When we talk about moving science into the clinical setting, you need diagnostic tests that are feasible in a busy practice. With MEG tests, patients can sit passively and listen to tones and beeps which can be performed on anybody who can sit still for a few minutes.'

#### White Matter Focus of MEG Research

In another study, "Developmental Correlation of Diffusion Anisotropy With Auditory-Evoked Response," published in the December 2009 edition of NeuroReport. Dr. Roberts and colleagues hypothesized a biophysical reason for the auditory processing delay in children with ASDs. Researchers concentrated on MEG analysis of the brain's white matter, which carries electrical signals. After analyzing the development of white matter in the brains of 26 typically developing children and adolescents, researchers observed that the signaling speed of white matter improves when neurons are better protected with an insulating sheath of a membrane material called

"In children with autism we are now able to speculate that the reason we are seeing a delay in the evoked Timothy P.L. Roberts, response might be due to a less efficient highway from Ph.D., vice-chair of the thalamus to the cortex, or a less myelinated acoustic radiology research at radiation—a result of the delay in maturation of the Children's Hospital of myelinated white matter," Dr. Roberts said. Philadelphia, found that Further research is needed on the myelin's maturaauditory and language tion process and where the maturation goes wrong in processing may be children with ASDs, he said. evaluated in children

A research team led by

with autism spectrum

using magnetoencepha-

disorder (ASDs) by

lography (MEG).

and even possible drug interventions that may target myelin production or maturation, Drs. Roberts and Druzgal said. "This is where radiology can help basic science and

"We can now say we have a mechanism to help

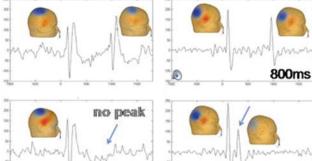
This study paves the way for potential treatments

understand the delay," Dr. Roberts said.

the pharmaceutical industry figure out what might be reasonable targets for drug development for autism," Dr. Roberts said. "It provides some sort of biological target and that's where this is going to be considered a breakthrough. We're led to a biophysical mechanism which leads to a biological target that you could develop strategies to alleviate. And it provides a functional measure of efficacy of any drug that is developed."

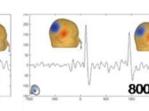
Dr. Druzgal noted, "As we start to develop imaging that's useful for these different types of cognitive pathol ogies, it will become part of the diagnosis and hopefully, sub-typing," he said. "As some of these highly specific treatments are developed, we can get people to the right treatments faster."

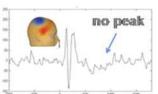
In further research, Dr. Roberts and colleagues will auditory delays.

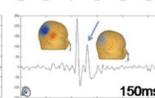


When children with autism hear tones in rapid succession (lower left graph), their response to the second tone is greatly reduced and delayed compared to responses by typically developing children (lower right graph). Upper graphs show responses to two tones separated at a longer interval. Blue and red colors on the skull diagrams indicate signal strengths.

seek to refine their imaging techniques to determine the biomarker's specificity to ASDs and investigate other MEG patterns in children with ASDs in addition to







#### LEARN MORE

• For more information on the studies cited in this article and to view a video of Timothy P.L. Roberts, Ph.D., conducting the MEG procedure on a patient, go to rsnanews.RSNA.org.

■ This is where radiology can help basic science and the pharmaceutical industry figure out what might be reasonable targets for drug

development for autism."

Timothy P.L. Roberts, Ph.D.

# Business Focus Fosters Healthy Radiology Practices

Maintaining or developing a successful radiology practice/ department in the current healthcare climate means acknowledging a few hard truths—including the fact that radiology is a business and patients are "customers."

THE ECONOMIC DOWNTURN and rapid advancements in imaging technology have driven significant changes in the radiology workplace in recent years and radiologists must adapt to the changing times to stay on top, according to leaders in the field.

"For the last 15 years, staff shortages meant clinical radiologists could write their own ticket," said James H. Thrall, M.D., radiologist-in-chief at Massachusetts General Hospital (MGH) and the Juan M. Taveras Professor of Radiology at Harvard Medical School, both in Boston. "Now they have to compete to keep their jobs."

The "salad days" when radiologists made a lot of money and felt entitled to take eight to 12 weeks of vacation a year and outsource night work are gone, said Giles W.L. Boland, M.D., vice-chair of radiology and business development at MGH and an associate professor of radiology at Harvard Medical School.

"Those glory days aren't coming back," Dr. Boland

Hospitals are replacing radiology groups with teleradiology companies at an alarming rate, Dr. Thrall said. "Some radiology groups have failed to align their interests with the needs of the hospital and radiologists can no longer count on an exclusive franchise with a hospital. Hospitals can't hold the line on turf because other specialties are admitting patients."

#### "Just Being Good Is Not Good Enough"

Radiologists who want to maintain a healthy business in this climate must be involved in the diagnosis and management of care, Dr. Thrall said.

"Radiologists need to understand that what we do is far more important in the care process than it was 20, 30 or 40 years ago," he said. "We need to become major participants in hospital governance and proactive in joining quality assurance committees."

Radiologists must start thinking of themselves as business people as well as healthcare professionals, Dr. Boland said. "I don't believe everyone in radiology knows this is a business."

Critical to that process is recognizing that the needs and desires of the "customer," or patient, are most important and that radiology provides a necessary service.

"Radiologists need to ask: What does it mean to be a patient? A good read is just a piece of the overall service we are giving," Dr. Boland said.

Dr. Thrall agreed, saying in the past it was enough to

be a good doctor—but no more.

"Now, the care process is so integrated that just being good is not enough," he said. "You need to be a team player. The quality of work should be a given, but that's a starting place, not the end point. For radiologists to be competitive, they must think in those terms.

"Our core values should be to service the patient and the referring physician," he added.

#### Wanted: Effective Radiology Leaders

While being a team player is important, the need for effective leadership cannot be overstated, said Dr. Boland, author of the article, "The Evolving Radiology Landscape: The Importance of Effective Leadership," published in the December 2009 issue of *European Radiology (ER)*.

Citing Dr. Thrall as a source, Dr. Boland relayed five key challenges radiology leaders face in today's healthcare climate: The slow response of hospitals to shift clinical care toward outpatient facilities, increasingly stringent service and quality standards, the need for local image

interpretation, the inability of smaller radiology groups to deliver a broad spectrum of services, and turf battles.

