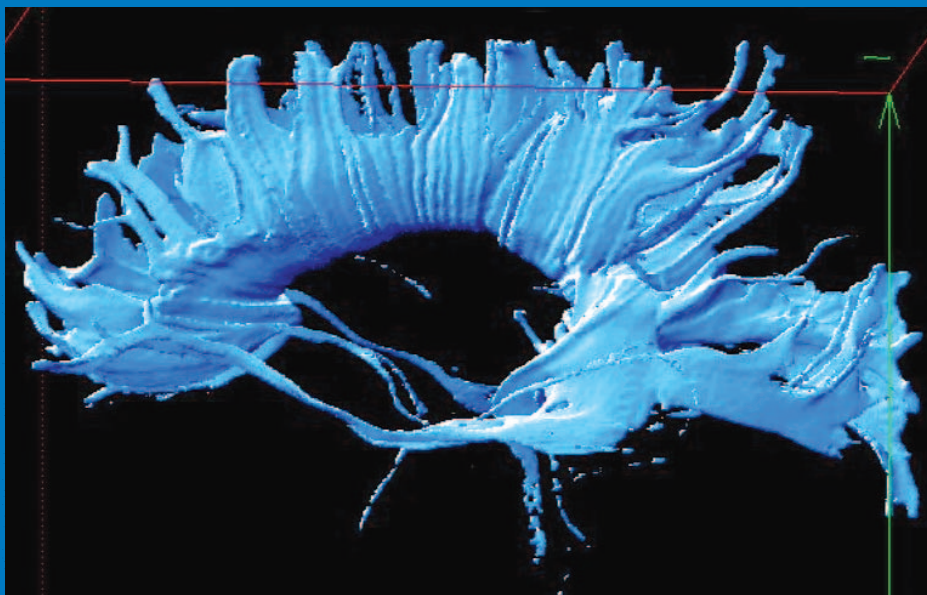


RSNA *News*

NOVEMBER 2002 • VOLUME 12, NUMBER 11

THE NEWSLETTER OF THE RADIOLOGICAL SOCIETY OF NORTH AMERICA

DT-MRI Offers Expanding Potential in Research and Diagnosis



Also Inside:

- Breast Density Best Predictor of Mammographic Sensitivity
- Many Unanswered Questions Remain in Debate Over Full-Body CT
- RSNA Fellow Bridges Gap Between Laboratory and Clinic
- IHE: Making Workflow Work for You
- Internet for You—Part 7

RSNA 2002
December 1-6 • Chicago

RSNA *News*

NOVEMBER 2002

- 1 **People in the News**
- 2 **Announcements**
- 3 **Letter to the Editor**
- 4 **2002 RSNA Board of Directors Report**
- 5 **RSNA 2002 Lecture/Oration Preview**

- Feature Articles**
- 6 **Breast Density Best Predictor of Mammographic Sensitivity**
- 8 **Many Unanswered Questions Remain in Debate Over Full-Body CT**
- 11 **DT-MRI Offers Expanding Potential in Research and Diagnosis**
- 13 **IHE: Making Workflow Work for You**
- 14 **Densitometry Courses and Certification Offered Immediately Following RSNA 2002**
- 15 **Internet for You—Part 7**

- Funding Radiology's Future**
- 19 **RSNA Fellow Bridges Gap Between Laboratory and Clinic**
- 20 **Research and Education Foundation Donors**
- 21 **Program and Grant Announcements**

- 10 **Radiology in Public Focus**
- 21 **Working for You**
- 23 **Meeting Watch**
- 23 **Exhibitor News**
- 25 **www.rsna.org**

RSNA News

The newsletter of the Radiological Society of North America

November 2002 • Volume 12, Number 11

Published monthly by the Radiological Society of North America, Inc., at 820 Jorie Blvd., Oak Brook, IL 60523-2251. Printed in the USA.

Periodical postage pending mailing with postage in Oak Brook, IL 60523, and additional mailing offices. POSTMASTER: Send address correction "changes" to: *RSNA News*, 820 Jorie Blvd., Oak Brook, IL 60523-2251.

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

Contents of *RSNA News* copyrighted ©2002 by the Radiological Society of North America, Inc.

Letters to the Editor:

E-mail: rsnanews@rsna.org

Fax: (630) 571-7837

RSNA News

820 Jorie Blvd.

Oak Brook, IL 60523

Subscriptions

Phone: (630) 571-7873

E-mail: subscrip@rsna.org

Reprints and Permissions

Phone: (630) 571-7829

Fax: (630) 590-7724

E-mail: strassne@rsna.org

Advertising

Phone: (630) 571-7819

E-mail: jdrew@rsna.org

www.rsna.org/advertising/ratecardrsnanews.html

EXECUTIVE EDITOR

Joseph Taylor

MANAGING EDITOR

Natalie Olinger Boden

CONTRIBUTING EDITOR

Robert E. Campbell, M.D.

EDITORIAL BOARD

Susan D. Wall, M.D.

Chair

Lawrence W. Bassett, M.D.

Richard H. Cohan, M.D.

Nancy A. Ellerbroek, M.D.

David S. Hartman, M.D.

C. Leon Partain, M.D., Ph.D.

William T.C. Yuh, M.D., M.S.E.E.

