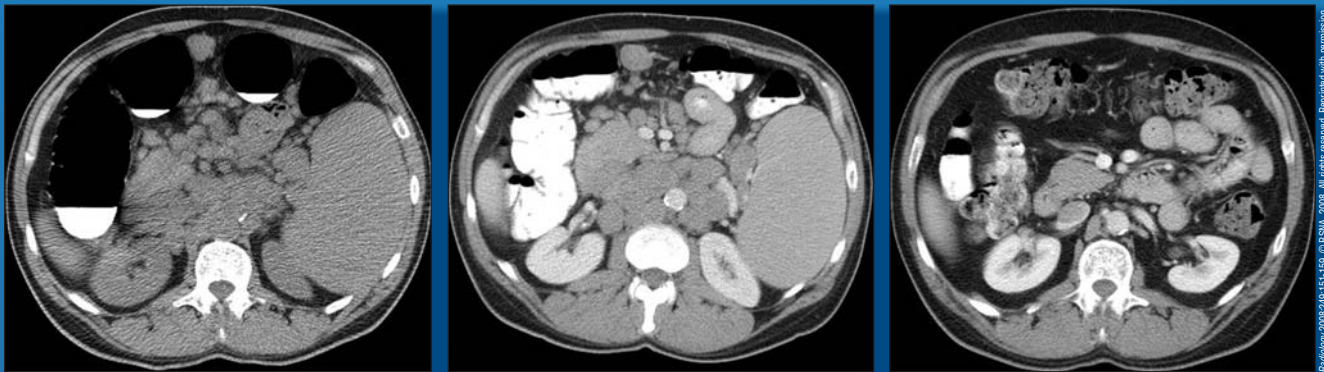


RSNA® *News*



Practice Issues Dominate Ongoing Virtual Colonoscopy Discussion

Also Inside:

- Different Methods Deployed to Manage Imaging Utilization in U.S. and Canada
- Benefits and Drawbacks Must be Weighed in Physician-Industry Relationships
- MBI Shows Promise in Women with Dense Breast Tissue, Increased Risk
- Laser Technique Could Unlock Protein Imaging

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Bracco Endows R&E Foundation Grant

TWENTY YEARS after Bracco became an inaugural member of the RSNA Research & Education (R&E) Foundation Vanguard program, Bracco is recommitting itself to funding radiology's future.

Bracco Diagnostics has made the first payment toward a new, 20-year, \$600,000 endowment of an R&E Foundation grant.

"Bracco's support of RSNA's R&E Foundation demonstrates our corporate commitment to advancing the science of radiology and finding new ways to improve patient care and increase the safety of diagnostic imaging," said Tony Lombardo, COO of Bracco Diagnostics.

"It also helps support a core corporate initiative of supporting students in their educational pursuits."

The Research Resident Grant offers young investigators not professionally established in the radiologic sciences an opportunity to gain further insight into scientific investigation and to develop competence in research techniques and methods. Corporate donors can support emerging researchers through R&E's Vanguard program.

Said Lombardo, "Our ongoing support of scientific

research and personal and professional development is at the heart of our theme, 'Committed to Science. Committed to You.'"



Bracco Diagnostics develops a range of clinical agents for cardiac, vascular, abdominal and neuroimaging, with a mission focused on developing high-quality processes and products that are well tolerated, more effective

and increasingly in tune with the needs of patients and physicians.

Since the formation of the Vanguard program in 1989, companies in the industry have committed more than \$20 million to fund radiologic research and education. Bracco's donation will be applied to the Foundation's \$15 million Silver Anniversary Campaign. For more information about corporate and individual giving, visit RSNA.org/Foundation.

Apply Now for 2009 Grants

Individuals interested in applying for 2009 R&E grants can prepare their applications online at grants.rsna.org/grants.

Application deadlines are:

January 10, Education Grants
January 15, Research Grants
February 1, Medical Student Grant

For more information on grants offered by the Foundation, go to RSNA.org/Foundation or contact Scott Walter, M.S., Assistant Director, Grant Administration at 1-630-571-7816 or swalter@rsna.org.

SIR Welcomes UFE Recommendations

The Society of Interventional Radiology (SIR) has applauded recommendations from the American College of Obstetricians and Gynecologists (ACOG) that uterine fibroid embolization (UFE) is a "safe and effective option."

In a recent practice bulletin, "Alternatives to Hysterectomy in the Management of Leiomyomas," ACOG listed UFE among Level A treatment options, meaning that the minimally invasive treatment is considered safe and effective based on long- and short-term outcomes data. Level A evidence is the highest grade possible.

"This is especially significant news for the 200,000 women who have hysterectomies performed annually in the United States to treat symptomatic uterine fibroids," said SIR President John A. Kaufman, M.D. "Many of these women can confidently choose UFE."



CMS Considers Broadening PET Coverage

THE Centers for Medicare & Medicaid Services (CMS) is considering a request from imaging groups to broaden Medicare coverage of PET for cancers including brain, cervical, bladder, small-cell lung, ovarian, testicular, prostate, kidney and pancreatic.

Imaging organizations, including the Academy of Molecular Imaging, pointed to a recently released study showing clinicians changed the intended care of more than one in three cancer patients as the result of FDG-PET findings. The study, using data from the National Oncologic PET Registry, was published in the May 1, 2008, issue of the *Journal of Clinical Oncology*.

In 2005, CMS said that it would cover PET for the cancers if the


patients were enrolled in the registry. The imaging representatives maintain there is now enough evidence to support coverage without registry enrollment.

CMS is expected to make a draft decision in January and a final ruling in April. For more information regarding this issue and other CMS decisions on imaging coverage, go to the Medicare Coverage Center at www.cms.hhs.gov/center/coverage.asp and click NCAs (National Coverage Analyses) in the Spotlight section.

IMAGING TECHNOLOGY

Fact of the Month

Most DICOM-formatted images contain a great deal of administrative and technical information in their headers.

 American Association of Physicists in Medicine

ABR Seeks Associate Executive Director Applicants

THE Board of Trustees of the American Board of Radiology (ABR) seeks applications for the part-time position of associate executive director (AED) for radiation oncology.

The new AED will work closely with the executive director and the AED for administration to coordinate and execute the ABR Strategic Plan and policy decisions of the ABR Board of Trustees. The AED will also work with ABR division chairs on operational matters, systems analysis



and quality improvement and with the AEDs for diagnostic radiology and radiologic physics to coordinate policy and the specifics of implementation across the three disciplines.

The AED for radiation oncology will serve as an ABR spokesperson at the American Board of Medical Specialties (ABMS), at annual meetings of major radiologic societies and at leadership meetings of ABR and specialty societies. The position also requires participation in ABR research

and authoring/co-authoring ABR publications and communications.

Candidates must be current or former ABR trustees. The anticipated start date is July 2009. People interested in the position should contact ABR before March 1:

Gary J. Becker, M.D.
Executive Director
The American Board of Radiology
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NIH Funds Biomedical Technology Research Centers

A center for MR imaging of neurodegenerative disorders is one of two Biomedical Technology Research Centers (BTRCs) to be funded by the National Center for Research Resources (NCRR), a part of the National Institutes of Health (NIH). NIH has committed an estimated \$11 million over the next five years to fund the two centers.

The Northern California Institute for Research and Education in San Francisco will receive approximately \$6 million to develop the MR imaging center. The center will develop innovative imaging techniques designed specifically to better diagnose and treat diseases including Alzheimer, Parkinson and Lou Gehrig.

The other BTRC award will go to the University of California, San Diego, to establish a new center for computational mass spectrometry that will serve as an international resource in proteomics, enabling more research activities and investigation into unexplored areas of computational proteomics.

MEDICAL IMAGING COMPANY NEWS

Health Systems Solutions to Acquire Emageon

■ Health Systems Solutions (HSS), of Tampa, Fla., and New York, has agreed to acquire Emageon, of Birmingham, Ala., for approximately \$62 million. HSS provides technology solutions, software and consulting for home healthcare, medical staffing, acute and post-acute facilities and telemedicine. Emageon offers information technology systems for hospitals, healthcare networks and imaging facilities. HSS indicated that the timing of acquisition was influenced by the company's desire to accelerate delivery of next generation PACS.

Clarification

In a story in the October 2008 issue of *RSNA News*, "Radiology Practices Still Faltering Despite Temporary DRA Relief," the organization of Richard Jensen, M.D., was misidentified. Dr. Jensen is chairman and president of Radiology Associates of Tarrant County.

PEOPLE IN THE NEWS

Berman Named SCCT President

Daniel S. Berman, M.D., director of cardiac imaging at Cedars Sinai Medical Center and a professor of medicine at the University of California, Los Angeles, was recently elected president of the Society of Cardiovascular Computed Tomography (SCCT). The society also elected **Jack A. Ziffer, M.D., Ph.D.**, as president-elect. Dr. Ziffer is the chief of radiology at Baptist Hospital in Miami and director of cardiac imaging at the Baptist Cardiac and Vascular Institute.

Alderson Appointed to NIBIB Advisory Council

Philip O. Alderson, M.D., dean of the Saint Louis University School of Medicine, has been appointed to the advisory council of the National Institute of Biomedical Imaging and Bioengineering (NIBIB) of the National Institutes of Health (NIH). The council provides recommendations on research priorities and opportunities in biomedical imaging and bioengineering and research training. Dr. Alderson is a past-president of the Academy for Radiology Research.



Philip O. Alderson, M.D.

ASTRO Names Gold Medalists, Honorary Member

The American Society for Therapeutic Radiology and Oncology (ASTRO) has awarded **Christopher Rose, M.D.**, and **Joel Tepper, M.D.**, with its gold medal.

Dr. Rose is the technical and associate director of Valley Radiotherapy Associates Medical Group in Glendale, Calif., medical director of the Center for Radiation Therapy of Beverly Hills and chief technology officer of Vantage Oncology.

Dr. Tepper is the Hector MacLean Distinguished Professor of Cancer Research and a professor of radiation oncology at the University of North Carolina School of Medicine, where he was chair for almost 20 years.

Also during the 2008 ASTRO annual meeting in Boston, **Audrey Evans, M.D.**, was named an honorary member. Dr. Evans was one of the co-founders of the original Ronald McDonald House, which opened in Philadelphia in 1974. From 1969 to 1989, Dr. Evans served as the chair of the Division of Oncology at Children’s Hospital of Philadelphia.



Christopher Rose, M.D.



Joel Tepper, M.D.

