From Antiques to Arachnids, CT Unravels Ancient Secrets

ALSO INSIDE:
- Neuroimaging Aids in Identifying Early-onset Alzheimer Disease
- CD-based Image Transfer Reduces Utilization, Bolsters Case for Web-based Sharing
- $^{90}$Y Radioembolization is Safe, Effective Liver Cancer Treatment
- See Chicago Sizzle During RSNA 2011

Register Now for RSNA 2011 Courses at RSNA2011.RSNA.org—See Page 24
For more than 20 years, RSNA News has provided high-quality, timely coverage of radiology research and education and critical issues facing the specialty, along with comprehensive information about RSNA programs, products and other member benefits.

**FIRST IMPRESSION**

1. Announcements
2. RSNA Board of Directors Report
3. My Turn

**FEATURES**

5. TECHNOLOGY FORUM: CD-based Image Transfer Reduces Utilization, Bolsters Case for Web-based Sharing
7. 198Y Radioembolization is Safe, Effective Liver Cancer Treatment
11. From Antiques to Arachnids, CT Unravels Ancient Secrets
14. See Chicago Sizzle During RSNA 2011

**RADIOLOGY’S FUTURE**

9. Neuroimaging Aids in Identifying Early-onset Alzheimer Disease
18. R&E Foundation Donors

**NEWS YOU CAN USE**

20. Journal Highlights
21. Radiology in Public Focus
23. Education and Funding Opportunities
24. Annual Meeting Watch
26. For Your Benefit
27. Residents & Fellows Corner
28. RSNA.org
RSNA Foundation Receives $1.5 Million Donation
The RSNA Research & Education (R&E) Foundation has received a $1.5 million donation from the Ralph Schlaeger Charitable Foundation, created by radiologist Ralph Schlaeger, M.D. (1921-2007).

Dr. Schlaeger specialized in gastrointestinal radiology and was a radiologist at Pennsylvania Presbyterian Hospital and professor of radiology at Columbia University College of Physicians and Surgeons in New York for 51 years. Dr. Schlaeger was published in Radiology and presented at RSNA annual meetings. His obituary noted: “A lifelong bachelor, Dr. Schlaeger devoted his life to the practice and teaching of radiology.” “Ralph was extremely well-liked,” said Philip D. Alderson, M.D., former chair of radiology at Columbia University. “He was very accommodating with clinicians and always took the time for courtesy consultation, which is too often missing from rushed healthcare practices today.”

R&E Foundation Board of Trustees Chair Theresa C. McLoud, M.D., noted: “This truly remarkable gift will be a lasting tribute to Dr. Schlaeger’s passion for radiology and service to the profession. What greater gift could a radiologist leave, than to enable future generations to contribute to the research and educational endeavors in this great specialty?”

The endowment will be used to support R&E Research Seed, Fellow and Scholar grants for young researchers beginning their career in radiology.

QIBA Meeting Draws Record Attendance
The fourth annual Quantitative Imaging Biomarkers Alliance (QIBA) meeting drew a record number of stakeholders from the clinical community, imaging equipment manufacturers, the pharmaceutical industry, government agencies and medical informatics companies.

• RSNA’s five Technical Committees worked in breakout sessions to further develop QIBA Profiles and conduct project planning for groundwork studies to provide the data needed to establish or reinforce Profile claims.
• Technical Committee spokespeople provided updates on ongoing projects funded from contract monies awarded to RSNA by the National Institute of Biomedical Imaging and Bioengineering.

For more information on QIBA and to access the QIBA Quarterly newsletter, updates from Technical Committees and presentations from the QIBA Annual Meeting, go to RSNA.org/Research/QIBA.

Numbers in the News
6,066
Impact factor for Radiology, according to the recently released 2010 Journal Citation Reports® from the Thomson/Institute for Scientific Information Annual Citation. Read the latest statistics for both RSNA journals on Page 27.

24
Median survival, in months, of patients with neuroendocrine cancer whose liver metastases were treated with 90Y radiomodulation, according to a recent study. Colorectal cancer patients survived an overall median of 14 months. Learn more about 90Y radiomodulation—which researchers say is well-tolerated as well as effective—on Page 7.

1,487
Number of emergency department patient records analyzed by researchers studying whether CD import of outside examinations into PACS decreased imaging utilization rates in the subsequent 24 hours. Patients with successfully imported CDs had a 17 percent decrease in imaging rates during the subsequent 24 hours and a 16 percent decrease in subsequent CT scans, according to the study. Read more on Page 5.

NIH Honors Zerhouni
The National Institutes of Health (NIH) honored former NIH Director Elias A. Zerhouni, M.D., with an official portrait unveiled at a ceremony held in May in Washington, D.C. From left, Dr. Zerhouni, 2010 RSNA President Hadrig Hricak, M.D., Ph.D., Dr. h.c., and current NIH Director Francis S. Collins, M.D., Ph.D. Dr. Zerhouni received the RSNA Gold Medal in 2010.

ACR Bestows Honors
Lawrence W. Bassett, M.D., Leonard Berlin, M.D., and Art Van Moore Jr., M.D., were awarded gold medals at the American College of Radiology’s (ACR) recent annual meeting in Washington, D.C. Andreas Adam, M.B.B.S., F.R.C.R., was named an honorary fellow.

Dr. Bassett is the Iris Cantor Professor of Breast Imaging, David Geffen School of Medicine at the University of California, Los Angeles. He is a former RSNA News Editorial Board member and a current member of RSNA’s Public Information Advisors Network (PIAN). Dr. Berlin is a professor of radiology at Rush University College of Medicine in Chicago and vice-chair of the Department of Radiology at NorthShore University HealthSystem, Skokie Hospital in Illinois. A former chair of RSNA’s Professionalism Committee, Dr. Berlin is currently a PIAN member. Dr. Moore is president of Charlotte Radiology in Charlotte, N.C., a past ACR president and past member of RSNA’s Public Communications Committee.

Dr. Adam is a professor of interventional radiology at the University of London and honorary consultant radiologist at Guy’s and St Thomas’ Hospital. Dr. Adam received RSNA honorary membership in 2006.
**RSNA Board of Directors Report**

At its June meeting, the RSNA Board of Directors approved the Society’s 2011-2012 budget, continued planning for the annual meeting and committed RSNA’s expertise and experience to a number of inter society collaborations.

**Abstract Submission Strong for RSNA 2012**

Planning continues for RSNA 2011, with the RSNA Scientific Program Committee and its subcommittees choosing from the more than 12,000 abstracts submitted this year to design the meeting program. Among the new offerings is the Pediatric Campus, a special area of McCormick Place which will house all refresher courses, scientific presentations and opportunities in the pediatric subspecialty. More details will be available in the Pocket Guide and Meeting Program.

With RSNA 2012 already on the horizon, RSNA has announced that the abstract submission deadline will be March 31 again next year.

**Collaborations Strengthen Radiology Education, Policy**

RSNA will sponsor a session on pediatric cardiovascular imaging and additional speakers at the 27th International Congress of Radiology (ICR), to be held in conjunction with the 42nd Sao Paulo Radiological Meeting, May 3-6, 2012, in Sao Paulo, Brazil.

RSNA is now a sponsor of the Commission on Accreditation of Medical Physics Educational Programs (CAMPEP). In addition, RSNA has expressed its support to the American Board of Radiology (ABR) for a combined training program leading to a primary interventional radiology/diagnostic radiology dual certificate from ABR.

The Society also continues its contributions to the Image Wisely campaign. Task force members from RSNA, the American College of Radiology, the American Association of Physicists in Medicine and the American Society of Radiologic Technology have developed criteria for an Image Wisely-compliant practice. The criteria—covering such areas as CT dose optimization and reduction methodologies and consultation with referring practitioners—will be published later this year. The Image Wisely campaign, launched in 2010 to increase awareness of radiation issues in adults and pediatric imaging, is now widening its focus to include nuclear medicine procedures.

After this year’s successful inaugural “Cancer Imaging and Radiation Therapy” symposium emphasizing the interaction between diagnostic radiology and radiation oncology, RSNA and the American Society for Radiation Oncology have agreed to offer another symposium in 2013.

**Meaningful Use Hot Topic**

RSNA is helping to define radiology’s response to federal meaningful use policy. Issued by Centers for Medicare & Medicaid Services (CMS) as part of the 2011 American Reinvestment and Recovery Act, RSNA will collaborate with the research firm KLAS on a joint survey regarding criteria to be used in developing regulations on meaningful use in radiology practice. A random sample of RSNA members will be included in the survey.