R. Gilbert Jost, M.D.

Board Liaison

CONTRIBUTING WRITERS

Bruce K. Dixon

Amy Jenkins, M.S.C.

Mary Beth Nierengarten, M.A.

Mary E. Novak

Ken Schulze

Marilyn Idelman Soglin

GRAPHIC DESIGNER

Adam Indyk

ADVISORS

Dave Fellers, C.A.E.

Executive Director

Roberta E. Arnold, M.A., M.H.P.E.

Assistant Executive Director

Publications and Communications

RSNA 2002 BOARD OF DIRECTORS

Brian C. Lentle, M.D.

Chairman

David H. Hussey, M.D.

Secretary-Treasurer

Robert R. Hattery, M.D.

Liaison for Publications and Educational Materials

R. Gilbert Jost, M.D.

Liaison for Communications and Corporate Relations

Theresa C. McCloud, M.D.

Liaison for Education

Gary J. Becker, M.D.

Secretary-Treasurer-designate

R. Nick Bryan, M.D., Ph.D.

President

Peggy J. Fritzsche, M.D.

President-elect

Caramella New President of EuroPACS Society

Daive Caramella, M.D., associate professor of radiology at the University of Pisa in Italy, has been elected president of the EuroPACS Society. For the next three years, he will lead EuroPACS—one of the oldest scientific societies in the field of picture archiving and communication systems—striving to maintain its tradition to promote research and foster discussion about the technological evolution as well as the experiences in clinical implementation and evaluation of PACS in Europe and worldwide.



Daive Caramella, M.D.

Dean First NIBIB Deputy Director

Donna J. Dean, Ph.D., has been named deputy director of the National Institute of Biomedical Imaging and Bioengineering (NIBIB). She had been acting director of the one-year old institute.

“Dr. Dean took on a difficult job and has performed it remarkably well,” said NIBIB Director Roderic I. Pettigrew, M.D., Ph.D. “The Institute is now on solid organizational, administrative, scientific and fiscal footing. She has interacted well with the extramural community and has been invaluable to me. ... As deputy director, she will continue to provide the needed continuity and critical support in achieving the institutes’ mission.”



Donna J. Dean, Ph.D.

Newman to be Featured Inflight

Donna Newman, B.A., R.T.(R), CNMT, president of the American Society of Radiologic Technologists, is featured this month as part of a special audio program that will be broadcast on 23,000 flights for American Airlines and Northwest Airlines. During the program, “Answering America’s Call: Associations at Work,” Newman discusses issues affecting the RT profession, including the personnel shortage and the Consumer Assurance Radiologic Excellence bill. “I’m excited to be able to deliver ASRT’s message to such a large audience,” she says. “This program is a great opportunity to educate people about the profession of radiologic technology and the role of radiologic technologists.”



Donna Newman, B.A., R.T.(R), CNMT

Amis New ACR Chair

E. Stephen Amis Jr., M.D., is the new chairman of the Board of Chancellors for the American College of Radiology. He assumed his new post in October. Dr. Amis is also professor and chairman of the Department of Radiology at Albert Einstein College of Medicine and Montefiore Medical Center in the Bronx.



E. Stephen Amis Jr., M.D.

Singleton Earns Distinguished Faculty Award

1995 RSNA Gold Medallist **Edward B. Singleton, M.D.**, has received the 2002 Distinguished Faculty Award from Baylor College of Medicine in Houston, Texas. Dr. Singleton is the professor emeritus of radiology at Baylor and the emeritus chief of radiology at Texas Children’s Hospital. He has been a member of RSNA since 1957.



Edward B. Singleton, M.D.

AAPM Residency Program Awards

The residency program in Medical Physics at the University of Alabama at Birmingham and at the University of Texas M.D. Anderson Cancer Center have each earned a two-year grant from the American Association of Physicists in Medicine (AAPM) in support of diagnostic medical physics. The grants, sponsored by the RSNA Research and Education Foundation, provide \$18,000 per year for two years.

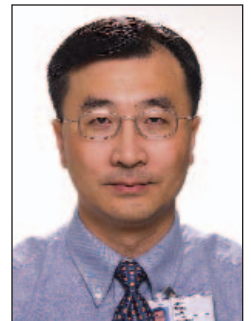
At UAB, **Michael Yester, Ph.D.**, is the supervisor; **Benjamin W. Zeff, Ph.D.**, is the resident. At M.D. Anderson, the supervisor is **John Hazle, Ph.D.**; the resident is **John Rong, Ph.D.**



Michael Yester, Ph.D.



Benjamin W. Zeff, Ph.D.



John Rong, Ph.D.

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

Education Center Store at RSNA 2002

This year, the Education Center Store will be located in Lakeside Center at McCormick Place. RSNA 2002 attendees will be able



purchase printed syllabi, the 2002 RSNA Scientific Program, patient education brochures, and refresher courses on videocassettes and slides/audiocassettes. In addition, Internet access to view RSNA educational programs will be available.

Hours of Operation:

Sat., Nov. 30	12:00 p.m. – 6:00 p.m.
Sun., Dec. 1	7:00 a.m. – 6:00 p.m.
Mon., Dec. 2 –	
Thur., Dec. 5	7:30 a.m. – 6:00 p.m.
Fri., Dec. 6	7:30 a.m. – 1:00 p.m.