ASHNR Awards Gold Medal to Dillon

The American Society of Head and Neck Radiology (ASHNR) presented its 2008 gold medal to **William P. Dillon, M.D.**, during the society’s 42nd annual meeting in Ontario, Canada. Dr. Dillon has been chief of the neuroradiology section at the University of California, San Francisco, since 1992 and also serves as vice-chair for research in the Department of Radiology. He has served as senior editor of the *American Journal of Neuro-radiology* since 1996.



William P. Dillon, M.D.

Brody Named President of Salk Institute

William R. Brody, M.D., Ph.D., retiring president of The John Hopkins University, has been named president of the Salk Institute for Biological Studies. As president of the Salk Institute, Dr. Brody will oversee a staff of 870 scientific personnel, including several Nobel laureates and members of the National Academy of Sciences. Dr. Brody delivered the RSNA 2005 Annual Oration in Diagnostic Radiology, “Radiology: Back to the Future.”



William R. Brody, M.D., Ph.D.

IN MEMORIAM:

Joseph Davidson Calhoun, M.D.

Joseph Davidson Calhoun, M.D., died Oct. 12 at the age of 86.

Among the highlights of Dr. Calhoun’s distinguished radiology career were becoming the first resident in radiology at the University of Arkansas Medical School (UAMS) in 1950 and introducing mammography to Arkansas in 1970.

After graduating from Tulane University in 1945, Dr. Calhoun was commissioned as a lieutenant in the U.S. Naval Medical Corps and was eventually assigned to active duty at the

Arkansas Veterans Hospital. There he combined work with his radiology residency.

Dr. Calhoun served as the director of radiology and chief of the medical staff at St. Vincent’s Infirmary and as director of the Department of Radiology, chief of the medical staff and as a member of the board of directors at Arkansas Children’s Hospital. He was a clinical professor of radiology at UAMS from



Joseph Davidson Calhoun, M.D.

1950 until his retirement.

An RSNA member since 1951, Dr. Calhoun became president of the American College of Radiology (ACR) in 1968 and was awarded the ACR gold medal in 1988. He served as the president of the American Roentgen Ray Society in 1980 and received the ARRS gold

medal in 1995.



Send news about yourself, a colleague or your department to rsnanews@rsna.org, 1-630-571-7837 fax, or *RSNA News*, 820 Jorie Blvd., Oak Brook, IL 60523. Please include your full name and telephone number. You may also include a non-returnable color photo, 3x5 or larger, or electronic photo in high-resolution (300 dpi or higher) TIFF or JPEG format (not embedded in a document). *RSNA News* maintains the right to accept information for print based on membership status, newsworthiness and available print space.

Award Named for Welch

SNM has created an annual award named for **Michael J. Welch, Ph.D.**, professor of radiology, developmental biology and chemistry at Washington University in St. Louis. The Michael J. Welch Award, created by the Radiopharmaceutical Sciences Council (RPSC) of the society, will be given annually for outstanding work in the field. Dr. Welch delivered the RSNA 2008 New Horizons Lecture, "Nanotechnology in the Future of Imaging: Prospects and Pitfalls."



Michael J. Welch, Ph.D.

Pisano Elected to Institute of Medicine

Etta Pisano, M.D., vice-dean for academic affairs in the University of North Carolina (UNC) at Chapel Hill School of Medicine, has been elected to the Institute of Medicine. Dr. Pisano, who joins 64 other new members announced by the institute in October, is also the Kenan Professor of Radiology and Biomedical Engineering, director of the UNC Biomedical Research Imaging Center and a member of the UNC Lineberger Comprehensive Cancer Center.



Etta Pisano, M.D.

MY TURN

Science Must Join, Not Just Watch, the Online Revolution

AS THE Internet-driven revolution in mass media communications continues, so too does the influence of the World Wide Web on scientific communication. Online communication is immediate, multimedia and has a global reach. It also is interactive and has proven to be a vehicle for social networking and a democratization of information. *Radiology*, like other scientific journals, must adapt to the new pace and style of communication the Internet affords us and must take advantage of the case of global interactive communication to promote broader dialogue on issues of concern to our profession.

To that end, *Radiology* is launching a number of features to help our readers make the most of online communication. New message boards encourage discussion about articles in the Controversies in Radiology and Perspectives sections of the journal, as well as some *Radiology* editorials. These require par-

**My Turn
ONE
RADIOLOGIST'S
VIEW**

ticipant registration and are open to all readers, not just RSNA members, at RSNA.org/radiology/discuss.

Unfortunately, participation to date has been disappointing. I encourage all RSNA members to join in the discussions on the message boards, as I am sure that fuller vetting of the issues

raised will be of benefit to all. I'm also pleased to announce that short podcasts summarizing articles of interest in *Radiology* will begin with the January 2009 issue. These podcasts, available on the *Radiology* Web site, will include comments from the editors, authors and experts in the field.

With all these online innovations, the goal is to provide more context and additional insights on articles appearing in *Radiology*. My staff and I have also begun working with William W. Olmsted, M.D., and the staff at *Radio-*



Herbert Y. Kressel, M.D.

Graphics to develop theme-based online collections of content from both *Radiology* and *RadioGraphics*. We expect the first of these to be available in 2009, coincidentally the 10th anniversary of RSNA's journals going online. Finally, to help our readers navigate this rapidly changing online

world we have also begun a feature titled "Net Assets," highlighting new developments on the Web that may be of interest. Together we will navigate this increasingly complex world of cyberspace.

Herbert Y. Kressel, M.D., is editor of Radiology. Dr. Kressel is also the Miriam H. Stoneman Professor of Radiology at Harvard Medical School in Boston.

■ A story in the January 2009 issue of *RSNA News* will detail the evolution of the RSNA journals since they went online in 1999.



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Practice Issues Dominate Ongoing Virtual Colonoscopy Discussion

PUBLICATION of the final results of the National CT Colonography (CTC) Trial in *The New England Journal of Medicine (NEJM)* in September marked a turning point in the development of CTC. With its accuracy established, virtual colonoscopy is entering an era in which practice issues are paramount—topics like training and accreditation, reimbursement, management of extra-colonic findings and coordination with other specialties are now moving to the fore.

Coordinated by the American College of Radiology Imaging Network (ACRIN), the large, multicenter trial showed that CTC found 90 percent of the large polyps—10 mm and larger—found by traditional colonoscopy. While specificity was somewhat lower, at 86 percent, the findings were positive enough to trigger a change in national guidelines. In March 2008, on the basis of preliminary results presented at the ACRIN fall meeting in 2007, the American Cancer Society modified its colorectal cancer screening guidelines to include the option of CTC at five-year intervals.

“I think the clinical validation of CTC is now complete,” said principal investigator C. Daniel Johnson, M.D., of the Mayo Clinic in Scottsdale, Ariz. Not only does CTC get good marks for performance, he said, the procedure is also likely to rate high on patient acceptance because it does not require sedation or taking a day off from work. He added that CTC is safer than colonoscopy, with lower risk of perforation. While costs vary substantially, he said, CTC “should be about half of the cost of



C. Daniel Johnson, M.D.
Mayo Clinic, Scottsdale, Ariz.



Judy Yee, M.D.
University of California, San Francisco

colonoscopy,” when costs are added up for the entire colonoscopy procedure, including room charges, anesthesia, biopsy and pathology.

Training, Reimbursement Issues Arise

With increasing acceptance of CTC, one of the most immediate and important issues for practicing radiologists is training.

“It does require a special skill set,” said Dr. Johnson. “This is not an easy test to read.” In the ACRIN trial, participating radiologists were required to submit evidence of having interpreted at least 500 CTC examinations or to complete a special course. In either case, participants had to pass a qualifying exam.

A number of training courses are now offered by groups such as ACR and the Society of Gastrointestinal Radiologists (SGR) and by some institutions, such as the University of Chicago, New York University

and the University of California, San Francisco. The ACR course is similar to that required for the trial, with 50 hands-on case studies designed to address specific issues in reading CTC scans. When trainees successfully complete the 50 cases, they receive a certificate of proficiency that shows they meet ACR guidelines. The certificate can help radiologists meet the credential requirements of hospitals and third-party payers. SGR anticipates providing a certification with its annual course in 2009.

In one sign of the rising importance of CTC training, the International Symposium on Virtual Colonoscopy will be held next year at ACR headquarters in Reston, Va., in conjunction with one of the group’s colonography courses.

The ACRIN trial results are also expected to affect reimbursement policies. The Centers for Medicare & Medicaid Services (CMS) launched a national coverage analysis to study the impact and readiness of widespread

I think the clinical validation of CTC is now complete.

C. Daniel Johnson, M.D.



FROM THE COVER

There is growing concern about managing unsuspected extracolonic malignancies detected at screening CT colonography (CTC), as CTC use increases in light of studies validating its accuracy. A low-dose unenhanced transverse two-dimensional image (a) from screening CTC in an asymptomatic 50-year-old man shows massive abdominal lymphadenopathy and splenomegaly. The findings are better depicted on an image (b) from the subsequent diagnostic staging CT study of the chest, abdomen and pelvis. Mantle cell non-Hodgkin lymphoma was confirmed at percutaneous core needle biopsy. (c) The patient achieved complete remission with chemotherapy and was free of evidence of disease 2 years after diagnosis.

Radiology 2008;249:151-159. © RSNA, 2008. All rights reserved. Reprinted with permission.

CTC colorectal cancer screening in the U.S. The analysis is scheduled to be completed in early 2009.

One of the largest private payers in the U.S., United Healthcare, now covers CTC for screening, while the Blue Cross, Blue Shield Association and a number of other insurers are also considering or have approved coverage. “The number is changing daily,” said Matthew Barish, M.D., director of CTC at the State University of New York, Stony Brook, who designed and directs the ACR course.

Extracolonic Findings are Complicated, Controversial

One of the more complicated and controversial practice issues related to CTC is how to manage extracolonic findings. CTC imaging includes parts of the lungs, kidneys and abdominal organs, and abnormalities turn up on many scans. Some, such as lung nodules, renal masses and aortic aneurysms, are potentially life threatening. About 16 percent of patients in the ACRIN trial had extracolonic findings that were worrisome enough to trigger further testing or urgent care.

Robert Fletcher, M.D., a professor emeritus of ambulatory care and prevention at Harvard Medical School in Boston, wrote an editorial to accom-

pany the *NEJM* article, questioning the benefit of identifying and following up on these abnormalities. “Although some extracolonic findings are life-threatening, few (with the exception perhaps of unrecognized abdominal aortic aneurysms) can be treated effectively,” Dr. Fletcher wrote.

