Self-selected Radiology Mentors
Yield Greater Satisfaction

ALSO INSIDE:
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Advance Registration for RSNA 2011 Begins May 4
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HIMSS Unveils Web Resource on Meaningful Use

The Healthcare Information and Management Systems Society (HIMSS) has launched Meaningful Use OneSource, a repository of hundreds of documents, tools and links to other knowledge available on the Internet. Developed to prepare users for federal Meaningful Use and Certification Criteria and Standards regulations, the new website addresses:
• Meeting meaningful use and certification criteria
• Receiving Medicare and Medicaid incentive funding and avoiding penalties
• Implementing meaningful use in an organization, practically and successfully

All content contained within the Meaningful Use OneSource is vetted by content experts prior to its inclusion on the site, according to HIMSS. The site is located at www.himss.org/AS/Pages/meaningfuluse.aspx.

NEW MEMBER CARDS MAILED

RSNA recently issued new membership cards featuring the Society’s updated logo. If you did not receive your new card, contact the RSNA Membership Department at membership@rsna.org or 1-877-RSNA-MEM(776-2636). Outside the U.S. or Canada, call 1-630-571-7873.

IRIA Honors Hricak

2010 RSNA President Hedvig Hricak, M.D., Ph.D., Dr. h.c., received honorary membership in the International Radiology & Imaging Association’s (IRIA) 64th National Conference held in January in New Delhi. Pictured, left to right: Rajesh Kapur, M.D., Dr. Hricak, IRIA 2010 President Kishor Taori, M.D., conference organizing chair Harsh Mahajan, M.D., and Atul Kumar Bhardwaj, M.D.

City of Hope Names Boswell Chair

William D. Boswell Jr., M.D., has been named a professor and chair of the Department of Diagnostic Radiology at City of Hope, a National Cancer Institute-designated comprehensive cancer center in Duarte, Calif. Dr. Boswell was previously a professor of clinical radiology and urology at the Keck School of Medicine of the University of Southern California in Los Angeles. The author of 90 peer-reviewed papers, Dr. Boswell’s research focuses on urologic cancers, hematologic malignancies and the multimodality imaging of cancer patients.

Zietman is New Red Journal Editor

Anthony Zietman, M.D., president of the American Society for Radiation Oncology (ASTRO) and a professor of radiation oncology at Massachusetts General Hospital, has been named editor of ASTRO’s official journal, International Journal of Radiation Oncology•Biology•Physics. Dr. Zietman succeeds James Cox, M.D., who served for 15 years at the helm of the publication also known as the Red Journal. Dr. Zietman is one of the most highly cited authors in radiation oncology and has reviewed multiple oncology journals for more than 20 years. Dr. Zietman’s first issue of the Red Journal will be January 2012.

JCR Seeks Volunteers for Relief Team

The Japanese College of Radiology (JCR) is developing a volunteer team to aid those suffering in the aftermath of the recent earthquake, tsunami and subsequent nuclear accident.

Along with posting information about radiation exposure, JCR is working to treat cancer patients unable to receive therapy at local hospitals and provide remote radiologic/imaging evaluations via the Internet to patients in need.

JCR is seeking assistance in developing various information dissemination designs, including image screens, PACS and workstations.

The American College of Radiology is working with JCR and other international organizations to support efforts on the ground and inform the public of radiation risk and safety issues.

Those interested in volunteering can visit the JCR website at www.jcr.or.gr/index_e.html or e-mail Dr. Mino at mino@ntu.ac.jp.

Donnelly Named Chair at Nemours

A nationally recognized pediatric radiologist, Lane F. Donnelly, M.D., has been named chair of radiology for Orlando, Fla.-based Nemours pediatric health systems. Dr. Donnelly also was named chief medical officer and physician-in-chief at Nemours Children’s Hospital in New Haven, Conn.

Dr. Donnelly oversees all pediatric radiology services across the enterprise.

A member of RSNA’s Quality Improvement Committee and public information advisers network, Dr. Donnelly also served on RSNA’s Scientific Program Committee from 2003 to 2009. A regular contributor to Radiology and Radiographics, Dr. Donnelly received an Editor’s Recognition Award from Radiology in 2000.
Mo-99 Stakeholders Meeting Updates Government Agencies

Nuclear medicine society SNM was among the participants in a March meeting designed to update the U.S. Departments of Energy, Health and Human Services and Homeland Security and other government agencies on the current Mo-99 shortage and activities under way to establish a new sources.

Produced in research reactors by irra-
duating targets made from highly enriched uranium (HEU). Mo-99 then serves the parent radioisotope in generators that pro-
duce medical isotopes. Steps include converting a Mo-99 processing facility in Perren, The Netherlands, to use LEU.

Read more at interactive.snm.org.

International Medical Devices Group to be Reorganized Without Industry Representation

The Global Harmonization Task Force (GHTF), founded in 1992 to address the need for international cooperation in regulating medical devices, has been disbanded.

The U.S. Food and Drug Administration (FDA) and regulatory agencies of the for international cooperation in regulating medical devices, has been disbanded.

Without Industry Representation

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My Turn

Well- Constructed, Well-Conducted Clinical Trials Are Essential

As healthcare resources tighten, the value of various imaging tests to patients and society is increasingly being scrutinized. Data from high quality clinical trials are the only solid foundation for arguments in favor of the benefits of radiologic imaging and intervention. Designing and implementing clinical tri-
als, however, requires skills that are different in many ways from the laboratory methodology that radi-
ologists may have learned in their prior education.

Clinical trials, as distinguished from observational studies, are controlled experi-
ments where humans are the experimental animals. In the ideal laboratory setting, all variables other than the one under study are fixed, so that any change seen in the selected endpoint can be ascribed to the intervention. However, with clinical trial subjects, patients or normal volunteers, it is impossible to control all the variables other than the one being studied. Randomization distributes the uncontrolled variables equally—at least in theory—and provides the closest approxi-
mation to laboratory conditions.

In laboratory experiments, the outcome of an experiment is repeated by the investigator and others for verification.

When a randomized human trial does show a significant difference between the study cohorts, repeating it to confirm the results is usually not an option because of ethical concerns, especially if the study involves cancer patients.

These are just two examples of some of the special challenges that we face when conducting clinical research. Courses such as the RSNA-supported Clinical Trials Methodology Workshop (CTMW) are essential for teaching these concepts and solutions. The CTMW, which finished its sixth year, makes the task less daunting and provides prospective investigators with vitally needed tools.

Radiologists need to take the reins and design and run the clinical trials that will shape the future of our specialty. It is in our own best interest. The CTMW fills a critical role in educating investigators how to do the job right.