Electronic Walks Through the Week

Download RSNA 2002 course information by subspecialty at www.rsna.org/rsna/walks/index.html. These electronic Walks Through the Week replace the previous paper brochures. These pages and portable document format files will also be available at the Scientific Assembly via RSNA Link Onsite.

Residents' Reception at RSNA 2002

Residents are invited to attend a special RSNA 2002 Residents' Reception on Monday, December 2, from 4:00 p.m. to 5:00 p.m. in the Regency Ballroom of the Hyatt McCormick Place.

RSNA President R. Nick Bryan, M.D., Ph.D., will greet the residents. Complimentary beverages and light snacks will be served.

RSNA CME Credit Repository Update

Since its inception last May, RSNA's online CME Credit Repository (www.rsna.org/cme) has generated strong interest. As of August 30, 2,612 credits have been deposited. Among those, 1,956 were awarded by RSNA.

Members are able to view and print a certificate of all of their credits stored in the CME Credit Repository. These printed certificates may be used as the proof necessary for relicensure or for hospital privileges.

A printable cumulative record of RSNA-earned credits includes the RSNA Accreditation Statement and signature of the RSNA Secretary-Treasurer.

Residents' Lounge

RSNA Members-in-Training and non-member residents are invited to visit the Residents' Lounge, located in the Lakeside Center Ballroom, during RSNA 2002. The lounge provides a place to relax and network with colleagues while enjoying complimentary refreshments. Complimentary issues of *Radiology*, *RadioGraphics*, *RSNA News* and the 2002 *Education Center Catalog* will be available.

Residents' Lounge

Lakeside Center Ballroom
Sunday, Dec. 1 – Thursday, Dec. 5
8:00 a.m. – 5:30 p.m.

Medical Liability Study

RSNA is cooperating with the American Medical Association and the American College of Radiology to conduct a study to determine physicians' recent experiences with the professional liability system. The study findings will be used in efforts to achieve reform of the liability system.

A random sample of physicians was sent a postcard or e-mail message in late September asking for their participation.

Outstanding and Award-winning Papers at RSNA 2002



RSNA 2002 will feature outstanding and award-winning papers

from three related societies: the American Society of Neuroradiology (ASNR), the American Society for Therapeutic Radiology and Oncology (ASTRO), and the Society of Interventional Radiology (SIR).

The RSNA 2002 Scientific Program will include:

Monday, December 2	4:00–5:30 p.m.
<i>ASNR Invited Papers</i>	7 papers
<i>ASTRO Invited Papers</i>	10 papers
Wednesday, December 4	4:00–5:30 p.m.
<i>Call Me SIR: Highlights from the 2002 Scientific Program</i>	6 papers

See your RSNA 2002 Scientific Program for more detailed information on the individual papers and their authors.



Consensus Paper on Fusion Imaging Technologists

The Society of Nuclear Medicine Technologist Section (SNMTS) and the American Society of Radiologic Technologists (ASRT) have developed a consensus paper concerning the education, qualifications and regulations of personnel who operate hybrid imaging equipment such as PET-CT or SPECT-CT.

The groups determined that any registered nuclear medicine technologist, radiographer or radiation therapist would be capable of performing the examinations with appropriate additional education.

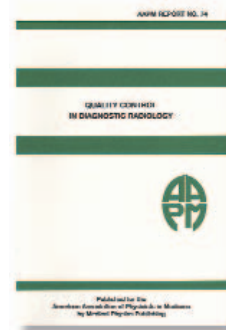
The full text of the consensus paper is available at <https://www.asrt.org/asrt.htm>.

2002 Nicholas E. Davies Award Announced

The Healthcare Information and Management Systems Society (HIMSS) has presented the 2002 Nicholas E. Davies award to **Maimonides Medical Center** and **Queens Health Network**, both in New York. "We are happy to recognize two organizations that have done an outstanding job implementing electronic medical record systems and have used them to bring value to their patients and staff," says Tom Payne, M.D., chair of this year's award committee. The winners will be formally recognized at the 2003 HIMSS Annual Conference and Exhibition Awards Banquet in February.

Report on Quality Control in Diagnostic Radiology

The American Association of Physicists in Medicine has released a report on *Quality Control in Diagnostic Radiology*. The report is available to AAPM members as a PDF file at www.aapm.org/pubs/reports/. Scroll down to report number 74. It is also available for purchase from Medical Physics Publishing at www.medicalphysics.org or (800) 442-5778.



LETTER TO THE EDITOR

To the Editor:

As discussed in a recent *RSNA News* article (September 2002), a patient's place of origin or of residence is certainly relevant to a thorough evaluation of the differential diagnosis of his or her condition. However, two of the techniques suggested may be imperfect in determining a patient's place of origin.

In the United States, with many citizens being several generations removed from their immigrant ancestors and now having mixed ethnic origins, and with the common practice of wives taking husband's surnames, a patient's last name may be a clue to only one of the many ancestral lands of the patient, or of her biologically unrelated husband.

