Patients are True Beneficiaries of the “Power of Partnership”

Although challenges remain, radiologists who join with colleagues and patients to deliver the best healthcare possible are demonstrating the true “Power of Partnership” and the value of the specialty, said RSNA President Sarah S. Donaldson, M.D., during her President’s Address on Sunday.

“That experience, Dr. Donaldson said, taught her the extraordinary power of partnerships. It’s a time that requires us to focus on producing value not volume, and outcomes not output,” she said.

In order to target a tumor, radiologists must integrate images from all imaging modalities, seeing tumors in every dimension and understanding how tumors move, their heterogeneity, their blood supply and their molecular pathways. Dr. Donaldson shared an image of a hepatic lesion in a patient with primary colorectal cancer. The abnormality was not well defined by CT and was deemed inappropriate for radiofrequency ablation.

That experience, Dr. Donaldson said, taught her the extraordinary power of partnerships. It’s a time that requires us to focus on producing value not volume, and outcomes not output,” she said.

In order to target a tumor, radiologists must integrate images from all imaging modalities, seeing tumors in every dimension and understanding how tumors move, their heterogeneity, their blood supply and their molecular pathways. Dr. Donaldson shared an image of a hepatic lesion in a patient with primary colorectal cancer. The abnormality was not well defined by CT and was deemed inappropriate for radiofrequency ablation.

Multiparametric MR Aids Earlier Detection of Prostate Cancer Recurrence

**Multiparametric MR** (mp-MR) can enable earlier detection of cancer recurrence and improve treatment planning in patients who experience an increase in prostate specific antigen (PSA) after undergoing treatment for prostate cancer, according to the author of an education exhibit presented Sunday.

Prostate cancer is treated most often with surgery and radiation therapy as first-line therapy. In many cases, patients experience elevated levels of PSA after treatment, but the elevated levels are not always indicative of local recurrence or extensive metastatic disease, said Varaha Tammisetti, M.D., of the University of Texas Health Science Center at Houston.

“Elevated PSA levels don’t tell if there is a recurrence, and if there is recurrence, they don’t tell you if the cancer has spread outside of the prostate,” Dr. Tammisetti said. “Some patients get blind therapy without evidence of a recurrence.”

The education exhibit demonstrates how mp-MR combines different MR imaging techniques to provide more accurate information about both anatomy and function in patients with PSA relapse.

“Conventional imaging such as bone scans and CT are helpful only when disease is significantly advanced or metastatic, at which time treatment options are palliative rather than curative,” said Dr. Tammisetti. “With MRI we combine the advantage of the high-contrast resolution of MR with functional parameters like information on how tightly cells are packed, how blood flows in tissue and the chemical makeup of tissue. Therefore, with MRI we can detect recurrence at an earlier point than other modalities, speeding the onset of appropriate treatments.”

**Bridging the Divide Between Radiology, Interventional Oncology**

**Deeper Collaboration** between radiology and radiation oncology is necessary to realize the full potential of the two specialties whose paths diverged nearly 50 years ago, said Damian E. Dupuy, M.D., who presented the Annual Oration in Diagnostic Radiology as part of the RSNA Opening Session on Sunday.

“Our patients and the medical community will reap the benefits of a stronger collaboration,” Dr. Dupuy said in his presentation, “We Must Stand on the Shoulders of Giants.”

Dr. Dupuy contrasted the role of the two specialties from the 1970s to today. “In the good old days, it was ‘we image and diagnose’ and ‘you treat,’” said Dr. Dupuy, director of tumor ablation at Rhode Island Hospital and a professor of diagnostic imaging at the Warren Alpert Medical School of Brown University in Providence, R.I. “Today, we must look at our strengths and weaknesses and work together to treat patients.”

In his appeal for collaboration, Dr. Dupuy invoked the words of Anthony L. Zietman, M.D., M.B.B.S., a professor of radiation oncology at Harvard Medical School and presenter of the RSNA 2012 Annual Oration in Radiation Oncology. Dr. Zietman has noted that radiation oncology is very good at irradiating the microbes of cancer.
Point-of-Care Imaging

With a strong foundation of expertise in imaging design, development and manufacturing, NeuroLogica transforms fixed technologies into portable point-of-care platforms.

Our current portfolio consists of CereTom® small bore CT, inSPira HD® brain SPECT and the BodyTom® large bore CT.

Please visit NeuroLogica
Samsung RSNA Booth #6913, North Building, Hall B

For more information, please visit
www.NeuroLogica.com or
call (978) 564-8520
Monday at a Glance

7:15–8:15
Hot Topic and Controversy sessions

8:30–9:00
Refresher Courses and Workshops
Associated Sciences Refresher Course
Global Health: Radiology in Haiti
BOOST: Bolstering Oncoradiologic and Oncoradiotherapeutic Skills for Tomorrow: Anatomy and Contouring—Head and Neck, Gynecology

Molecular Imaging Symposium
Preparing for Tomorrow: The Application of Novel and Advanced Imaging in Clinical Oncology

8:30–NOON
Series Courses
Breast, Emergency, Gastrointestinal, Interventional, Musculoskeletal, Neuroradiology, Nuclear Medicine, Pediatric, Radiology Informatics

10:30–NOON
Scientific Paper Sessions, including France Presents
Associated Sciences Refresher Course
Global Health: Dose Reduction is Our Business

Informatics Courses (BOOST) Bolstering Oncoradiologic and Oncoradiotherapeutic Skills for Tomorrow: Integrated Science and Practice—Head and Neck, Gynecology

Molecular Imaging Symposium
Radiogenomics: The Next Logical Step in ‘Rad-Path’ Correlation for Clinical Imaging?

12:15–1:15
Scientific Informal (Poster), Quality Storyboard and Education Exhibit Presentations (Lakeside Learning Center and Subspecialty Campuses)

12:30–2:00
Informatics Courses

1:30–2:45
Monday Plenary Session (Arie Crown Theater)
Alexander R. Margulis Award for Scientific Excellence Presentation
Presentation of Honorary Memberships (see Page 6A)

Eugene P. Pendergrass New Horizons Lecture Normal and Neoplastic Stem Cells: Implications for the Radiological Sciences
Irving L. Weissman, M.D.
AAPM/RSSA Basic Physics Lecture for the Radiologic Technologist
Digital Breast Tomosynthesis—Physics and Clinical Considerations

1:30–3:00
Associated Sciences Refresher Course Reducing CT Dose

Molecular Imaging Symposium Imaging Cellular Subpopulations: Current Progress and Future Directions

Program to Enhance Relational and Communication Skills for Radiologists (PERCS: Radiology)

1:30–5:30
Estate Planning in Our New Tax Environment

Associated Sciences Refresher Course Maximizing Space Planning in an Era of Diminishing Resources

Molecular Imaging Symposium Molecular Brain Imaging: From Research to Clinical Applications

4:30–6:00
RSNA Diagnosis Live Chest and Abdomen

Special Interest Sessions

Informatics Courses

1:30–6:00
Interventional Oncology Series: Hepatocellular Carcinoma

5:30–5:50
Estate Planning in Our New Tax Environment

3:00–4:00
BOOST: Bolstering Oncoradiologic and Oncoradiotherapeutic Skills for Tomorrow

Hands-on Contouring: Head and Neck

4:45–6:00
BOOST: Bolstering Oncoradiologic and Oncoradiotherapeutic Skills for Tomorrow

Special Interest Sessions

Informatics Courses

South Building Hall A Booth #3314
DATE: Wednesday Dec. 4
TIME: 10:30 - 11:15AM

A Strategy for Connecting With and Marketing To the e-Patient and e-Referrer

DR Systems presents our vendor-neutral, cloud-based, approach for solving four of your most critical needs:

- Patient Engagement,
- Meaningful Use Compliance,
- Image Sharing, and
- Connectivity to referring doctors’ EMRs.