Daniel C. Sullivan, M.D., is a professor and vice-chair for research at the Department of Radiology at Duke University in Durham, N.C.

Dr. Sullivan is the RSNA Science Advisor and im-
mmediate past director of the RSNA Clinical Trials Meth-

odology Workshop, having oversaw the program from its inception in 2006 through 2010.

Read "CTMW Workshop Offers Forte Ground for Clinical Trials," on page 13.

Siegel Jiors CDISC Board of Directors

Eliot Siegel, M.D., was recently named a new member of the Clinical Data Interchange Stan-
dards Consortium (CDISC) Board of Directors for a three-year term. Dr. Siegel is a professor and vice-chair of information systems for the Univer-
sity of Maryland School of Medicine Department of Diagnostic Radiology and Imaging and chief of radiology for the VA Maryland Health-
care System in Baltimore. CDISC is a global, open, multidisciplinary, non-
profit organization that has established standards to support the acquisition, exchange, submission and archive of clinical research data and meta-
data. Dr. Siegel is a member of RSNA’s Informat-
ics Committee.

IN MEMORIAM:

Theodore A. Tristan, M.D.

1962 RSNA President Theodore A. Tristan, M.D., died Feb. 29, 2011. He was 86.

Dr. Tristan received his medical doctor degree from the University of Nebraska. He estab-
lished an internship and fellowship at the University of Pennsylvania (Penn), where he later became an associate profes-
sor. While at Penn, Dr. Tristan introduced computerized imaging and image intensification and authored several papers on their use.

Later in his career Dr. Tristan estab-
lished a private practice at the Polyclinic Medical Center in Harrisburg, Pa., and was president of the medical and dental staff, chair of the Department of Radiology and chief of the Division of Diagnostic Radiol-
y in the new Milton S. Hershey Medical School in nearby Hershey, Pa.

An advocate of expanded CME opportunities, Dr. Tristan created the RSNA Audiovisual Services Committee, a forerunner to the present-day Education Center. He received the RSNA Gold Medal in 1986.
**Personalized Image-guided Therapy is Next Frontier in Cancer Treatment**

Along with making significant headway in the fight against cancer, image-guided drug delivery (IGDD) is expanding the concept of personalized medicine, according to an RSNA 2010 presenter and organizer of a recent National Cancer Institute (NCI) summit on the technique.

“In essence, IGDD is used to guide and validate targeted therapies in cancer,” said Keyvan Farahani, Ph.D., acting chief of the Image-guided Interventions Branch of the Cancer Imaging Program, National Cancer Institute (NCI), National Institutes of Health (NIH) in Bethesda, Md. “Ultimately, this leads to the concept of personalized medicine, where an individual patient’s pathology is visualized and targeted therapies are administered under image guidance. Imaging can be used to devise more effective targeted treatments based on the individual patient’s disease and response profiles.”

Dr. Farahani discussed the progress of IGDD in targeting tumors using a number of developing imaging technologies during his presentation at the RSNA 2010 Hot Topic session, “Image-guided Drug Delivery.”

Despite the many challenges to fully implementing IGDD, physiologic and quantitative imaging techniques may serve as tools in transforming those obstacles into opportunities, he said.

“The most important utility of imaging in IGDD is the ability to quantitatively assess delivery of the drug to the tumor,” he explained. “While anatomical imaging may be important at the planning stage of IGDD, physiologic or functional imaging methods at various resolution scales are crucial in the actual implementation. In essence, imaging can be used to quantitatively assess three equally important properties: where the drug goes—in bio-distribution, what the body does to the drug—in pharmacokinetics, and what the drug does to the body—in pharmacodynamics.”

“Advanced imaging methods have ushered in an era of early detection of cancers that are frequently localized to a single organ,” concurred Bradford Wood, M.D., director of the NIH Center for Interventional Oncology.

When fully implemented, IGDD has the potential to become part of the “operating room of the future,” morphing into devices such as a real-life tricorder similar to that used as a full-body scanner on the television show “Star Trek,” Dr. Wood said.

Biological Barriers to Drug Delivery Present Challenge

Dr. Farahani and colleagues who convened the NCI Image-guided Drug Delivery Summit in 2010 highlighted a systematic approach to fully implementing IGDD, including targeted delivery, activation and monitoring.

Although the goal is to optimize the therapeutic ratio through personalized image-guided treatments, a major challenge lies in overcoming the biological barriers to delivery of therapeutics into tumors and cells, Dr. Farahani said.

“Full implementation of IGDD requires drugs that can be imaged, localized or targeted, and activated at the tumor site and imaging techniques that provide anatomic and quantitative functional measures of the process at various spatial and temporal resolutions for active monitoring,” he said.

Noninvasive imaging can reveal the location and characterize the disease early in its evolution, allowing the physician to apply drugs locally instead of throughout the body, Dr. Wood said. This may lead to more effective treatments with fewer systemic side-effects.

“Imaging might also facilitate delivery of drugs carried by nano-devices,” Dr. Wood explained. “For instance, an array of particles could be injected and circulated through the bloodstream to be activated at the target by heat delivered locally using needles or focused ultrasound.”

**Targeted Drug Delivery is the Ultimate Goal**

Ultimately the goal of IGDD is to maximize the delivery of therapeutics to the tumor while minimizing systemic toxicities, Dr. Farahani said. Approaches to imaging and drug delivery, he said, can be divided into these categories:

- **Direct delivery via a catheter (transcatheter)** under image guidance—such as MR-guided transarterial chemoembolization of liver tumors via the hepatic artery, for example (See Fig. 1).
- **Systemic delivery** via micro- or nanocarriers and local triggered release using exogenous mechanical energy such as MR-guided focused ultrasound to soft tissue tumors or across the blood-brain barrier (See Fig. 2).
- **Systematic targeted delivery** using an array of functionalized nanoparticles that home in on molecular tumor markers, such as MR imaging-guided transferin-targeted liposomes or thermos-sensitive agents targeted at nedd-3 integrins (See Fig. 3).

The last approach is likely to yield the most significant developments, Dr. Farahani said.

“Tumor-specific nanoparticles could be administered systematically but only release their therapeutic cargo once they’ve reached their biological targets,” Dr. Farahani said. “This approach obviates the need for triggering with external sources of energy.”

A number of pre-clinical and clinical IGDD studies have been completed to date, he said. Although nanomedicine-based studies are largely in the pre-clinical stage with several clinical trials currently under way, NCI funding opportunities are available to advance further research, Dr. Farahani said.