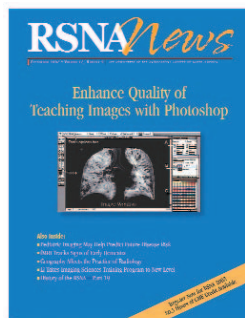
I was also surprised by Dr. Wall's sidebar article on the geographic assignment of Society Security numbers. I have never lived west of Missouri, and have spent most of my life on the East coast. Both my own and my brother's Social Security numbers, issued while we were growing up in Florida, begin with a 5. Thus, the Social Security number too is likely an imperfect clue to a patient's origins.

As always, an interview of an available and competent patient provides the most complete clinical history.

Sincerely,

DAVID L. LERNER, M.D.

CLINICAL ASSISTANT PROFESSOR OF RADIOLOGY
MOUNT SINAI SCHOOL OF MEDICINE, NEW YORK



MORE CLARIFICATION ON THE SOCIAL SECURITY NUMBER

What Does Your Number Mean?

The nine-digit Social Security number is divided into three parts:

- The first three digits are the area number. If your Social Security number was assigned before 1972 when Social Security cards were issued by local offices, the area number reflects the State where you applied for your number. If your number was assigned in 1972 or later when we began issuing Social Security cards centrally, the area number reflects the State as determined by the ZIP code in the mailing address on your application for the number.
- The middle two digits are the group number. They have no special geographic or data significance but merely serve to break the number into conveniently sized blocks for orderly issuance.
- The last four digits are serial numbers. They represent a straight numerical sequence of digits from 0001-9999 within the group.

Source: Social Security Administration

RSNA News Send your *Letters to the Editor* to rsnanews@rsna.org, (630) 571-7837 fax, or *RSNA News*, 820 Jorie Blvd., Oak Brook, IL 60523. Please include your full name and telephone number. *RSNA News* maintains the right to accept information for print based on membership status, newsworthiness and available print space.

RSNA Board of Directors Report

“A year of consistent improvement” may be one way to describe 2002 for RSNA. Last February, the Board of Directors approved a strategic plan for the Society. The plan is designed to make RSNA more effective in meeting the needs of its membership and the radiologic community at large. It is also intended to make the best possible use of RSNA’s resources, both financial and human.

At the September meeting of the RSNA Board of Directors in Chicago, Board members reviewed the goals and objectives of the Society and defined the assessment of progress in the achievement of objectives. Among those areas receiving the most attention were the RSNA Scientific Assembly, the RSNA Research and Education Foundation and member benefits.

RSNA 2002

To improve the “user friendliness” of the annual meeting, a series of focus groups will meet during RSNA 2002 to help the Society evaluate attendees’ experience of the meeting. Twelve to 15 small groups will gather to discuss various aspects of the meeting including courses, publications, registration, transportation and other logistics.

Member suggestions that will be implemented this year include a second screen in classrooms in which audience response is part of the curriculum. Questions will be displayed on one screen while images are displayed on the second. In addition, a video display screen will be available during the new *Essentials of Radiology* course. Because each of the eight sessions is near or at the 1,100-seat capacity, the video display screen will give all course attendees a close-up view of the instructors.

This year, some refresher course faculty received formal training in curriculum design and in conducting interactive sessions. The training session was so enthusiastically received that the Board has decided to extend training to other faculty in the future.

In 2003, refresher courses will be

added to help people prepare for maintenance of certification examinations and certificates of added qualifications.

RSNA Research & Education Foundation

“Funding Radiology’s Future”—the new theme of the Research & Education Foundation—points to the critical need for funding to ensure that radiology remains at the forefront of medicine. The research conducted today is the basis for tomorrow’s practice.

Because of the volatile world economic situation, the Board has agreed to several recommendations by the R&E Board of Trustees to help encourage contributions to the Foundation so that it can continue to support the work of young investigators and ultimately, the fields of radiology, radiation oncology and the allied sciences.

- The RSNA President’s Circle will now include members who have donated \$1,500 or more in one year.
- The Foundation will unveil at RSNA 2002 a new corporate giving program, called the “Exhibitor’s Circle,” that will encourage small- and mid-size companies to make an annual contribution to the Foundation.
- Because the mission of the Academy of Radiology Research is the “identification of sources of support for radiology research and the use of that



Brian C. Lentle, M.D.
Chairman, 2002 RSNA Board of Directors

research to improve the knowledge base, educational programs and patient care activities of radiology,” RSNA and the Foundation will continue to each maintain membership in ARR; however, RSNA will pay the cost of the Foundation membership and thus preserve more resources to support research.

Member Benefits

The Board of Directors is exploring ways to increase the benefits of RSNA membership. Items under consideration include an RSNA member discount with various medical textbook publishers, a package of educational materials that will help members prepare for their maintenance of certification examinations, and expansion of popular courses to outside the annual meeting.

Relationships with Academic Societies

An RSNA Task Force on Academic Radiology has been formed to discuss the relationship between RSNA and academic radiology. Task Force members will meet with the Association of University Radiologists, the Society of Chairmen of Academic Radiology Departments and the Association of Program Directors in Radiology. Some of the issues the task force will discuss are whether RSNA should continue

Continued on page 18

Lecture/Oration Previews

Three respected leaders will deliver the honored lectures at RSNA 2002. They are Bruce R. Rosen, M.D., Ph.D., Valerie P. Jackson, M.D., and C. Norman Coleman, M.D.