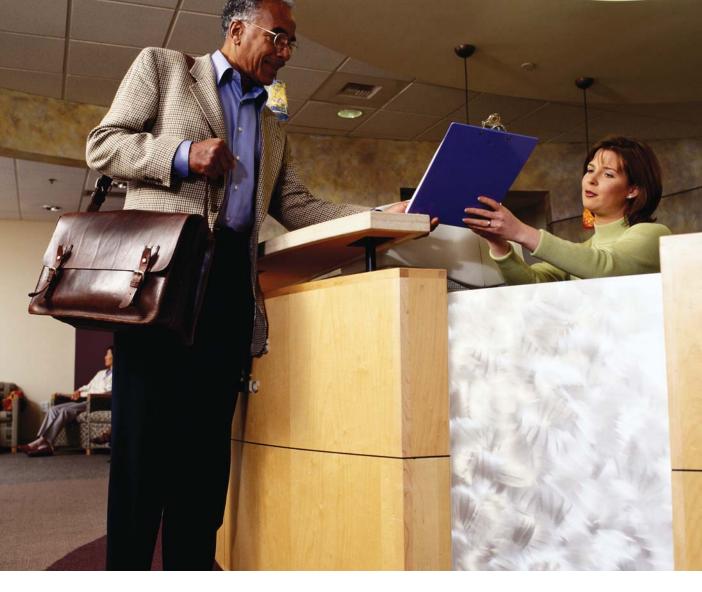
"If the profession, from whatever health environment, wishes to survive,

If I don't believe everyone in radiology knows this is a business."

Giles W.L. Boland, M.D.

effective, strong and visible leadership is now, more than ever, required to help navigate radiologists and their departments through the evolving radiology landscape," according to the article.

Another area critical to the future of radiology is standardization, according to Dr. Boland, who also authored, "From Herding Cats Toward Best Practices: Standardizing the Radiologic Work Process," for the December 2009 issue of the *American Journal of Roentgenology (AJR)*.



# Top 5 Challenges Facing Radiologists Today

- 1 Slow response of hospitals to shift clinical care toward outpatient facilities
- 2 Increasingly stringent services and quality standards
- **3** Need for local image interpretation
- **4** Inability of smaller radiology groups to deliver a broad spectrum of services
- **5** Turf battles

#### SpeakUp

What is the toughest challenge facing your practice? Vote in this month's RSNA News reader poll at rsnanews.org.

"The use of information systems to monitor a wide variety of quality metrics offers managers the opportunity to standardize radiology and departmental practices with the goal of transforming these practices into those that are more efficient, cost effective and of higher quality," Dr. Boland wrote in the article.

Business has used the economic dashboard as a standard for years—now it's time for radiology to adopt this measure of operating efficiency, Dr. Boland said.

He stressed that this is not a one-time fix, but a process that must be continued on a regular basis.

"Think about this like mowing the grass in the summer," he said. "You don't just do it once. You do it weekly. Those who continually reevaluate their performance and improve will succeed. Customers will migrate toward improved products."

#### Involvement Critical to Success

With the economy on a slow road to recovery, Dr. Boland suggested radiologists become more efficient, productive and involved in their own workplaces if they hope to create a thriving practice or department.

"Become more engaged with the referring physician and the patient," he said. "Talk directly with the patient about how MR imaging works or about the function of IV contrast or about the amount of radiation dose. It's critical for radiology to move in this direction."

"There are solutions to most of the challenges facing radiology today," Dr. Thrall said. "The only one we will likely lose is the turf issue," he predicted.

#### LEARN MORE

- For more information on the studies cited in this article, go to *rsnanews.RSNA.org*.
- RSNA members can view the free online version of the RSNA 2009 refresher course, "Patient-centered Radiology: Use it or lose it " at RSNA 2009 RSNA are



James H. Thrall, M.D., is radiologist-in-chief at Massachusetts General Hospital and the Juan M. Taveras Professor of Radiology at Harvard Medical School



Giles W.L. Boland, M.D., is vice-chair of radiology and business development at Massachusetts General Hospital and an associate professor of radiology at Harvard Medical School.

# Cost-Effectiveness Critical in Lung Cancer Screening Recommendations

While randomized controlled trials show that low-dose helical CT screening may decrease lung cancer mortality, cost effectiveness will be an important part of best practice recommendations, according to findings presented by researchers at RSNA 2009.

A DECADE-LONG STUDY examining cost versus benefit of helical CT screening for lung cancer conducted at Massachusetts General Hospital (MGH) in Boston, was launched after research suggested possible benefits of lung cancer screening, said presenter G. Scott Gazelle, M.D., M.P.H., Ph.D., a professor of radiology at MGH and Harvard Medical School and a professor in the Department of Health Policy and Management at Harvard School of Public Health.

"We saw it as a developing controversy because we knew several very ambitious clinical trials were about to begin and we felt that they couldn't possibly address all of the issues relevant to CT screening for lung cancer," Dr. Gazelle said. "It was about 10 years ago that we set out to develop a model to study these questions, so it has been a long time in the making."

#### Combined Intervention and Screening Effective but Costly

To evaluate cost effectiveness, researchers used an existing, well validated microsimulation model of lung cancer to simulate six cohorts of individuals (white men and women ages 50, 60 and 70 years in 1990) in multiple scenarios.

Researchers compared four types of interventions: no screening, screening with helical CT, smoking cessation alone and combined screening/cessation programs over a range of estimates regarding their effectiveness and cost. All interventions were modeled as one time and annual.

"Our model predicts mortality reductions between 18 and 25 percent after 10 years of annual screening compared to no screening, at costs of between \$134,000 and \$181,000 per quality-adjusted life year (QALY),"

ing for lung cancer can be beneficial—it results in a reasonably good mortality reduction—but it is not cost effective as compared to smoking cessation alone.""

G. Scott Gazelle, M.D., M.P.H., Ph.D.



Dr. Gazelle said. "One-time screens yielded mortality reductions below 8 percent at a higher cost per QALY than annual screening."

The analysis assumed perfect adherence to the screening protocol. Lower participation rates would result in both lower costs and effectiveness, but the relative effects on the cost per QALY would depend on whether the heaviest or light-

Lung cancer screening trials were contro
was in the contro
Gazelle said.

Compared to no intervention, the cost for a one-time smoking cessation program offered to current smokers was about \$9,300 per QALY. Compared to a one-time cessation program, the cost for annual cessation was approximately \$17,000 per QALY. Compared to annual smoking cessation, the combination of screening and smoking cessation cost \$200,000 per QALY.

"Our study showed that CT screening for lung cancer can be beneficial—it results in a reasonably good mortality reduction—but it is not cost effective as compared to smoking

cessation alone," Dr. Gazelle said.

There will be many follow-up studies including refining the cost modeling and examining alternative treatment strategies, he added.

## CT Benefits Chest Pain Patients, Cuts Bills

Another study presented at RSNA 2009 showed that the reported high negative predictive value of ECG-gated cardiac CT in low- to moderate-risk chest pain patients may allow an earlier, yet safe, discharge from the emergency department (ED) at a considerable cost savings.

For chest pain, the standard of care is an ECG, a blood test and a nuclear stress test, which keep a patient in the ED an estimated 30 hours and cost as much as \$8,000, said William Shuman, M.D., a professor and vice-chair in the department of radiology at the University of Washington School of Medicine and director of radiology at the University of Washington Medical Center.

Based on earlier studies, Dr. Shuman theorized that a gated cardiac CT angiogram (CCTA) could rule out signs of steno-

sis, resulting in the discharge of a patient in just five hours at a cost of about \$4,000.

In a scientific presentation, Dr. Shuman and colleagues detailed results of a study testing the CCTA theory.