The federal government’s U.S. Preventive Services Task Force (USPSTF) also cited the problem of extracolonic findings in its recent decision not to recommend CTC for colorectal cancer screening. “Evidence to assess the harms related to extra-colonic findings is insufficient and the balance of benefits and harms cannot be determined” the task force reported in October.

Others contend that patients do benefit when a potentially dangerous mass or aneurysm is found. The main issue now is establishing protocols for managing extracolonic findings, said Dr. Johnson. “We need evidence-based rules for interpretation, indicating when there is a need and when there is no need to report or follow up,” he said. A study based on the ACRIN results is already under way to increase understanding of these issues, he added.

Radiation exposure has been raised as another potential disadvantage to regular CTC screening. The USPSTF reported exposure of about 10 mSv per

examination and that the harm at this level is uncertain. Other experts point out, however, that current ACR guidelines call for lower doses, making the effective radiation dose 6–8 mSv per exam. “This is approximately the same as a double-contrast barium enema,” said Judy Yee, M.D., a professor and vice-chair of radiology and biomedical imaging at the University of California, San Francisco. “The USPSTF has raised undue alarm. It is short-sighted and a disservice to patients who otherwise won’t come in for screening at all.”

Patient Compliance Still a Barrier

Getting patients in for colonoscopy is one of the major barriers to regular screening. CTC eliminates some of the inconvenience associated with colonoscopy, such as the need for sedation. It requires the same arduous 24-hour bowel cleansing, however, and the patient has to undergo a standard colonoscopy if polyps are found. The subsequent colonoscopy requires another day of colon cleansing unless a colonoscopy appointment can be arranged the same day.

“A team of radiologists and gastroenterologists is required in order to provide the best service to patients,” Dr. Johnson said. “I think we can solve

Continued on Page 9

Laser Technique Could Unlock Protein Imaging

PHYSICISTS at Argonne National Laboratory have demonstrated the world's first X-ray microprobe of laser-aligned molecules. The technique may be used to better understand human proteins when studying drug interaction.

"We have used X-rays to examine an ensemble of individual molecules that have been aligned in free space using a laser," said Linda Young, Ph.D., group leader in Atomic Molecular and Optical Physics and a distinguished fellow at Argonne, located in Argonne, Ill.

Alignment, in this context, means that a unique molecular axis—the most polarizable one—is forced to be parallel to the laser's polarization axis, the direction of which can be easily controlled by the researcher. The linearly polarized electric field of the laser interacts with the polarizability of the molecule, producing an induced dipole which then settles into its minimum energy configuration along the laser polarization axis.

"While many others have used lasers to align molecules before, we are the first research group to use X-rays to probe such aligned molecules," said Dr. Young. "X-rays are a unique probe of molecules, indeed matter, because the extremely short wavelengths—sub-Ångstrom—provide information with atomic resolution."

LASER is an acronym for light amplification by stimulated emission of radiation. Laser light has the special property of being coherent, so its electric field can be linearly polarized in a direction perpendicular to its propagation.

Laser Alignment Offers Benefits over Protein Crystallization

Currently in protein imaging, crystals are used to create an X-ray diffraction pattern, often using X-rays from a synchrotron source, from which a real space image can be reconstructed. When proteins are not crystallized, however, X-rays scatter weakly and make a diffraction image unattainable.

"A major bottleneck now in the quest to determine protein structure is being able to grow crystals of sufficient size where X-ray crystallography becomes feasible," said Dr. Young.

"The forefront in protein crystallography is to examine very small, say 20 micron length-scale, protein crystals through microdiffraction methods. The use of individual proteins, without the

need for any crystal growth, would be a significant technological step forward."

Implications for Drug Development, Radiology Envisioned

Finding a different way to view molecules involved in drug interactions than the one offered by crystalliza-

tion is imperative because some of the molecules involved with drug interaction cannot be crystallized. The laser technique aligns millions of molecules so that they will scatter in the same way when bombarded with X-rays. The atomic-level-resolution images so produced do not require crystallization.

Understanding the protein structure-function relationship on a molecular level will be key to designing new drugs, said Dr. Young.



Linda Young, Ph.D.
Argonne National Laboratory

Dr. Young noted that the concept of laser alignment is simply a subset of laser control—laser alignment is a method to constrain the rotational degree of freedom in a molecule. She said she envisions arrays of aligned molecules located in a 2D or 3D lattice formed by crossing laser beams. These advanced optical methods to control molecules may enable better structure determination, she said.

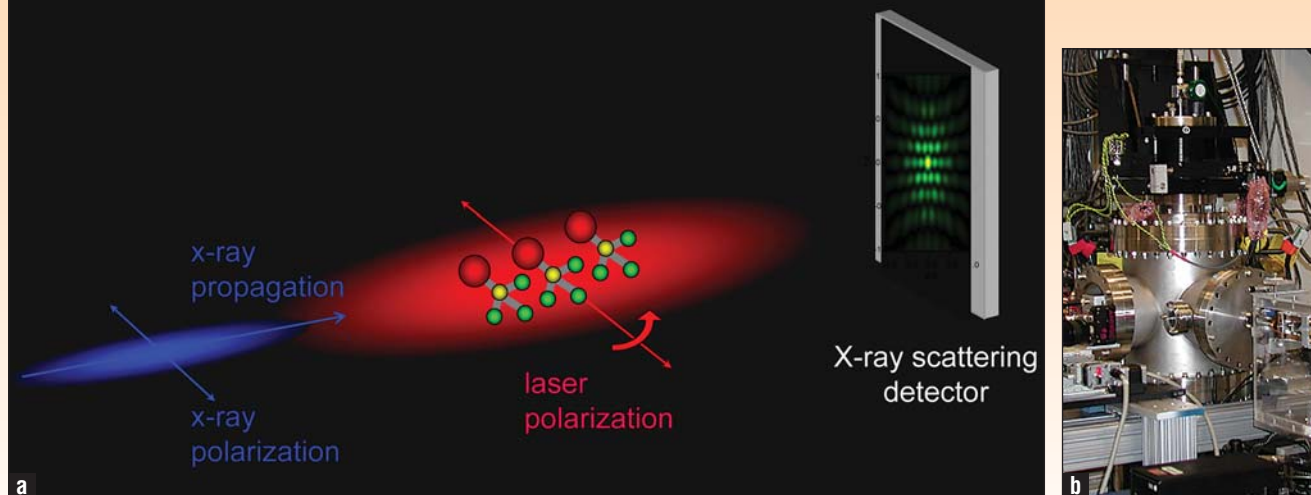
Extending laser alignment to molecules in the liquid phase would also be a significant breakthrough, she said. "Beyond rotation, one can control other degrees of freedom, vibrational and electronic, as well," she said. "On a more global scale, laser control of chemical reactions—through bond softening and hardening, bond making and breaking, may be possible."

Laser alignment may have applications in radiology, said Dr. Young. "The field of X-ray coherent diffractive imaging, whereby an X-ray diffraction pattern of a non-periodic sample can be inverted to produce a real space

While many others have used lasers to align molecules before, we are the first research group to use X-rays to probe such aligned molecules.

Linda Young, Ph.D.

X-ray microprobe of laser aligned molecules



Researchers at Argonne National Laboratory have used X-rays to examine an ensemble of individual molecules that have been aligned in free space using a laser. The diagram (a) describes the process, which involves the apparatus shown (b).

structure with nanometer resolution, is in its infancy,” she said. “Combining this powerful technique with laser control of molecular motions at the atomic level would be very exciting.”

Improvements to X-ray Flux Sought

So far, researchers have used X-ray absorption to probe aligned molecules, said Dr. Young. However, she said, the gold standard for structure determination is X-ray diffraction, or coherent elastic scattering. “Because the scattering cross-section is much smaller, the realization is significantly more challenging,” she said.

Dr. Young and colleagues are currently working to improve the X-ray flux onto the laser-aligned molecular sample by more efficiently using the flux produced by Argonne’s Advanced Photon Source (APS), a premier source of X-rays in the U.S. Since the team’s initial experiments used relatively low repetition rate lasers (1 kHz), they seek a statistical gain up to a factor of 6500x by using lasers where the repetition rate is matched to that of the APS.

A large international collaboration is working on the problem with an eye toward implementation at the Linac Coherent Light Source (LCLS), an

X-ray free-electron laser located at the SLAC National Accelerator Laboratory that is scheduled for first use in the summer of 2009. The LCLS produces the same average flux as the APS, but the flux comes bunched in ultrashort packets with a repetition rate of 120 Hz. Shorter pulse lengths and larger photon number per pulse will spur developments in single shot imaging methods, said Dr. Young. □

Practice Issues Dominate Ongoing Virtual Colonoscopy Discussion

Continued from Page 7

this.” At Mayo, the gastroenterology department now keeps a few appointments open each day for patients whose CTC scans indicate they need a colonoscopy, he said, while the radiology department does the same for cases in which a standard colonoscopy cannot be completed.

Another way to deal with a lack of patient compliance could be to develop less difficult, non-cathartic ways to prepare the colon for CTC, said Dr. Johnson. Studies are looking at the use

of a contrast medium that would allow radiologists to reliably discriminate stool from polyps, he added.

If these studies are successful, patient acceptance of screening in general and the use of CTC in particular is expected to increase dramatically, which should result in more screening and more lives saved, said Dr. Johnson.

“If the preparation gets figured out, it will be revolutionary,” he said. □

Learn More

- Read the abstract for “Accuracy of CT Colonography for Detection of Large Adenomas and Cancers,” published in the Sept. 18, 2008, issue of *The New England Journal of Medicine*, at content.nejm.org/cgi/content/abstract/359/12/1207.
- More information about the CTC analysis undertaken by the Centers for Medicare & Medicaid Services is available at www.cms.hhs.gov.

Benefits and Drawbacks Must be Weighed in Physician-Industry Relationships

PRESENTERS of an RSNA 2008 course on physician-industry relationships agreed that such relationships have proliferated but debated the degree to which such relationships benefit the medical profession and society at large, as well as how potential downsides should be managed.

The “Physicians’ Relationships with Industry” refresher course was sponsored by the RSNA Professionalism Committee. Committee chair Leonard Berlin, M.D., said he is fascinated by this thought-provoking topic and has become his own newspaper clipping service when it comes to articles about physicians getting kickbacks, medical journals being misled by researchers and other evidence of the need for disclosure.

“When a doctor is wined and dined by radiology manufacturers or medicine makers, is he or she obligated or beholden to that company?” asked Dr. Berlin, chair of radiology at Rush North Shore Medical Center in Skokie, Ill. “Will this prejudice subsequent medical research?”