Eugene P. Pendergrass New Horizons Lecture

Bruce R. Rosen, M.D., Ph.D., an international leader in the development and utilization of physiological and functional magnetic resonance imaging (fMRI) techniques, will present the New Horizons Lecture on "Functional Imaging of the Brain in Space and Time."

The last decade has witnessed an explosion in the ability to study the workings of the brain. Dr. Rosen will discuss the history of functional imaging using magnetic resonance and will present today's latest technological advances in functional MR imaging of the brain.

The lecture will also cover new technologies such as direct tomographic imaging with light and novel means to combine MR imaging with electromagnetic recordings acquired with EEG and its magnetic cousin, MEG (magnetoencephalography). These new technologies will extend the ability to capture views of brain function in "real time" and in all populations, and ultimately will allow direct testing of new computational and physical models of how the brain works, grows, and is perturbed in disease.

Dr. Rosen's current research in fMRI technique development includes the measurement of the physiological and metabolic changes associated with brain activation and cerebrovascular insult. Dr. Rosen's research also addresses how functional imaging tools can be applied to solve specific biological and clinical problems.

Dr. Rosen is a professor of radiology at the Harvard Medical School in Boston and director of the Athinoula A. Martinos Center for Biomedical Imaging at Massachusetts General Hospital, the Massachusetts Institute of Technology and Harvard Medical School.

Annual Oration in Diagnostic Radiology

Valerie P. Jackson, M.D., a distinguished scholar, popular instructor and noted authority in diagnostic radiology and particularly women's imaging, will deliver the 2002 Annual Oration in Diagnostic Radiology titled, "Screening Mammography: Controversies and Headlines."

There has been a great deal of controversy regarding the efficacy of screening mammography. The debate has intensified following two recent articles by a pair of Danish researchers who concluded that mammography is ineffective in reducing breast cancer mortality. However, most major randomized clinical trials have found a statistically significant decrease in breast cancer mortality from mammography. This presentation will review the data, the criticism, the cost of the debate and potential future breast cancer screening modalities.

Dr. Jackson is the John A. Campbell Professor of Radiology at Indiana University School of Medicine in Indianapolis. She is also on staff at six area hospitals.

Annual Oration in Radiation Oncology

Internationally respected cancer researcher, C. Norman Coleman, M.D., will present this year's Annual Oration in Radiation Oncology on "Linking Radiation Oncology and Imaging Through Molecular Biology."

The era of molecular medicine is transforming the practice of medicine, providing new insights that will have a major impact on disease treatment and

prevention. The "technologically oriented" disciplines will be presented with new challenges and opportunities to adapt or, preferably, to lead in new directions. Among the extraordinary opportunities are cancer imaging, defining the signature of cancer cells, and molecular targets of prevention and

treatment. The new paradigms of "credentialing" and "focused biology" have shown that imaging and therapy are linked by molecular biology—providing an important reason for diagnosis, therapy and nuclear medicine to develop new research, training and education agendas building on each other's expertise.

Dr. Coleman wears many hats at the National Cancer Institute (NCI) in Bethesda. He is the creator and director of the Radiation Oncology Sciences Program, which coordinates all radiation oncology activities at NCI. He is also deputy director of the Center for Cancer Research, chief of the Radiation Oncology Branch of the Center for Cancer Research, associate director of the Radiation Research Program in the Division of Cancer Treatment and Diagnosis, and special advisor for Radiation Sciences to the director of NCI. □



**Bruce R. Rosen, M.D.,
Ph.D.**



**Valerie P. Jackson,
M.D.**



**C. Norman Coleman,
M.D.**

Breast Density Best Predictor of Mammographic Sensitivity

Breast density, rather than a woman's age or hormonal status, is the best predictor of mammographic sensitivity, according to a study published in the October issue of *Radiology*,¹ which corroborates previously published research. The new study, by Thomas M. Kolb, M.D., a private practitioner from New York City, and colleagues also suggests that in women with dense breasts, an ultrasound

examination will show a significant number of tumors that screening mammography will not.

The researchers evaluated 27,825 consecutive screening sessions that included mammography and subsequent physical examination in 11,130 asymptomatic patients.

If the patients were determined to have dense breasts, they also had complete bilateral screening breast ultrasound. The examiner had knowledge of the prior screening results. All three examinations were performed during a single visit by a single examiner. Each patient's age, hormonal status and risk factors were recorded.

The American College of Radiology has developed a four-level grading system to subjectively categorize breast density on a scale of 1 (fatty) to 4 (most dense). "We previously reported finding dense breasts in two thirds of premenopausal women, 25 percent of postmenopausal women not taking hormones and 50 percent of postmenopausal women taking hormones." In this study, the dense breast cohort was 49 percent of the entire patient population and included all patients with density grades 2-4.

The calculated sensitivity of mammography for all women studied was 77 percent, which Dr. Kolb says is an overly simplistic way of reporting performance because sensitivity significantly varies in different subpopulations of women.

"We found that density is the single most important predictor of mammographic sensitivity. Age was a less important predictor, and as breast density increases, mammographic sensitivity significantly decreases," says Dr. Kolb. "In those women with fatty breasts, mammography failed to show only two percent of breast cancer. But in women with the densest breasts, mammography failed to show over 52 percent of all cancer."