**RSNA Publications**

*Image on New Media Look for RSNA on the cutting edge as the Society brings its publications to readers in ever-expanding formats. Radiology and Radiographics are now available as mobile websites and as full-text apps available on the App Store. A multimedia mobile version of Individual Articles from RSNA’s News tablet edition, made its debut with the July issue and can be downloaded from the App Store and Android Market. RSNA journals also continue to reach more readers worldwide. Selected articles from Radiology are now available in Chinese and from Radiographics in German. In addition, Radiology will now offer special collaborative packages with a volume on lung nodules in January 2012. The special collections will be available online in print-on-demand and e-book formats.**

**R&E Foundation Celebrates**

The RSNA R&E Foundation is pleased to report its fifth straight year of $1 million in individual donations, allowing the Foundation to ever expand its efforts to support the next generation of radiologic science and education.

This is a busy and productive time of year for the RSNA Board of Directors. We are pleased to offer new programs, collaborations and opportunities to Society members.

**My Turn**

**Radiology Residency Training: Crucial Elements to Meet Today’s Challenges**

To earn and maintain accreditation from the Accreditation Council for Graduate Medical Education (ACGME), residency programs must demonstrate compliance with a broad range of requirements spanning from the institutional level to medical specialties and beyond. Progresses in surgical and anatomic pathology, radiology, and other subspecialties have been leveraged in how they may fulfill these requirements and much is not standardized.

Traditionally, core residency training for radiology has focused on clinical content and procedural skills in nine subspecialty areas, but many programs have developed criteria consistent in an attempt to fulfill the goal of the ACGME’s six core competencies. A new challenge to radiology education is preparing for the proposed addition to the healthcare delivery system of what Washington policy makers are calling “accountable care organizations” (ACOs). These new groups will be charged with the care of defined populations of patients. The promise is that there will be a return of any shared savings back to the ACOs from the Centers for Medicare & Medicaid Services for meeting cost and quality targets.

The need for radiologists to assume leadership roles in these new organizations cannot be over emphasized. Given the central function of ACOs in the healthcare delivery system, radiologists are the natural choice to manage an ACO’s imaging enterprise and the information technology infrastructure that supports it. Promoting safety, quality and best practices also falls within that mission.

In the current fee-for-service environment, these ACOs are expected to drive value in all aspects of care as a distraction from the “real work” of image interpretation. In order to receive a share of an ACO’s revenues in compensation for managerial and administrative duties, radiologists will need to be involved in negotiating employment contracts with hospitals, participate in their hospital’s medical staff governance and be knowledgeable about business practices. Success in the new ACO environment will require a huge cultural shift and future radiologists must be prepared to take active and leading roles. A proper foundation, established during residency training, is crucial to the success of this specialty.

**In Memoriam:**

**Rosalyn S. Yalow, Ph.D.**

Rosalyn S. Yalow, Ph.D., a medical physicist who was only the second woman to receive the Nobel Prize in Medicine, died May 30, 2011. She was 89. At her death, she was senior medical investigator with a volume on lung nodules in January 2012. The special collections will be available online in print-on-demand and e-book formats.

In the 1950s Dr. Yalow co-discovered the radioimmunoassay, “which brought a revolution in biological and medical research,” the Karolinska Institute said in awarding her the Nobel Prize in Physiology and Medicine in 1977. Dr. Yalow was also noted for overcoming a fear of needles, and the Karolinska Institute said she had overcome a fear of needles, and the Karolinska Institute said in awarding her the Nobel Prize in Physiology. Dr. Yalow was also noted for overcoming a fear of needles, and the Karolinska Institute said in awarding her the Nobel Prize in Physiology.

Dr. Yalow’s career accomplishments was also noted for overcoming a fear of needles, and the Karolinska Institute said in awarding her the Nobel Prize in Physiology.

Dr. Yalow was also noted for overcoming a fear of needles, and the Karolinska Institute said in awarding her the Nobel Prize in Physiology.

Dr. Yalow was also noted for overcoming a fear of needles, and the Karolinska Institute said in awarding her the Nobel Prize in Physiology.

Dr. Yalow was also noted for overcoming a fear of needles, and the Karolinska Institute said in awarding her the Nobel Prize in Physiology.

Dr. Yalow was also noted for overcoming a fear of needles, and the Karolinska Institute said in awarding her the Nobel Prize in Physiology.

Dr. Yalow was also noted for overcoming a fear of needles, and the Karolinska Institute said in awarding her the Nobel Prize in Physiology.

Dr. Yalow was also noted for overcoming a fear of needles, and the Karolinska Institute said in awarding her the Nobel Prize in Physiology.

Dr. Yalow was also noted for overcoming a fear of needles, and the Karolinska Institute said in awarding her the Nobel Prize in Physiology.

Dr. Yalow was also noted for overcoming a fear of needles, and the Karolinska Institute said in awarding her the Nobel Prize in Physiology.

Dr. Yalow was also noted for overcoming a fear of needles, and the Karolinska Institute said in awarding her the Nobel Prize in Physiology.

Dr. Yalow was also noted for overcoming a fear of needles, and the Karolinska Institute said in awarding her the Nobel Prize in Physiology.

Dr. Yalow was also noted for overcoming a fear of needles, and the Karolinska Institute said in awarding her the Nobel Prize in Physiology.

Dr. Yalow was also noted for overcoming a fear of needles, and the Karolinska Institute said in awarding her the Nobel Prize in Physiology.

Dr. Yalow was also noted for overcoming a fear of needles, and the Karolinska Institute said in awarding her the Nobel Prize in Physiology.

Dr. Yalow was also noted for overcoming a fear of needles, and the Karolinska Institute said in awarding her the Nobel Prize in Physiology.
CD-based Image Transfer Reduces Utilization, Bolsters Case for Web-based Sharing

CDs not only offer patients access to prior imaging studies but also may decrease subsequent imaging utilization, according to new research published in Radiology.

While healthcare is moving toward Internet-based solutions for image sharing and universal electronic health records (EHR)—a primary goal of federal meaningful use provisions as well as the RSNA/National Institutes of Health/National Institute of Biomedical Imaging and Bioengineering (NIBIB) Image Sharing Project—the data contained on CDs will provide valuable insight during the lengthy transition process, experts say.

“The reality is that, until we have fairly robust transfer networks or image repositories in place, we’re likely to be dealing with CDs for many more years,” said Aaron Sodickson, M.D., Ph.D., director of emergency radiology at Brigham and Women’s Hospital in Boston and lead author of “Outside Imaging in Emergency Department Transfer Patients: CD Import Reduces Rates of Subsequent Imaging Utilization,” published in the April 2011 issue of Radiology.

Dr. Sodickson serves on the Emergency Radiology Subcommittee of the RSNA Scientific Program Committee.

Data Transfer Reduces Unnecessary Tests

Dr. Sodickson and colleagues reviewed the medical records of 1,487 consecutive emergency department patients to identify whether CD import of outside examinations into PACS decreased imaging utilization rates in the subsequent 24 hours. Data imports were successful for 78 percent of patients. As for cases that could not be imported, “the CD was just not functional, but more commonly that was due to a non-standard, proprietary format,” Dr. Sodickson said.

Patients with successfully imported CDs had a 17 percent decrease in imaging rates during the subsequent 24 hours (2.7 versus 3.3 exams per patient) and a 16 percent decrease (1.2 versus 1.4 exams per patient) in subsequent CT scans, results showed.

“CDs are the most commonly available tool for image sharing and are one of the most important components of the patient handoff during transfers between hospitals. Access to the contained imaging exams allows us to reduce unnecessary and redundant imaging,” Dr. Sodickson said.

Universal Standards will Optimize Image Sharing

While those findings are promising, universal adoption of the Digital Imaging and Communications in Medicine (DICOM) standard would improve data transfer rates, Dr. Sodickson said.

“There are vendors working on CD import solutions that decode those proprietary formats and convert them to DICOM to be imported into PACS,” he said. “I think our 78 percent success rate could be a lot higher using some of the new software tools out there.”

The 22 percent failed import rate reflected in Dr. Sodickson’s research is testament to the relatively slow pace of standards adoption in medical institutions—a gradually changing scenario that once fully embraced, will change the face of healthcare, said David S. Mendelson, M.D., chief of clinical informatics at Mount Sinai Medical Center in New York.

“While Dr. Sodickson and colleagues dealt with issues specific to the use of CDs as a sharing mechanism, their observations can help us understand how to optimize image sharing and its benefits in the Internet era,” Dr. Mendelson said. In the interim, he said, working toward better interoperability between systems and software will improve communication across healthcare sites, no matter what transfer method is used.

“This is an important lesson as we design and implement Internet-based solutions intended to provide a seamless workflow,” Dr. Mendelson said.

“It is essential that we encourage the adoption of a set of standards not only for image and report content such as DICOM and HL7, but also for transmission protocols.”

RSNA Oversees Image Sharing Network

That is the goal of RSNA’s Image Sharing Project, created in 2009 through a $4.7 million contract with NIBIB to build a secure, patient-centric medical imaging sharing network based on a common open-standards architecture.