Researchers prospectively followed 70 consecutive patients admitted to the ED suffering chest pain. Each patient agreed to a 64-channel ECG gated cardiac CT to determine signs of significant coronary artery steposis

There was no coronary cause for their pain demonstrated on CCTA, so all patients were discharged. In a follow-up, Dr. Shuman and colleagues interviewed the patients at three-, six- and 12-month intervals after the initial ED visit.

Dr. Shuman and his colleagues found none of the 70 patients experienced any adverse heart-related medical events during that time. CCTA avoided further unnecessary and expensive medical tests, they discovered.

"Two previous studies looked at patients 30 days after an ED visit and two other studies talked to patients six months later," Dr. Shuman said. "Those studies had the exact same results as ours. None of the



850 total low-risk patients enrolled in these five studies suffered a cardiac event after a negative cardiac CT angiogram."

The CCTA method could reduce ED congestion, Dr. Shuman said. "CCTA is beginning to look like a safe practice that can be used by emergency departments at major medical and community hospitals," Dr. Shuman said.

Another presenter, Ethan J. Halpern, M.D., an associate professor in the Department of Radiology at Thomas Jefferson University and Jefferson Medical Center in Philadelphia, presented a cost/benefit analysis showing the benefits of an immediate CT angiogram for ED patients with chest pain.



Dr. Halpern and his colleagues compared diagnostic accuracy, cost and radiation exposure for a chest CT, a nuclear stress test and triple rule out (TRO).

"Our strategy was if the CT is positive, then go onto a nuclear perfusion test," Dr. Halpern said. "If the CT is negative, there is no need for the nuclear test. Therefore you save money and lower the radiation dose."

#### FROM RSNA 2009

These articles were adapted from stories that appeared in the RSNA 2009 *Daily Bulletin*. Daily newspapers from the annual meeting are available online at RSNA ora/bulletin.

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# Medical Myths, Maxims "Busted"

Popular myths in radiology practice were challenged or "busted" by presenters who addressed a packed room of attendees during a special focus session at RSNA 2009.

Based on the popular "MythBusters" television show, the session deconstructed several common maxims about findings in adult and pediatric neurologic neoplasms, long bone tumors, hepatocellular neoplasms and cardiovascular disease.

"Some of our most cherished medical 'facts' are actually unproven or proven to be untrue," explained presenter James G. Smirniotopoulos, M.D., diagnostic imaging program director at the Center for Neuroscience and Regenerative Medicine and a professor of radiology, neurology and biomedical informatics at Uniformed Services University of the Health Sciences (USUHS) in Bethesda, Md. "Critical thinking should always be used to evaluate medical information."

#### Neuro Myths Negated

Dr. Smirniotopoulos busted the first myth: Intraaxial edema around an extraaxial meningioma predicts a malignant histology.

"That can't possibly be true, because the vast majority of meningiomas are non-malignant," Dr. Smirniotopoulos explained. He revealed that 91 percent of meningiomas are World Health Organization Grade 1 and that 50 percent have vasogenic edema.

However, Dr. Smirniotopoulos noted, it is plausible that intraaxial edema predicts a poor prognosis. Edema seems to be related to resectability, he explained, and to what degree the meningioma will "stick" to the underlying brain. "If you leave some behind there is a chance of tumor recurrence," he said. "Resectability is related to prognosis and, therefore, edema is indirectly related to prognosis."

Also "busted" was the myth that vasogenic edema predicts the histology of choroid plexus neoplasms. Alice B. Smith, Lt. Col., U.S. Air Force, M.C., chief of neuroradiology at the Armed Forces Institute of Pathology and an assistant professor at USUHS, presented cases of 65 patients with lateral ventricle neoplasms. Of those, atypical and choroid plexus carcinoma cases and 55 percent of choroid plexus papilloma (CPP) cases had vasogenic edema. The positive predictive value of vasogenic edema in choroid plexus carcinoma in the series was only 23.8 percent. "As nasty as this one looks," Dr. Smith said of an edematous image, "it's a CPP."

The myth that in a long bone, giant cell tumor occurs only at the epiphyses was busted by Mark J. Kransdorf, M.D., a professor of radiology at the Mayo Clinic in Jacksonville, Fla. "Giant cell tumor, in fact, originates in the metaphysis and extends toward the

edge of the bone as it grows," he explained.

Another adage—that marginal sclerosis virtually excludes the diagnosis of giant cell tumor of bone—is also untrue, Dr. Kransdorf said. He demonstrated that it's not uncommon to encounter partial marginal sclerosis in giant cell bone tumor at CT and, to a lesser extent, on radiography.

"Much of what we see in residency is based on very old studies that are repeatedly referenced in the literature." Dr. Kransdorf said.

#### Liver Beliefs Busted

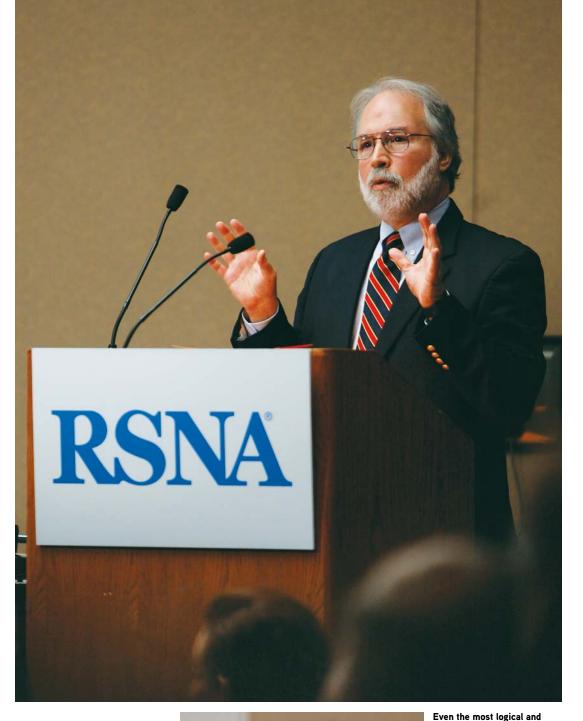
Three liver myths were addressed by Pablo R. Ros, M.D., M.P.H., chair of radiology at University Hospitals of Cleveland and Case Western Reserve University. Dr. Ros demonstrated that hemangioma is not, in fact, always easy to distinguish from metastases with CT and MR scans, as is popularly believed. He also showed that portal vein invasion—contrary to many texts—can occur in liver metastases. Noting that he himself was an investigator on studies that promulgated these myths, Dr. Ros explained, "I contributed to these myths myself, but experience taught me I was wrong. I was very young."

He also confirmed the plausibility of the belief that there is no iron particle uptake in hepatocellular carcinoma.

Two more myths—that right ventricular myocardial fat means arrhythmogenic right ventricular dysplasia (ARVD) and that a zero calcium score equals no atherosclerotic coronary artery disease (CAD)—were busted by Vincent B. Ho, M.D., M.B.A., interim chair and a professor of radiology at USUHS.

Some of our most cherished medical 'facts' are actually unproven or proven to be untrue."