Learn to use incentive payments to build your practice.

Florent Saint-Clair
VP, Corporate Development
DR Systems, Inc.

Carol Osborne
e-IR Associate Product Manager
DR Systems, Inc.
Shifting Healthcare Landscape Creates Threats, Challenges

With the implementation of the Affordable Care Act, the introduction of new payment models, and a shift from volume- to value-based radiology, radiologists are facing a number of challenges as they head into the foreseeable future.

But there are several steps radiologists can take to deal with these challenges going forward, according to Vijay M. Rao, M.D., David C. Levin, M.D., and Jonathan W. Berlin, M.D. They presented a Sunday refresher course, “The Future of Radiology: What are the Threats and How to Respond to Them.”

While all three radiologists addressed the same topic just one year ago at RSNA 2012, some circumstances have changed since then, said Dr. Rao, RSNA Board Liaison for Information Technology and Annual Meeting. “People were still wondering about the Affordable Care Act and whether that really meant a change from volume- to value-based radiology,” she said. “That has become a reality and now we are focusing on quality metrics. It’s becoming important for us to become champions of quality in our institutions.”

Dr. Rao urged radiologists to become more visible within the hospital environment, particularly with the evolution and adoption of new payment models. “One thing that clearly needs to happen is that radiologists need to build bridges to hospital administrations,” she said. “As we evolve into bundled payments or the formation of ACOs (accountable care organizations), we’re no longer talking about fee-for-service, so radiologists may be in an unfavorable position unless the hospital recognizes their value.”

“A ‘culture change’ is needed,” Dr. Levin said. “This is where radiologists have to take the role and responsibilities of something that clearly needs to happen is that radiologists must act like true consulting physicians by screening imaging exams for appropriateness, supervising advanced imaging exams, giving patients access to their test results, and being available to consult with referring physicians. In order to do these things, radiologists will have to change the way they look at productivity, Dr. Levin said. Co-presenter Dr. Berlin pointed out that in order to deal with declining reimbursements, radiologists have focused on increasing productivity while cutting expenses and reducing hiring.

This is problematic on several levels, Dr. Berlin said. It’s a problem when radiologists fail to pick up the phone or reach out to other clinicians or residents because these activities won’t increase RVUs, he said. “Behave more like consulting physicians,” Dr. Levin said, “even if it means we have to sacrifice some income to do it.”

Dr. Levin also urged radiologists to “take back the nights and weekends” from teleradiology companies; consider consolidating into larger groups in order to better cover those times as well as provide subspecialty expertise and achieve more market power and economies of scale; do more to publicize ACR appropriateness criteria; and build bridges to primary care physicians who will be increasingly influential under new payment models.

Radiologists as Utilization Gatekeepers

In terms of utilization management, radiologists need to take on a larger role, Dr. Rao said. In the past radiologists have shied away from becoming utilization gatekeepers, Dr. Rao said, partly due to financial interests, as well as the possibility of alienating their colleagues by rejecting imaging tests as unnecessary. “This is where radiologists have to take a leadership role in reducing unnecessary imaging,” she said.

Taking on that role can be accomplished in several ways, including educating medical students, staff and referring physicians about appropriate imaging and working with hospitals to install decision support systems linked to order entry. Another major concern is that a bigger segment of the radiology job market is contracting. And a poor job market means “less clout and prestige for the specialty,” said Dr. Berlin, as well as less added-value as perceived by referring physicians and patients.

Groups should be prepared to hire more young radiologists, even if it means sacrificing income, Dr. Rao said. “We don’t want to send the message to medical students that there aren’t any jobs available in radiology. Radiology has always attracted the best and the brightest and we don’t want to see them shy away from entering the specialty.”

2013 RSNA Outstanding Educator and Researcher

Norbert J. Pelc, Sc.D., of Stanford, Calif., was honored as 2013 RSNA Outstanding Researcher. Read about Dr. Pelc’s achievements in the January 2014 issue of Radiology. An article about Dr. Haffty appears in the November-December 2013 issue of Radiographics. See a list of past recipients at RSNA.org/awards.
EXPERIENCE HITACHI’S FULL LINEUP OF COMPREHENSIVE SOLUTIONS.

INTUITION
ADVANCED 3D VISUALIZATION WITH ENTERPRISE DISTRIBUTION

SCENARIO™
THE LATEST 128 SLICE CT

ECHelon™ OVAL
THE WIDEST WIDE BORE

NOBLUS™ ULTRASOUND
EXPANDING THE BOUNDARIES

CLINICAL REPOSITORY
VNA

Patient-Friendly Imaging & Image Management Solutions

South Hall Booth 2511
New Horizons Lecture
Normal and Neoplastic Stem Cells Hold Promise for Cancer Treatment

Research that bears on the earliest stages of cancer development as well as the sequelae of cancer treatment is important not only to radiation oncologists but to diagnostic radiologists as well, says Irving L. Weissman, M.D., who will deliver today’s RSNA 2013 New Horizons Lecture, “Normal and Neoplastic Stem Cells: Implications for the Radiological Sciences.”

An investigation led by Dr. Weissman into blood-forming stem cells and their non-self-renewing progeny found that these hold promise for regenerating the hematopoietic system after chemotherapy and radiation for cancer. These pluripotent cells can replace genetically defective or otherwise damaged blood-forming systems and help us understand the stages of hematopoiesis that harbor the earliest stages of pre-leukemia. They may even provide the first constant target found on all cancers.

Dr. Weissman, a professor in the Department of Hematology and Pathology at the Stanford University School of Medicine, has devoted his career to stem cell research. His particular interests include hematopoietic stem and progenitor cells, central nervous system stem and progenitor cells, and lymphocyte differentiation.

Dr. Weissman has founded three companies focused on bringing stem cell therapeutics into the clinic and served on the founding scientific advisory boards of three others. He has been an investigator of the Howard Hughes Medical Institute in Chicago and the Karel Beekhuis Professor of Cancer Biology and chair of the immunology program at Stanford.

Dr. Weissman is a fellow in the American Association for the Advancement of Science and was elected to the Institute of Medicine of the National Academy of Sciences.