RSNA is overseeing development of a Web-based network for sharing images and reports at five academic institutions. Patients will control access to their information through personal health records (PHRs), said Dr. Mendelson, chief investigator for the project. He also serves on the RSNA Radiology Informatics Committee (RIC), chairs the RIC subcommittee for Integrating the Healthcare Enterprise (IHE) and serves on the RIC subcommittee for Structured Reporting.

“RSNA Image Sharing will allow patients to take control of their medical imaging information and securely share it via an Internet-based network,” Dr. Mendelson said.

Investigators are now recruiting patients to use the network, which employs profiles created by IHE, an initiative among medical leaders, software developers, societies and vendors to improve communication between healthcare equipment, systems and software.

“Use of IHE profiles is essential in defining the standards that make exchange accessible to all in a safe, secure fashion at a reasonable cost,” Dr. Mendelson said.

CDs a Necessary Conduit

While the RSNA project focuses on patient control of image distribution through PHRs, the underlying technology applies to other forms of data sharing such as health information exchange (HIE) and point-to-point solutions when these methods are appropriate for data exchange, Dr. Mendelson noted.

“Direct Internet sharing negates the need to rely on physical media—the CD,” Dr. Mendelson said. “While physicians can’t always predict definitive CDs and needing to have the media in your possession should disappear, resulting in a more streamlined workflow.”

That said, CDs aren’t disappearing anytime soon, noted Dr. Mendelson and Sodickson. Observing existing standards like those defined by IHE can improve their usefulness in healthcare facilities in the meantime, they said.

“Ultimately, implementing universal electronic medical records, image repositories or robust image transfer networks would streamline image transfer between various sites, obviating the need to send CDs with transfer patients,” Dr. Mendelson said. “However, CDs will likely remain the prevalent means of image transfer for the foreseeable future.”

CDs might not be a necessary conduit, but they’re likely to endure for years. The reality is, that until we have fairly robust transfer networks or image repositories in place, we’re likely to be dealing with CDs for many more years,” said Aaron Sodickson, M.D., Ph.D. in Radiology.
90Y Radioembolization is Safe, Effective Liver Cancer Treatment

Yttrium 90 radioembolization—infusing yttrium 90 (90Y) microspheres through a catheter into the hepatic artery—is safe, well tolerated and may slow disease progression in patients with inoperable liver cancer who are not responding to chemotherapy, according to research presented recently at the Society of Interventional Radiology (SIR) 2011 Annual Scientific Meeting.

“90Y radioembolization takes advantage of the fact that liver tumors get most of their blood supply from the hepatic artery, while the liver draws the majority of its blood from the portal vein, said lead researcher Riad Salem, M.D., M.B.A., a professor of radiology and director of interventional oncology at Northwestern University in Chicago.

“The microspheres blanket the tumors,” said Dr. Salem, who began studying radioembolization with TheraSpheres—glass-coated microbeads loaded with 90Y—in 1999, after the FDA approved the procedure. “And because they concentrate at the tumors, there is limited damage to surrounding normal tissue.”

Survival Rates are Promising

Dr. Salem and colleagues studied 151 patients, average age 63 years, with metastatic cancer that had spread to their liver and was resistant to chemotherapy. Between 2006 and 2010, patients underwent two 90Y radioembolization treatment sessions, five weeks apart. Each patient received approximately 128 g and researchers tracked their progress every 90 days for nine months and every six months thereafter.

Ninety-six percent of the adverse events related to the treatment were mild and included fatigue, pain and hyperbilirubinemia. There were no unexpected major adverse events. Survival among patients varied depending on where the cancer originated; colorectal cancer patients survived an overall median of 9.4 months, whereas those with neuroendocrine carcinomas—the most common type of liver cancer—were not able to completely removed, the disease is usually fatal within three to six months.

Right now, 90Y radioembolization is the best method for treating metastatic disease in the liver when chemotherapy has failed.”

Daniel E. Wertman Jr., M.D.

As IUSM, Dr. Wertman and colleagues found that “90Y radioembolization staves off liver failure and improve patients’ quality of life. The technique is also useful in improving the condition of patients waiting for liver transplants and even cures some small tumors, Dr. Wertman said.

“Right now, 90Y radioembolization is the best method for treating metastatic disease in the liver when chemotherapy has failed,” Dr. Wertman said. “It’s an angiography-intense procedure,” said Dr. Wertman, who has performed more than 100 90Y radioembolization procedures since joining IUSM in October 2006. “It’s important to block off any accessory branches arising from the hepatic arteries that could cause non-target injury.”

Most importantly, radioembolization offers new hope for patients facing a bleak prognosis, experts say. Aggressive surgery is often the first treatment option for liver cancer, but only 10 to 20 percent of hepatocellular carcinomas—the most common type of liver cancer—can be completely removed with surgery, according to the National Institutes of Health. If the cancer cannot be completely removed, the disease is usually fatal within three to six months.

Treatment Can Stave Off Liver Failure

Detailed treatment planning is important to the success of “90Y radioembolization, according to Daniel E. Wertman Jr., M.D., co-chief of interventional radiology and an assistant professor of clinical radiology at the Indiana University School of Medicine (IUSM) in Indianapolis. Using CT to determine tumor volume and angiography to assess the blood supply to the tumor is essential, Dr. Wertman said.

The definition of ‘cure’ varies,” Dr. Salem said. “But we have seen many patients in other studies show lengthy periods of time-to-disease-progression.”

Further Studies Under Way

“I see a future role for this treatment in combination and effective in a high enough percentage of patients that it is worth performing. Of all the embolization techniques, this appears to be the least toxic with the fewest side effect.”

Stop-Hcc, International, Multicenter Phase Iii Studies That Use “Y In combination with other standard therapies. EpoC is focused on metastatic colon cancer in the liver, while STOP-HCC is a primary liver cancer trial.”

As for the future of this treatment in combination with systemic agents, such as the oral drug sorafenib used to treat hepatocellular carcinoma,” added Dr. Salem. “When we use them in combination, we may see better response rates, longer times to progression and improved survival.”

Dr. Salem is continuing his research through EPOCH and STOP-HCC, international, multicenter phase III studies that use “Y in combination with other standard therapies. EPOCH is focused on metastatic colon cancer in the liver, while STOP-HCC is a primary liver cancer trial.”

TheraSpheres

• 9-90 integral count of the microspheres
• Microsphere diameter: 13-15 μm
• 22,000 to 75,000 microspheres/g
• 6-micron size (5, 7, 11, 15, 20 μm)
• Over 600 injected target volume
• Arterial supply and liver microspheres

Yttrium 90 radioembolization—infusing yttrium 90 (90Y) microspheres through a catheter into the hepatic artery—is considered one of the best methods for treating metastatic disease in the liver when chemotherapy has failed, according to research presented at the annual meeting of the Society of Interventional Radiology (SIR) on Weds., Nov. 30. Sessions are:

• Principles of Oncologic Imaging and Reporting
• Lung Cancers (Primary, Metastases)
• Lymphoma
• Kidney Cancer
• Ovarian Cancer
• Prostate Cancer
• Colon Cancer
• Liver Cancer
• Chemo and Radiation Therapy-induced Toxicity
• MSK
• Pancreatic Cancer

“Traditionally, our role as radiologists has been quite limited in evaluating dementia, using MR or CT to rule out uncommon, potentially treatable causes such as mass lesions, subdural hematomas or normal pressure hydrocephalus,” said Jeffrey R. Petrella, M.D., an associate professor of radiology and director of the Alzheimer’s Disease Imaging Research Laboratory at Duke University School of Medicine in Durham, N.C. “Now, imaging is at the hub of Alzheimer’s research.”

For the first time in 27 years, clinical diagnostic criteria for AD have been revised and research guidelines for earlier stages of the disease have been characterized to a deeper understanding of the disorder. In April, the National Institute on Aging and the Alzheimer’s Association issued new clinical diagnostic criteria and research guidelines that reflect three distinct disease stages: pre-clinical AD, mild-cognitive impairment (MCI) due to AD and dementia due to AD. The guidelines will establish a framework for eventually adding biomarker benchmarks to the diagnosis of AD in all of its stages. (See Web Extras)

“The new guidelines recognize that Alzheimer’s has a protracted pathophysiologic course in the brain, following a continuum from a preclinical to prodromal to dementia phase,” Dr. Petrella said.

“Cognitive Reserve” Identified in Early-onset AD

In findings presented at the 2011 American Roentgen Ray Society Annual Meeting, researchers at the Mayo Clinic in Rochester, Minn., used PET/CT to help identify cognitive reserve in early-onset AD patients.