James G. Smirniotopoulos, M.D.





rational 'facts' need to be re-examined periodically to test their validity, said "Mythbuster" James G.
Smirniotopoulos, M.D., (above) who along with Alice B. Smith, Lt. Col., U.S. Air Force, M.C., and others deconstructed several common radiologic myths and maxims during an RSNA 2009 session based on the popular "Myth-Busters" television show.

"If you look at the criteria described by the ARVD Task Force in 1994, nowhere does it say that fatty infiltration is an imaging criterion of ARVD," said Dr. Ho, noting that sub-epicardial, intramyocardial fibrofatty infiltration is the histopathologic hallmark of ARVD. "Typically, the resolution of the imaging studies we perform is unable to reliably depict fibrofatty infiltration. Therein lies the problem and, perhaps, the source of the myth.

"The calcium score myth is probably more common among patients than it is circling in your institution," Dr. Ho continued. "We know that calcified plaque is a feature of atherosclerotic CAD, but we also know that not all atherosclerotic plaque calcifies. In fact, calcification only counts for around 20 percent of the plaque burden."

The final myth, busted by Dr. Smirniotopoulos, is the idea that imaging can be used to define the margin of a diffuse astrocytoma. "The corollary is that this will improve the survival and prognosis," Dr. Smirniotopoulos said. "The reality is that individual cells can spread away from the white matter and infiltrate functional brain parenchyma in a way we may not even be able to detect with current technology. If the surgeon were to try to remove all these cells, we'd be giving the patient a neurological deficit and decreasing their quality of life."

Throughout their education and training, radiologists will encounter tens of thousands of medical "facts," Dr. Smirniotopoulos concluded. "However, even the most logical and rational 'facts' need to be re-examined periodically to test their validity."

#### FROM RSNA 2009

This article was adapted from stories that appeared in the RSNA 2009 *Daily Bulletin*. Daily newspapers from the annual meeting are available online at *RSNA.org/bulletin*.

## Busted Radiologic Practice Myths Challenged:

- Intraaxial edema around an extraaxial meningioma predicts a malignant histology
- In a long bone, giant cell tumor occurs only at the epiphyses
- Zero calcium score equals no atherosclerotic coronary artery disease (CAD)
- Imaging can be used to define the margin of diffuse astrocytoma
- Portal vein invasion does not occur in liver metastases

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## Embracing Technology Equals Profit Amid Healthcare Reforms

From structured reporting to smartphones, radiologists are harnessing ever more sophisticated information technology to improve quality of care and reduce overall costs—a smart move as the U.S. healthcare system remains under scrutiny.

AT HIS INFORMATICS KEYNOTE ADDRESS at RSNA 2009, Keith J. Dreyer, D.O., Ph.D., vice-chair of radiology at Massachusetts General Hospital in Boston, pointed out the need for standardized, structured reporting methods and information sharing to facilitate compliance with the U.S. government's 2015 deadline for implementing an electronic health record system.

"How do you inspire people to comply?" Dr. Dreyer asked. "You talk about Medicare and Medicaid reimbursement. If you participate early you can receive up to \$44,000 as an individual provider."

One area where significant change is under way is in image sharing, Dr. Dreyer said.

"It's becoming a problem," he said. "We have stacks of CDs, so we've looked at implementing these crossenterprise imaging systems. With image sharing we are going from all CDs to managing CDs to eliminating CDs, and that's the goal."

#### iPhone™ Has Untapped Radiology Potential

In addition to enterprise solutions, radiologists are also looking to their own smartphones—including the ubiquitous iPhone<sup>™</sup>—to improve healthcare through technology.

Although there are more than 100,000 iPhone applications and just over 300 are healthcare-related—even fewer for radiologists—there has been a steady increase in the number of medical imaging applications and the potential for growth appears to be limitless, said presenter Trushar Patel, M.D.

"The rate of growth of medical applications is impressive," Dr. Patel said. "I think we have just scratched the surface and it will continue to grow."

Dr. Patel and colleagues studied the iPhone applications in aggregate, including a systematic review of currently available applications and looked to the future of radiology-related applications.

Viewing data, providing collaboration and decision support, increasing operational efficiency, promoting patient safety and improving physician productivity are uses of some





The critical need for radiology to fully embrace image sharing was stressed by Keith J. Dreyer, D.O., Ph.D., (above) during his informatics keynote address at RSNA 2009, while presenter Trushar Patel, M.D., (bottom) urged radiologists to tap the growing number of imaging applications now available through iphone."

from all CDs to managing CDs to eliminating CDs, and that's the goal."

Keith J. Dreyer, D.O., Ph.D.

current iPhone applications.

Dr. Patel discussed iChart EMR, used for charting patient information, Merge Mobile™ Viewing, Case Logs—a non-radiology application that may have clinical benefits for residents, specifically for tabulating clinical cases or follow-up—and a dose calculator for nuclear medicine.

While these are all useful, many more useful radiology tools are on the iPhone horizon, including applications offering increased integration with the Internet and hospital-based systems to enhance information exchange and communication, said Dr. Patel. One area that has the most growth potential is use of computer-generated imagery to create augmented reality, he said.

"There are currently no applications that use augmented reality—the use of an iPhone as a portable image viewer which responds to location and movement—so there is much untapped potential development in this area also," Dr. Patel said.

#### FROM RSNA 2009

These articles were adapted from stories that appeared in the RSNA 2009 Daily Bulletin. Daily newspapers from the annual meeting are available online at RSNA.org/bulletin.

## Radiology-related Web Tools Boost Search Capability

Search engines are evolving rapidly to suit the needs of radiologists, according to RSNA 2009 presenters.

During the session, "What are Radiologists Searching For? Obtaining Quality Information at the Desktop, Radiology-Specific Search Engines and Beyond," one of the founders of the radiology-related medical search engine, Yottalook $^{\mathbb{N}}$ , said the site provides the most relevant information to medical imaging professionals as quickly as possible.

"When we first began in 2007, we wanted to create a search engine from scratch, but we quickly ran out of server capacity and we went with a hybrid approach instead, combining engines like Google, but indexing it for radiologists," said Woojin Kim, M.D., an assistant professor at the Hospital of the University of Pennsylvania. "We have focused on developing various technolo-

gies involved with index optimization and improving query analysis and query expansion."

Among services offered by Yottalook, which is incorporated into *myRSNA.org*™ through the mySearch feature, is a journal search.

"When you search for something like 'radiation dose,' it gives you results only from radiology journals or from all medical journals if you choose," Dr. Kim explained.

Yottalook Reader indexes the latest content continuously and allows the user to search for the latest industry news in the field. Yottalook Images allows radiologists to convert images to 3D. The site receives more than 106,000 visitors per year.

GoldMiner™, an imagesearch engine created by and for radiologists, was the subject of a presentation by

Charles E. Kahn Jr., M.D., M.S., of the Medical College of Wisconsin in Milwaukee.

"A GoldMiner search generates a Google-type interface but also does much more,"  $\mbox{Dr.}$  Kahn said.

The free search engine can filter images dynamically by age, sex and imaging modality and combines search strategies using keywords and medical contexts.