The Alexander R. Marquis Award for Scientific Excellence, an annual award recognizing the best original scientific article published in Radiology, will be presented during today’s plenary session. The award is named for Alexander R. Marquis, M.D., a distinguished investigator and inspiring visionary in the science of radiology.
DISCOVER A NEW HEALTHCARE EXPERIENCE

Samsung’s solutions for healthcare providers help drive improvements in the quality of care. Start your discovery by visiting Booth #6913 (North Building, Level 3, Hall B) to find out more.

See all our products at samsung.com/healthcareusa
A whole new approach to CT-guided interventions

Learn how our innovative 3D planning and targeting solution is set to revolutionize CT-guided interventions

Product demo: Booth #6548, Hall ‘B’
Virtual Course Aids Diagnostic Radiology Learning in Colombia

While the use of diagnostic imaging has increased significantly on a global scale in the past two decades, providing high-quality and comprehensive training to diagnostic imaging students is often a major challenge in some parts of the world.

In Colombia, for example, less than 5 percent of medical schools have a radiology course or clinical rotation, and when programs do exist, student training typically involves listening to a radiologist dictate studies in the classroom.

Doctors at Los Andes University in Bogotá, Colombia, relied on creativity to design a course for medical students combining theoretical/on-site programs with the latest Web 2.0 and 3.0 technologies in diagnostic imaging training, according to Andres Vasquez, M.D., M.S., director at the Center for Education and Technology in radiology/clinical coordinator for radiology at Los Andes University, and author of an RSNA 2013 scientific poster on the program.

“We felt there was a great need to develop a comprehensive program for radiology clerkships in Colombia that would allow medical students to get the most out of their rotations, but at the same time continue to be feasible and efficient in terms of time and budget,” Dr. Vasquez said.

Last year, Dr. Vasquez and colleagues created a live, virtual six-week-long course based on the aims and concepts in radiology to the interpretation of the most relevant basic pathologies. “This placed students in the midst of learning and generated discussion among peers creating the concept of collective learning,” Dr. Vasquez said.

To gauge the program’s value, doctors conducted a three-year study that included 185, four-year medical students from the university between 2009 and 2012. For the statistical analysis, the doctors used a paired student’s t-test to evaluate the difference between the means of the enrolled group before and after the program. They used an unpaired t-test to evaluate the difference between the means for the enrolled and the control group after the course.

Researchers found a mean of 24 out of 100 for the pre-course exam and a mean score of 84.6 for the post-course exam in the enrolled group, with a post-course exam mean of 24.18 for the control group. An alpha error <0.05 was considered to be statistically significant. The p score for both of these tests were statistically significant.

“Our program establishes comprehensive objectives and competencies that students must fulfill and acquire throughout the program, covering topics ranging from basic concepts in radiology to the interpretation of the most relevant diagnostic images for general practitioners,” Dr. Vasquez said. “We strive to use interactive learning tools, including learning games, problem-based learning, and Web 2.0 and 3.0 platforms in order to better capture the attention of the students, taking into account they represent a new generation of learners who are native to the digital era.

Can Online Search Tools Predict Unfilled Radiology Residencies?

On Wednesday, Nora M. Haney, B.S., and colleagues will explore whether online search data may be useful in the prediction of unfilled radiology residency positions in their presentation of the educational exhibit, LL-INE-WEBB, "Medical School Graduate Interest in Radiology Residency Programs As Depicted by Online Search Tools." In response to recent media reports indicating a marked decrease in specialty positions available to medical school graduates, specifically in radiology, Haney and colleagues sought to gauge medical school graduate interest in radiology by comparing data from Google Trends and the National Residency Match Program. Haney and colleagues will present their exhibit from 12:45 to 1:15 p.m. Wednesday in the Informatics community of the Lakeside Learning Center. The exhibit will remain on display through Friday. Virtual meeting registrants may log in to view the poster from outside McCormick Place.

“Our program empowered students with the necessary tools to become masters of their own learning process,” said Dr. Vasquez. “We believe this type of program represents an innovative and comprehensive learning strategy that could be applied in many disciplines and fields, not only in Colombia but also around the globe.”

More ways to Image Wisely®

- Earn credit with the new Radiation Safety Case*
- Sign up for Radiation Safety News
- Take the pledge and earn a ribbon

Stop by any of these booths at RSNA 2013 to learn about the new features on imagewisely.org. All imaging professionals are invited!

- ACR Booth 3123, South Hall A
- AAPM Booth 1108, South Hall A
- ASRT Booth 1532, South Hall A
- RadiologyInfo.org Booth, RSNA Services, Level 3, Lakeside Center Ballroom

*Approved for AMA PRA Category 1 Credit™, Category A Credit and CAMPEP

Image Wisely®
Radiation Safety in Adult Medical Imaging

Learn more at imagewisely.org

The scientific poster "A Comprehensive and Innovative Program in Radiology for Medical Students" (LL-INS-SU4B) remains on display in the Lakeside Learning Center through Friday. Virtual meeting registrants may log in to view the poster from outside McCormick Place.
Partnership Opportunities Abound at RSNA 2013

As she began contemplating the theme of the annual meeting over which she would preside, 2013 RSNA President Sarah S. Donaldson, M.D., said the idea of highlighting partnership came naturally to her. “I always have been very focused on collaboration and what we can achieve through group efforts,” she said. The RSNA 2013 Meeting Program offers numerous sessions that demonstrate precisely the kind of results that Dr. Donaldson stressed are possible when partnerships are forged and strengthened within the radiology specialty, with other specialties and with patients.

Clinical Trials Collaboration Raises Radiology’s Profile

The nearly 2,800 scientific papers and posters being presented at RSNA 2013 represent significant collaboration among radiologists. Among the results being reported are those from trials conducted within the American College of Radiology Imaging Network (ACRIN), which brings together medical imaging investigators from more than 100 academic and community-based medical facilities in the U.S. and several international institutions.

“ACRIN investigators are instrumental in clinical research that is making a difference in the lives of cancer patients,” said ACRIN chair Mitchell D. Schnall, M.D., Ph.D., who will become chair of RSNA’s Research Development Committee at the conclusion of RSNA 2013. “Several ACRIN trials are now among the highest profile clinical trials in the National Cancer Institute’s portfolio and now, as part of the ECOG-ACRIN Cancer Research Group, the opportunity for ACRIN investigators to work collaboratively across clinical disciplines is better than ever before.” The ECOG-ACRIN Cancer Research Group was formed by the merger of the Eastern Cooperative Oncology Group (ECOG) and ACRIN.

Results from ACRIN 4006, which compares full-field digital mammography with digital breast tomosynthesis, will be reported at RSNA 2013. A scientific poster, “Effect of Reduced Radiation Dose on Breast Density Estimation in Digital Mammography” (LL-BRS-TU6B) and three scientific papers, “Characterization of Mean Glandular Dose Adjusted to Volumetric Breast Density in a Prospective Digital Breast Tomosynthesis Screening Trial” (SST22-01), “Comparison of Dose in Digital Breast Tomosynthesis and Standard Two-View Mammography for Prospective Breast Cancer Screening” (SSK01-05), and “Effect of Device Technical Factors on Patient Dose in a Prospective Digital Breast Tomosynthesis Screening Trial” (SST14-01) all detail ACRIN 4006 outcomes.