Previous studies have shown that the higher a patient’s education level, the longer a patient is able to forestall the symptoms of AD. Mayo Clinic researchers Jacob R. Hodge, M.D., Patrick J. Peller, M.D., and Christopher H. Hunt, M.D., used fluorine 18 fluorodeoxyglucose (FDG)-PET to determine whether patients with early-onset AD, a more aggressive subset of the disease, demonstrate the “cognitive reserve” associated with higher educated AD patients. The study comprised 91 patients under 65 and is the first to use imaging to investigate cognitive reserve in this subset of patients.

PET confirmed that adults with higher education, when matched with a less-educated control group with the same clinical severity of disease, showed more severe hypometabolism and greater brain pathology.

“Our research indicates that higher education decreases the expression of symptoms in early-onset AD adults just as it does in late-onset AD,” said Dr. Peller, a consultant in Mayo Clinic’s Department of Radiology.

FDG-PET is also leading researchers to new biomarkers for all phases of AD. For example, quantitation of FDG-PET can detect very mild decreases in glucose uptake, Dr. Peller said.

“Quantitation allows us to compare a patient to a normal cohort so that abnormalities are more conspicuous,” Dr. Peller said. “It allows the radiologist to report that a patient is, for example, three standard deviations below the mean, which adds to the degree of certainty.”

MR May Identify Cognitive Decline

Two recently published studies demonstrated that MR also may aid in identifying biomarkers of cognitive decline.

In the first study, published in the April 2011 issue of Neurology researchers at Massachusetts General Hospital in Boston determined that thinning brain areas associated with AD may serve as a biomarker for cognitive decline. They found the risk of developing AD was three times greater for individuals for whom areas of the cerebral cortex associated with AD in previous studies were thinner, compared to those with above-average thickness.

“Previous models have included regions of the brain as isolated variables,” said lead author Gloria C. Chiang, M.D., a radiology resident at UCSF. “Our study showed that volume loss in multiple brain regions that may be interconnected had a greater impact on memory decline. We found that automated temporal and parietal volumes identified those at risk for future memory decline with high accuracy.”

By identifying individuals at risk for cognitive decline, neuroimaging techniques will become critical in treating AD.

Neuroimaging Critical in Treating AD

By identifying patients with early-onset AD, a more aggressive subset of the disease, researchers are able to identify those at risk for future memory decline with high accuracy.

“By focusing on cortical regions known to be affected in AD dementia, subtle but reliable atrophy is identifiable in asymptomatic individuals nearly a decade before dementia, making this measure a potentially important imaging biomarker of early neurodegeneration,” researchers concluded.

In the second study, published in the June 2011 issue of Radiology, a University of California, San Francisco (UCSF) study of 149 healthy elderly people found that automated brain volume measurements on MR imaging could predict future memory decline with a high degree of accuracy. They analyzed volumes across a number of regions in the temporal and parietal lobes. Twenty-five of the 149 subjects (17 percent) experienced significant memory decline. A computer model incorporating eight brain regions enabled researchers to discriminate between cognitively normal people and subjects with memory decline with 81 percent accuracy.

Findings illuminated how interaction between these brain regions may play a key role in memory loss.

“Previous models have included regions of the brain as isolated variables,” said lead author Gloria C. Chiang, M.D., a radiology resident at UCSF. “Our study showed that volume loss in multiple brain regions that may be interconnected had a greater impact on memory decline. We found that automated temporal and parietal volumes identified those at risk for future memory decline with high accuracy.”

Neuroimaging Critical in Treating AD

By identifying patients at risk for cognitive decline, neuroimaging techniques will become critical in the search for effective therapies to stop or slow the progression of AD and other dementias, experts say.

“Radiologists play a huge role in identifying enriched populations for clinical trials,” Dr. Petrella said.

“If we can identify Alzheimer’s with certainty earlier in the disease process, there is opportunity for disease modification or ameliorating treatment,” Dr. Peller added. “If we can identify Alzheimer’s with certainty earlier in the disease process, there is opportunity for disease modification or ameliorating treatment,” Dr. Peller added. 

Patrick J. Peller, M.D.
From Antiques to Arachnids, CT Unravels Ancient Secrets

Long before there was Lady Gaga, there lived Lady Gautseshenu—a young woman born to a prominent family of Egyptian priests more than 2,600 years ago.

When she was a teenager, her family took great care to bury her remains in a beautifully painted cartonnage—or coffin—housed at the Brooklyn Museum since 1934. Recently, researchers began to unravel details of Lady Gautseshenu’s life using a tool that would have astounded even the greatest minds in ancient Egypt: CT.

Revealing the photo frenzy created by modern-day Lady G., physicians at North Shore University Hospital in Manhasset, N.Y., took more than 10,000 images of Lady Gautseshenu using 64-slice multi-detector CT (MDCT) that afforded an incredible level of detail. Without disturbing the delicate remains, researchers determined that Lady Gautseshenu was at least 16 years old and stood about 4 feet 6 inches tall. Her body showed signs of osteoarthritis in the pelvis and backbone, her brain and other internal organs were removed and her heart and lungs were in place. Her teeth were in pristine condition.

The level of detail did not surprise researchers, who say CT has yet to scratch the surface in terms of unlocking secrets of ancient relics. “Evaluation of relics using CT scanning is rapidly becoming the norm, because it allows researchers to analyze the objects without touching or damaging them in any way,” said project researcher Amgad N. Makaryus, M.D., director of echocardiography, cardiac CT and MR imaging at North Shore University Hospital.

CT Reveals Astonishing Details of Ancient Spider

CT has come a long way since the late Derek Harwood-Nash, M.B., Ch.B., D.Sc., published the first article on his use of CT to study an Egyptian mummy in 1979. Since then, CT has been used for everything from examining priceless antiques to evaluating skeletal remains of prehistoric Australian aboriginals to creating a stunning 3D image of a 45-million-year-old spider trapped inside a fossil. The evolution of CT technology—primarily in terms of spatial resolution and speed—has fueled such research.

“Ten microns was state-of-the-art 10 years ago, now 50 nanometers is possible,” said Philip Withers, Ph.D., who in 2009 established the Henry Moseley X-ray Imaging Facility at Manchester University, U.K. “Each tomograph contains more than a thousand individual projections taken at different observation angles. This takes time in the lab. Using synchrotron X-rays, we can collect thousands of radiographs in a second, creating 3D movies at three images per second.”

The noninvasive evaluation of these relics will become more common and even the norm as it allows for their evaluation without invading or damaging them.”

Amgad N. Makaryus, M.D.

The spider, housed in the Berlin Natural History museum, was trapped inside fossilized amber resin, barely visible under a microscope. Working with colleagues in Germany, researchers imaged the spider using phase contrast and conventional attenuation contrast to better examine low-contrast features. Results were published in the April 2011 edition of Naturwissenschaften.

“Phase contrast is an interference effect based on the shift in phase of the X-rays as they pass through an object,” said Robert Bradley, a research associate at the Henry Moseley Facility, who imaged the fossil along with doctoral student Andrew McNiel. “Phase contrast is an exciting development, making CT suitable for new applications including soft tissue, polymers, insects, wood, graphite as well as fossils in amber.”

Researchers, who determined that the amber fossil is a member of the living genus of Huntsman spiders, were astonished by the level of detail revealed by CT, said David Penney, Ph.D., a visiting scientist with Manchester’s Faculty of Life Sciences Laboratory.

“Several people have tried CT scanning of fossils in amber, but none have recovered details like this,” Dr. Penney said. “Until now, I had only seen images of this quality from synchrotron scans.”

Along with documenting the oldest Huntsman spider on record, researchers created a short film revealing all of the astounding details (See Web Extras).

“Personally I find the spider’s 5 micron-sized ‘hairs’ striking,” Dr. Withers said.

Scans See Inside Antiques

A growing fascination with MDCT and 3D imaging led interventional radiologist Marc Ghysels, M.D., to establish a private radiology practice in Brussels where he analyzes antiques from various cultures. Specialists around the world rely on Dr. Ghysels radiology skills and knowledge to authenticate antiques.

“CT scanning is an absolutely non-destructive test that has the advantage of describing the inner state of the object, examined this time as a whole,” said Dr. Ghysels, who comes from a family of artists, art historians and collectors.

Dr. Ghysels has developed methods to create artwork and expose forgeries designed to deceive collectors. Among its capabilities, CT can reveal an object’s contents, determine how the piece was made and expose the nature and extent of restoration work—often revealing forgeries.

Materials that respond well to CT include wood, ivory, bone and terra cotta. In one instance, a CT scan of a terracotta sculpture from China’s Tang Dynasty (A.D. 618-907) revealed that metal, glue and resin were used to assemble terracotta pieces of varying density and that the head had been carved from plaster. The sculpture was a modern construction created with old materials, Dr. Ghysels said. (See Web Extras)

“The CT scans of Peruvian whistling bottles highlights one of the many innovations developed by ancient Peruvian potters during a more than 3,000-year period. 