GoldMiner's image library draws from seven core journals and more than 250 other peer-reviewed journals. "It also offers outstanding performance and has fast retrieval and accurate search results," said Dr. Kahn.

A presentation on STATdx®, a diagnostic decision support system for imaging that provides point-of-care reference help and can be accessed from any location via the Internet, was given by H. Ric Harnsberger, M.D., a professor in head and neck neuroradiology at the University of Utah and the CEO of Amirsys® Inc.

STATdx helps increase interpretation, speed, accuracy and diagnostic confidence in complex cases and can be added to the myRSNA.org interface, he said. Another product, STATdx PREMIER, includes all the features of STATdx, and can be integrated with PACS.

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#### **Journal Highlights**

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

#### Medical Response to a Major Radiologic Emergency: A Primer for Medical and Public Health Practitioners

IN THE EVENT OF A serious radiologic or nuclear emergency, medical facilities that remain functional may have to deal with large numbers of ill, wounded and probably contaminated people. Special care and/or handling will be needed for those with trauma, blast injuries or thermal burns as well as significant radiation

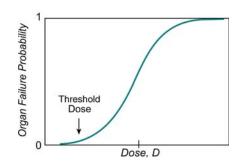
exposures or contamination. In the March issue of Radiology (RSNA.org/Radiology),

Anthony B. Wolbarst, Ph.D., of the University of Kentucky Medical School in Lexington, and colleagues describe the medical responses needed following a radiologic or nuclear incident, including the symptoms of and specific treatments for acute radiation syndrome and other early health effects. The authors also discuss:

- Types of radiogenic health effects
- General radiation safety principles
- Protection of personnel
- Medical facility planning and training

The first rule of effective management is preparation, which requires that healthcare professionals become knowledgeable about various emergency scenarios and think through appropriate responses before they occur, Dr. Wolbarst and colleagues conclude.

"That is why it is essential for radiologists, radiation oncologists, nuclear medicine specialists, medical physicists and emergency physicians to make a serious effort to be prepared to confront and manage the healthcare response to any nuclear or radiologic emergency that might occur," they write.



A dose-response relation for a deterministic effect in an organ or other tissue (as opposed to that for stochastic transformations in single cells) is usually sigmoidal in shape. At low doses, little if any damage occurs. Above an effective threshold—specific to the type of radiation, the tissue and biologic endpoint and perhaps the individual-the damage increases with dose until the tissue is fully nonfunctional.

(Radiology 2010:254.3:660-677) @RSNA, 2010. All rights reserved. Printed with permission.

#### Postoperative Imaging in Liver Transplantation: What Radiologists Should Know

BECAUSE LIVER TRANSPLANTATION is now frequently used in the treatment of end-stage liver disease, it is important that radiologists be aware of common anastomotic techniques and expected postoperative imaging findings.

In the March-April issue of Radio Graphics (RSNA.org/Radio Graphics), Ajay K. Singh, M.D., of Massachusetts General Hospital in Boston, and colleagues depict the

RadioGraphics spectrum of findings seen at ultrasonography, CT, MR imaging, cholangiography, angiography and scintigraphy in patients with posttransplan-

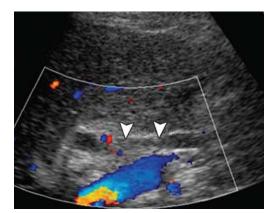
tation complications involving the hepatic artery, portal vein, inferior vena cava and hepatic vein as well as biliary complications (biliary obstruction, choledocholithiasis, bile duct stricture, bile duct leak) and other complications. Specifically, authors:

- Describe anastomotic techniques used in liver transplantation
- Identify normal posttransplantation imaging findings
- Discuss posttransplantation complications and their imaging characteristics

Imaging is useful for detection of early and late complications, as well as for longterm follow-up to assess transplant viability, the authors conclude.

"An understanding of potential posttransplantation complications and of the strengths and weaknesses of each imaging modality will aid in early diagnosis and promote timely therapy," they write.

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



Acute portal vein thrombosis in a 54-year-old man. Color Doppler US image shows lack of flow in the main portal vein and an echogenic clot (arrowheads). (RadioGraphics 2010;30.2;339-351) ©RSNA, 2010. All rights reserved.

### Radiology in Public Focus

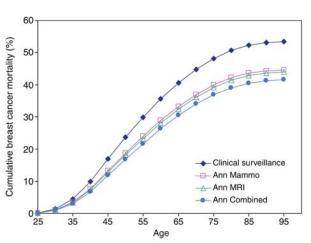
Press releases have been sent to the medical news media for the following articles appearing in the latest issue of Radiology.

#### Cost-Effectiveness of Breast MR Imaging and Film Mammography for Screening BRCA Gene **Mutation Carriers**

In women who carry BRCA1 gene mutations, researchers have found that yearly mammography screening combined with MR imaging yields better life expectancy than either modality alone.

Janie M. Lee, M.D., M.S., of the Department of Radiology at Massachusetts General Hospital in Boston, and colleagues compared film mammography and MR individually and in combination using a simulation model in a cohort of 25-year-old BRCA1 carriers, Although combining the modalities had the highest cost, it resulted in the highest life expectancy as measured in quality adjusted life years (QALY), researchers found.

"Adding annual MR imaging to annual mammography screening cost \$74,086 for each additional OALY gained," Dr. Lee and colleagues write. "Annual combined mammography and MR imaging screening provides the greatest life expectancy and is likely cost-effective, when the value placed on gaining an additional QALY is in the range of \$50,000-\$100,000."



Cumulative breast cancer mortality according to screening strategy. Ann Mammo = annual screen-film mammography, Ann MRI = annual MR imaging, Ann Combined = annual combined screening.

(Radiology 2010,254.3;793-800) ©RSNA, 2010. All rights reserved. Printed with

#### Radiation Dose from Single-Heartbeat Coronary CT Angiography Performed with a 320-Detector Row Volume Scanner

Volume scanning techniques can result in a dramatic reduction in radiation dose for patients undergoing coronary CT angiography, researchers have found.

"By using 100-kVp volume scanning, effective dose from coronary CT angiography can be decreased by up to 91 percent in comparison with standard helical scanning, with no change in image noise," wrote Andrew J. Einstein, M.D., Ph.D., of the Department of Medicine, Cardiology Division at Columbia

University Medical Center and New York Presbyterian Hospital.

Dr. Einstein and colleagues measured CT angiography dose using metal oxide semiconductor field-effect transistor detectors in male and female phantoms. "Estimating effective dose with a chest conversion coefficient resulted in a dose as low as 1.8 mSv, substantially underestimating effective dose for both volume and helical coronary CT angiography," the researchers write.

The researchers advise that when conversion coefficients are used to estimate effective dose from dose-length product, the coefficients should be appropriate for the scanner and scan mode used and reflect current tissue weighting

## Media Coverage of Radiology

In January, media outlets carried 170 news stories generated by articles appearing in the print and online editions of *Radiology*. These stories reached an estimated 52 million people.