Numerous other RSNA 2013 sessions also represent the collaboration of radiologists belonging to RSNA and other radiologic societies. The ACR, American Institute for Radiologic Pathology, North American Society for Cardiac Imaging, Society for Imaging Informatics in Medicine, Society of Nuclear Medicine and Molecular Imaging, American Association for Women Radiologists, Interamerican College of Radiology and European Society of Radiology have partnered with RSNA to offer annual meeting sessions and courses this year.

“Investigators are instrumental in clinical research that is making a difference in the lives of cancer patients.”

Mitchell D. Schnall, M.D., Ph.D.

Physicians From Across Globe Tackle Shared Concerns

From “France Presents” to the country pavilions in the Technical Exhibition that house companies from Germany, Korea, China, Japan, France and Canada (Ontario Province), international partnerships are an important part of RSNA 2013.

“With so many of the world’s leaders in radiology present, the annual meeting provides a forum for many organizations to have international communications and involvement that otherwise could not exist,” said Richard L. Baron, M.D., RSNA Board Liaison for International Affairs. “These range from industry partners seeking input from worldwide experiences to improve their products and subspecialty radiology groups sharing clinical advances, to international leadership taking advantage of this limited opportunity to tackle worldwide issues together.”

Dr. Baron notes that almost 40 percent of RSNA 2012 attendance was from outside North America. The first meetings of the Regional Committee for Asia/Oceania and Regional Committee for Latin America are being held at RSNA 2013, with two additional regional committees for Europe and Middle East/Africa to be rolled out in 2014.

A session on Friday, “Radiology in the Developing World: Mistakes Made, Lessons Learned, What’s Next?” (RC816) will help attendees understand how they can participate in or develop global radiology projects. The session will be held from 8:30 to 10:00 a.m. in Room S404AB.

Another case study in international partnership is a quality storyboard available for viewing throughout the week: “Establishing First-ever Radiology Services and Interpretation at Isolated Island Hospital Tualad, Indonesia—Multinational Humanitarian Radiology Cooperation” (LL-QSE-SU2B). In just two weeks in the summer of 2012, the radiology department aboard the United States Naval Ship Mercy Hospital coordinated an effort involving many of the ship’s departments, Indonesian civilians and virtual support from mainland U.S. to repair two portable radiography units, teach Indonesian physicians how to shoot, develop and interpret plain radiography at a small hospital that provides care to people who have to travel 10-12 hours by boat to the next level of care.

“The annual meeting provides a forum for many organizations to have international communications and involvement that otherwise could not exist.”

Richard L. Baron, M.D.
Other Physicians

IndustryFellow Radiologists

partner with them. It’s just that simple.”

Patients want to partner with us, and we need to partner with them. It’s just that simple.”

Dr. Donaldson said. “But to do so, we have to meet critical challenges. We must modify our culture and then invest in the opportunities ahead.”

Image Sharing Benefits Patients and Providers

As Dr. Donaldson noted in her president’s address, radiologists have learned that “patients want to partner with us, and we need to partner with them. It’s just that simple.” Some of the latest partnerships involve communicating radiology results directly to patients. A scientific poster, “Communicating Radiology Results to Patients: Results from Universal Online Release by an Academic Radiology Department” (LL-INS-SU2B), details the results of a retrospective review of utilization of the patient portal at one institution between May 2012 and March 2013; approximately half of the nearly 119,000 test results released via the portal were viewed by patients. Investigators concluded that many patients seek access to their imaging results, making them a partner in their care. Investigators identified potential financial benefits to the electronic sharing as well; printing and mailing costs are reduced, as is staff time devoted to fielding calls from patients looking for their test results.

A refresher course, “Vignette-based Disclosure of Medical Error in Radiology” (RC216) combines lectures on the risks, benefits and barriers to disclosing medical errors with live enactments between course participants and trained personnel who will portray the physicians and patients to whom errors must be disclosed. The enactments will be followed by debriefings and group discussions.

“If done properly, a well-constructed disclosure process can potentially enhance the bond between a patient and a healthcare provider,” said Stephen D. Brown, M.D., chair of the RSNA Professionalism Committee, which sponsors the vignette-based course.

An education exhibit, “Re-thinking the Role of the Radiologist: Enhancing Visibility through Both Traditional and Non-traditional Reporting Practices” (LL-INE3192), notes that traditional reporting practices do not give radiologists sufficient opportunities to interact with patients or referring physicians, limiting their ability to practice “patient-centered” radiology or form effective partnerships with referring physicians and recommends non-traditional reporting practices radiologists can add to their repertoire.

“Patients want to partner with us, and we need to partner with them. It’s just that simple.”

Sarah S. Donaldson, M.D.

Healthcare Reform Drives Better Relationships

“In an era of patient safety initiatives, healthcare reform and new patient care models, it is critical that radiologists and referring physicians can work in tandem to improve their patients’ care,” said Judy Yee, M.D., chair of the RSNA Public Information Committee.

“What the Referring Physician Needs to Know” (RC716) will help attendees understand what referring physicians need from radiologists at various stages of patient care, as well their preferences in communication methods. Course attendees will also learn about the needs of referring physicians when it comes to structured reporting and appropriateness criteria.

For an example of how the relationship between radiologists and referring physicians can sour, there is a scientific paper, “Crying ‘Wolf’ about Unsatisfactory Study Quality: A Potential Rift in Communication between Radiologists and Referring Clinicians” (SSK11-02). Researchers looked at how often radiologists identify technically unsatisfactory imaging quality (TUIQ) reports from various modalities, how often recommendations for follow up are made and whether these recommendations are heeded by clinicians. Researchers found that 1 in 14 radiology reports contain comments or disclaimers related to TUIQ, with ultrasound and CT having relatively higher rates than CR. Radiologists must seek to improve communication with referring clinicians regarding the diagnostic quality of imaging studies and need for repeat imaging, the researchers concluded.

“In an era of patient safety initiatives, healthcare reform and new patient care models, it is critical that radiologists and referring physicians can work in tandem to improve their patients’ care.”

Judy Yee, M.D.

Collaborations Yield New Hardware, Software, Standards

Radiology’s partnerships with industry are also moving the specialty forward, as evidenced by initiatives such as the Quantitative Imaging Biomarkers Alliance (QIBA). Organized by RSNA in 2007, QIBA brings together researchers, healthcare professionals and industry stakeholders to identify needs, barriers, and solutions to develop and test consistent, reliable, valid and achievable quantitative imaging results across imaging platforms, clinical sites and time. QIBA representatives also work to accelerate the development and adoption of hardware and software standards needed to achieve accurate and reproducible quantitative results from imaging methods. Learn more about QIBA at a kiosk in the Lakeside Learning Center.