He adds that, "Since there are large numbers of women, predominantly young and premenopausal with dense breasts, the impact of this low sensitivity is very large. In terms of mammographic sensitivity, it is more important for a woman to know her breast density than her age."

Breast density has been found to be heritable,² while more than a dozen other studies have demonstrated that women with dense breasts are at increased risk for breast cancer.

Other Findings from the Kolb Study

- Physical examination detected only 27 percent of cancers. When a tumor was palpable to the examiner, on



Thomas M. Kolb, M.D.
Private Practitioner, New York

average it measured twice as large as those tumors that were non-palpable and only 37 percent were early stage cancers vs. 90 percent for non-palpable tumors. Dr. Kolb says this confirms the importance of finding tumors before they become palpable.

- Screening ultrasound detected an additional 42 percent of invasive cancers that were not detected by either mammography or physical examination in women with dense breasts. Dr. Kolb says this translates into a 73 percent increase in cancer detection.
- Of biopsies prompted by ultrasound alone, 37 out of 358 (approximately 10 percent) were malignant. In other single center studies of screening breast ultrasound, as few as two percent of biopsies prompted by ultrasound proved malignant.

This is a unique opportunity to further study a possible impact upon mortality by a new screening procedure.

—Thomas M. Kolb, M.D.



TABLE.
Sensitivity of Combined Detection Modalities for Each Breast Density Category

Modality	BI-RADS Category				
	1	2	3	4	2-4
Mammography, PE, or both	100 (100/100)	87.8 (36/41)	74.6 (44/59)	63.0 (29/46)	74.7 (109/146)
Mammography, US, or both*	NP	100 (41/41)	98.3 (58/59)	93.5 (43/46)	97.3 (142/146)

Note.—Data are percentages. Data in parentheses are numbers used to calculate the percentages. NP = not performed.
 * Screening US was not performed in women with BI-RADS category 1 breast density.

© 2002 RSNA. Table reprinted with permission. (*Radiology* 2002; 225:165-175)

- Of the 31 cancers found by ultrasound alone in women with dense breasts, 15 (48 percent) were in women at high-risk.
- The benefits of routine screening breast ultrasound must be weighted against the false-positive rate of 2.4 percent of this examination and the cost of the subsequent diagnostic procedures.

“What we’ve shown is that in women with dense breasts who have normal mammograms and normal physical examinations, you can still find an additional 42 percent of women with non-palpable invasive breast cancer by performing ultrasound screening,” he says.

He also stresses that cancers detected by ultrasound alone were similar in size and stage to those detected mammographically only and were likely at smaller and lower stage than if detected as an interval cancer. This would also allow for easier and more varied treatment options.

“These findings suggest that the survival benefit from additional screening with ultrasound would magnify that created by screening mammography. For those who believe mammographic screening does not alter mortality, it is either because tumors in the younger woman are more aggressive or they are simply being mammographically missed in younger women who predominantly have denser breasts,” says Dr. Kolb.



Dr. Kolb presented his findings in September at the American Medical Association’s annual Science Reporters Conference in Washington, D.C.

Based on previous studies and this new work, Dr. Kolb believes cancers that are mammographically invisible as well as many interval cancers, which are less prognostically favorable, may be found prior to their dedifferentiation to more aggressive tumors. “This is a unique opportunity to further study a possible impact upon mortality by a new screening procedure.”

ACRIN Breast Cancer Study

In a multicenter trial, co-funded by the Avon Foundation and the National Cancer Institute, conducted through the American College of Radiology Imaging Network (ACRIN), high-risk women will be screened independently by mammography and bilateral whole breast ultrasound. “There have been


many barriers to widespread acceptance of screening breast ultrasound, including its operator dependence and high likelihood of generating an unnecessary biopsy,” says lead investigator Wendie A. Berg, M.D., Ph.D., director of Breast Imaging at the University of Maryland.

In addition to the primary goal of validating the supplemental benefit of ultrasound after mammography, the trial will also evaluate important issues such as reproducibility of lesion detection and characterization across different radiologists. Criteria have been suggested to decrease the rate of benign biopsies, but they have not yet been validated across multiple centers. A critical aim of the study is reproducibly identifying lesions with less than two percent risk of malignancy that can be followed.

The Avon Foundation is committed to improving the entire field of breast imaging. The ACRIN study is only one of a number of breast cancer research projects for which the foundation is providing funding. □

Reference:

1. *Radiology* 2002; 225:165-175
2. *NEJM* 2002; 347:886-894

 A full-text version of the Kolb study is available at radiology.rsnaajnl.org/.

Many Unanswered Questions Remain in Debate over Full-Body CT

Using full-body CT as a preventive tool is currently one of the hotly debated topics surrounding the use of diagnostic technologies to detect disease before—sometimes long before—a disease may manifest. Within this debate, the use of full-body CT has raised pressing questions about its value to look for disease that is not evident, and for some people, not even likely.

Central to the controversy are several questions without any clear answers. Does early detection of specific diseases reduce mortality? Should people be able to refer themselves for screening? Is the monetary cost of screening CT worth the benefit? What, if any, are the criteria for people who should undergo full-body CT?