A conflict of interest can be defined, said Dr. Berlin, as objectivity being unduly influenced by some material gain. What may be harder to define, he said, is the difference between “influence” and “undue influence.”

“Where is the line?” Dr. Berlin asked. “It’s hard to believe you wouldn’t feel some sort of obligation when you are influenced.

“If a radiologist says something is medically successful, and that radiologist is getting money from one of the big device makers or the maker of contrast media, could that damage the



Radiology has been at the forefront of medical specialties when it comes to disclosing physician/industry relationships, said Leonard Berlin, M.D., chair of the RSNA Professionalism Committee. The committee sponsored the “Physicians’ Relationships with Industry” course at RSNA 2008.

image of radiology in the eyes of the public?” Dr. Berlin continued.

Fortunately, said Dr. Berlin, radiology has been at the forefront of medical specialties when it comes to disclosing physician/industry relationships.

Relationships Hasten Innovations to Clinic

Speaking for the first time on this topic, Rachel Brem, M.D., characterized collaborative efforts between researchers and industry as “relationships which can be healthy.”

Dr. Brem, who has a longstanding relationship with Dilon Technologies, is the director of breast imaging and intervention and vice-chair of the Department of Radiology at George Washington University Medical Center.

She started her research with Dilon on breast-specific gamma imaging (BSGI) in 1996. Dr. Brem worked on the science, clinical research and direction Dilon Technologies should take.

“I was involved from the beginning with the design of the equipment and the initial research studies,” said Dr. Brem. “It required two groups, breast imagers and nuclear medicine physicians, who typically don’t work together, to do just that. In addition, the company needed to understand the culture of academics.”

Dr. Brem became a member of the Dilon board after 10 years of working with the company. While her decision may have raised some eyebrows, Dr. Brem maintained the regulatory climate

How will innovation reach patients without the collaboration of researchers and industry?

Rachel Brem, M.D.

is becoming so stringent that patients may not get new technologies at the speed they are getting them today. “How will innovation reach patients without the collaboration of researchers and industry?” she asked. “There is an increasing feeling of too many restrictions and that could harm the ability of doctors to get new technologies to patients.”

Both physicians and industry must be vigilant, said Dr. Brem. “We maintain extremely stringent operating procedures with many deep levels of institutional review board (IRB) oversight,” she said. “Oversight is important, but it must, and it can be, managed. If it becomes overly burdensome, it could harm patients.”

Physician-Industry Relationships “Ubiquitous”

Considering that there is not enough money available from the federal government, hospitals and medical schools to pay for research, medicine will naturally turn to industry for some funding, said Eric G. Campbell, Ph.D. “Close relationships can quicken the development and marketing of products and drugs,” he said. “Many, if not all, of the new drugs and devices on the market today wouldn’t exist without these relationships.” There is no need to end the relationships, he said, as long as all parties clearly and fully note their participation.

However, Dr. Campbell, an associate professor of medicine at the Institute for Health Policy at Massachusetts General, takes a hard line view on every other potential conflict of interest. Citing several of his own published studies (see sidebar), he noted, “The research in this area shows the industry-physician relationship is ubiquitous in all aspects of medicine,” he said.

“Research shows 90 percent of medical students have had a dinner with drug company representatives,” Dr. Campbell continued. “Ninety-seven percent of all practicing doctors have a relationship with industry, including department chairs and IRB chairs.



Clark Silcox, J.D., of the National Electrical Manufacturers Association, said he predicts public policy change in 2009 that will bring disclosure legislation through Medicare law and include criminal penalties for fraud.

There is not a single aspect of medicine today without these relationships.”

Dr. Campbell said he believes the most common conflicts of interest occur when doctors accept free lunches in their offices. “This should never happen,” he said. “Doctors should not pass the higher cost of medicine and equipment to their patients by accepting free lunches.” There is nothing wrong with a physician calling a drug company to arrange a meeting with a drug representative, he said, but those representatives should not be feeding doctors and nurses.

Pointing to free trips as another potential area of abuse, Dr. Campbell cited

The Wall Street Journal coverage of an equipment manufacturer taking a group of doctors to New Orleans during Mardi Gras and paying for a float for the doctors to ride in and \$25,000 worth of beads for the doctors to toss. Golf outings are also ripe for manipulation, he added. “They’re not educational,” he said. “What about

CME? You don’t need to go to Naples for CME—you can do that at home on your computer.”

There have been calls for a ban on all industry support of CME and many medical schools and hospitals are considering such restrictions, said Dr. Campbell. “Half of all CME is sup-



Rachel Brem, M.D.
George Washington University



Eric G. Campbell, Ph.D.
Massachusetts General

ported by drug and device companies,” he said. “Those companies make significant returns on their investments.”

Dr. Campbell noted the discrepancies that arise when physicians are asked about their efforts to self-monitor for potential conflicts. “Interestingly, many physicians believe there is no nega-

Continued on Page 13

Different Methods Deployed to Manage Imaging Utilization in U.S. and Canada

FACILITATORS of an RSNA 2008 session on controlling imaging utilization in the U.S. and Canada offered differing opinions of the forces at work.

“In Canada, utilization of imaging is being managed largely by limiting capacity and the ability to expand capacity,” said G. Scott Gazelle, M.D., M.P.H., Ph.D., a professor of radiology at Harvard Medical School in Boston and director of the Institute for Technology Assessment at Massachusetts General Hospital. “In the U.S., utilization is being managed primarily by limiting either the economic incentives to image or the freedom to order, but not capacity, with the exception of determination of need laws. It’s really an interesting contrast.”

Dr. Gazelle led the special focus session, “Rationing of Imaging Services: Facing the Inevitable Crisis in Resources—U.S. versus Canadian Perspective,” with Walter Kucharczyk, M.D., F.R.C.P., a professor of radiology in the Department of Medical Imaging at the University of Toronto.

The session examined present and potential efforts to control imaging utilization in both the U.S. and Canada, comparing and contrasting the way both nations seek to reduce medical costs by limiting the utilization of imaging exams.

Patients Deem New Technology Worth the Money

Diagnostic imaging is one of the fastest growing medical expenditures in the U.S. According to a June 2008 report from the U.S. Government Accounting



G. Scott Gazelle, M.D., M.P.H., Ph.D.
Harvard Medical School



Walter Kucharczyk, M.D., F.R.C.P.
University of Toronto

Office, Medicare spending for imaging services more than doubled between 2000 and 2006, increasing to about \$14 billion. Spending on advanced imaging, such as CT, MR imaging and nuclear medicine, rose substantially faster than imaging services such as ultrasound, X-ray and other standard imaging.

Patients, however, do not report having a problem with the rising costs. A 2005 *The Wall Street Journal*/Harris Interactive Poll indicated that nearly one-third of adults believe that new technologies such as digital imaging devices and electronic medical records are worth the money because they will improve patient care.

“From my perspective, imaging has developed very rapidly over the past two decades, to the point that it is of central importance to patient management for a whole host of diseases,” said Dr. Kucharczyk.

Public versus Private Sector a Key Difference

Canada and the U.S. are a little out of sync in how they have developed systems for utilization management, Dr. Kucharczyk added. “The U.S. has private and public sector medical cost payers, while the Canadian system of care is purely public,” he said. “The Canadian system has generally disseminated technology slower. The country overall, at least in the 80s and 90s, didn’t invest as much in technology. It was all government paid.”

Cost controls for imaging in the U.S. have become of increasing importance in the past five years, said Dr. Gazelle. “The interesting thing we’ve seen recently is the payers, private and public, have become increasingly concerned with the cost of imaging,” he said. “They have implemented a variety of strategies to try to limit imaging utilization. The public payers, Medicare

principally, have focused primarily on the cost side; that is, they've tried to put downward pressure on costs, hoping that reduced economic incentives will force centers to image less.

"The private payers have focused on more direct discouragement of utilization, using radiology benefit management firms, pre-authorization and pay-for-performance clauses in contracts that actually pay you more or withhold money if you cannot control utilization," Dr. Gazelle continued.

Such measures don't exist in Canada, said Dr. Kucharczyk. "We don't have this intermediary," he said. "No one is ever turned away by their insurer because they don't think the exam is indicated. They get turned away indirectly because they have to wait for the exam."

Radiologist's Role Elevated

Whether the controls are direct or indirect, the session presenters agreed that containing costs is a subject that plays a role in medical decision making. This

relatively new pressure for radiologists simply highlights their increasing role as expert consultants on each patient's medical team, said Dr. Kucharczyk.

"I'm a neuroradiologist dealing mostly with MR imaging, so we're always trying to juggle schedules to fit people in," he said. "You always leave enough gaps in your schedule to get in a person who presents with a serious need. If you don't have a gap, you bump someone who's not as urgent.

Emergency situations here always get handled. It's the elective cases that have to wait longer."

The fact that utilization management efforts are under way in Canada, said Dr. Kucharczyk, means the system is always operating at capacity. "We all grew up with the system," he said. "I'll ask, 'Does a test have to be done today? How urgent is it?' If it's a physician you trust, whose opinion you respect, you'll arrange it. But it is time consuming and can be frustrating."

In the U.S., Dr. Gazelle observed,

In the U.S., utilization is being managed primarily by limiting either the economic incentives to image or the freedom to order, but not capacity.

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

radiologists don't want to be in a situation of saying "no" to referring physicians. "One of the things we've done here at MGH is develop computerized order entry with embedded decision support that we think provides useful information and some control of imaging utilization, by focusing on limiting ordering choices to those instances where we think it's the most appropriate," he said. "It's always been part of the routine care that there's a dialogue, that radiologists are not just people who interpret exams, that they are colleagues who provide consultation." □

Learn More

- To read the June 2008 report of the U.S. Government Accounting Office, "Medicare Part B Imaging Services: Rapid Spending Growth and Shift to Physician Offices Indicate Need for CMS to Consider Additional Management Practices," go to www.gao.gov/new.items/d08452.pdf.
- To learn more about the June 2005 *The Wall Street Journal Online*/Harris Interactive healthcare poll, go to medicalimaging.org/news/wsjharrispoll.cfm.

Benefits and Drawbacks Must be Weighed in Physician-Industry Relationships

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tive effect on their own behavior but surely there is a negative effect on their colleagues who participate," he said, adding that medical societies must also check their conflicts when receiving money from drug and device makers.

Vendors Involved in Regulation

On the other side of the physician-industry equation, medical vendors have a keen interest as well. Course presenter Clark Silcox, J.D., is secretary and general counsel for the National Electrical Manufacturers Association (NEMA), made up of companies that make X-ray, CT, MR imaging and ultrasound machines and radiation therapy equipment.