Industry representatives also collaborate with medical imaging professionals via the Integrating the Healthcare Enterprise (IHE) initiative, which brings together users and developers of healthcare information technology to improve the way systems communicate with one another and accelerates the adoption of electronic health records. An education exhibit, “RSNA/IHE Image Sharing Demonstration” (LL-INE3252), details the latest developments in the IHE initiative and the RSNA Image Share project. There is also an RSNA/IHE Image Sharing Demonstration in the North Building, Hall B, Booth 8140.

Patients

Professionals

Providers

Other Physicians

Powerful Words

Before a packed house in the Arie Crown Theater Sunday, RSNA 2013 President Sarah S. Donaldson, M.D., delivered her President’s Address, urging radiologists to embrace “the Power of Partnership” and find the time to form and nurture partnerships with one another and their patients. “I’m truly optimistic that we can achieve these partnerships,” Dr. Donaldson said. “But to do so, we have to meet critical challenges. We must modify our culture and then invest in the opportunities ahead.”

Other Physicians
More to See at RSNA 2013: Sessions in Every Subspecialty

Here’s just a sampling of what RSNA attendees can learn in refresher courses and scientific and education presentations in every subspecialty. View scientific posters and education exhibits in the Lakeside Learning Center through Friday. Virtual meeting registrants may also view posters and exhibits by logging in from outside McCormick Place.

**BIOMARKERS/QUANTITATIVE IMAGING**

MR Quantification Techniques in the Liver (Fat, Iron, Fibrosis)
Hot Topic Session SPSHS2
The TVC, Dec. 5 • 3:00-4:00 p.m.
Room E350

**CHEST**

Fluorine-19 MRI: A New Functional Pulmonary Imaging Modality
Part of Scientific Paper Session SSG04—
Chest (Functional Lung/Perfusion)
Tuesday, Dec. 3 • 10:30 a.m.–Noon
Room S404CD

**MUSCULOSKELETAL**

LL-MKS-THA Four-year Experience Follow-up in the Treatment of Degenerative Disease of the Supraspinatus Tendon by Ultrasound guided Injections of PRP. Clinical and Radiological Evidence
Scientific Poster

**NEUROIMAGING**

Effect of Insurance Status on Imaging Utilization for Acute Ischemic Stroke
Part of Scientific Paper Session SST10—
Neuroradiology (Cerebral Ischemia, Hemorrhage and Vessel Wall Imaging)
Friday, Dec. 6 • 10:30 a.m.–Noon
Room N227

**NEURORADIOLOGY**

Quantitative DTI for Prediction of Neurocognitive Outcome in Severe Traumatic Brain Injury: A Five-year Prospective Cohort

**VASCULAR**

Utilization of the iPad for Patient Education During Informed Consent in Interventional Radiology: A Randomized Controlled Trial
Part of Scientific Paper Session SST16—
Vascular/Interventional (MR Guidance/Topics of Interest)
Friday, Dec. 6 • 10:30–Noon
Room E350

**PEDIATRIC RADIOLOGY**

Child Abuse (an Interactive Session)

Refresher Course 513
Wednesday, Dec. 4 • 8:30–10:00 a.m.
Room S103AB

Radiologists play a critical role in raising concerns for injuries potentially related to child abuse. In this session, presenters will detail skeletal injury patterns associated with physical child abuse and discuss the mechanisms of inflicted injuries and the types and specificities of abusive injuries. They will also review metabolic bone diseases, skeletal dysplasias, accidental injuries and normal variants that can mimic abuse. Presenters will also review abusive head trauma and the imaging appearance of spinal injuries in children with abusive trauma with emphasis on the role of MR imaging.

RESEARCHERS examined whether interactive media presented on an iPad improves patient understanding and confidence during the informed consent process in interventional radiology. Presenters found that the iPad is a useful tool to help build a patient-physician relationship before an interventional procedure and can be very helpful during informed consent for interventional radiology procedures. In addition, the iPad significantly increases patient understanding, confidence and satisfaction.
Digital Breast Tomosynthesis Offers Superior Pre-surgical Staging

Digital breast tomosynthesis has the potential to replace full-field digital mammography (FFDM) for assessing invasive breast cancer, according to a digital presentation on display in the Lakeside Learning Center this week. The research earned a 2013 RSNA Trainee Research Prize awarded Sunday.

Although FFDM and ultrasound are the proven imaging modalities for detecting breast cancer, presenter Asif Iqbal, M.D., said digital breast tomosynthesis is an emerging technology which is showing better accuracy in measuring the tumor sizes. Two main problems are associated with FFDM, according to Dr. Iqbal, of the Breast Radiology Department of the National Breast Screening Centre at King’s College Hospital in London, and colleagues. Anatomical noise from breast parenchyma can obscure tumors, and certain growth patterns, such as diffusely infiltrating invasive lobular carcinoma, have relatively little fibrous or necrotic tissue growth around the tumor. “The characterization of the lesion—the extent of the tumor margins and the boundary of the lesion—are not as easily visible on FFDM,” Dr. Iqbal said.

Digital breast tomosynthesis overcame these problems. “In particular, on the spicular masses, which appear as a star shape, the spicules coming out from the nucleus of the tumor are easily visible, but they aren’t as easily visible on FFDM,” Dr. Iqbal said.

Researchers also found that digital breast tomosynthesis had a tendency to “over-measure” the size of tumors, whereas ultrasound had a tendency to “under-measure.” The team also reported changes in mammographic signs between the two modalities.

“Comparing FFDM with tomosynthesis, sometimes you would find that a lesion with asymmetric density or parenchymal distortion would change into a spiculated mass on digital breast tomosynthesis,” Dr. Iqbal said. “Mammographic sign change is one of the most significant benefits.”

“Because of the glandular appearance of the tissue on the 2D, especially in dense breasts, it may not be easy to find the foci of the tumor and the reader may classify it as normal, or BI-RADS 1,” Dr. Iqbal said. “But on the FFDM, because of the 3D information within the slices, sometimes we have noticed that it changes into a circumscribed or a spiculated mass.”

Researchers studied 139 breast lesions in 137 patients, who averaged 58 years. The team found that 77.7 percent of the cancers were invasive ductal carcinoma, 15.8 percent were invasive lobular carcinoma, 2.2 percent were mucinous carcinoma, and 2.8 percent were tubular carcinoma. There was one case each of medullary, lymphovascular and papillary carcinoma. Of the three tested modalities—FFDM, digital breast tomosynthesis and ultrasound—tomosynthesis offered the highest degree of accuracy in determining maximum tumor dimension, with a greater ability to determine tumor margins.

Dr. Iqbal said he believes that digital breast tomosynthesis has the potential to provide the best tumor staging for pre-operative management. “It will help in accurate tumor size measurement, which will in turn be important especially in conservative breast surgery. It will help us choose the surgical option that is best for the patient.”