Early Detection / Reduced Mortality

The argument for detecting early disease rests on the “intuitive” sense that the earlier you treat disease, the better the prognosis. Mammography for breast cancer, PSA test for prostate cancer, colonoscopy for colorectal cancer, pap smears for cervical cancer, and blood tests for cholesterol and glucose levels are all done based on this idea, wrote Michael N. Brant-Zawadzki, M.D., in a recent article.¹ Why, then, is there such a controversy over using full-body CT to test for such diseases as lung cancer, heart disease and colon disease?

With the emphasis on evidence-

based medicine, there is increased demand to move beyond, or at least augment, “intuition” with scientifically tested outcomes. Early detection for diseases which full-body CT could

and medical director of radiology at Hoag Memorial Hospital in Newport Beach, Calif. “Compare this to people with stage I lung cancer who undergo surgery—80 percent of them are alive at five years.”



Stephen J. Swensen, M.D.
Chair, Department of Radiology
Mayo Clinic



Michael N. Brant-Zawadzki, M.D.
Medical Director of Radiology
Hoag Memorial Hospital

detect—notably lung cancer, coronary artery disease and colon cancer—has not, to date, been proven to reduce mortality. Because of this lack of scientific proof, the American College of Radiology does not recommend whole-body CT screening.

But observational data, particularly for lung cancer, suggest that screening could have a major benefit in outcomes despite the dearth of randomized data. “We know that if people with stage I lung cancer are not treated, about 80 percent of them will be dead in five years,” says Dr. Brant-Zawadzki, a clinical professor of radiology at Stanford University School of Medicine

spoke to a group of journalists and physicians attending a recent conference at the Mayo Clinic in Rochester, Minn. Efforts to improve outcomes have advanced little over the past years. Lung cancer maintains a mortality rate of 87 percent death, added Stephen J. Swensen, M.D., professor of radiology at Mayo Medical School and chair of

the Department of Radiology at the Mayo Clinic.

Dr. Swensen reported on a study he and Dr. Midthun conducted at Mayo to evaluate the benefit of CT screening in people at high risk of developing lung cancer. Using low-radiation-dose spiral CT and sputum cytology screening in

Screening for Lung Cancer

The difficulty of detecting lung cancer in its earliest stages is a major reason lung cancer kills so many people. Lung cancer kills more people every year than breast, prostate, colon and pancreas cancers combined, according to pulmonologist David E. Midthun, M.D., who

RSNA 2002 Opening Session

The Opening Session at RSNA 2002 will be on screening examinations. The moderator will be George S. Bisset III, M.D. The panelists are Bruce J. Hillman, M.D., and Michael N. Brant-Zawadzki, M.D. Check your *RSNA Scientific Program* for more information.

1,520 patients, 61 percent of whom were smokers, the investigators made significant findings, such as nodules that needed further investigation, in nearly 1,200 (79 percent) participants.² Of the 51 lung cancer cases detected, 30 (59 percent) were stage IA.

In addition to lung cancer, Dr. Swensen says ancillary findings, such as abdominal aneurysms, were located in the lower portions of the CT scan. Abdominal CT scans can also detect signs of osteoporosis and visceral fat, which in a certain distribution has been linked to an increased risk of cardiovascular disease.

Encouraged by these findings, Dr. Swensen suggests that full-body CT screening could save lives through early detection of lung cancer and other ancillary diseases, and could be cost-effective, but is absolutely unproven.

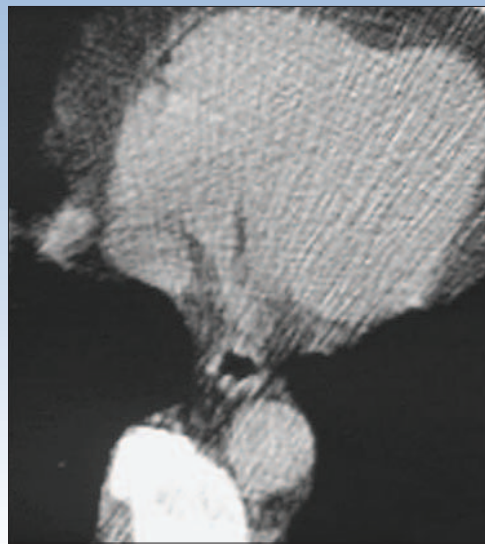
Dr. Midthun also cites a lack of evidence of reduced mortality associated with early lung cancer detection and the problem of bias that continues to thwart the ability to evaluate reduced mortality in many studies. A recently initiated multicenter study, the National Lung Cancer Screening Trial (see the July issue of *RSNA News*), compares spiral CT to standard chest x-rays and will be “used as the gold standard for mortality reduction of lung cancer,” says Dr. Midthun.

Self-Referral

Evidence on the effect of early diagnosis on mortality is only one issue in the controversy over full-body CT scanning. Another issue—the dividing issue, according to Dr. Brant-Zawadzki—is whether patients should be able to refer themselves for screening.

With the proliferation of free-standing radiology clinics that offer full-body CT scanning just like any other offering in a mall, concern has increased in the radiology and healthcare communities about the appropriateness, ethics and viability of these entrepreneurial ventures.

“Self referral fits into a culture that



The enlarged lymph node identified on screening CT led to the diagnosis of lymphoma in this asymptomatic participant. 215 of the 1,520 participants in the Mayo Clinic study had lymphadenopathy. Three of the 215 participants with lymphadenopathy have been determined to have a malignancy.