"This issue has been around for decades, but now there is increased interest by the media and lawmakers," said Silcox. Congress and some state legislatures have proposals to require disclosure, he said, and interestingly that disclosure will come from the vendors. Early attempts included mandatory disclosure of all discounts. Silcox said that requirement had to be eliminated because, in his industry, every sale of large equipment such as an MR imaging machine is discounted. Such disclosure would give competitors unfair price knowledge, he said.

Academic institutions and medical schools have their own ethics regulations to police themselves, but sometimes the rules are not observed, said Silcox. He

predicted a public policy change next year that will bring disclosure legislation in through the Medicare law and include criminal penalties for fraud. □

Learn More

- The full text of studies by Eric G. Campbell, Ph.D., and colleagues into physician-industry relationships is available online:
 - "Institutional Academic-Industry Relationships" jama.ama-assn.org/cgi/content/full/298/15/1779
 - "A National Survey of Physician-Industry Relationships" content.nejm.org/cgi/content/full/356/17/1742
 - "Financial Relationships between Institutional Review Board Members and Industry" content.nejm.org/cgi/content/full/355/22/2321

MBI Shows Promise in Women with Dense Breast Tissue and Increased Risk

MOLECULAR breast imaging (MBI) has promise as an adjunct test for some women, according to a recent study, comparing MBI to mammography with the goal of establishing an additional detection tool for women with dense breasts who are at higher risk of developing breast cancer.

The study, presented earlier this year at an American Society of Clinical Oncology symposium, showed that MBI—a new method of breast imaging using a dedicated breast camera—performed strongly. Results showed that specially designed MBI cameras revealed more tumors and produced fewer false alarms, but researchers emphasized that the experimental technology will not replace mammograms for any women.

“At this time we think mammography works well in most women, so we see this as an adjunct for women whom mammography doesn’t serve well,” said Carrie B. Hruska, M.D., Ph.D., the study’s lead author. “One of the benefits of mammography is that it detects microcalcifications. We are not yet sure that MBI can do that.”

Dr. Hruska, a post-doctoral research fellow in the Department of Radiology at the Mayo Clinic in Rochester, Minn., said the study’s initial enrollment included 1,000 asymptomatic women presenting for their annual mammogram.

The American Cancer Society, American College of Radiology and American College of Surgeons recommend that women over 40 have annual mammograms. About one-quarter of women aged 40 and older have dense breasts.

“To be included in the study the women had to have dense breast tissue, more than 50 percent dense, and another risk factor such as family history, personal history, BRCA mutation or something that elevated their risk even further,” said Dr. Hruska. All participants had both tests within 21 days of one another and the reviewers read independently without knowledge of the outcome of the other test.

Technology also Yielded Fewer False Positives

Dr. Hruska said 13 tumors were detected in 12 patients—eight by MBI alone, one by mammography alone, two by both methods and two by neither.

“Having 10 cancers picked up with MBI and only three with screening mammography was our main finding, but we also had a lot of other encouraging findings,” said Dr. Hruska. “We had fewer false positives with this technology. A technique can be highly sensitive, but if it’s picking up things that aren’t cancer, it isn’t very useful.”

Researchers noted that MBI also had a higher positive predictive value



Carrie B. Hruska, M.D., Ph.D.
Mayo Clinic

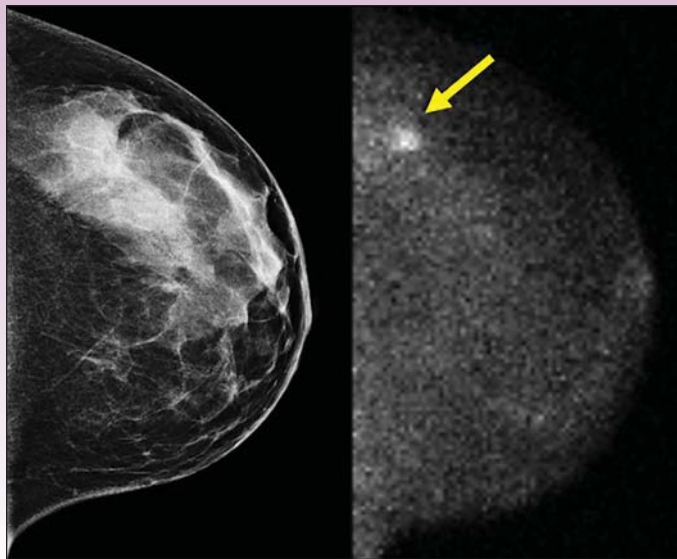
than mammography. The study began in September 2005 and researchers recently began a 15-month follow-up. Researchers extended the follow-up from 12 to 15 months because many women are late scheduling their annual mammograms.

“It’s important to do a follow-up because we can look at what was detected at the time of the study, but we don’t know if we missed something on both modalities,” Dr. Hruska said. “We have to see if anything crops up in the next year and that could affect our data. We aren’t re-testing them with MBI, but we are using any other clinical findings they may have.”

So far, three cancers have been detected during the follow-up period. The cancers were very small, said Dr. Hruska, and therefore it’s debatable whether or not they were present at the time of the study.

Mammography works well in most women, so we see this as an adjunct for women whom mammography doesn’t serve well.

Carrie B. Hruska, M.D., Ph.D.



Researchers at Mayo Clinic studied molecular breast imaging (MBI) in 12 patients with more than 50 percent dense tissue and another breast cancer risk factor such as family history, personal history or BRCA mutation. Thirteen tumors were detected in 12 patients—eight by MBI alone, one by mammography alone, two by both methods and two by neither. MBI also yielded fewer false positives and a higher positive predictive value than mammography. Researchers, who recently began a 15-month follow-up, believe the results show the promise of MBI as an adjunct test for women with dense breasts, but emphasize that MBI will not replace mammography in any women.

While the study results are promising, said Dr. Hruska, the use of MBI in breast imaging is still in the research stages.

“We are using cadmium zinc telluride (CZT), which is a new type of gamma ray detector,” she said. “With these cameras, we are able to detect very small lesions. They are specifically designed for the breast and don’t have a dead space around the edge, so the breast can be placed right on the camera. By moving in so close to the breast, we can detect very small cancers.”

Researchers took commercially available detectors and configured them into a dual-head breast imaging unit for their own prototype design, Dr. Hruska said.

MBI: A Cost-effective Option for Moderate Risk Women?

Jennifer A. Harvey, M.D., a professor of radiology at the University of Virginia Health Sciences Center in Charlottesville, said the study is very promising.

“MBI has been around for awhile but has not been well utilized or popular because it has traditionally been done with a gamma camera for whole-body imaging and the resolution was poor,” said Dr. Harvey, who chairs the breast imaging subcommittee of the

RSNA Scientific Program Committee.

“The development of gamma cameras that are smaller and get closer to the breast is where we are going to be able to see more cancers and smaller cancers,” said Dr. Harvey. “The survival rates and treatment will be much better if the disease can be found at its earliest point.”

While the study included 1,000 women, both Drs. Hruska and Harvey would like to see even larger studies done using MBI.

“Studies need to be done with these breast-specific cameras to compare breast cancer detection in high-risk women and in women who are more moderate risk,” Dr. Harvey said. “High-risk women will probably get MR imaging because it’s more cost-effective for women who are genetic carriers. But for women who are at elevated but not the highest risk, tests like this are going to be great because they will likely be more cost-effective.”

The lower cost will be a huge benefit should MBI be validated and become a screening technology, said Dr. Hruska. “Other screenings used to address the limitations of mammography, like breast MR imaging, are very expensive,” she said. “MBI is three to five times less costly than MR imaging, but we are still studying to see if it can

do as well as MR imaging in certain applications.

“Overall, so far, we are pleased with the results of this study and we are encouraged that MBI picked up more than three times as many cancers as the screening mammogram did in women who are at increased risk and have dense breasts,” Dr. Hruska concluded. □

Learn More

■ To view the abstract for “Molecular Breast Imaging to Screen for Breast Cancer in Women with Mammographically Dense Breasts and Increased Risk,” go to www.asco.org and click Abstracts under Top Links. Click 2008 Breast Cancer Symposium Abstracts and select Screening—New Imaging Modalities.



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Journal Highlights

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

Infected (Mycotic) Aneurysms: Spectrum of Imaging Appearances and Management

ALTHOUGH not common, infected aneurysms have a high mortality rate if not properly treated. State-of-the-art imaging techniques such as multidetector CT and MR imaging are fast replacing **RadioGraphics** conventional angiography as minimally invasive methods for detecting infected aneurysms and providing vascular mapping to facilitate treatment planning.

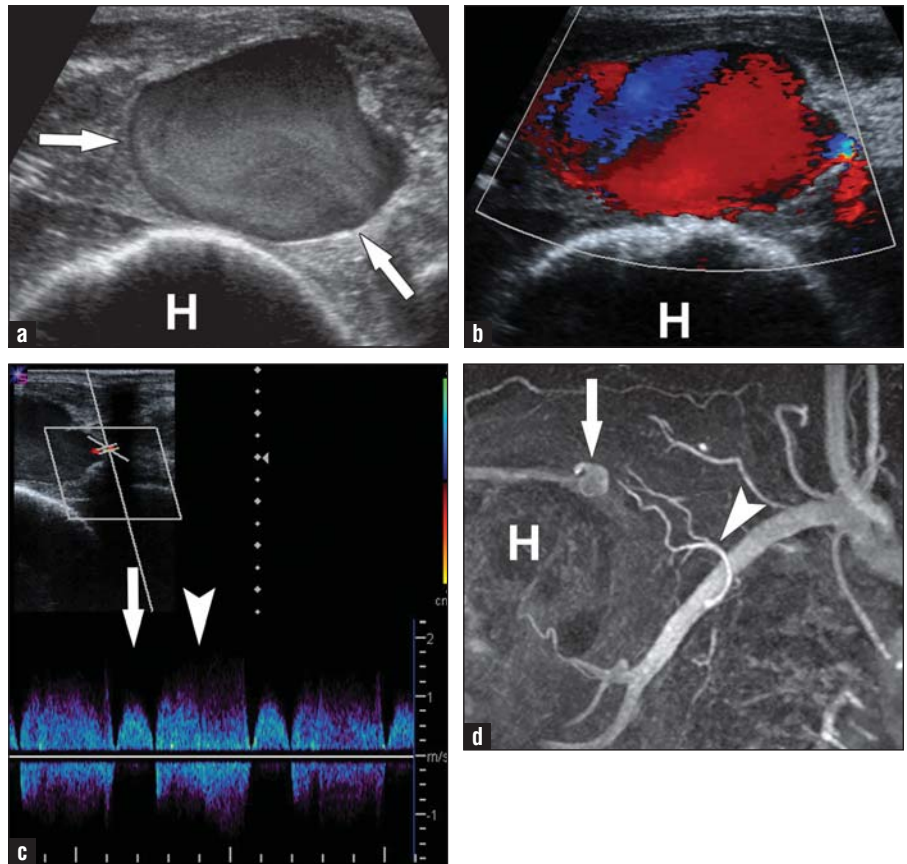
In an article in the November-December issue of *RadioGraphics* (RSNA.org/radiographics), Wai-Kit Lee, M.B.B.S., F.R.A.N.Z.C.R., and colleagues discuss imaging methods used to assess infected aneurysms, list features of infected aneurysms at CT, MR imaging and ultrasound and describe the treatment options.