The superior measurement of digital breast tomosynthesis compared to FFDM and ultrasound is mainly due to the additional information in the three-dimensional series of thin slices, which allows better lesion visibility and better measurement of lesion extent and characteristics, the researchers noted.

Dr. Iqbal and his team are further exploring the use of “synthetic 2D” generated with tomosynthesis. “I foresee that synthetic 2D combined with the 3D slices of the tomosynthesis could replace the existing conventional 2D mammography,” Dr. Iqbal said.

Dr. Iqbal’s research earned a 2013 RSNA Trainee Research Prize honoring an outstanding scientific presentation in each subspecialty presented by a resident/physician trainee, fellow or medical student.

The scientific poster, LL-BRS-SU1A, Measurement of Invasive Breast Cancer Using Digital Breast Tomosynthesis, Full Field Digital Mammography and Ultrasoundography, is on display in the Lakeside Learning Center this week. Virtual Meeting registrants can log in to view the poster from outside McCormick Place.
Patients are True Beneficiaries of the “Power of Partnership”

Instead, the facility’s tumor board recommended stereotactic body radiotherapy, which required daily real-time image guidance and tumor tracking facilitated by fiducial markers implanted by interventional radiologists. At simulation, the team obtained PET-CT images to localize the lesion.

“Our gating techniques confirmed the tumor did not move with respiration, but the PET scan showed a larger hypermetabolic lesion than revealed by CT,” she said. “Our nuclear medicine colleagues confirmed this and, on the basis of their consultation, we enlarged our treatment target volume.

“Without integrated multimodal imaging and close interaction with our imaging colleagues, we would have underestimated the true extent of the disease, which would have resulted in a marginal miss—and a marginal miss guarantees a local failure,” Dr. Donaldson continued. “Instead, as partners, we controlled this disease, without hepatic toxicity.”

As advanced imaging allows more tailored therapy, it will demand that medical professionals share more responsibility. At the same time radiologists must also find creative ways to become more visible, Dr. Donaldson said. “One way is to get out of the basement and out of the reading room by actively participating in clinics, tumor boards and multidisciplinary conferences. While it may be difficult to send a radiologist to every conference and tumor board, the fact is that we can’t afford not to.”

Most importantly, radiologists need to partner with their patients, she said. “Whether or not this environment is comfortable for us, we must acknowledge that patient-driven care is our new challenging reality.”

Dr. Donaldson shared stories and photos of a few young patients with whom she became “buddies” during their cancer care, and told the audience how they stayed in touch with her through adulthood after they were cancer-free.

“I’m truly optimistic that we can achieve these partnerships,” Dr. Donaldson said. “But to do so, we have to meet critical challenges. We must modify our culture and then invest in the opportunities ahead.”

Dr. Donaldson is the Catharine and Howard Avery Professor of Radiation Oncology at Stanford University School of Medicine in Stanford Calif. She also serves as the associate director of the radiation oncology residency program at Stanford Hospital and Clinics and is the chief of the radiation oncology service at Lucile Salter Packard Children’s Hospital at Stanford.
Three-dimensional reconstruction of high-resolution MR imaging sequences can be used to measure volume in the vestibular system in patients with vertigo, and help explain the symptoms, said the presenter of a Sunday session at RSNA 2013.

**Vertigo** is a common symptom in patients seeking medical help from ear, nose and throat physicians, said Nagy N. Naguib, M.Sc., of the Johann Wolfgang Goethe University Hospital in Frankfurt, Germany, and the Department of Radiology, Alexandria University in Alexandria, Egypt. In fact, according to Dr. Naguib, vertigo and headache account for two of the most common complaints of patients seeking medical help.

“While MRI is a useful tool in the evaluation of vertigo patients, there are still some cases that don’t show any detectable structural changes on MRI,” Dr. Naguib said. “We thought it would be helpful to assess the volume of the vestibular system as a part of patients’ evaluation for cases presenting with vertigo and referred to radiologists for MR imaging assessment.”

The research began as an attempt to make use of the available software and available resolution delivered by MR imaging in order to obtain a 3D reconstruction of the inner ear structures. The aim of these reconstructions was to provide the reading radiologist and referring clinician with an easy way to evaluate 3D images of the inner ear structures, which are located in the three planes and have a complex anatomy, Dr. Naguib said.

In performing the reconstructions, Dr. Naguib and colleagues noticed that in certain cases some of the semicircular canals seemed to be interrupted, were absent, or looked thinner than usual. While some of these structural differences—such as a missing semicircular canal—are easily evaluated, others require more experienced readers.

“Based on this we tried to assess all cases with an objective method of measurement—namely the volumetric assessment of the 3D figure obtained,” Dr. Naguib said. “The sequence used for the reconstruction is already integrated in many of the examination protocols for the inner ear, and the new application of this routinely performed sequence represents the core of the current research.”

Dr. Naguib and colleagues retrospectively studied 153 patients with a mean age of 48.9 years, 61 of whom presented with vertigo and 92 of whom presented with other diseases of the ear and normal vestibular function. In patients with vertigo the mean volume of the semicircular canals was 0.258 cm$^3$ and the mean volume of the vestibule was 0.069 cm$^3$. In patients without vertigo, the mean volume of the semicircular canals was 0.306 cm$^3$ and the mean volume of the vestibule was 0.075 cm$^3$.

Researchers concluded that the reduced volume of the vestibular system in patients presenting with vertigo could account for their symptoms. Dr. Naguib pointed out that most studies addressing the subject in the past have relied on assessing the bony part of the inner ear using CT and that this method while beneficial—does not accurately reflect the status of the contents of the bony structure.

In addition, use of 3D reconstructions can be more than just a tool to impress other clinicians, Dr. Naguib said. “We think adding 3D reconstructions might open the horizon for other studies addressing the subject of inner ear pathology in general, and the subject of vertigo in particular. It’s important to have the ability to assess the structural changes in an objective way that might be associated with vertigo rather than relying only on the subjective experience of the reader.”

**System Aids Breast Cancer Detection in Women with Dense Breasts**

A **unique risk-assessment imaging system and model presented on Sunday at RSNA 2013 accurately assesses the likelihood of breast cancer, especially in women with dense breasts.** The metabolic imaging and risk assessment (MIRA) model works as an adjunct to mammography in enabling early detection of breast cancer.

“One of the main issues with mammography is that it is very difficult to get an accurate reading for women with dense breasts,” said presenter vice-president of research and development at Real Imaging, Ltd., a medical imaging company based in Israel’s Airport City. “You cannot replace mammography, but you can add an additional modality to aid the physician, particularly for women with dense breasts,” he said.

Breast density appears as a solid white area on mammograms, while the non-dense (“fatty”) tissue appears black. Tumors are also dense issues. Because X-rays don’t penetrate dense tissue as well as they do fatty tissue, relying on mammograms alone to help detect tumors can become troublesome. “What we do is perform mammogram of a woman with dense breast tissue is the same contrast you would get for the tumor,” Dr. Izhaky said. “It’s very difficult for the physician to see the difference in the contrast in the image between the tumor and the healthy tissue. Another drawback of mammography is that results are based on human interpretation, which can lead to error such as missed diagnoses of breast cancer. And the current risk assessment models for breast cancer rely on genetic susceptibility and family history, in addition to mammographic breast density.”