“NCI funding opportunities relevant to IGDD are aimed at solving challenges to fully implementing IGDD through collaboration across specialties,” Dr. Farahani said. “We believe that there is tremendous potential in that research.”

Similarly, the Center for Interventional Oncology offers opportunities for investigating cancer therapies that use imaging technology to diagnose and treat localized cancers in targeted and minimally or non-invasive methods, Dr. Wood said. The center, founded in 2007, is a joint effort of NIH, NCI and the National Heart, Lung and Blood Institute.

“The center will help bridge the gap between emerging technology and the everyday practice of medicine,” Dr. Wood said.

“The most important utility of imaging in IGDD is the ability to quantitatively assess delivery of the drug to the tumor.”

Keyvan Farahani, Ph.D.

**FIGURE 1A**

MR imaging can predict the biodistribution of injected chemotherapeutic agent. (a) Conventional contrast-enhanced T1-weighted MR image scan before chemoembolization shows hepatocellular carcinoma in right lobe of tumor. (b) Transcatheter intraarterial perfusion MR imaging shows anticipated biodistribution of chemotherapeutic drugs prior to injection. Colors quantify perfusion in ml/min/100 mg of tissue. (c) CT scan obtained after chemoembolization shows lipidoid staining within targeted segment of liver, confirming biodistribution that was predicted in (b).

**FIGURE 1B**

Images courtesy of Reed Draney, M.D.

**FIGURE 2**

Representative histologic sections from (a) a mouse tumor treated with pulsed-high intensity focused ultrasound (HIFU) and (b) control tumor, viewed at fluorescence microscopy. Expression of green fluorescent protein (GFP) reporter gene (green) is clearly visible in the tumor that underwent pulsed-HIFU prior to intravenous injection of GFP plasmid. Pulsed-HIFU increased the SFF delivery and expression by about tenfold as compared to the control.

**FIGURE 3**

Fumagillin Treated

**FIGURE 4.**

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Self-selected Radiology Mentors Yield Greater Satisfaction

While formal mentoring programs are considerably beneficial to radiology residents overall, those allowed to self-select mentors are more likely to be satisfied with the relationship, according to research from Beth Israel Deaconess Medical Center (BIDMC) and Harvard Medical School in Boston.

Mentoring has long been considered a valuable tool in medical training, but only about half of the nation’s residency programs offer formal mentoring programs, according to Phillip Boiselle, M.D., lead author of the study, “Qualitative Assessment of a Formalized Radiology Resident Mentoring Program,” presented at the 2010 Association of University Radiologists (AUR) Annual Meeting. Researchers discovered that existing programs may benefit from allowing residents to self-select a mentor during training, he said.

“Mentoring residents is associated with a number of potential benefits including enhanced career development, assistance with future career decisions such as post-residency specialty training, greater job satisfaction and assistance with work-life balance,” said Dr. Boiselle, a professor of radiology at Harvard Medical School and vice-chair of quality, safety & performance improvement and director of thoracic imaging at Beth Israel Deaconess Medical Center. “For residents with aspirations to enter academic radiology careers, mentoring offers the potential for enhanced participation in research and educational projects, as well as acceleration of academic career development.”

Dr. Boiselle, who founded the mentoring program at the radiology department at BIDMC five years ago, used a hybrid approach that allows residents to self-select a mentor or have one assigned to them.

Although the program received positive informal feedback from residents, Dr. Boiselle and colleagues opted to formally evaluate the program to ensure its overall effectiveness. “At the same time, we could also compare the responses of residents who were self-selecting mentors versus those who were assigned mentors,” he said.

Chemistry Critical to Mentoring Success

A voluntary web-based survey was sent to 27 second-, third- and fourth-year radiology residents who had participated in the mentoring program for at least six months. Questions included year in residency, method of assignment to mentor, length of assignment with current mentor, frequency and types of communication between mentor and mentee, whether the resident considered their assigned faculty member as their primary mentor, perception of the general value of mentoring, level of satisfaction with the mentorship and residency programs and the perceived impact of mentoring.

Of the 25 residents who returned the survey, 14 had self-selected mentors and 11 were assigned them. Both groups unanimously agreed that mentoring was beneficial or critical to their training. However, residents who self-selected mentors were significantly more satisfied with the program and more likely to consider the person they chose as their primary mentor as compared to those with assigned mentors.

“Our findings are not surprising,” Dr. Boiselle said. “The phrase ‘having good chemistry’ is often used to describe a good mentoring relationship. In the setting of an assigned mentorship, good chemistry can develop over time, but it’s more likely to occur in self-selected mentoring settings.”

“The other key ingredient for the success of a mentoring relationship depends on the frequency of interaction between mentor and resident,” Dr. Boiselle added. “A combination of chemistry and frequency of interaction can explain some of the findings.”

Although self-selecting a mentor proved beneficial, residents surveyed also reported positive experiences with assigned mentors—a point illustrated by the study’s co-author Kei Yamada, M.D., who was assigned to Dr. Boiselle during his residency at BIDMC.

“It was nice to be assigned because it eliminated the process of trying to find someone myself, which would have been difficult because I didn’t know anyone at the time,” said Dr. Yamada, now an interventional radiology fellow at Stanford University. “Fortunately Dr. Boiselle and I clicked and it was a good fit.”

Mentors Encourage Life-Work Balance

Career advice is not the only benefit to the mentoring process. An avid runner, Dr. Yamada was always encouraged by Dr. Boiselle to find time for exercise despite the difficulties of residency.

“Dr. Boiselle encouraged me to not only keep up with my academics, but also to stay focused on things I enjoy,” said Dr. Yamada, who met with Dr. Boiselle at least once a month during the four-year residency program.

Mentors who understand the importance of balance—and stress that to residents—are especially beneficial, according to Priscilla Slanetz, M.D., M.P.H., co-director of BIDMC’s residency and mentoring programs.

“A lot of residents today are very interested in figuring out how to balance various aspects of their lives during training,” Dr. Slanetz said. “It’s a generational concern and one I personally think is very reasonable. To be satisfied in your career, you need satisfaction in your personal life.”

Dr. Boiselle is encouraged by the growing number of formal mentoring programs and hopes this research inspires other institutions to create their own programs. RSNA Board Liaison for Science N. Reed Dunnick, M.D., who chairs RSNA’s Resident and Fellows Committee, agrees that BIDMC’s mentoring program is a model for other institutions.

“I’m not at all surprised by the success they’ve had,” said Dr. Dunnick, the Fred Jenner Hodges Professor and chair of the Department of Radiology at the University of Michigan in Ann Arbor. “I’m hoping it will encourage other departments to create similar programs.”