January coverage included The New York Times print and online editions, Toledo Blade, Honolulu Star-Bulletin, Des Moines Register, Gannett News Service, Reuters, United Press International, Telemundo, KABC-TV (Los Angeles), WMAQ-TV (Chicago), WXYZ-TV (Detroit), WBZ-TV (Boston), KDVR-TV (Denver), KGW-TV, (Portland, Ore.), WBAL-TV (Baltimore), KUSA-TV (Denver), KSAZ-TV (Phoenix), CBS Radio Network, WCBS-AM (New York), KCBS-AM (Los Angeles), WBBM-AM (Chicago), MSNBC.com, CNBC.com and Drugs.com.

#### **March Public Information Activities Focus on Colorectal Cancer**

To highlight National Colorectal Cancer Awareness Month in March, RSNA will distribute radio public service announcements (PSAs) encouraging listeners to be screened for colorectal cancer.

In addition, RSNA will distribute the "60-Second Checkup" audio program to nearly 100 radio stations across the U.S. The segments will focus on colorectal cancer topics, including early detection of colorectal cancer and the use of CT colonography.

News from RSNA 2009 reached a potential audience of 4 billion people. Read more on Page 21.

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#### **For Your Benefit**

## RSNA 2009 Physics Modules Available Online

Physics education modules introduced at RSNA 2009 are now available online free of charge to RSNA and American Association of Physicists in Medicine members. Designed to educate radiology residents about important concepts in physics, these self-guided modules include a testing feature that creates a comprehensive learning experience for the viewer.

Modules were developed by teams that include at least one physicist and one radiologist and are peer-reviewed for content and quality before being officially launched online. The goal is to provide a basic understanding of physics in the following areas: general imaging, radiography, mammography, CT and imaging processing, fluoroscopy and interventional radiology. RSNA will release additional online physics modules in 2010.

View these modules at RSNA.org/ Education/physics.cfm. For more information on the physics modules, call 1-630-368-3753 or e-mail *physics@* rsna.org.

#### Point of Care CME Available This Spring

A new CME offering called Internet point of care (PoC) learning—a structured, selfdirected, online learning activity on topics relevant to clinical practice—will be available to RSNA members this spring.

To ensure that physicians can claim AMA PRA Category 1 Credit™ for PoC Learning, RSNA is creating an online tracking mechanism through myRSNA® that meets American Medical Association guidelines for the three-step PoC Learning cycle. Each time a patient-related topic is researched using RSNA's online evidence-based resource, 0.5 credits may be earned.

For more information, contact the RSNA Education Center at 1-630-590-7772 or e-mail poc@rsna.org.

#### **RSNA Education Center CD-ROM Collections**



RSNA Education Center's new CD-ROM collections of refresher courses from past RSNA annual meetings are available for viewing in the 2009–2010 product catalog. Go to RSNA.org/Education and click Education Center Store.

Bundled into topical sets for easy reference, the collections allow members to build a comprehensive education library at a reduced price.

For more information on these products, contact the RSNA Education Center at ed-ctr@rsna.org or call 1-800-381-6660 x3753.













#### IHE® Connectathon Promotes Interoperability

A unique testing opportunity was offered to attendees of the 11th annual Integrating the Healthcare Enterprise (IHE) North America Connectathon held January 11-15 in Chicago to promote the adoption of standards-based interoperability by vendors and users of healthcare information systems. The health information technology industry's largest interoperability testing event featured 498 engineers working with 104 vendors (an increase from 71 vendors in 2009). In all, more than 3,500 successful tests of IHE integration profiles were performed and verified at this year's event.

## **Education and Funding Opportunities**

## RSNA Introduction to Research for International Young Academics

Deadline for Nominations:

The RSNA Introduction to Research for International Young Academics program encourages young radiologists from countries outside the U.S. and Canada to pursue careers in academic radiology. The

program consists of a special seminar held during the RSNA annual meeting. Eligible candidates are residents and fellows currently in radiology training programs or radiologists not more than two years out of training who are beginning or considering an academic career. Nominations must be made by the candidate's department chairperson or training director. Fluency in English is required. Nomination forms can be found at RSNA.org/IRIYA.

#### RSNA Evler Editorial Fellowship

Candidates are sought for the RSNA Eyler Editorial Fellowship, sponsored by the RSNA Publications Council and the Committee on International Relations and Education

Named after William R. Eyler, M.D., a former editor of Radiology, the fellowship is designed to provide an opportunity for a mid-career radiologist to further his/her experience in radiologic journalism. Working with Radiology and RadioGraphics editors and RSNA publications staff, the fellow will learn about manuscript preparation, peer review, manuscript editing, journal production, printing and electronic publishing.

For more information regarding eligibility requirements and to apply, go to RSNA.org/Publications/ editorial fellowships.cfm.

#### Nominations Sought for Roentgen Resident/Fellow Research Award

Deadline for Nominations: The RSNA Research & Education Foundation seeks nominations for the Roentgen Resident/Fellow Research Award, designed to recognize and encourage outstanding residents and fellows in radiologic research. Each participating North American residency program will receive an award

plague with space to display a brass nameplate for each year's recipient. The Foundation will also provide a personalized award for the department to present to the selected resident or fellow.

The residency program director or department chair should identify one individual annually based on the

- Presentations of scientific papers at regional or national
- Publication of scientific papers in peer-reviewed journals
- Receipt of a research grant or contributions to the success of a research program within the department
- Other research activities

Every resident/fellow in an Accreditation Council for

Graduate Medical Education-approved program of radiology, radiation oncology or nuclear medicine is eligible. Nominations are limited to one resident or fellow per department per year. For more information, including the nomination form and a listing of past recipients, go to RSNA.org/Foundation/roentgen.cfm.

#### **MedicalMeetings**

## April-May 2010

APRIL 9-12 VISIT THE RSNA BOOTH

International Congress of Radiology, Shanghai International Convention Center. China • www.icr2010.ora

#### **APRIL 13-17**

Society for Pediatric Radiology (SPR), Annual Meeting, Boston Park Plaza Hotel & Towers • www.pedrad.org

#### APRIL 22-23

Canadian Association of Radiologists (CAR), International Guidelines Symposium. Montréal. Quebec • www.car.ca

#### APRIL 22-25

Canadian Association of Radiologists (CAR), 73rd Annual Scientific Meeting, Hvatt Regency Hotel, Montréal, Quebec www.car.ca

#### APRIL 29-30

American Association of Physicists in Medicine CT Dose Summit, Scan Parameter Optimization, Renaissance Concourse Atlanta Airport Hotel, Atlanta • www.aapm.org/meetings/2010CTS

#### APRIL 29-MAY 1

American Brachytherapy Society (ABR), Annual Meeting, Hyatt Regency, Atlanta

www.americanbrachytherapy.org

#### MAY 1-5

American Radium Society (ARS), Annual Meeting, J.W. Marriott Cancun, Mexico www.americanradiumsociety.org

International Society for Magnetic Resonance in Medicine (ISMRM), European Society for Magnetic Resonance in Medicine and Biology (ESMRMB), Joint Annual Meeting, Stockholm International Fairs, Sweden • www.ismrm.ora

#### Molecular Neuroimaging Symposium

Hosted by SNM in conjunction with RSNA and the Society for

Molecular Imaging, this symposium will focus on molecular imaging Institutes techniques including PET/CT, SPECT and

optical imaging. Among the topics to be addressed:

of Health

Bethesda, Md.