On the Cover:
North Shore University Hospital researcher Amgad Makaryus, M.D., center, and CT staff members Joann Aydin (left) and Karen Lisk examine the 2,600-year-old Lady Gautseshenu mummy from the Brooklyn Museum.
Continued from previous page

Along with authenticating artwork, Dr. Ghysels, whose awards from RSNA include the 2004 Excellence in Design Award for his exhibit, “CT in Art Appraisal,” uses CT to shed light on the work of artists whose secrets were buried with them.

“As a radiologist, my goal is to make the piece ‘speak’ from its internal content and then to interpret these messages/signs/anomalies … to decide if they are consistent with the original piece and its natural history over the centuries,” he said.

Potential of CT is Boundless

Where will the ever-expanding capabilities of CT lead? The possibilities are endless, investigators say.

“It is opening up a whole new world,” Dr. Penney said. “Fossils that would have been considered of no real scientific value—because they are preserved in ways that obscure important features—can now be examined in fine detail. And not just the external appearance. ‘We can see internal details of preserved fossils,’ he added. Researchers at the Moseley X-ray Imaging Facility created 3D images of ancient objects of different mummies. This research disclosed that, despite primarily vegetarian diets, no sedentary lifestyles and no tobacco use, “Egyptian remains still showed evidence of often significant vessel calcification, indicating that vascular disease is not a modern phenomenon but a product of the interplay between human genetic predisposition and environmental factors.”

The technology may even help unravel more complex mysteries of the heritage of life on earth, experts say:

“Because of CT, we can expect to see a greater incorporation of paleontological data in neontological studies in coming years, which may help refine our understanding of the evolutionary tree of life on earth,” Dr. Penney said.

 continued on next page...
March: Nature’s LunchBox, RiverWorks, Water Lab and the Wilderness Walk. Visitors seven years of age and younger are invited to enjoy the Hand-on-Habitat.

• 2430 N. Cannon Dr. 1-773-755-3300 www.chihs.org

Museum of Science and Industry
The only remaining building from the 1893 World’s Columbian Exposition, the museum is packed with one-of-a-kind exhibits; one of two U-505 German submarines captured during World War II; a realistic coal mine, the multilevel Science of Storms exhibit, complete with a vapor tornado and tsunami tank; and the Henry Crown Space Center featuring Apollo 8. A temporary exhibit, Smart Home: Green + Wired, presents technology designed to enhance current life-styled solutions and sustainable design. A U-505 German submarine is among the one-of-a-kind exhibits at the Museum of Science and Industry.

• 57th St. and Lake Shore Dr. 1-773-684-1414 www.msmchicago.org

(US505Submarine)

Chicago History Museum
This collection dates from 1856, approximately 25 years after the founding of Chicago, and was started with the intent to help to research and interpret the city’s history. The museum helps bring to life many aspects of Chicago’s past, including the Great Chicago Fire of 1871, the rise of Chicago’s Chinatown and the life and times of Abraham Lincoln. Details on neighborhood tours, lectures, performances and events are available on the website.

• 1651 N. Clark St. 1-312-442-4600 www.chicagohs.org

DuSable Museum of African American History
A special museum dedicated to collecting and preserving the history of African Americans. This nearly 50-year-old institution is the first of its kind in the U.S. It features exhibits on salient historical topics such as civil rights as well as work by African-American artists.

• 440 East 56th Pl. 1-773-947-0600 www.dusablenumuseum.org

Lincoln Park Conservatory
Built in the late 1800s, the conservatory originally provided visitors a chance to view exotic plants, while growing most of the specialized horticulture for Chicago’s parks. Today, visitors can stroll among the display houses: Fern Room, Orchid House, Palm House and Show House, where the Christmas show is presented.

• 2291 N. Stockton Dr. 1-312-742-7736 www.chicagoparkdistrict.com

Garfield Park Conservatory
Enjoy the holiday flower show in one of the world’s largest gardens under glass, built at the turn of the last century. The conservatory is famous for its prairie waterfall set among stone and water landscapes.

• 300 N. Central Park Ave. 1-312-746-5100 www.garfield-conservatory.org

Millennium Park Ice Rink
The McCormick Tribune Plaza & Ice Rink is located just off Michigan Avenue in the shadow of the Cloud Gate sculpture, affectionately called “The Bean.” The Park Grill’s windows look out on the rink. Skating is free and ski rental is available.

• East side of Michigan Avenue between Washington and Madison streets 1-312-742-1568 www.milenniumpark.org

Daley Bicentennial Plaza Ice Rink
Located across Millennium Park from the蛇, this 80-foot Bridge is a secluded ice rink with far fewer skaters than the well-known Millennium Park rink. The facility offers free skating, ski rental and a warming building.

• South side of East Randolph Street between Columbus Drive and Lake Shore Drive 1-312-742-7850 www.chicagoparkdistrict.com

Theatre
Ann: An Affectionate Portrait of Ann Richards
Entry® award winning actress Holland Taylor brings this Texas icon to life.

• Bank of America Theatre 24 W. Randolph St. 1-312-902-1400 www.ticketmaster.com

Elizabeth Rex
This tale of love and death centers on Queen Elizabeth’s interlude with a Shakespearean actor the night before beheading her assumed lover, the Earl of Essex, for treason.

• Chicago Shakespeare Theater 800 E. Grand Ave. 1-312-955-4560 www.chicagoshakes.org

Home
Set during the turbulent ’60s and ’70s, Home was originally performed by the Negro Ensemble Company.

• Court Theatre 5535 S. Ellis Ave. 1-773-753-4472 www.courttheatre.org

Late Nite Catechism
This witty performance examining the Baby Boomer parochial school experience is a longtime favorite among those taught by nuns and also serves as a wry introduction to Catholicism.

• Royal George Theatre 1641 N. Halsted St. 1-312-988-3000 www.rouletteistheanswer.com

Memphis
A story of forbidden love in the underground clubs of Memphis in the ’50s comes alive through song and dance.

• Cadillac Palace Theatre 151 W. Randolph St. 1-312-902-1400 www.ticketmaster.com

Penelope
A modern take on the competition among Penelope’s suitors during Odysseus’ long absence.

• Steppenwolf Theatre 1650 N. Halsted Ave. 1-312-335-1650 www.steppenwolf.org

The Pitmen Painters
Lee Hall, the gifted writer who brought us Billy Elliot, is once again working his magic on the story of miners in Northern England.

• TimeLine Theatre 615 W. Wellington Ave. 1-773-238-4643 www.timelinetheatre.org

The Second City
Second City is the comedic training ground for many of today’s favorite comedians. Shows are scheduled on both the Main Stage and the smaller ETC stage, combining short comedy sketches and improvisation. Cocktails and food are served during performances.

• Main Stage and ETC stage 1616 N. Wells St. 1-312-337-3992 www.secondcity.com

Tommy Gun’s Garage
This interactive dinner theatre set in the underground clubs of Memphis in the ’50s comes alive through song and dance.

• Briar Street Theatre 3133 N. Halsted 1-773-348-4000 www.briarstreettheatre.com

Junie B., Jones in Jingle Bells, Batman Smells!
This Emerald City Theatre adaptation is appropriate for children of all ages.

• The Apollo Theatre 2540 N. Lincoln Ave. 1-773-935-4300 www.emeraldcitytheatre.com

Symphony and Opera
Lyric Opera of Chicago
The historic and renovated art-deco Civic Opera House is the perfect setting to see the renowned Lyric Opera of Chicago. Free lectures are offered one hour before every performance. Tickets go on sale Aug. 1. Productions include:

• Ariadne auf Naxos Nov. 28 and Dec. 2

“Tragedy surrounded by comedy” is one way to describe this clever production starring larger than life charac-ters. By Richard Strauss; Conductor: Sir Andrew Davis with Anna Chrysta, Alice Coote, Brandon Jovanovich and Deborah Voigt.

• Boris Godunov Nov. 27

Enjoy the grandiose tale of a tormented Russian Czar who must persevere during the worst of times. By Modest Mussorgsky; Conductor: Sir Andrew

Chicago Symphony Orchestra
Dec. 1 & 2 & 3 Conductor: Jean-Georges Tzimandi
Program: Stucky: Rhapsoiades for Orchestra; Mozart: Bassoon Concerto; Mahler: Symphony No. 1

Symphony tours also include:

• Vienna Boys Choir and Mahler: Symphony No. 1

Enjoy the rich history of the Chicago Symphony Orchestra.

Symphony concerts continue:

• “Boris Godunov” will be performed at the Lyric Opera of Chicago.

Family Performances
A Christmas Carol
For more than 30 years, the Goodman Theatre has presented this timeless Dickens classic during the holiday season.