On the Cover

Radiology professor Corrie Yablon, M.D., instructs former radiology resident Michael Powell, M.D., and P.A.C.S. workstation in the radiology department at Beth Israel Deaconess Medical Center.

In the setting of an assigned mentorship, good chemistry can develop over time, but it’s more likely to occur in self-selected mentoring settings.”

Phillip Boiselle, M.D.
Self-referral Spurs Growth in Nonradiologist Imaging

When the Maryland Supreme Court upheld a state law prohibiting physicians from referring patients for MR imaging, CT and radiation therapy services to providers in their own group practice, it marked a rare victory for opponents of the practice of self-referral.

In a study published in the January 2011 issue of the Journal of the American College of Radiology, researchers determined that Medicare payments to non-radiologists for noninvasive medical imaging had increased dramatically, particularly among nonradiologists for noninvasive medical imaging, according to Cassil and HSC colleagues.

One of the biggest growth areas is musculoskeletal ultrasound, promoted as a convenient, inexpensive alternative to MR imaging. In a study presented at RSNA 2010, Thomas Jefferson University researchers analyzed U.S. Centers for Medicare and Medicaid Services data between 2000 and 2008 and found that non-radiologists accounted for 71 percent of the increase in musculoskeletal ultrasound growth. The study showed that 213,425 musculoskeletal ultrasound studies were primarily reimbursed by Medicare in 2008, up from 56,254 exams in 2000. Of the 157,171 increase in exams over that time period, 131,268 were conducted by nonradiologists, researchers found.

One of the most shocking findings was that podiatrists performed 66,385 studies in 2008, after performing almost 3,920 in 2000,” said Dr. Sharpe, a study author. “In 2008 podiatrists performed three times more exams than other specialists and any other nonradiologist provider type and approached the number of exams performed by radiologists.

It appears unlikely that payers will wait for new legislation before pushing back against imaging overutilization. In September 2009, Blue Cross Blue Shield issued a new policy in four states deeming all musculoskeletal ultrasound studies “experimental,” citing the potential for lack of training and oversight amid the proliferation of diagnostic units. Although the decision was reversed five months later, it is a clear sign of things to come, Dr. Levin said.

“Payers can set policy versus setting laws,” he said. “In Philadelphia, Blue Cross will not pay for high-end imaging in an office unless it’s a full-service modality provider. As a result, no cardiology practices in Philadelphia have a CT machine.”

“Overutilization...”

Lawmakers Yet to Close Stark Loophole

Ironically, the increase in non-radiologist imaging is rooted in a law originally intended to prohibit self-referral: the Stark law, which barred self-referrals for clinical laboratory, imaging and other health services under Medicare if the referring doctor had a financial interest in the facility. The law had one glaring loophole: an exception allowing physicians to refer tests to themselves or another physician in the same group practice if the equipment is located in their own office.

Since the Stark law took effect in 1992, manufacturers began aggressively marketing high-tech imaging equipment to nonradiologists. Additional revenue streams from imaging proved attractive to physicians facing stagnating salaries and declining reimbursements.

“The underlying message we send to physicians is, the more exams you do, the more you get paid,” said Alwyn Cassil, director of public affairs for the Center for Studying Health System Change (HSC), an independent, nonpartisan health policy foundation based in Washington, D.C.

In a recent physician survey, Cassil and HSC colleagues discovered that 22.7 percent of physicians in community-based, physician-owned practices reported their practice owned or leased equipment for advanced imaging. The survey included information from more than 4,700 physicians and yielded a 62 percent response rate. Since the analysis examined the extent of physician ownership or leasing of medical equipment, the sample was limited to 2,750 physicians practicing in community-based, physician-owned practices who represent 58 percent of all physicians surveyed.

Despite potential drawbacks to excessive imaging—radiation dose remains a headline in mainstream media—and opposition from organized radiology, lawmakers have so far been reluctant to close the loophole in the Stark law. Non-radiologist physician groups have lobbied against any changes and radiologists say a provision added to the 2009 federal Patient Protection & Affordable Care Act, requiring self-referring physicians to disclose financial interest to patients and inform them of nearby imaging facilities, isn’t likely to have an impact.

“That provision is toothless,” Dr. Levin said. “Ninety-nine out of 100 physicians will trust their doctor and get the exams done in the same office.”

Nonradiologists Drive Musculoskeletal Ultrasound Growth

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“Payers can set policy versus setting laws,” he said. “In Philadelphia, Blue Cross will not pay for high-end imaging in an office unless it’s a full-service modality provider. As a result, no cardiology practices in Philadelphia have a CT machine.”

“When physicians such as cardiologists or orthopedists have that own equipment and self-ref, they get more income. That creates a built-in conflict of interest and that is troubling.”

David C. Levin, M.D.
The American Society for Radiation Oncology (ASTRO) Board of Directors has approved a workforce study to investigate that capacity as well as the future demand for radiation oncologists, Dr. Haffty said.

Fortunately, calculating the number practitioners in radiation oncology may be easier than in other subspecialties, Dr. Haffty added. “The vast majority of radiation oncologists are board-certified, so we have a good handle on the actual numbers of practitioners out there. Second, almost everyone who performs radiation treatment is in fact, a radiation oncologist.”

ASTRO’s study group is also examining other critical members of the workforce—physicists, dosimetrists, therapists and nurses—in terms of how they can help absorb the increasing workload.

Researchers predicted demand for radiation therapy between 2010 and 2020 by multiplying current radiation utilization rates—as calculated with ASTRO’s team model—shortening the length of radiation treatments and gradually increasing the number of residents accepted into training programs.

Teamwork, Hypofractionation May Increase Patient Volume
Study authors outlined strategies to help mitigate the impact of the projected shortage including using team-care models, shortening the length of radiation treatments and gradually increasing the number of residents accepted into training programs.

“We project that between 2010 and 2020, demand for radiation therapy will increase by 22 percent, or 10 times faster than the supply of radiation oncologists.”

Benjamin D. Smith, M.D.

The team-care model—incorporating physician assistants or advanced-practice registered nurses to assist with the care of patients receiving radiation therapy—has proven efficient and effective at MD Anderson, Dr. Smith said. “The team really works well to optimize patient throughput, performing tasks such as the initial patient assessment that allows physicians time to focus on simulation and treatment planning,” Dr. Smith said.

It’s not clear whether the team model allows radiation oncologists to increase patient volume or simply perform more productively with their existing patient population, Dr. Haffty said. “That’s another thing the ASTRO survey will accomplish—give us a better handle on whether these models improve our capacity,” he added.