Dr. Izhaky and his team targeted those issues in developing the computerized, noninvasive imaging modality used in the study, which comprised 3D breast vascular maps of 339 women. Of those women, 209 were healthy, 36 had benign lesions and 94 had biopsy-proven breast cancer. Researchers used receiver-operating characteristic (ROC) curves and bootstraping to assess the diagnostic accuracy of the breast cancer likelihood. They found an overall 84.1 percent area under the ROC curve, which increased to 86.5 percent when looking at dense-breast examples.

“We believe we have the first risk-assessment tool purely based on imaging biomarkers,” Dr. Izhaky said. The tool would be essential in early detection and prevention strategies, which depend on the ability to accurately identify individuals with significantly increased breast cancer risk. “Our technology attempts to provide a dynamic assessment analyzing the chances that a woman harbors a breast cancer at a specific time, based on objective metabolic signatures,” Dr. Izhaky said. “If assessed as high risk, such a woman would need immediate further workup to detect and localize the cancer.”

Researchers plan to initiate the clinical trial phase in the U.S., which Dr. Izhaky estimated could start in February 2014. “In 10 years, most imaging modalities will provide risk assessment for the presence of pathology,” he said. “Providing the risk is by no means intended to exclude physicians from the clinical decision process, rather to provide them with a non-biased objective assessment in order for the physician to decide on the most appropriate workup for the patient, adopting a personalized, tailored approach.”

**Breast Density Issue Addressed**

Numerous RSNA 2013 sessions take on the hot topic of breast density and its impact on the effectiveness of mammograms. Breast density has made headlines as many U.S. states have passed or are considering laws that require written notification of women, after screening mammography, of their tissue density and the need discussed in this session their primary care physicians. A federal breast density notification law is pending, and the U.S. Food and Drug Administration is also considering modifications to national mammography reporting guidelines to include breast density notification. See these RSNA 2013 sessions for a variety of perspectives on the breast density topic:

**Special Interest Session**

- **Breast Density: Risk Assessment, Communication, and Approaches to Supplemental Imaging**, Wednesday, 4:30–6:00 p.m., E61A
- **Integrated Science and Practice Session**
  - **Breast Imaging (Nuclear/Molecular Imaging)**, Tuesday, 10:30–11:30 a.m., E61A
  - **Scientific Paper Sessions**
    - **Breast Imaging (Screening and Density)**, Tuesday, 3:00–4:00 p.m., Arie Crown Theater

**Posters**

- **LL-BRS-TUBA—Effect of Reduced Radiation Dose on Breast Density Estimation in Digital Mammography**
- **LL-BRS-J01—Mammography: Comparison of Chest CT with Mammography**
- **LL-BRS-WE1A—The Yield of Preoperative Breast MRI in Patients with Fat Density Breasts**
- **LL-BRS-TH7A—The Density Dilemma**
- **UL-BRS-T05B—What Do Women Think? Knowledge and Opinions of Women Regarding Breast Density Legislation and Supplemental Whole Breast Ultrasound**

**Exhibit**

- **LL-BRE24—Breast Density: Methods of Assessment, Implications for Clinical Practice, and Practice Module**
Catheter-directed Approach Leads to Weight Loss

Left Gastric Artery embolization results in weight loss in patients, potentially leading to a role for interventional radiologists in helping stem the obesity crisis in the U.S., according to presenters of scientific paper at RSNA 2013. “There may be a role for interventional radiology in bariatric medicine by modulating ghrelin levels using catheter-directed approaches,” said Rahmi Oklu, M.D., Ph.D., an interventional radiologist at Massachusetts General Hospital (MGH), and an assistant professor at Harvard Medical School, Boston.

Ghrelin, an appetite-stimulating hormone, is primarily produced by cells found in the fundus of the stomach, which receives its primary vascular supply from the left gastric artery. Suppressing serum levels of ghrelin is a potential means of controlling body weight. Since the left gastric artery is sometimes emboled in interventional radiology procedures, researchers assessed post-procedural weight loss in patients after left gastric artery embolization.

“It is has been shown in animal models that embolization of the left gastric artery suppresses production of ghrelin by the stomach,” said presenter Andrew Gunn, M.D., a radiology resident at MGH and Harvard Medical School. “Decreased production of ghrelin results in decreased appetite and weight loss.” Researchers retrospectively analyzed the electronic medical records of patients who underwent left gastric artery embolization for upper gastrointestinal (GI) bleeding from 2000 to 2012. Those records were compared to age-matched controls of similar patients who had undergone embolization of an artery other than the left gastric for upper GI bleeding. Patients’ weights were recorded within four weeks prior to the embolization and within three months after the procedure; changes in weight were evaluated.

Nineteen patients with a mean age of 64.6 years were included in the experimental group, while 28 patients with a mean age of 58.7 years were included in the control group. The mean pre- and post-procedural weights in the experimental group were 184.1 lbs. and 170.8 lbs., respectively, representing a 7.3 percent decrease in body weight. The mean pre- and post-procedural weights in the control group were 177.3 lbs. and 173.6 lbs., respectively, representing a 2 percent decrease in body weight. The post-procedural weight loss of the experimental group was significantly greater than that observed in the control group (P=0.006).

Results demonstrate that patients lose significantly more weight after left gastric artery embolization than following embolization of other arteries for upper GI bleeding, suggesting that body weight can be potentially modulated via left gastric artery embolization in humans. “We attempted to account for other variables in the patients’ medical history that could explain weight loss as well,” Dr. Gunn said. “We found that patients lost significantly more weight after left gastric artery embolization.”

“Our findings in this small, limited number of cases is just the beginning,” Dr. Oklu said. “These exciting results need to be rigorously investigated in larger trials.” The findings could offer hope for the more than 150 million Americans affected by obesity, many of whom rely on surgical options that can have serious complications, according to Dr. Gunn. “Results are promising,” Dr. Gunn said. “Unfortunately, despite advances in both medical and surgical treatments, obesity rates continue to rise.”
Partnerships Key to R&E Foundation’s Success

Partnerships with researchers, educators, donors and organizations enabled the RSNA Research & Education (R&E) Foundation to fund a record-setting number of grants in 2013, according to the chair of the Foundation’s Board of Trustees.

James P. Borgstede, M.D., a professor and vice-chair of the Department of Radiology at the University of Colorado School of Medicine and chair of the R&E Foundation’s Board of Trustees, outlined the Foundation’s accomplishments Sunday at the Arie Crown Theater. In 2013, the Foundation funded $383 grants totaling over $3 million dollars, a testament to the importance of collaborators across the profession, Dr. Borgstede said.

“The work of the Foundation’s grant recipients would be impossible without the supportive partnership of countless academic departments and their leaders,” he said. “These leaders encourage investigators to apply for R&E funding and then generously yield protected time for their research.”