The authors specifically address these imaging features of infected aneurysms:

- Lobulated vascular mass
- Indistinct irregular arterial wall
- Perianeurysmal edema
- Perianeurysmal soft-tissue mass

Specifically, the article examines aneurysms found in the aorta, peripheral arteries, cerebral arteries, visceral arteries and arteries to other organs.

"The key to a successful outcome in this uncommon but difficult to manage entity is early diagnosis and aggressive treatment," the authors conclude. "Early diagnosis requires a high index of clinical suspicion and awareness by the radiologist of the spectrum of imaging appearances, especially early changes."



Infected aneurysm of the thoracoacromial artery in an 82-year-old man with methicillin-sensitive *S aureus* septic arthritis.

Oblique gray-scale (a) and color Doppler (b) sonograms show a 3.5-cm complex hypoechoic mass (arrows in a) adjacent to the right humeral head (H); the mass has turbulent flow on the color Doppler image. There is no significant perianeurysmal soft tissue. (c) Pulsed Doppler sonogram obtained at the aneurysm neck shows a "to-and-fro" waveform with high-velocity antegrade flow into the aneurysm during systole (arrow) and high-velocity bidirectional flow out of the aneurysm during diastole (arrowhead). The bidirectional waveform in diastole is due to turbulent flow. (d) Coronal contrast-enhanced fat-suppressed T1-weighted MR angiogram shows the aneurysm (arrow) arising from the acromial branch (arrowhead) of the right thoracoacromial artery. Selective catheterization of the acromial branch artery for embolization was unsuccessful. Ultrasound-guided percutaneous embolization with steel coils and 100 units of thrombin was performed, resulting in complete exclusion of the aneurysm from the parent artery.

(*RadioGraphics* 2008;28:1853-1868) © RSNA, 2008. All rights reserved. Printed with permission.

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

Continued on Page 20

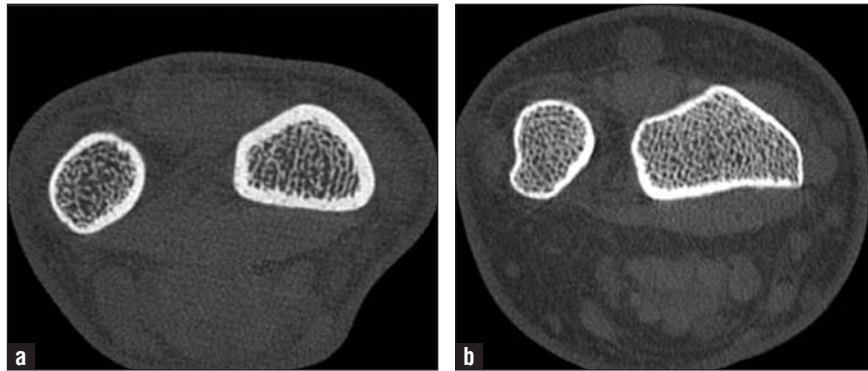
Radiology in Public Focus

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

Distal Radius in Adolescent Girls with Anorexia Nervosa: Trabecular Structure Analysis with Very High Resolution Flat-Panel Volume CT

BONE STRUCTURE in adolescent girls with anorexia nervosa (AN) can be abnormal despite normal bone mineral density, researchers have found. Miriam A. Bredella, M.D., of the Department of Radiology at Massachusetts General Hospital, and colleagues studied trabecular microarchitecture on flat-panel volume CT (fpVCT) wrist images of 10 girls with mild AN and 10 normal-weight controls. They found that fpVCT demonstrated bone structure deficiencies in the girls with AN, even when bone mineral density on dual-energy X-ray absorptiometry was normal.

The girls included in the study had mild or early onset AN and did not have extreme weight loss compared to healthy adolescent girls with similar bone mineral density, Bredella and colleagues noted. “Bone mass measurements do not necessarily translate into fracture risk, which is better predicted using measures of bone structure, and



(a) Very high-resolution flat-panel volume CT (fpVCT) scan of the distal radius in a 15-year-old adolescent girl with anorexia nervosa (bone age, 16 years; body mass index [BMI], 19.6 kg/m²) demonstrates rarefaction of trabeculae of the distal radius and ulna. Note the lack of subcutaneous and deep fat. (b) Very high-resolution fpVCT scan of the distal radius in a 16-year-old normal-weight control subject (bone age, 17 years; BMI, 24.2 kg/m²) demonstrates normal mineralization of the distal radius and ulna. An increase was observed in trabeculae compared with trabeculae in subject with anorexia nervosa. (*Radiology* 2008;249:946–948) © RSNA, 2008. All rights reserved. Printed with permission.

it is not known whether bone structural changes precede changes in bone density,” the researchers wrote. “Therefore, assessment of trabecular bone architecture is of particular concern when the body is actively accruing bone mass.

“Given the increasing prevalence

of AN and its profound consequences on bone health, these results may have major implications on the treatment and follow-up of AN,” the researchers concluded.

This study was also presented as a scientific paper at RSNA 2008.

Media Coverage of Radiology

In October, media outlets carried 111 news stories generated by articles appearing in *Radiology*. These stories reached an estimated 48 million people.

A news release promoted findings from a study on the use of 3D MR imaging to detect intraplaque hemorrhage (*Radiology* 2008;249:259-267).

Broadcast coverage included Ivanhoe Broadcast News (syndicated), WKTV-TV (Utica, N.Y.), WWLP-TV (Springfield/Holyoke, Mass.), WALB-TV (Albany, Ga.), WJFW-TV (Wausau/Rhineland, Wis.), WECT-TV (Wilmington, N.C.), WCAU-TV (Philadelphia), WNWO-TV (Toledo, Ohio), WEYI-TV (Flint/Saginaw/Bay City, Mich.), KMIR-TV (Palm Springs/Palm Desert, Calif.), KMTR-TV

(Eugene, Ore.), KNTV-TV (San Francisco), KSBW-TV (Monterey/Salinas, Calif.), WBFS-TV (Miami/Ft. Lauderdale), WBNG-TV (Binghamton, N.Y.), WPEC-TV (West Palm Beach/Fort Pierce, Fla.) and WTWO-TV (Terre Haute, Ind.).

Print and wire coverage included *Daily Mail* (London, U.K.), *The Telegraph* (London, U.K.), *Daily Transcript* (San Diego, Calif.), Targeted News Service, Indo-Asian News Service, *Heart Disease Weekly*, *Cardiovascular Week* and *Diagnostic Imaging*.

Web placements included Yahoo! News, Medical News Today, HealthDay, *MSN.com*, *USNews.com*, *BBCNews.com*, *docguide.com*, *healthcentral.com*, *sciencecentric.com* and *drkoop.com*.

December Outreach Activities Focus on Interventional Radiology

In December, RSNA's 60-Second Checkup radio program highlights pediatric interventional radiology, minimally invasive therapies and radiation safety.

Journal Highlights

Continued from Page 18

Incidental Adrenal Lesions: Principles, Techniques, and Algorithms for Imaging Characterization

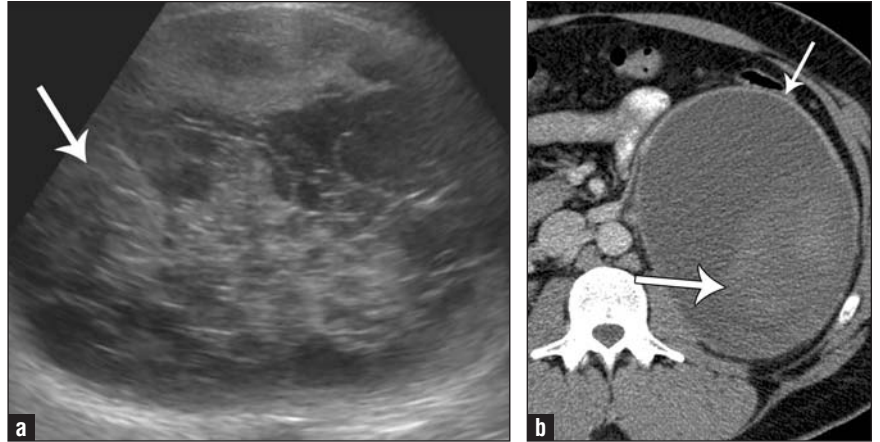
WHILE ALMOST all incidental adrenal lesions (IALs) in patients without a known primary cancer are benign, characterization of IALs in patients with cancer is essential to predict prognosis of the primary disease, assess staging and direct therapy.

In a review article in the December issue of *Radiology* (RSNA.org/radiology), Giles W.L. Boland, M.D., and colleagues evaluate the anatomic and physiologic imaging principles used for differentiating adrenal masses, present available imaging techniques and recommend an imaging algorithm that can guide the radiologist toward the correct diagnosis.

High test specificity is the crux of adrenal imaging, according to the researchers. Techniques addressed include:

- Morphologic imaging: CT and MR imaging
- Lipid-sensitive imaging techniques: CT and MR imaging

Radiology



A 17-cm left adrenal cyst in 43-year-old woman.

(a) Sagittal ultrasound image shows a complex cyst with marked internal echoes (arrow). (b) Axial contrast-enhanced CT scan shows slightly thickened wall (short arrow) and cyst with mixed components (long arrow). Owing to the cyst's complex nature, percutaneous biopsy was performed to exclude cystic neoplasm; results confirmed benign adrenal cyst.

(*Radiology* 2008;249:756-775) © RSNA, 2008. All rights reserved. Printed with permission.

- CT techniques including CT densitometry and CT histogram analysis
- MR imaging techniques including chemical shift
- Perfusion imaging of the adrenal glands: CT washout scans

Also analyzed are imaging features of cortical adenoma, metastasis, myelolipoma, lymphoma, adrenal carcinoma, pheochromocytoma, hemorrhage, cyst, neuroblastoma, ganglioneuroma,

hemangioma and hemangiosarcoma and granulomatous disease.