• Goodman Theatre 170 N. Dearborn St. 1-312-443-3800 www.goodman-theatre.org

The Blue Man Group
A vibrant event blending flashing lights, comedy, loud music—and yes, blue men—for one unique experience. Shows are unique to each city. Children under five not admitted.

• Briar Street Theatre 3133 N. Halsted 1-773-348-4000 www.briarstreettheatre.com

• A Christmas Carol for Younger Audiences Nov. 27

A Christmas Carol for Younger Audiences is adapted from Charles Dickens’ classic tale with music, dance and holiday spirit. Performances are held in the cosmetic theater, an intimate performance space.

• Timeline Theatre 615 W. Wellington Ave. 1-773-231-5600 www.timeline-theatre.com

“Paris of the Prairie” will be performed at the Blackstone Theatre.

• “Paris of the Prairie” will be performed at the Blackstone Theatre.

Enjoy the grandiose tale of a tormented Russian Czar who must persevere during the worst of times. By Modest Mussorgsky; Conductor: Sir Andrew
Family Activities

Chicago Children’s Museum
Fifteen permanent hands-on exhibits range from dinosaurs to art, water play to fire safety, climbing to commerce. Daily activities offer even more focused opportunities.

• 700 E. Grand Ave. (Navy Pier)
  1-312-464-7732
  www.chicagomuseum.org

Navy Pier IMAX Theatre
The Navy Pier IMAX theatre will announce its complete holiday film schedule in late autumn.

• 700 E. Grand Ave.
  1-312-595-5IMAX
  www.imagchicago.com

John Hancock Observatory
This observatory experience on the 94th floor begins with a ride on the fastest elevator in North America and includes an open-air skywalk, free multimedia sky tour and the Navy Pier IMAX theatre will announce this observatory experience on the 94th floor.

• 700 E. Grand Ave.
  1-312-875-VIEW
  jhochicago.com

Lincoln Park Zoo
One of the nation’s last free zoos, and one of its oldest, the Lincoln Park Zoo is conveniently located in nearby Lincoln Park. Walk through the zoo at night with the holiday-themed ZooLights festival on Friday evenings.

• 2200 N. Cannon Dr.
  1-312-742-2000
  www.lpzoo.com

Skydeck Chicago at Willis Tower
At 1,353 feet above the ground, Skydeck Chicago (above in Willis Tower, the tallest building in the Western Hemisphere) offers views up to 60 miles. If you dare, venture out onto a Ledge, four glass-enclosed—and glass-bottomed—boxes outside the building.

• 220 N. Wacker Dr. (Enter Skydeck on Jackson)
  1-312-875-9447
  www.theskydeck.com

RSNA News
1817

Continued on next page
Become a VIP Donor by Sept. 30 to Receive Full Benefits at RSNA 2011
More than 20 private practices and academic departments across the country are investing in RSNA Research & Education (R&E) Foundation grants to fund a critical research and development pipeline for the specialty.

The Visionaries in Practice (VIP) Program recognizes the link between today’s research and tomorrow’s practice, as well as the importance of strong residency and fellowship training programs to build tomorrow’s workforce. By investing in the R&E Foundation, VIP groups fund radiologic research to sustain the advancements that build their practices. In appreciation for funding support, the R&E Foundation provides special recognition and benefits to VIP practices and practice members. RSNA 2011 benefits include:

• Access to the R&E Donor Lounge
• Practice name and logo recognition in the R&E Foundation Booth
• Discounts at the RSNA Education Store

Priority taxi boarding

For more information to share with your practice, see the VIP video at RSNA.org/Foundation/VIP/giving.cfm or contact Robert Leigh at 1-630-590-7760 or rleigh@rsna.org.

R&E Foundation Individual Donors

In memory of Mervin M. Figley, M.D.
In memory of Julian H. Capps II, M.D.
Katelyn Atkins, B.S.

Your Donations in Action

Katelyn Atkins, B.S. (center) with scientific advisor Gary R. Thomas, Ph.D. (left) and Department Chair Charles R. Thomas, M.D.

With an RSNA R&E Foundation grant, Katelyn Atkins, B.S., is working to understand the molecular basis of how cells respond to acute radiation. Such understanding is critical to the development of novel radiation therapy treatments to increase the effectiveness of radiation therapy in cancer treatment.

2012 R&E Grant Applications Open Soon

Individuals interested in obtaining RSNA Research & Education (R&E) Foundation grants for 2012 can begin submitting their applications starting in October. For more information, go to rsna.org/Foundation or contact Scott Walter, M.S., Assistant Director, Grant Administration at 1-630-591-7816 or swalter@rsna.org.

Mammographic Signs of Systemic Disease

While mammography is primarily used for the detection of breast cancer, it occasionally reveals evidence of systemic diseases. Diseases affecting the breast can originate from almost any organ system in the body and can be difficult to diagnose. The radiologist must be aware of the imaging features of these malignancies to rule out a more serious disease.

According to a review article by Ryan D. Murtagh, M.D., M.B.A., of the Moffitt Cancer Center in Tampa, Fla., and colleagues in the August issue of Radiology (RSNA.org/Radiology), specifically, the authors discuss:

• Minimally invasive spine surgery
• Motion preservation
• Total disk replacement procedures
• Partial disk replacement
• Intermittent devices
• Posterior pedicle fixation-based stabilization devices
• Facet replacement devices
• Partial disk replacement

Graft Substitutes

“While it would be difficult to become familiar with the imaging characteristics of each device, it is imperative that the radiologist be aware of the increasing popularity of these devices and have a basic understanding of the rationale and basic function associated with each device category,” the authors conclude.

Journal Highlights

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

New Techniques in Lumbar Spinal Instrumentation: What the Radiologist Needs to Know

Recent advances in lumbar surgical technique seek to minimize morbidity through minimally invasive approaches, the use of osteoinductive materials and methods to reduce adjacent-level disease.

Radiologists should be aware of the imaging features of these methods, the devices utilized and their potential complications, according to a review article by Ryan D. Murtagh, M.D., M.B.A., of the Moffitt Cancer Center in Tampa, Fla., and colleagues in the August issue of Radiology (RSNA.org/Radiology). Specifically, the authors discuss:

• Minimally invasive spin surgery
• Motion preservation
• Total disk replacement procedures
• Partial disk replacement
• Intermittent devices
• Posterior pedicle fixation-based stabilization devices
• Facet replacement devices

Mammographic Signs of Systemic Disease

While mammography is primarily used for the detection of breast cancer, it occasionally reveals evidence of systemic diseases. Diseases affecting the breast can originate from almost any organ system in the body and can be difficult to diagnose. The radiologist must be aware of the imaging features of these malignancies to rule out a more serious disease.

According to a review article by Ryan D. Murtagh, M.D., M.B.A., of the Moffitt Cancer Center in Tampa, Fla., and colleagues in the August issue of Radiology (RSNA.org/Radiology), specifically, the authors discuss:

• Minimally invasive spine surgery
• Motion preservation
• Total disk replacement procedures
• Partial disk replacement
• Intermittent devices
• Posterior pedicle fixation-based stabilization devices
• Facet replacement devices
• Partial disk replacement

Graft Substitutes

“While it would be difficult to become familiar with the imaging characteristics of each device, it is imperative that the radiologist be aware of the increasing popularity of these devices and have a basic understanding of the rationale and basic function associated with each device category,” the authors conclude.

Journal Highlights

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

New Techniques in Lumbar Spinal Instrumentation: What the Radiologist Needs to Know

Recent advances in lumbar surgical technique seek to minimize morbidity through minimally invasive approaches, the use of osteoinductive materials and methods to reduce adjacent-level disease.

Radiologists should be aware of the imaging features of these methods, the devices utilized and their potential complications, according to a review article by Ryan D. Murtagh, M.D., M.B.A., of the Moffitt Cancer Center in Tampa, Fla., and colleagues in the August issue of Radiology (RSNA.org/Radiology). Specifically, the authors discuss:

• Minimally invasive spin surgery
• Motion preservation
• Total disk replacement procedures
• Partial disk replacement
• Intermittent devices
• Posterior pedicle fixation-based stabilization devices
• Facet replacement devices
• Partial disk replacement

Graft Substitutes

“While it would be difficult to become familiar with the imaging characteristics of each device, it is imperative that the radiologist be aware of the increasing popularity of these devices and have a basic understanding of the rationale and basic function associated with each device category,” the authors conclude.

Journal Highlights

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

New Techniques in Lumbar Spinal Instrumentation: What the Radiologist Needs to Know

Recent advances in lumbar surgical technique seek to minimize morbidity through minimally invasive approaches, the use of osteoinductive materials and methods to reduce adjacent-level disease.