There has also been a trend toward decreasing the length of radiation treatment, Dr. Haffty continued. “We’ve seen a lot of research on hypofractionated therapies—fewer treatments at a higher dose—and how effective they are compared with standard therapy. That will affect how much they are utilized over the next 10 years,” Dr. Haffty said. “Again, it’s unclear whether these abbreviated radiation courses will actually increase the volume of patients we are able to see, but it may affect the numbers over time.”

Gradual Increase Recommended for Residency Programs
A gradual increase in the number of residents admitted to programs would help to increase the number of radiation oncologists available to treat patients over the next 10 years, according to Dr. Smith and colleagues.

While it’s fairly certain that demand for radiation therapy is increasing faster than the supply of radiation oncologists, Dr. Haffty cautions against flooding radiation oncology residency programs without further investigation of the issue.

“We before jump ahead and say we need to increase the number of residents, we need more information about whether there are other ways of increasing capacity—and there may currently be a little excess capacity,” Dr. Haffty said. “As we study this over the next few years, we will get a better handle on whether we need to speed it up or continue with existing gradual increases—about 20 percent in the last five years.”

Another factor: Increasing numbers of trainees entering radiation oncology would also impact the numbers of instructors needed and the suitable supply of radiation oncologists available to treat patients who are over 65 years,” Dr. Smith said. “From a radiation oncology standpoint, it is going to be a little more difficult to get the necessary numbers of instructors to keep the numbers of residents.”

A shortage could profoundly affect patient care, researchers found. Study data suggests groups most likely to feel the impact are those 65 and older who could see the need for radiation therapy increase 38 percent, and minorities who could see demand increase 45 percent. The rapidly aging U.S. population stands to expand the dilemma, Dr. Smith said.

The fraction of our patients who are over 65 will increase substantially in the next 10 to 20 years,” Dr. Smith said. “From a radiation oncologist’s perspective, we may approach treating a frail, 82-year-old person with cancer very differently that we would, say, a robust 50-year-old person with the same cancer. Radiation oncologists need to research and think about how to address the needs of our older patients over the next few decades."

Demand Outpaces Radiation Oncologist Supply
The demand for radiation therapy will increase 10 times faster than the supply of radiation oncologists in the next decade, potentially creating a shortage that could profoundly impact patient care, according to new research.
RSNA Workshop Offers Fertile Ground for Clinical Trials

As a starting junior faculty member, James R. Fink, M.D., wanted to pursue studies in advanced MR imaging in neuro-oncology but lacked the training in evidence-based and hypothesis-driven research needed to move his career forward.

“In neuro-oncology, many advanced imaging techniques have been developed but have not yet been rigorously studied in terms of multi-center prospective technology assessment and outcomes effectiveness,” said Dr. Fink, an assistant professor of radiology at the University of Washington (UW) in Seattle. “I had a sense this was the direction I wanted to take, but I didn’t know how to go about creating my own prospective study.”

Although the choice a different area of research—MR imaging in prostate cancer—Katarzyna J. Macura, M.D., Ph.D., faced similar roadblocks in developing the protocol needed to rigorously evaluate imaging modalities.

“Clinical trial design principles were not covered at the time of my training,” said Dr. Macura, an associate professor of radiology and urology at Johns Hopkins University in Baltimore, who earned both her degrees at Medical University of Lodz, Poland.

Dr. Macura and Fink were not alone. In fact, the growing number of potential clinical investigators armed with good ideas, but lacking the time or training to get them off the ground, inspired the program that has launched numerous radiology research careers since its 2006 inception: RSNA’s Clinical Trials Methodology Workshop.

The program offers clinical investigators a week-long opportunity for one-on-one mentoring and instruction in clinical research design, regulatory issues, biostatistics, ethics and other topics, as well as specific guidance in drafting protocols for imaging clinical trials.

After submitting abstracts of their proposed clinical research, Drs. Macura and Fink were accepted into the 2007 workshop and eventually went on to secure funding to conduct their research projects in a clinical setting.

Concentrated Mentoring Key to Protocols

The workshop’s format is what makes it so successful, participants said. Starting with 25-30 students and faculty, the workshop is divided into three sections: a didactic program, an experiential protocol development group and student protocol writing and break-out sessions. Information is presented via lectures, small group discussions and one-on-one mentoring.

The concentrated mentoring and feedback from top research methodologists is critical to developing complete protocols, participants said. “The one-on-one interaction provided instruction very specific to the project, which was immediately applicable and helped strengthen our proposals,” said Dr. Macura, whose study focused on the assessment of diagnostic accuracy of MR spectroscopy, diffusion-weighted imaging and dynamic contrast enhanced MR imaging in prostate cancer patients undergoing prostatectomy.

For his proposal targeting surgical biopsy and maximizing surgical resection of human malignant gliomas using advanced MR imaging methods, Dr. Fink found the expert instruction critical in discerning necessary aspects of protocol writing.

“At the end of the course, proposals are well on their way—even including consent forms—toward submission to the Institutional Review Board and funding agencies.” Katarzyna J. Macura, M.D., Ph.D.

Using RSNA’s Clinical Trial Methodology Workshop protocol template, similar to the one used by the American College of Radiology Imaging Network (ACRIN) format, mentors advised Dr. Fink on all aspects of crafting a prospective study protocol including participant selection and eligibility criteria, study procedures, statistical considerations and ethical considerations such as obtaining informed consent.

“Now that I’ve worked on ACRIN brain tumor imaging studies as a local site principal investigator, I understand the need for that format,” Dr. Fink said. “The RSNA workshop offered good early exposure for me in terms of prospective study design and research clinical methodology.”

Throughout the week, students identify project milestones: final concept sheets, draft protocols, draft informed consent, post-test and completed protocols due, with faculty reviewing progress and offering input. The workshop culminates in hypothesis-driven projects with implementable clinical research protocol.

“At the end of the course, proposals are well on their way—even including consent forms—toward submission to the Institutional Review Board and funding agencies,” Dr. Macura said.

Such results are often the outcome of the labor-intensive sessions, said Daniel C. Sullivan, M.D., who co-founded the program with Constantine A. Gatsonis, Ph.D., of Brown University.

“The Clinical Trials Methodology Workshop is more demanding than many other courses in terms of work product required during the week-long workshop, but attendees consistently rate it as one of the best courses they’ve taken,” said Dr. Sullivan, program co-director with Dr. Gatsonis until 2010. “The program is now directed by Barry Siegel, M.D., and Nancy Olschowki, Ph.D.