- Nanotechnology
- The blood-brain barrier
- Gene expression
- Hypoxia and proliferation Metabolic MR imaging
- PET probes for imaging tumor
- angiogenesis • Stem cell therapeutics
- Adoptive immunotherapies of brain tumors

For more information, go to www.snm.org/brain2010.

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#### **Annual Meeting Watch**

#### Submit Abstracts for RSNA 2010

The online system to submit abstracts for RSNA 2010 is now open. The submission deadline is 12:00 p.m. Central Time on April 15, 2010. Abstracts RSNA 2010 are required for scientific presentations, education exhibits, applied science and quality storyboards.



To submit an abstract online, go to RSNA.org/abstracts.

The easy-to-use online system helps the Scientific Program Committee and Education Exhibits Committee evaluate submissions more efficiently. For more information about the abstract submission process, contact the RSNA Program Services Department at 1-877-776-2227 within the U.S. or 1-630-590-7774 outside the U.S.

#### **INTERNATIONAL VISITORS**

#### Start Visa Process Now

Personalized letters of invitation to RSNA 2010 are available for request at RSNA2010.RSNA.org. Click International Visitors. This section of the annual meeting Web site also includes important information about the visa application process. Visa applicants are advised to apply as soon as they decide to travel to the U.S. and at least three to four months in advance of their travel date. It is recommended that international annual meeting attendees start the visa process now.

### **RSNA2009**

#### Media Coverage of RSNA 2009

Research showing beverage can stay-tabs pose a swallowing risk and a study showing mammography may increase breast cancer risk in some high-risk women were among the 15 news conferences that drew the most media attention during RSNA 2009.

More than 6,200 stories about RSNA 2009 have been carried by print, broadcast and online media outlets reaching more than 4 billion people.



at the annual meeting resulted in coverage in such publications as The New York Times, USA Today, Los Angeles Times and Chicago Tribune, as well as broadcast outlets including NBC Nightly News, CBS "Early Show" and CNN Headline News. Stories also appeared on Web sites including The New York Times and Wall Street Journal online editions.

#### RSNA 2009 Quality Storyboards Available Online

Selected RSNA 2009 Quality Storyboards detailing successful quality improvement projects that can help inspire and guide other institu-

tions are available online VC at RSNA.org/Quality/ storyboards/2009 storyboards/index.cfm.

Offered for the first time, Quality Storyboards include projects evaluating personalized dose reduction tech-



niques, reducing the need for sedation in pediatric imaging and systemic defenses against wrong patient, wrong procedure and wrong

More than two dozen Quality Storyboards were presented at RSNA 2009.

#### RSNA Continues on "Green" Path

RSNA's commitment to hosting one of the industry's greenest meetings proved successful based on the 2009 recycling analysis. The McCormick Place Tonnage Analysis for RSNA 2009 shows 155.75 total tons of materials recycled with a diversion rate of 74 percent.

McCormick Place, home to RSNA annual meetings since 1985, utilizes a waste disposal partner to sort waste and recyclables to more accurately determine facility diversion rates and employs a system to improve the separation of construction-related waste. Recycled items are fiber, wood, plastic and metal.



#### RSNA 2010 Registration Fees

BY NOV. 5	ONSITE		
\$ 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	
150	250	Non-Member Resident/Trainee	
150	250	Radiology Support Personnel	
680	780	Non-Member Radiologist, Physicist or Physician	
680	780	80 Hospital or Facility Executive, Commercial Research and Development Personnel, Healthcare Consultant and Indu- Personnel	
300	300	One-day registration to view only the Technical Exhibits	

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

#### RSNA 2010 Deadlines

April 28 RSNA/AAPM member registration and housing open

May 26 General registration and housing open

June 30 Course enrollment opens

October 22 Deadline for international mailing Deadline for final advance discounted registration,

housing and course enrollment RSNA 96th Scientific Assembly & Annual

December 3

November 28

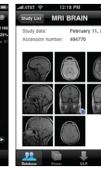
#### **Product News**

#### **NEW PRODUCT**

## PACS for iPhone® Upgrade

CoActiv (www.coactiv.com) has released EXAM-PACS for iPhone® v. 2 with direct 3G/2G/EDGE connectivity for worldwide access to medical images on the popular handheld mobile device.





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#### **NEW PRODUCT**

#### High-Volume Digital Radiography

Konica Minolta Medical Imaging (www.konicaminolta. com) has released the new Xpress DR System, a total room digital radiography solution ideally suited for any high-volume radiography environment. The Xpress DR System configurations include both ceiling- and floor-mounted tube options. Additional options include fixed 17" x 17" receptors or portable 14" x 17" receptors to meet custom imaging workflow needs while staying within capital equipment budgets.





#### **NEW PRODUCT**

#### Mobile Cloud-based Image Access for Physicians and Patients

Accelarad (www.accelarad.com) introduces mobile.accelarad.com, providing the power and convenience of handheld device access to images stored on its SeeMyRadiology.com cloud-based imaging platform. The ultra-fast and convenient application runs through the mobile device's browser with no additional software installation required. Authorized users simply log onto SeeMyRadiology.com to access images they are authorized to view. All information is encrypted for security and the system is fully Health Insurance Portability and Accountability Act-compliant. Accessing images anywhere is simple across the entire spectrum of care, from radiologists and physicians to patients. After SeeMyRadiology.com users store images on the SeeMyRadiology cloud archive, any authorized user can access them.



#### **NEW SERVICE**

#### Teleradiology with Quality Assurance

NightHawk Radiology Services (www.night hawkrad.net) has implemented a redesigned quality assurance (QA) program to foster better communication between the company's radiologists and customers.

Under the program, radiologists' interpretations and reports are evaluated by customers and submitted to NightHawk for iterative review by internal and external physician review boards. Key metrics ensure the most accurate and fair quality measurements. The QA program utilizes a highly analytical, systematic and disciplined approach to assign physicians a monthly medical quality score comprising report accuracy and report quality. Quality measurements and results will also be available to each customer by site on a monthly basis, tracking the overall performance and scores for NightHawk radiologists.

Information for Product News comes from the manufacturers. Inclusion in this publication should not be construed as a product endorsement by RSNA. To submit product news, send your information and a non-returnable color photo to RSNA News, 820 Jorie Blvd., Oak Brook, IL 60523 or by e-mail to rsnanews@rsna.org. Information may be edited for purposes of clarity and space.

#### **RSNA.org**

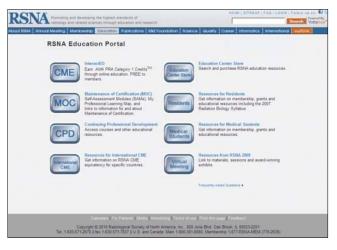
## RSNA Education Portal Keeps Members on Trend

When the media turns the spotlight on sensitive issues like the U.S. Preventive Services Task Force's breast cancer screening recommendations and quality care concerns such as CT imaging dosage, RSNA members can stay informed on the latest developments through the RSNA Education Portal at RSNA.org/Education.