Radiologists should be aware of the imaging features of these methods, the devices utilized and their potential complications, according to a review article by Ryan D. Murtagh, M.D., M.B.A., of the Moffitt Cancer Center in Tampa, Fla., and colleagues in the August issue of Radiology (RSNA.org/Radiology). Specifically, the authors discuss:

• Minimally invasive spin surgery
• Motion preservation
• Total disk replacement procedures
• Partial disk replacement
• Intermittent devices
• Posterior pedicle fixation-based stabilization devices
• Facet replacement devices
• Partial disk replacement

Graft Substitutes

“While it would be difficult to become familiar with the imaging characteristics of each device, it is imperative that the radiologist be aware of the increasing popularity of these devices and have a basic understanding of the rationale and basic function associated with each device category,” the authors conclude.

Journal Highlights

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

New Techniques in Lumbar Spinal Instrumentation: What the Radiologist Needs to Know

Recent advances in lumbar surgical technique seek to minimize morbidity through minimally invasive approaches, the use of osteoinductive materials and methods to reduce adjacent-level disease.

Radiologists should be aware of the imaging features of these methods, the devices utilized and their potential complications, according to a review article by Ryan D. Murtagh, M.D., M.B.A., of the Moffitt Cancer Center in Tampa, Fla., and colleagues in the August issue of Radiology (RSNA.org/Radiology). Specifically, the authors discuss:

• Minimally invasive spin surgery
• Motion preservation
• Total disk replacement procedures
• Partial disk replacement
• Intermittent devices
• Posterior pedicle fixation-based stabilization devices
• Facet replacement devices
• Partial disk replacement

Graft Substitutes

“While it would be difficult to become familiar with the imaging characteristics of each device, it is imperative that the radiologist be aware of the increasing popularity of these devices and have a basic understanding of the rationale and basic function associated with each device category,” the authors conclude.

Journal Highlights

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

New Techniques in Lumbar Spinal Instrumentation: What the Radiologist Needs to Know

Recent advances in lumbar surgical technique seek to minimize morbidity through minimally invasive approaches, the use of osteoinductive materials and methods to reduce adjacent-level disease.

Radiologists should be aware of the imaging features of these methods, the devices utilized and their potential complications, according to a review article by Ryan D. Murtagh, M.D., M.B.A., of the Moffitt Cancer Center in Tampa, Fla., and colleagues in the August issue of Radiology (RSNA.org/Radiology). Specifically, the authors discuss:

• Minimally invasive spin surgery
• Motion preservation
• Total disk replacement procedures
• Partial disk replacement
• Intermittent devices
• Posterior pedicle fixation-based stabilization devices
• Facet replacement devices
• Partial disk replacement

Graft Substitutes

“While it would be difficult to become familiar with the imaging characteristics of each device, it is imperative that the radiologist be aware of the increasing popularity of these devices and have a basic understanding of the rationale and basic function associated with each device category,” the authors conclude.

Journal Highlights

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

New Techniques in Lumbar Spinal Instrumentation: What the Radiologist Needs to Know

Recent advances in lumbar surgical technique seek to minimize morbidity through minimally invasive approaches, the use of osteoinductive materials and methods to reduce adjacent-level disease.

Radiologists should be aware of the imaging features of these methods, the devices utilized and their potential complications, according to a review article by Ryan D. Murtagh, M.D., M.B.A., of the Moffitt Cancer Center in Tampa, Fla., and colleagues in the August issue of Radiology (RSNA.org/Radiology). Specifically, the authors discuss:

• Minimally invasive spin surgery
• Motion preservation
• Total disk replacement procedures
• Partial disk replacement
• Intermittent devices
• Posterior pedicle fixation-based stabilization devices
• Facet replacement devices
• Partial disk replacement

Graft Substitutes

“While it would be difficult to become familiar with the imaging characteristics of each device, it is imperative that the radiologist be aware of the increasing popularity of these devices and have a basic understanding of the rationale and basic function associated with each device category,” the authors conclude.
Speech Stimulation During Functional MR Imaging as a Potential Indicator of Autism

**Functional MR imaging (fMRI) in response to passive speech stimulation may help differentiate language-impaired autistic from control subjects, demonstrating the potential utility of functional MR imaging as an objective indicator of language impairment in autism.**

In a prospective study, Grace Lai, Ph.D., of Columbia University Medical Center, Neurological Institute, New York, and colleagues performed fMRI during passive presentations of pre-recorded speech in 15 control subjects (mean age: 12.1 years) and 12 language-impaired and age-matched autistic children (mean age: 12.4 years). The study also included 27 additional autistic children (mean age: 8.4 years) who underwent sedation during routine MR exams. The spread (quantified as number of voxels) and amplitude of the MR activation were then quantified within two anatomically specified regions: the primary auditory cortex (A1) and the superior temporal gyrus (STG).

Although activity in A1 did not differ between autistic and control subjects, mean amplitude and spread of activity in the STG differed between autistic and control subjects, researchers discovered.

“Functional MR imaging activation in response to passive language stimuli can help differentiate language-impaired autistic subjects from control children with 83 percent (10 of 12 subjects) specificity and 92 percent (14 of 15 subjects) sensitivity,” the authors concluded.

Results suggest that these methods may also apply to sedated patients, the authors added.

**Outside Imaging in Emergency Department Transfer Patients: CD Import Reduces Rates of Subsequent Imaging Utilization**

**Among emergency department (ED) transfer patients, CD import of outside imaging from the sending institution into the receiving institution’s PACS significantly decreased the rates of subsequent imaging utilization.**

In the study, Aaron Sodickson, M.D., Ph.D., of Brigham and Women’s Hospital in Boston, reviewed the medical records of 1,487 consecutive patients transferred to the hospital’s ED from February and August 2009 with a CD containing medical images acquired elsewhere. CD import to PACS was attempted for all patients; the CD import was successful for 1,161, or 78 percent, of the patients. Incompatible image format or CD malfunction resulted in 326 unsuccessful CD imports.

Patients with successfully imported CDs had a 17 percent reduction in CD imaging rates during the subsequent 24 hours (2.7 versus 3.3 exams per patient) and a 16 percent decrease (1.2 versus 1.4 scans per patient) in subsequent CT scans. While implementing universal electronic medical records, image repositories or robust image transfer networks would streamline image transfer between sites and obviate the need to send CDs with transfer patients, CDs will likely remain the prevalent means of image transfer for the foreseeable future, according to the authors.

“Importing these images into the PACS adds value to patient care by reducing costs, streamlining care, and improving resource utilization. Reducing CT util- ization has the added safety benefits of decreased exposure to ionizing radiation and to intravenous contrast materials,” the authors concluded.

See more coverage of this study and its clinical implications on Page 5.

**Coronary Atherosclerosis in African-American and White Patients with Acute Chest Pain: Characterization with Coronary CT Angiography**

As described in a recent using coronary CT angiography, atherothrombotic plaque burden and composition differ between African-American and white patients with relatively more noncalcified disease in African-American patients and more calcified disease in white individuals.

In a retrospective study, John W. Nance Jr., M.D., of the Medical University of South Carolina in Charleston, and colleagues analyzed CT angiographic data of 901 patients (150 consecutive African-American patients, 151 white control patients; mean age, 55 years; 33 percent male) with acute chest pain. Researchers evaluated each coronary artery segment for the presence of atherosclerotic plaque, plaque composition (calcified, noncalcified or mixed) and stenosis. The noncalcified plaque volume was quantified using a threshold-based automated algorithm. Researchers compared the presence and extent of atherosclerotic plaque between the groups using univariate and multivariate regression analyses.

Findings indicated a similar overall atherosclerotic burden between symptomatic African-American and white patients, but differences in plaque composition.

“The prevalence of noncalcified plaque, which may be more unstable, was higher among the African Americans after correction for baseline differences; however, the prevalence of calcified plaque, which may represent more stable disease, was lower in this group,” the researchers concluded.
Education and Funding Opportunities

CORE Workshop
FORMERLY THE Revitalizing the Radiology Research Enterprise (RRRE) program, the newly named Creating and Optimizing the Research Enterprise (CORE) workshop will be held Friday and Saturday, Oct. 28 and 29 in Oak Brook, Ill. The workshop will focus on strategies for developing and expanding research programs in radiology, radiation oncology and nuclear medicine departments. The CORE program features a combination of presentations, case studies and group discussions. Register now at RSNA.org/CORE.