Workshop Leads to Grant Funding

Immediately after the workshop, Dr. Fink enrolled in RSNA’s Advanced Course in Grant Writing, which further paved the path to funding. In 2010, he secured a pilot grant from the Nancy & Buster Alvord Brain Tumor Center Research Grant at UW to fund his RSNA Clinical Trials Methodology Workshop project.

Dr. Macura’s RSNA-developed project helped secure funding through the Johns Hopkins University in Vivo Cell and Molecular Imaging Center, which led to subsequent clinical implementation and creation of a prostate imaging service at Johns Hopkins. “We have also incorporated the scanningprotocol into a routine clinical care at our institution,” Dr. Macura added.

Ultimately, the workshop gave Dr. Fink a firm foundation for the path he plans to stay on for the remainder of his career.

“After attending the Workshop, I had a sense this was the direction I wanted to take, but I didn’t know how to go about creating my own prospective study.” James R. Fink, M.D., Ph.D.
RadioGrafics (RSNA.org/Radiog.), Maryam Rezvani, M.D., and Azam M. Shaaban, M.D., of the Department of Radiology at Brigham and Women’s Hospital and Harvard Medical School, in Boston, and colleagues provide even more astonishing discoveries in the future.

Falllopian Tube Disease in the Nonpregnant Patient

Pathologic conditions affecting the fallopian tube range from the very common pelvic inflammatory disease to the much rarer, but nevertheless important to diagnose, tubal neoplasms. In addition, current evidence suggests that the prevalence of primary fallopian tube carcinoma (PFTC) is underestimated and that there is a relationship between PFTC and breast cancer. Familiarity with fallopian tube disease and the imaging appearances of both the normal and abnormal fallopian tube is crucial for optimal diagnosis and management in emergent and ambulatory settings.

In an article in the March-April issue of Radiology (RSNA.org/Radiog.), Maryam Rezvani, M.D., and Azam M. Shaaban, M.D., of the Department of Radiology at the University of Utah in Salt Lake City, describe normal fallopian tube anatomy and discuss various fallopian tube diseases, including the differentiation of benign from malignant disease.

Specifically the authors address:

• Pelvic inflammatory disease
• Atypical infections including tubal tuberculosis and tubal actinomycosis
• Fallopian tube torsion
• Tubal endometriosis
• Fallopian tube tumors including PFTC

‟Whether common or rare, abnormalities of the fallopian tube should be considered in the differential diagnosis for pelvic disease in the nonpregnant patient,‟ the authors conclude.
Journal Highlights

Does Security Screening with Backscatter X-Rays Do More Good than Harm?

Average traveler should not be overly concerned about being screened with the backscatter scanners and should be provided information on the technology. “...millimeter-wave scanning is a feasible and practical whole-body scanning technology that does not involve ionizing radiation and for which there is currently essentially no mechanistic or experimental evidence of biologic risks,” Dr. Brenner concluded.

“Information, in lay language, about the security screening process, its benefits, and its potential risks should be provided to individuals prior to scanning,” Dr. Schauer concluded.

Screening Breast MR Imaging: Comparison of Interpretation of Baseline and Annual Follow-up Studies

Baseline screening breast MR imaging studies have a higher rate of follow-up or biopsy recommendation than do studies with prior MR images available for comparison, researchers have discovered. In a retrospective study, Gil Abramovic, M.D., and Martha B. Mainiero, M.D., of the Warren Alpert Medical School of Brown University, Rhode Island Hospital in Providence, analyzed data from 650 consecutive women’s breast MR imaging examinations between September 2007 and December 2008. All examinations were performed using the same protocol and images were interpreted by the same radiologists.

Like mammography, breast MR imaging has a risk of false-positive results, but the risk decreases following the initial round of screening, according to the authors. “This information may provide some high-risk patients and their physicians when they are considering whether to undergo breast MR imaging as an adjunct to annual screening mammography.”

Screening Breast MR Imaging in Women with a History of Chest Irradiation

MR imaging is a useful, adjunct modality to screen high-risk women with a history of chest irradiation, resulting in a 4.8 percent (95 percent confidence interval: 1.2 percent, 10.9 percent) incremental cancer detection rate.

In a retrospective review of the dataset at Memorial Sloan-Kettering Cancer Center in New York, Janice S. Sung, M.D., and colleagues identified 247 breast MR imaging examinations performed between January 1999 and December 2008 in 91 women with a history of chest irradiation. Authors reviewed findings and recommendations for each breast MR study and on the most recent mammogram. They examined the number of cancers diagnosed, their method of detection and tumor characteristics.

Results support existing recommendations for annual screening MR imaging as an adjunct to annual mammography in women with a history of chest irradiation, researchers found. “However, MR imaging should be used in addition to and not in place of mammography in this population, as the sensitivity for detecting breast cancers by using a combination of MR imaging and mammography was higher than that for either modality alone,” the authors concluded.

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Media Coverage of RSNA
In February 2011, media outlets carried 1973 RSNA-related news stories. These stories reached an estimated 15 billion people.


Other Radiology Headlines
ECR Showcases Cutting Edge, Urges Multidisciplinary Approaches
Read more from the European Congress of Radiology (ECR), held in March in Vienna, at www.myesr.org.

Radiology Report Should be “Epiphany”
With proper structure, content and functionality, a radiology report is ideally an “epiphany” for the clinician, said ECR lecturer Leo P. Lawler, M.D.

“It should be something you pick up and get an immediate intuitive grasp of what the person is trying to say,” said Dr. Lawler, of Mater Misericordiae University Hospital in Dublin, Ireland. “If a clinician doesn’t read a very well-constructed report, the radiologist has failed in some way.”

Dr. Lawler emphasized that reports should make sense as they are transmitted within and among institutions and should make sense as they are transmitted way.

“Epiphany” for the clinician, said ECR Showcases Cutting Edge, Urges Multidisciplinary Approaches

In addition to eliminating radiation exposure—critical in a patient cohort of mainly young women—choosing MR also yields the multiparameter capability, high soft tissue contrast and adequate temporal resolution preferred by clinicians, said Francesca Maccioni, M.D., of the University La Sapienza in Rome. MR will be more tolerated by patients—who often dislike the positioning required by MR, as well as the rectal contrast—with increasing use of dedicated open magnets that allow the examination to be performed in the seated position, Dr. Maccioni added.

Source: ECR Today, March 6, 2011

MR Preferred for Pelvic Imaging
MR imaging offers advantages—lack of ionizing radiation chief among them—that increasingly make it the new choice for pelvic floor imaging.