From self-assessment modules (SAMs) to Cases of the Day and refresher courses from RSNA annual meetings, the roster of free resources keeps members educated on the issues most critical to them.

For example, members can stay on top of breast cancer issues through these resources available on MOC and CME pages:

- The SAM, "Invasive Lobular Carcinoma and Breast MR Imaging"
- "Optimize Your Body MR Practice: Cutting-Edge Breast MRI," an RSNA refresher course
- "Breast Cases of the Day" Stay ahead of the public's quality care concerns through these MOC and CME page resources.
- SAMs "Image Quality Process, Data Integrity, and Putting Display QC into Practice" and "When the Physician is the Problem"
- "CT Imaging-Dose Assessment in Clinical Practice," an RSNA refresher course
- Selections from the Quality Initiatives section of Radio Graphics





### WebSite-ing

## Molecular Imaging Webcast Set for April 27

"Industry for Molecular Imaging," the next in the "Imaging for Impact," series of a peer-to-peer educational Webcasts presented by Academy of Molecular Imaging (AMI), will be offered at 3 p.m. Eastern time on April 27. The session presenter is Dwight Heron, M.D., an associate professor of radiation oncology at the University of Pittsburgh Cancer Institute and a member of RSNA's Radiation Oncology and Radiobiology Subcommittee of the Scientific Program Committee.

To register, go to AMI-imaging.webex.com, click on Upcoming Meetings, and enter your name and e-mail. Registrants will receive a confirmation e-mail with instructions for joining the free session. AMI will sponsor other Webcasts throughout the year.

For more information, go to ami-imaging.org or e-mail dlevin@ami-imaging.org.





## **Answer**

[Question on page 3.]

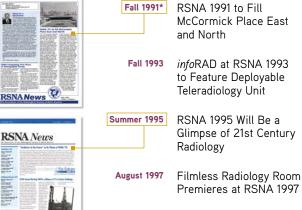
A Fetal dose can vary according to protocols used but typically is less than 1 mGy for either study. This is well below the threshold for malformation or neurological detriment at all stages of gestation. Q&A courtesy of AAPM.

### Retrospective

Celebrating 20 Years of RSNA News

#### Headlines

Remembering the radiologic topics that made news throughout the last 20 years. This month: the RSNA annual meeting.



December 1998

Expanded Public Information Program Launched at **RSNA 1998** 



May 2004 RSNA 2004 Eases Way for MOC Requirements

October 2004 RSNA 2004 to Feature Focus Session on Medical Simulators

Halls



October 2005 RSNA 2005 Offers Digital Mammography Self-Assessment Workshop

> Lakeside Learning Center Offers One-Stop Shopping at RSNA 2006

Exhibition to Span Three



RSNA Annual Meeting Honored for Economic



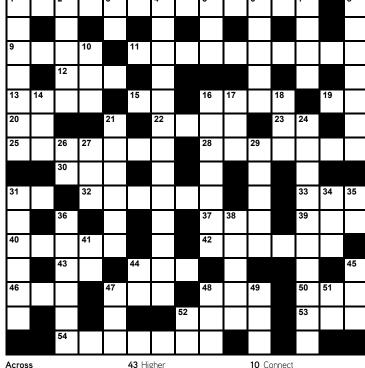
RSNA 2009 Spotlights Integrated Healthcare Technology

Tweet Your RSNA 2009 Experience

## \* RSNA News was published quarterly from Fall 1991 until September 1996, when

#### Crossword

Test your knowledge of radiology history and the press, politics and pop culture of the last 20 years. Answers will appear in the April issue of RSNA News.



#### Across

- 1 Places radioactive material temporarily or
- 9 Rock musical, based on La Boheme, took 1996 Tony
- chest radiology earned him eponymous society
- 12 Band-\_\_
- 15 Plate of photostimulable phosphor replaces film in
- 16 Treaty org.
- 19 Numeric information CT. abbr.
- 22 Reunion attendee
- to present passing through body at
- 32 Deciphering of this
- 33 Looks at structure and function of kidneys,
- championshin in 1991

- 43 Higher
- permanently in body
- 11 Seminal contributions to
- 13 Writer Rice
- this radiography type, abbr
- contained in each pixel of
- 20 Providence locale
- 23 Sodium symbol 25 RadioGraphics editor 1989
- 28 Longitudinal section right angles to median plane, in frontal orientation
- 30 Cheerleader cheer 31 Type of TV
- in 2000 expected to revolutionize medicine
- ureters, and bladder, abbi
- 37 Tarzan pal 39 Mercury or Saturn
- 40 Won first NBA
- 42 First female RSNA President

44 Oval object

52 Ken or Barbie

54 Homemaking maven

1 2006 Derby winner

suffered career-ending

injury two weeks later

2 In 2007, Ban Ki-moon

3 Unit of frequency, abbr.

4 Electronic transmission

of patient images and

5 Early CT manufacturer

6 British racing venue

8 Another name for CT

colonography: \_\_\_

colonoscopy

7 Upset Tiger in the 2009

consultative text

Reatles

indicted for insider trading

- 14 Zilch 46 Occurred in some patients 16 Uses small amounts of with kidney disease who
- radioactive material to received gadoliniumdiagnose or treat disease based MR contrast, abbr. 47 SNL star had a field day 17 I love, in Spanish
- with VP nominee Sarah 18 Lennon's Lady Palin, in 2008 21 2004 Olympics site 24 Used in the treatment or
- 48 Landmark 2006 bill led to losses for some imaging centers, abbr.
- 50 Assesses ability of 26 Smith or Bojangle intro procedure to generate 27 Actors' union, abbr. clinically useful image 29 Evaluated contrast, abbr.
- 31 First Radiology editor 34 "Brown-eyed girl" singer, 53 Common Market org.,
  - Morrison 35 Press guy

disease

36 Tries to fool, at poker

prevention of a deadly

- 38 Wall Street Journal reporter kidnapped, killed in Pakistan in 2002
- 41 Old record
- 44 \_\_\_ Doc Smith, Sci-Fi replaced him as U.N. head
  - 45 Agency screens applications for licenses to acquire sealed radioactive sources: abbr. 47 The Donald to Rosie O'
  - Donnell 48 Comes before org and
- also recorded songs of the
  - 49 The "greatest" boxer
  - 51 Vane direction 52 House character, abbr

CHALLENGE YOURSELF An interactive version of this puzzle at rsnanews.org includes a timer and optional hints.



# A CT THAT USES LESS RADIATION.

Minimizing radiation exposure for every patient is important, especially children who may have multiple scans over the course of their lives. This potential inspired us to develop the Aquilion® ONE dynamic volume CT. With 16 cm of volume coverage, it can perform acquisitions 10 times faster than helical and with at least 30% less radiation. To lead, you must first listen.

medical.toshiba.com