Writing a Competitive Grant Proposal
Registration is being accepted for the RSNA Writing a Competitive Grant Proposal workshop designed for researchers in radiology, radiation oncology, nuclear medicine and related sciences who are interested in actively pursuing federal funding. A limited number of slots are available for this 1½-day intermediate-level program that combines didactic and small group interactive sessions designed to help radiologic researchers understand and apply the key components of writing a competitive grant proposal. Topics to be covered are the NIH grant review process, developing specific aims and funding opportunities. Guided by a faculty of leading researchers with extensive experience in all aspects of grant applications and funding, the program will focus on developing realistic expectations and provide tools for getting started. Faculty includes: G. Scott Gazelle, M.D., Ph.D., M.P.H., of Massachusetts General Hospital in Boston, Ruth Carlos, M.D., of the University of Michigan Health System in Ann Arbor, and Elizabeth Burs medida, M.D., M.P.H., of the University of Wisconsin in Madison. The course fee is $175. Registration forms can be found at RSNA.org/CGP.

RSNA 2011 Registration
How to Register
There are four ways to register for RSNA 2011.
1. INTERNET
Go to RSNA.org/register
2. FAX (24 hours)
1-800-521-9018
3. PHONE
Monday-Friday, 8 a.m.-5 p.m.
1-800-381-4660
4. MAIL
Experienced/RSNA 2011
56 Atrium Drive
Vernon Hills, IL 60061 USA

RSNA 97th Scientific Assembly & Annual Meeting
RSNA News | August 2011

RSNA News | August 2011

 RSNA has many hotel rooms available at discounted rates. Register for the meeting today and reserve your hotel room.

Book with Gant Travel for a Chance to Win
Gant Travel has been RSNA’s official domestic travel agency for the past 11 years. Custom travel itineraries may be booked by phone and e-mail Monday-Friday, 7 a.m. to 6:15 p.m. CT. Additional taxes and booking fees will apply to airline ticket prices and after-hours emergency assistance.

RSNA attendees who book air travel through Gant Travel by September 30, 2011, will be entered into a drawing to receive a $500 USD travel credit good toward future travel on United Airlines. Contact Gant at 1-877-613-1192, international +01 630 634 3751, or RSNA@ganttravel.com.

For more information about registering for RSNA 2011, visit RSNA2011.RSNA.org, e-mail reginfo@rsna.org or call 1-800-381-4660 x7662.
“Flight Chicago” Takes off at RSNA 2011
The newest RSNA-sponsored tour & event will help RSNA attendees take “Flight”—without ever leaving Chicago.

“Flight Chicago” offers attendees a three-hour, behind-the-scenes glimpse of Chicago’s world-famous food scene. You will visit three different restaurants for an intimate look at the daily lives of Chicago’s hottest and most talked about chefs on their own turf.

After touring the kitchen or other notable “back of house” spaces to get a sense of how things work, you can sit down to sample tastes while engaging in a question-and-answer session with the chef.

Along the way you will also meet mixologists, bakers, mongers and other local artisans, and sample excellent wine, beer and spirit pairings. You will also enjoy a nine-course late lunch / early dinner paired with alcoholic beverages unique to each venue’s menu and specialties.

The starting point and restaurant names for the flight will be provided when you pick up your tickets at the Palmer House tour desk. Transportation to the restaurants is not included.

For Your Benefit
Retired Members Reap Values of RSNA Membership

Although he officially retired four years ago, 2001 RSNA President Jerry Petasnick, M.D., remains up-to-date on the latest news of his profession through a number of resources offered by RSNA.

Dr. Petasnick, who retired after 41 years of practice—37 at Rush University Medical Center in Chicago—takes full advantage of the following benefits offered to RSNA members who request retired status.

- No dues and assessments
- Free admission with advance registration to the RSNA Annual Meeting
- Free online access to RSNA peer-reviewed journals, Radiology and Radiographics (printed versions of the journals may be purchased at a reduced rate)
- “Since my retirement I have continued to attend RSNA annual meetings and have relied on Radiographics for Continuing Medical Education as well as Radiology to keep current on developments in the field,” Dr. Petasnick said.

The Value of Membership

“Friends and family frequently seek my advice about medical matters, making it important that I try to stay current on new advances,” Dr. Petasnick said. “I always look forward to the annual meeting as a time to meet old friends and learn what is new.”

Dr. Petasnick also regularly mentors and interacts with residents at the Residents Reception held at RSNA annual meetings. Even though he is no longer practicing medicine, it is important to stay connected to the quickly changing specialty for a number of other reasons, said Dr. Petasnick, who received the RSNA Gold Medal in 2006.

“Friends and family frequently seek my advice about medical matters, making it important that I try to stay current on new advances,” Dr. Petasnick said.

Retired status is offered to RSNA members who have retired from medical practice or other active involvement (spending less than 20 hours per week) in radiology or related fields and have been a member in good standing for at least 10 years. Fill out an application at RSNA.org/apply under Membership.
RSNA Resident and Fellow Committee


Not pictured: Duane G. Mezwa, M.D., faculty advisor, Waseem A. Bhatti, M.D., Christina M. Cinelli, M.D., Sriyesh Krishnan, M.D., Jennifer Yu, M.D., Ph.D.

RSNA 2010 Refresher Courses Available For Viewing, Purchase

Refresher courses recorded at RSNA 2010 are now available for viewing online. Members can view selected courses approved for AMA PRA Category 1 Credit™ at no charge by logging in at RSNA.org/Education and selecting courses from a wide array of subspecialties. Non-members can view the courses but do not have the option of earning CME credit.

Presented in formats to accommodate a variety of practitioners, Essentials, Update and Review courses cover topics for varying levels of expertise and familiarity. Included among the 20 selections from RSNA 2010 are “Malpractice Issues in Radiology,” “Obesity: A Challenge for Imaging” and “What Diagnostic Radiologists Need to Know about Radiation Oncology.” Most courses, though, focus on specific imaging challenges and cover a broad range of subspecialty topic areas from emergency neuroimaging and CT colonography to “Mammography Review” and “Pancreatic Imaging.”

For a limited time, CD collections of RSNA 2010 courses are now available for viewing online. And “Pancreatic Imaging” and “Electrocardiography for Cardiac Imaging” from the 2009 annual meeting are also included. Each collection is available as a one-time viewing (CDP) or as an annual subscription for repeated viewing (CDRE). For more information on these and other collections, visit RSNA.org/Education.

To order, go to RSNA.org/Education and the “Dosing Collection” is available at 25 percent off the original price. Collections are produced in a high-quality CD-ROM format and bundled into topical sets. To order, go to RSNA.org/Education and browse RSNA’s new Refresher Courses by subspecialty topic area. To learn more, call the RSNA Education Center at 1-800-272-2920.

RSNA.org

Tap into RSNA’s Informatics Resources

A leader in the informatics revolution, RSNA has always offered a well-stocked library of informatics solutions and user-friendly technology-based tools to its members.

Those continually expanding resources are more important than ever as healthcare moves rapidly toward Internet-based solutions for image sharing and universal electronic health records. (See “CD-based Image Transfer Reduces Utilization, Bolsters Case for Web-based Sharing,” on page 5).

Fortunately, RSNA members can take advantage of the one-stop informatics portal housed at RSNA.org, with links to resources including:

• Integrating the Healthcare Enterprise (IHE)—a worldwide initiative to achieve standards-based interoperability for health information technology across the spectrum of care.
• The Medical Imaging Resource Center (MIRC)—a set of free software tools to support radiology teaching files and imaging clinical trials.
• RadLex® comprehensive lexicon—a unified language of radiology terms for standardized indexing and retrieval of radiology information resources.

Adopt these RSNA-developed solutions to keep your workplace at the forefront of technology.

Access RSNA Weekly Archives

You might enjoy receiving RSNA Weekly in your e-mail, but you might not want—or have the space—to save every issue. RSNA does it for you. Through myRSNA®, access archives of RSNA Weekly dating back to September 2008, when the informational newsletter that reviews key issues affecting radiology made its debut. Just like radiology, RSNA Weekly has covered a lot of ground in three years.

COMING NEXT MONTH

India is the latest country to be spotlighted as part of the “Presents” sessions at the RSNA annual meeting. Next month, RSNA News will preview the RSNA 2011 “India Presents” session, offered in conjunction with the Indian Radiological & Imaging Association. The session promises a look at the numerous factors driving significant growth in radiology in India, as well as presentations of some the latest in radiology research from the region, including intervention in hemoptysis, MR-PET fusion and MR spectroscopy in intracranial cystic masses.
**Breast Imaging/High Risk Collection**  BUN06
Includes: RSP2307, 2707, 2807

Only
$90  
For RSNA members
$130  
For non-members

**Dosing Collection**  BUN12
Includes: RSP1107, 1907

Only
$60  
For RSNA members
$100  
For non-members

Buy today to benefit from the educational content for years to come.*

ORDER NOW:  RSNA.org/OrderCDs  Enter the appropriate BUN number in the product code area.

CME CREDITS AVAILABLE THROUGH NOVEMBER 25, 2011

For more information, visit RSNA.org/Education/Collections. Questions? Contact ed-ctr@rsna.org or call 1-800-272-2920.

*While supplies last.