Researchers at London University College Hospital comparing the clinical utility of MR and the longtime standard fluoroscopy found that a variety of clinicians, including urogynecologists and gastroenterologists, clearly preferred the results yielded by MR.

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Source: ECR Today, March 6, 2011

Overdiagnosis a Possibility in Older Population
Geriatric patients, commonly presenting with co-existing diseases and various physical and cognitive problems, require special consideration in distinguishing the healthy from those in need of treatment.

“The question is how to be aware of the potential and limits of diagnostic imaging and its applications in geriatric patients,” said Giuseppe Guglielmi, M.D., of Fogga, Italy, who addressed an ECR session on March 6.

Co-presenter Anne Cotten, Ph.D., of Lille, France, urged radiologists to become aware of misleading radiological presentation features typically occurring in the geriatric population, such as unrecognised fractures, missed infection or malignant conditions and myeloma revealed by osteoporotic vertebral collapses.

Noting that most complications of cardiovascular disease occur in subjects 65 years or older, presenters pointed toward imaging methods such as ultrasound, PET/CT and high-resolution black-blood MR imaging that can successfully assess cardiovascular, cardiac, renal and pulmonary conditions.

Source: ECR press release

Interventional Radiology the Focus of April Outreach Activities
In April, RSNA distributed the “60-Second Checkup” audio program to nearly 100 radio stations across the U.S. The segments focused on the use of minimally invasive interventional radiology procedures such as uterine fibroid embolization.

RadioLogic.info Launches Twitter Page
RadioLogic.info now offers another way to receive updates about new content, news and other updates to the site. Follow RadioLogic.info at Twitter.com/RadioLogic.info.

Monitoring the Value of Membership
"Epiphany" for the clinician, said ECR Showcases Cutting Edge, Urges Multidisciplinary Approaches

"I was attracted to RSNA’s point of care learning because it allows you to do an on-the-spot literature search and get CME credits—a value-added feature of RSNA membership without extra cost," said Stuart A. Royal, M.S., M.D. "How great is that!"

To ensure physicians can properly claim AMA PRA Category 1 Credits®, PoC learning conforms to American Medical Association guidelines. The structure tracks the original clinical questions, relevant sources identified from among those consulted and the application of the findings to practice.

myRSNA search tool “pre-filters” results by listing evidence-based, peer-reviewed literature. “Having easy access to a literature search with the extra incentive of CME has been a win-win for me," Dr. Royal said.

The feature offers a step-by-step form to ensure credit can be claimed, enabling the user to instantly print a CME certificate and file the credit in the RSNA CME Credit Repository for access at any time.

Credits are adding up quickly for Dr. Royal, who was instructed on PoC at RSNA 2010 by “a wonderful computer pro who gave me an in-service set-up.” In the first two-and-a-half months of 2011, he earned 3.5 AMA PRA Category 1 Credits through PoC.

CME Credit Quickly Adding up for Point of Care Users
RSNA members are giving high marks to the myRSNA® tool that allows them to earn CME at the point of care (PoC). Accessible through myRSNA, PoC learning is entirely self-directed and driven by the needs of the individual physician—a feature users say is invaluable.

"I use this tool every day," Dr. Royal said.

To get started, go to myRSNA and scroll to the mySearch tab.

Stuart A. Royal, M.S., M.D. is radiologist-in-chief and the Harry M. Burns Endowed Chair of Pediatric Radiology at Children’s Hospital Birmingham, Ala.

What’s the most valuable part of your RSNA membership? Tell us about it at info@rsna.org.

Diagnostic Radiology Core Examination Study Guide Available from ABR
The American Board of Radiology has posted on its website the Diagnostic Radiology Core Examination Study Guide, a resource featuring individual study guides for:

- Breast imaging
- Cardiac imaging
- Gastrointestinal imaging
- Interventional radiology
- Musculoskeletal imaging
- Neurology
- Nuclear radiology
- Pediatric radiology
- Physics
- Reproductive/endocrine imaging
- Safety
- Thoracic imaging
- Ultrasound
- Urology imaging
- Vascular imaging

The individual study guides also help prepare exam takers in relevant applications of CT, MR and radiography/fluoroscopy. Access the guide at www.theabr.org.

For Your Benefit
The Value of Membership
"Epiphany" for the clinician, said ECR Showcases Cutting Edge, Urges Multidisciplinary Approaches

ANNUAL MEETING: PROGRAM CONTENT TO TARGET RESIDENTS AND FELLOWS
New for RSNA 2011 will be a program of content especially for residents and fellows. More information about the new program will be reported in upcoming issues of RSNA News.

RSNA 2011 Main Stage

RSNA News Vol. 20, No. 12 © 2011 American Roentgen Ray Society
**Access RSNA Education Product Catalog Online**

The RSNA Education Center’s 2010-2011 product catalog is accessible online. The catalog includes complete descriptions of refresher courses recorded from previous RSNA meetings available on CD-ROM. Bundled into topical sets and sold at significant savings, the collection offers a cost-effective way for radiologists to build a library of the best educational content.

Each course is offered on CD-ROM and can be viewed on most PCs or laptop computers. Audio recordings of speakers and their slides are accompanied by optional written transcripts for easy reference. AMA PRA Category 1™ credits are available for all recorded refresher courses. This year, the collection has expanded to more than a dozen sets available for purchase.

For more information or to purchase the CD-ROM collections, go to RSNA.org/Education/catalog or call the Education Center at 1-800-272-2920.

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**Cases of the Day Now Online**

One of the most popular programs at RSNA annual meetings, Cases of the Day from RSNA 2010 are available online—an option that offers a unique set of benefits for participants.

In the Cases of the Day area at the annual meeting, image-based case scenarios in 14 different radiology subspecialties are presented to participants who submit their diagnoses for cases for five consecutive days and check for the correct answer the following morning.

In the online format, participants who view the RSNA 2010 cases and submit diagnoses can immediately see the correct answer and view the discussion for each case.

Free to members, Cases of the Day are now available at RSNA.org/Education/index.

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**Making MIRC Work**

Marc Kohli, M.D., and his colleagues in the Department of Radiology at Indiana University Purdue University Indianapolis (IUPUI), knew that making teaching files with RSNA’s Medical Imaging Resource Center (MIRC) work would require a new developer, thanks to a new development from their PACS vendor.

“We learned of the Teaching File and Clinical Trial Export (TCE) functionality provided by our vendor,” Dr. Kohli said, referring to FUJIFILM Medical Systems U.S.A. (Fujifilm), the first vendor to support the TCE profile designed by the Integrating the Healthcare Enterprise (IHE®) project.