While the importance of adrenal imaging methods continues to evolve, the researchers found that “CT contrast medium washout tests offer the highest test sensitivity and specificity for IAL characterization.”

MAINTENANCE OF CERTIFICATION

MOC News

RSNA Education Center to Unveil Learning Map

In January 2009, the RSNA Education Center will unveil My Professional Learning Map, which provides a way for radiologists to map out their yearly CME based on required educational elements as well as their individual practice requirements. This new online

tool will assist all physicians in organizing their CME and maintenance of certification (MOC). For more information, go to RSNA.org/education or contact the RSNA Education Center at 1-800-272-2920.



News about RSNA 2009

Submit Abstracts for RSNA 2009

THE ONLINE SYSTEM to submit abstracts for RSNA 2009 will be activated in mid-January. **The submission deadline is 12:00 p.m. Central Time on April 15, 2009.** Abstracts are required for scientific papers, scientific posters and education and applied science exhibits.

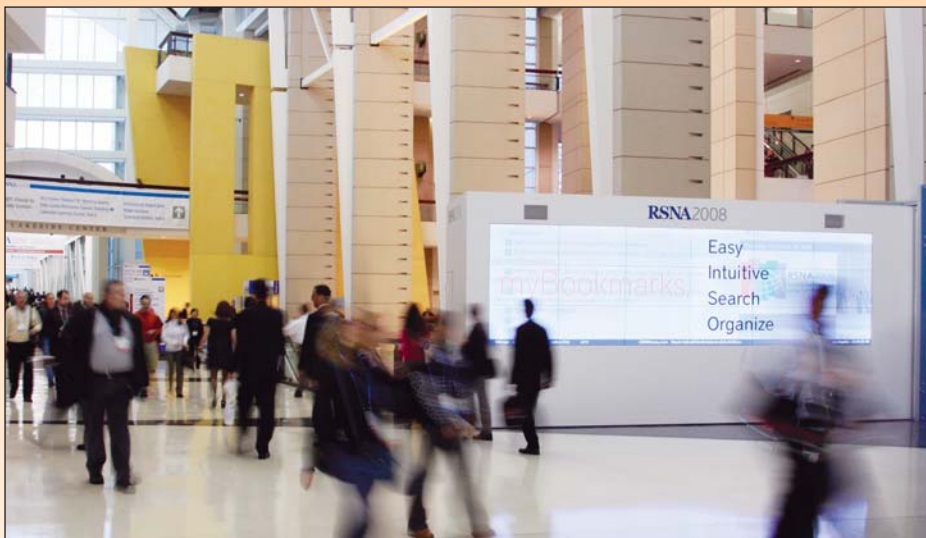
To submit an abstract online, go to RSNA.org/abstracts.

The easy-to-use online system helps the Scientific Program 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.



Important dates for RSNA 2009

April 15	Deadline for abstract submission
April 29	RSNA/AAPM member registration and housing open
May 27	Non-Member registration and housing open
June 30	Course enrollment opens
November 29 – December 4	RSNA 95th Scientific Assembly & Annual Meeting



(clockwise from top left) New to RSNA 2008 was a 25 foot by 11 foot plasma wall featuring news of each day's events and photos from around the annual meeting. The wall was a popular meeting place in the Grand Concourse. Visitors to the RSNA Research & Education (R&E) Pavilion in RSNA Services learned about giving opportunities and the many grant programs offered by the Foundation. The new Bistro RSNA offered a quick and convenient meal option in all three technical exhibit halls and the Lakeside Learning Center.

Working For You

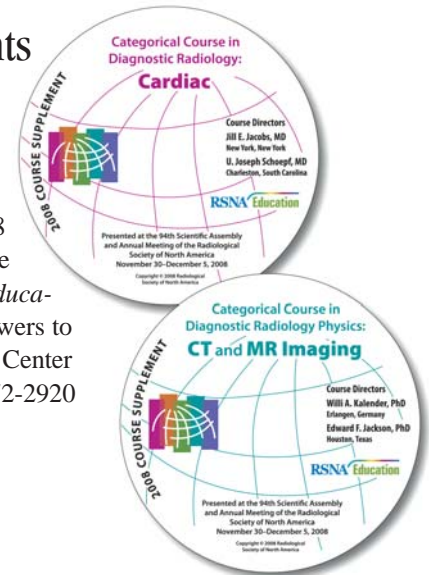
Purchase RSNA 2008 Categorical Course Supplements

SUPPLEMENTS from the RSNA 2008 categorical courses are available for purchase from the RSNA Education Center. These supplements include:

- Categorical Course in Diagnostic Radiology: Cardiac
- Categorical Course in Diagnostic Radiology Physics: CT and MR Imaging

The supplements were designed by categorical course faculty to complement their live presentations. Supplementary material includes direct clinical applications of a given topic, answers about the impact on clinical outcomes, sample images and sources of additional information.

The supplements have been formatted on CD-ROMs and are available to members for \$20 each and to non-members for \$25 each. To purchase the RSNA 2008 supplements or to view a complete product listing, go to RSNA.org/education. For more information or answers to questions about RSNA Education Center courses or products, call 1-800-272-2920 or 1-800 381-6660 ext 3753.



RSNA Visits South Korea

Byung Ihn Choi, M.D., (left), secretary of the Asian Oceanian Society of Radiology, visited the RSNA informational booth at the 12th Asian Oceanian Congress of Radiology in October in Seoul. Dr. Choi was named an RSNA Honorary Member in 2007. Present at the booth throughout the week to greet visitors were RSNA Assistant Executive Director for Science and Education Linda B. Bresolin, Ph.D., M.B.A., C.A.E., (middle) and 2008 RSNA President Theresa C. McLoud, M.D.

The RSNA informational booth travels next to the Sociedad Mexicana de Radiología e Imagen (SMRI) in Mexico City, February 4–8, 2009, and the European Congress of Radiology in Vienna, Austria, March 6–10, 2009. RSNA members attending those meetings are invited to stop by and bring a colleague to learn more about RSNA membership.

If you have a colleague who would like to become an RSNA member, you can download an application at RSNA.org/mbrapp or contact the RSNA Membership and Subscriptions Department at 1-877-RSNA-MEM [776-2636] (U.S. and Canada), 1-630-571-7873 or membership@rsna.org.

Program and Grant Announcements

NCI Bridge Award

Application Deadline—February 27, 2009

The National Cancer Institute (NCI) Small Business Innovation Research Program (SBIR) has recently announced a new SBIR Phase II Bridge funding opportunity. The Bridge Award is designed to support the next stage of development for previously funded National Institutes of Health SBIR Phase II projects in areas such as cancer imaging technologies. This award addresses the funding gap between the end of the SBIR Phase II award and the subsequent financing needed to advance a product toward commercialization.



The SBIR Phase II Bridge Award more than triples the amount of funding available to applicants through the NCI SBIR Program and incentivizes the development of partnerships between awardees and third-party investors and/or strategic partners. Budgets up to \$1 million in total costs per year and project periods up to three years may be requested.

Learn about the Bridge Award and other SBIR funding opportunities at sbir.cancer.gov.

RSNA Eyler Editorial Fellowship

Application Deadline—May 1, 2009

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

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 the editors of *Radiology* and *RadioGraphics* 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.

SNM Symposium on Multimodality Cardiovascular Molecular Imaging

April 30–May 1, 2009 • National Institutes of Health, Bethesda, Md.

THIS SYMPOSIUM aims to bring together individuals from chemistry, engineering, physics, molecular biology, cardiovascular physiology and imaging sciences to promote cardiovascular molecular imaging. The meeting continues the work of a similar conference held at NIH in 2004 that served as the basis for the first textbook dedicated to the field of cardiovascular molecular imaging. Included will be expert lectures, panel discussions and an abstract poster session, with a focus on imaging of cardiovascular receptors, stem cell therapy, vascular biology and myocardial metabolism. RSNA is co-sponsoring this meeting. More information is available at www.molecularimagingcenter.org.

RSNA-Sponsored Sessions at the Association of University Radiologists (AUR) Annual Meeting

May 12–15, 2009 • Marriott Crystal Gateway Hotel, Arlington, Va.

MERC Workshop

Part of the Association of American Medical Colleges (AAMC) Medical Education Research Certificate (MERC) Program, this workshop is targeted to clinicians and other educators who want to learn research skills enabling collaborative participation in medical education research projects. The workshop will be offered on Tuesday, May 12.

AUR-RSNA Quality Keynote

This lecture will be delivered on Thursday, May 14. Catherine C. Roberts, M.D., will moderate. Presenters are Steven J. Swensen, M.D., and Kevin B. Weiss, M.D., M.P.H.

More information about all sessions will be available at www.AUR.org.

RSNA Medical Imaging Resource Center (MIRC®) Session

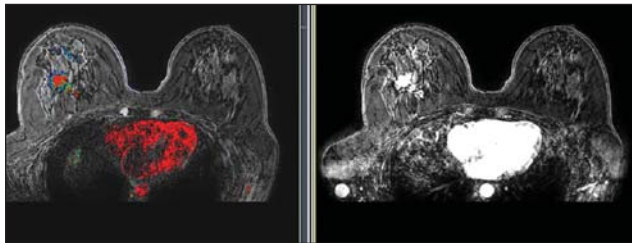
“Introduction to RSNA’s Teaching File Software: A Do-It-Yourself Guide to Setting It Up, Capturing Cases or Simply Using It for Board Review” will be offered Friday, May 15. Faculty will be Eliot Siegel, M.D., Micah Adams, B.A., Naomi Saenz, M.D., and Tara Morgan, M.D.

Product News

FDA CLEARANCE

Orthopedic Radiography with 3D Reconstruction

BIOSPACE MED (www.biospace-med.com) has received FDA clearance to market its EOS X-ray imager along with its new image workstation, sterEOS. The system is well suited for surgical planning of orthopedic spine procedures. EOS can capture head-to-toe images of patients in a standing, weight-bearing position with up to 10 times less radiation dose than a CT scan, while the sterEOS workstation allows 3D reconstruction and measurement. EOS and sterEOS allow physicians to assess balance and posture as well as relative positioning of each vertebra, enabling better preoperative assessment for procedures that require a true weight-bearing assessment, such as spine surgery and hip and knee replacement.