The 2013 recipients are performing research that has important implications for patient care. Dr. Borgstede noted several examples among the 2013 grant recipients, including:

- **Michael Zeineh, M.D., Ph.D.**, from Stanford University. Dr. Zeineh is using advanced MRI techniques to quantify changes in the brains of football players. The study represents a collaboration with the R&E Foundation and the Foundation of the American Society of Neuroradiology.
- **Ann A. Zavodni, M.D.,** from St. John’s University. Dr. Zavodni will investigate the use of CT myocardial tissue characterization in patients who have undergone coronary artery bypass grafting.
- **Education Scholar Grant Recipient Chun-Der Li, M.D.,** in cooperation with Tessa Cook, M.D., Ph.D., from the Hospital of the University of Pennsylvania. Dr. Li will develop a simulation program that allows radiology residents to develop strategies and skills to correctly interpret images in a distraction-filled environment. The study represents a collaboration of the R&E Foundation and the Association of University Radiologists Research & Education Foundation.

“T’s a great honor to be part of the R&E Foundation as we witness these outstanding projects evolve,” Dr. Borgstede said.

Dr. Borgstede also praised the donors who made the grants possible, including:

- **Presidents Circle Member and Legacy Donor Phan Hueyhn, M.D.,** of Houston, Dr. Hueyhn will assume the chairmanship of the Foundation’s Individual Giving Subcommittee this year.
- **Alessandro Furlan, M.D.,** a 2011 grant recipient now in his second year of practice. Dr. Furlan’s donation will help fund future grant recipients and advance his chosen specialty.

The success of the R&E Foundation is in ample evidence at this year’s annual meeting, Dr. Borgstede said.

“Whether a plenary session, refresher course, scientific session or education exhibit, this continuing commitment by R&E grant recipients is both steadfast and worthy of note,” he said.

After thanking the Foundation’s corporate friends and long-term industry partners, Dr. Borgstede encouraged attendees to visit the R&E Foundation Booth on Level 3 of Lakeside Center to learn more about the grant recipients, their innovative projects and the many available opportunities to support the R&E Foundation and the future of radiology.

---

**ACR at RSNA 2013**

ACR booth 3123 | South Building | Hall A
McCormick Place Convention Center, Chicago
Dec. 1–5, 2013

Preview what’s new with ACR programs:

- Accreditation
- BI-RADS®
- Clinical Research
- Coding
- Diagnostic Imaging Center of Excellence®
- Education Center
- Head Injury Institute

- Image Wisely®
- Imaging 3.0®
- Mammography Case Review
- National Radiology Data Registry (NRDR®)
- Neiman Health Policy Institute
- Radiology Leadership Institute®
- TRIAD™

### Six ways to win a $1,000 Apple® gift card!

1. **Join:** the ACR
2. **Renew:** ACR membership
3. **Bring a colleague:** who joins or renews
4. **Update:** ACR Member Profile
5. **Complete:** PRED Practice Profile
6. **Pledge:** to Image Wisely®

**Receive special offers and discounts!**
Molecular Therapies Break New Ground in Colorectal Cancer Treatment

Advancements in molecularly targeted therapies have revolutionized therapeutic options for colorectal cancer, according to the presenters of a scientific poster at RSNA 2013.

"In the last decade there have been major changes in the management of colorectal cancer. We've gained a better understanding of the mechanisms driving the disease and developed new molecular therapies," poster co-presenter Rahul A. Sheth, M.D., a radiology resident at Massachusetts General Hospital, Boston, said Sunday. “It’s important for radiologists to be aware of the therapies, how molecularly targeted therapies affect tumors, and what oncologists are looking for in image findings.”

The increasingly complex, genetically based management of colorectal cancer offers significant challenges as well as opportunities for physicians, according to Dr. Sheth and co-presenter Arun Krishnaraj, M.D., M.P.H., a radiologist at the University of Virginia, Charlottesville.

“As part of the multidisciplinary decision-making team, we need to know the new branch points in the management of colorectal cancer and be able to speak the same language as oncologists,” Dr. Sheth said.

Mutational analysis has added a slew of new acronyms to the medical lexicon that convey critical information on colorectal cancer tumors, affecting both prognosis and therapeutic efficacy, the co-authors said.

One example: Mutations in mismatch repair (MMR) genes, due to a heritable genetic syndrome or somatic defects, result in microsatellite instability (MSI). “Tumors with MSI tend to be lower stage and have a better prognosis but may be resistant to conventional chemotherapies,” Dr. Sheth said.

Although the angiogenesis inhibitor bevacizumab has not totally delivered on its promise to starve tumors of blood flow, Dr. Sheth said the drug still has a role to play in colorectal cancer. When combined with a first-line chemotherapies, it can improve survival rates.

Other therapies produced by mutational analysis help oncologists make treatment decisions for a subset of colorectal cancer patients. Cetuximab is a monoclonal antibody targeted against the epidermal growth factor receptor (EGFR), which is overexpressed in 19 percent of colorectal cancers. However, researchers have discovered that patients will not benefit from anti-EGFR therapy when a mutant form of the onco-gene KRAS is also present. KRAS is mutated in up to 40 percent of all colorectal cancers.

Dr. Sheth said new molecularly targeted therapies and drugs have an assortment of unique risks and potential complications that radiologists should also be aware of, including:

- Steatohepatitis, inflammation with concurrent fat accumulation in the liver is a potential toxicity of the drug irinotecan and can obscure liver metastases.
- Thromboemboli may affect patients treated with cetuximab.
- Bowel perforations and pulmonary hemorrhage may occur in patients treated with a combination of bevacizumab and conventional chemotherapy.

The presenters also stressed the important role radiologists continue to play in evaluating the resectability of colorectal liver metastases. “Determining the suitability for surgical resection is a critical branch point in the care of patients with metastatic colorectal cancer,” Dr. Sheth said.

View the scientific poster, “Colorectal Cancer in the Era of Molecular Medicine: What the Radiologist Needs to Know,” in the Lakeside Learning Center through Friday.
The future of value-driven healthcare starts right now

The pressure is building as laws, regulations, incentives, sanctions and competitive forces continue to mount in the transition to value-driven care. Radiology increasingly is feeling the weight of that change and the necessity to make the right decisions right now to succeed in a new era of healthcare.

One of the best – and easiest -- decisions you can make is to step up to the PowerScribe® 360 workflow and communication platform from Nuance.

This dynamic platform can prepare you for the future while delivering the critical elements for success today: actionable, structured, high-quality reports in a fast, efficient manner; critical results notification and logging; and a clinical search and analytics package that enables you to measure your key performance indicators and achieve desired objectives.

So make it a point to stop by RSNA Booth #1322 South Hall and take a look at your future from our industry-leading platform.
extracting the essence.

Multi-Modality Monitor

RadiForce® RX850

the essence of clarity.

View a variety of high-resolution images in exceptional detail on a single 8 megapixel screen suited for even compact workspaces.

Come see the product at Hall A, Booth 1735