“I think we were one of the first institutions to even think about this,” Dr. Kohli added. “There really isn’t an easy way to create good teaching files with full image sets without either a lot of custom programming or TCE.”

Dr. Kohli also appreciates that MIRC works well with external software. “And MIRC is an application that has an open standard format, allowing developers from around the world to create software that works with MIRC documents,” he added. “There’s even a developer who created an iPhone/IPad application. That wouldn’t have been possible with a proprietary format.”

“One thing that has limited my creation of teaching files is that I don’t want to get stuck with a bunch of information in files that become obsolete when the developer writing the software abandons the project,” Dr. Kohli added. “Because MIRC uses open standards, and because it’s backed by the RSNA, I know that I’ll be able to access my files now and in the future.”

The “one mouse click” data transferers that are so vital to the TCE/MIRC exchange are made possible by DICOM technology inherent in the Fujifilm PACS. Fujifilm has historically provided features and functionality that support teaching and work, working with IUPUI and RSNA, the company is able to further demonstrate the benefits of its advanced software integrations that enable radiologists to derive greater efficiency and enhanced capabilities from the PACS for educational purposes, a company spokesman said.

“When we talk to radiologists about product enhancements, the request we always hear is, ‘Quick and efficient,’” said Jim Morgan, Fujifilm’s Vice-President of Medical Informatics. “All of our Synapse products are designed to satisfy this request while also delivering high quality imaging results. The TCE/MIRC integration is fundamental to advancing radiological education and Fujifilm is proud to be able to support RSNA and IUPUI with this important endeavor.”

**For Your Benefit**

### RSNA Clinical Trials Methodology Workshop

#### Over the course of this 6½-day workshop, each trainee will be expected to develop a protocol for a clinical study, ready to include in an application for external funding. Participants will learn how to develop protocols for the clinical evaluation of imaging modalities.

A dynamic and experienced faculty will cover topics including:

- Principles of clinical study design
- Statistical methods for imaging studies
- Design and conduct of multi-institutional studies
- Sponsorship and economics of imaging trials
- Regulatory processes

Applicants will undergo a competitive selection process for course entrance. Once admitted, training will participate in advance preparation, didactic sessions, one-on-one mentoring, small group discussions, self-study and individual protocol development. Familiarity with basic concepts and techniques of statistics and study design is required of all applicants.

#### RSNA/AUR/ARRS Introduction to Academic Radiology Program

**Sponsored by RSNA, the American Roentgen Ray Society (ARRS) and Association of University Radiologists (AUR), the Introduction to Academic Radiology program:***

- **Exposes second-year radiology residents (PGY2) to academic radiology**
- **Demonstrates the importance of research in diagnostic radiology**
- **Illustrates the excitement of research careers**
- **Introduces residents to successful clinical radiology researchers**

Successful applicants will be assigned to either a seminar held during RSNA 2011 or the AUR annual meeting in 2012.

**CORE Workshop Focused on Research**

**FORMERLY THE REVITALIZING THE RADIOLoGY RESEARCH ENTERPRISE (RRE) 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.
News about RSNA 2011

Advance Registration and Housing Opens May 4

RSNA 2011 advance registration and housing opens May 4 for RSNA and AAPM members. General registration and housing opens June 1. Advance Registration and Housing information is available at RSNA2011.RSNA.org.

International Visitors

If you must apply for a temporary non-immigrant visa to attend RSNA, you are advised to apply as soon as travel to the United States is decided and no later than three to four months in advance of the travel date. RSNA offers an official letter of invitation for RSNA 2011 attendees.

Come to Chicago, See Memphis

Opening at Chicago’s Cadillac Palace Theater just in time for RSNA 2011 is “Memphis,” a Broadway musical bursting forth from the city’s underground dance clubs of 1950s. The tale of fame and forbidden love was inspired by actual events—a white radio DJ who wants to change the world and a black club singer who is ready for her big break. Their incredible journey to the ends of the airwaves promises laughter, soaring emotion and roof-raising rock ‘n’ roll. Winner of four 2010 Tony® Awards including Best Musical, “Memphis” features a Tony-winning original score with music by Bon Jovi founding member David Bryan. Directing is Tony nominee Christopher Ashley (“Jersey Boys”). “Memphis” runs Nov. 22–Dec. 4 at the Cadillac Palace Theater, 151 W. Randolph St. in Chicago. For more information, go to memphisthemusical.com.

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)
   1-800-521-6017
   1-847-996-5401
3. TELEPHONE
   (Mon–Fri 8:00 a.m. – 5:00 p.m. ct)
   1-847-996-5876
   1-800-650-7018
   1-847-996-5401
   (24 hours)
   1-800-521-6017
4. MAIL
   Experient/RSNA 2011
   568 Atrium Drive
   Vernon Hills, IL 60061 USA

Registration Fees

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Important Dates

May 4
- RSNA/AAPM member registration and housing open
- RSNA 97th Scientific Assembly & Annual Meeting

June 1
- General registration and housing open

July 6
- Course enrollment opens

October 21
- International deadline to have full-conference materials mailed in advance
- Conference program opens

November 4
- Final discounted advance registration, housing and course enrollment deadline to have full-conference materials mailed in advance
- Registration office opens

Nov. 27 – Dec. 2
- RSNA 97th Scientific Assembly & Annual Meeting
- RSNA2011.RSNA.org
- e-mail reginfo@rsna.org
- Access RSNA 2010 Content Online
- Tap into RSNA 2010 education offerings by visiting myRSNA® and clicking on the mySearch tab along the top. Under Media on the left-hand side of the page, click on RSNA 2010 Exhibits to access select electronic exhibits from the annual meeting. The content can also be accessed through RSNA’s annual meeting page at RSNA2011.RSNA.org and connecting to myRSNA,
- COMING NEXT MONTH
- Researchers wondering what it takes to get published in Radiology should check out next month’s RSNA News featuring an article outlining the process for getting accepted by RSNA’s prestigious, peer-reviewed science journal. Radiology Editor Herbert Y. Kressel, M.D., discusses guidelines for selecting research from the more than 2,000 manuscripts he receives each year.
Don’t delay ... apply for accreditation today. The CMS accreditation deadline is fast approaching. Don’t put your Medicare reimbursements at risk by waiting too long to get started. It could take months to prepare your images for submission.

Apply for ACR accreditation now to ensure your practice will meet the CMS deadline. We make the application process easy and cost effective. To apply, visit acr.org or call 1-800-770-0145.