NEW PRODUCT

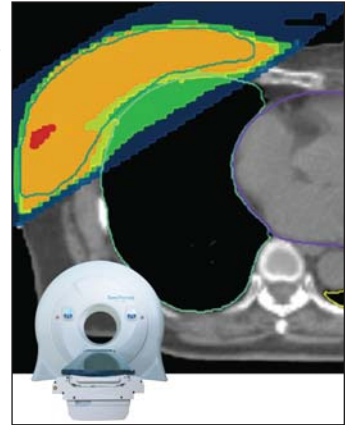
Breast MR Analysis Software

iCAD (www.icadmed.com) introduces the SpectraLook™ breast MR analysis solution, which provides more diagnostic information by creating colorized images based on signal changes defined by tumor physiology. iCAD's All Time Point (ATP) analysis is based on an advanced pharmacokinetic model that calculates numerical values of key physiological parameters, allowing the user to detect different biological processes taking place in malignant versus benign tumors. These key physiological markers can aid in analyzing large MR datasets.

FDA CLEARANCE

Radiation Therapy Delivery Mode

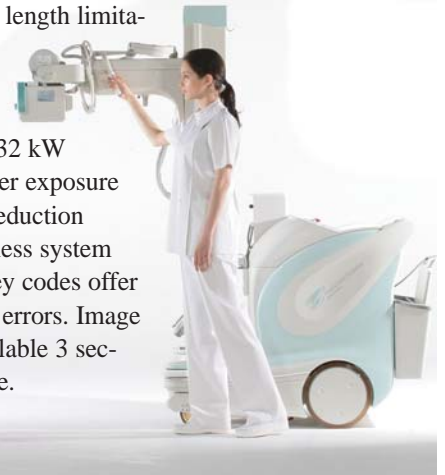
TomoTherapy (www.tomotherapy.com) has received FDA clearance for its TomoDirect™ radiation therapy technology, a discrete-angle, sliding-beam delivery mode for the Hi-Art® treatment system. TomoDirect was developed as a complement to the helical TomoTherapy™ system, with both modes utilizing the same binary multileaf collimator and CT-style gantry technology. The choice of modality to use for a given case will depend on the nature of the tumor volume and surrounding organs at risk. TomoDirect allows clinicians to choose several discrete angles as well as the optimal modulation level for delivery.



NEW PRODUCT

Mobile Digital Radiography System

The MobileDaRt Evolution mobile digital radiography system by Shimadzu Corporation (www.shimadzu.com) features a new ergonomic design that facilitates quick positioning and easy maneuverability. Designed to be used without electric cabling, MobileDaRt Evolution can be used for emergency and trauma departments without worry about electric cord length limitations or concerns about tripping over cables. New features include a 32 kW generator for shorter exposure times, new noise reduction features and a keyless system turn-on. Unique key codes offer the ability to track errors. Image verification is available 3 seconds after exposure.



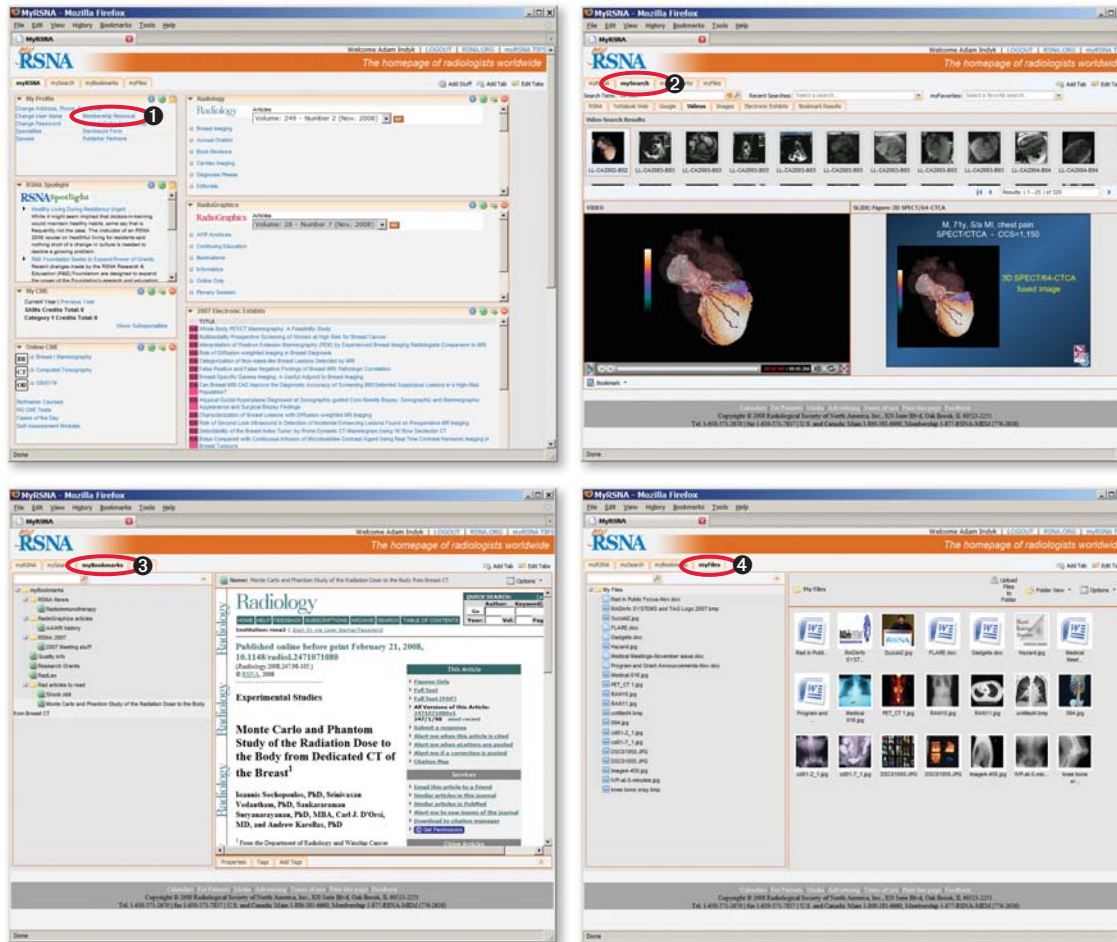
RSNA.org

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Because online access to *Radiology* and *RadioGraphics* is tied to membership status, if your payment has not been received by December 31, 2008, your online subscriptions will be automatically inactivated.

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While you're on myRSNA, check out new features to help you personalize your RSNA Web page:

- mySearch ❷—organize results of a keyword search into categories such as RSNA content, Yottalook™ radiology-focused content, videos, images and electronic exhibits from the RSNA annual meeting. Save favorite searches for future use.

- myBookmarks ❸—bookmark favorite and frequently used Web sites.
 - myFiles ❹—upload your files for access to them on any computer.
- New widgets help RSNA members across the globe access their favorite content anywhere, making myRSNA “the homepage of radiologists worldwide™.”

For more information or to renew your membership by phone, contact the RSNA Membership Department toll free at 1-877-RSNA-MEM or at 1-630-571-7873, or send an e-mail to membership@rsna.org.

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RSNA Career Connection
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RadiologyInfo™
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RSNA 2009
RSNA2009.RSNA.org

NEW
Abstract Submission
RSNA.org/abstracts

CALENDAR

Medical Meetings January – May 2009

JANUARY 7–11

Indian Radiological & Imaging Association (IRIA), 62nd Annual Congress, Sri Krishna Memorial Auditorium, Patna • www.iria.in

FEBRUARY 4–8 VISIT THE RSNA BOOTH

Sociedad Mexicana de Radiología e Imagen (SMRI)
• www.smri.org.mx

FEBRUARY 7–12

SPIE, Medical Imaging, Disney Coronado Springs Resort, Lake Buena Vista, Fla. • spie.org

FEBRUARY 23–27

Integrating the Healthcare Enterprise (IHE®), Connectathon and Education Conference, Hyatt Regency Chicago • www.ihe.net

MARCH 6–10 VISIT THE RSNA BOOTH

European Congress of Radiology (ECR), Austria Center, Vienna
• www.ecr.org

MARCH 7–12

Society of Interventional Radiology (SIR), 34th Annual Meeting, San Diego • www.sirweb.org

MARCH 15–20

Society of Gastrointestinal Radiologists (SGR) and Society of Uroradiology (SUR), Abdominal Radiology Course, Grand Wailea Resort Hotel & Spa, Maui, Hawaii • www.sgr.org

APRIL 2–5

American Institute of Ultrasound in Medicine (AIUM), Annual Meeting, Marriott Marquis, New York • www.aium.org

APRIL 4–8

Healthcare Information and Management Systems Society (HIMSS), Annual Conference and Exhibition, Chicago
• www.himssconference.org

APRIL 18–24

International Society for Magnetic Resonance in Medicine (ISMRM), 17th Scientific Meeting and Exhibition, Honolulu
• www.ismrm.org

APRIL 21–25

Society for Pediatric Radiology (SPR), 52nd Annual Meeting, La Costa Resort and Spa, Carlsbad, Calif. • www.pedrad.org

APRIL 25–29

American Radium Society (ARS), Annual Meeting, Four Seasons Vancouver, British Columbia • www.americanradiumsociety.org

APRIL 26–29

Society of Breast Imaging (SBI), 9th Postgraduate Course, The Broadmoor, Colorado Springs, Colo. • www.sbi-online.org

APRIL 26–MAY 1

American Roentgen Ray Society, Annual Meeting, John B. Hynes Veterans Memorial Convention Center, Boston • www.arrs.org

APRIL 27–29

International Atomic Energy Agency (IAEA), International Conference on Advances in Radiation Oncology, Vienna International Centre, Austria • www.iaea.org

APRIL 30–MAY 1

SNM/RSNA, Symposium on Multimodality Cardiovascular Molecular Imaging, National Institutes of Health, Bethesda, Md.
• www.molecularimagingcenter.org

APRIL 30–MAY 2

French Society of Radiology, InterAmerican College of Radiology, Sao Paulo Society of Radiology and Brazilian College of Radiology, French and Latin American Congress of Radiology, São Paulo, Brazil

MAY 2–6

American College of Radiology, Annual Meeting and Chapter Leadership Conference, Hilton Washington, D.C. • www.acr.org

MAY 12–16

Association of University Radiologists (AUR), Annual Meeting, Crystal Gateway Marriott, Arlington, Va. • www.aur.org

MAY 16–21

American Society of Neuroradiology (ASNR), 47th Annual Meeting, Vancouver Convention and Exhibition Center, British Columbia • www.asnr.org

NOVEMBER 29–DECEMBER 4

RSNA 2009, 95th Scientific Assembly and Annual Meeting, McCormick Place, Chicago • RSNA2009.RSNA.org