Image courtesy of Dr. Swensen

is already in place in the medical community,” says Dr. Brant-Zawadzki. “Physician referrals for CT scans have risen dramatically because of the sensitivity of CT. With increased information available to patients, they are now self-referring for all sorts of exams, from mammography to genetic testing.”

A central barrier to self-referral CT scanning is that it puts diagnostic radiologists on the front lines of healthcare, a place where they are not used to being, says Dr. Brant-Zawadzki,

Further barriers include concern over the need to establish criteria on who would benefit from this type of screening and the cost it will incur on the healthcare industry as a whole.

Who Should Get Full-Body CT Screening?

“For people who want these scans, I would recommend the following,” says E. Stephen Amis Jr., M.D., chairman of the Board of Chancellors for the American College of Radiology. “First, patients should discuss the test with their personal physician before having it done. Second, patients should be age 40 or older. Third, patients should be required to sign a consent form saying

that insignificant findings may require further work-up, that certain tumors will not be detected and that cumulative radiation exposure can be dangerous.”

Although effects of radiation exposure may be of little concern for a single CT examination, explains Dr. Amis,

“the main problem would be cumulative exposure to radiation if patients are allowed to begin seeking screening at an early age and repeat it at regular intervals.”

For Dr. Brant-Zawadzki, criteria for patient selection are important. Rather than full-body CT scanning, Dr. Brant-Zawadzki is a proponent of targeted CT for the heart, lung and colon, in

that order. He also considers the age of the patient and their history, such as smoking, before allowing CT.

Cost Concerns

“I view the additional cost to society, given the current state of whole-body screening, as the largest ethical issue to be faced,” says Dr. Amis, who is also professor and chairman of the Department of Radiology at Albert Einstein College of Medicine and Montefiore Medical Center in the Bronx. “There is no doubt that CT will increase the cost

Continued on next page

I view the additional cost to society, given the current state of whole-body screening, as the largest ethical issue to be faced.

—E. Stephen Amis Jr., M.D.

Continued from previous page

of healthcare overall, whether it remains consumer oriented or becomes an accepted and reimbursed examination.”

Dr. Brant-Zawadzki agrees, but adds that he knows of no preventive tool that cuts healthcare costs. But is the benefit worth the cost? Dr. Swensen calculates that 907,200 new lung cancers would be detected if CT scans were performed on the U.S.

population, which would incur a cost of \$74.1 billion or \$81,700 per cancer. The question of whether this cost burden is acceptable will remain unanswered until more evidence indicates a clear reduction in mortality as a result of early disease detection. □

Reference

1. *Am J Roentgenology* 2002;179:319-325
2. *Am J Respir Crit Care Med* 2002;15:165:508-513

FDA Offers Information

The Food and Drug Administration's Web site offers information on whole-body CT (www.fda.gov/cdrh/ct/), including the following statement:

At this time the FDA knows of no data demonstrating that whole-body CT screening is effective in detecting any particular disease early enough for the disease to be managed, treated or cured and advantageously spare a person at least some of the detriment associated with serious illness or premature death.

JOURNALS

Radiology in Public Focus

Press releases have been sent to the medical media for the following scientific articles appearing in the November issue of *Radiology* (radiology.rsna.org):

“Picture Archiving and Communication System: Effect on Reporting of Incidental Findings”

The introduction of PACS into a radiology practice appears to be associated with an increased number of reported incidental findings and recommended follow-up studies.

Steven C. Wagner, M.D., and colleagues from Thomas Jefferson University Hospital in Philadelphia reviewed the results of 2,500 lumbar spinal 1.5-T MR examinations—500 in the year prior to PACS, 500 during the year of transition to PACS and 500 in each of the next three years.

They found an increase in the number of incidental findings from 19 in year one to 50 in year five. The most common incidental findings involved potential renal, pelvic, hepatic, pulmonary and lymph node abnormali-

ties. The total number of recommended follow-up studies increased from five in year one to 18 in year five.

Follow-up expense increased from \$4,221 per 1,000 studies in year one to \$8,252 in year five. (*Radiology* 2002; 225:500-505)

“Renal Imaging Findings in Patients with Tuberous Sclerosis Complex”

Angiomyolipoma and Acysts commonly occur in pediatric patients with tuberous sclerosis complex (TSC) and tend to increase in size and number with increasing age.

Keith A. Casper, M.S., Lane F. Donnelly, M.D., and colleagues from Children's Hospital Medical Center in Cincinnati reviewed the renal imaging findings and changes over time in a large series of young patients with TSC. They found that in



patients with initial normal exams, the mean age of presentation of cysts was 9.0 years and angiomyolipomas was 9.2 years.

The researchers write: “Considering the age of typical occurrence of angiomyolipoma and size criteria for increased risk of hemorrhage, imaging surveillance most likely does not yield clinically important information until late in the first decade of life.”

(*Radiology* 2002; 225:451-456)

RSNA press releases are available at www2.rsna.org/pr/pr1.cfm.

“Efficacy of Open Versus Anti-Reflux Stents for Palliation of Distal Esophageal Carcinoma and Prevention of Symptomatic Gastroesophageal Reflux”

The “Dua” anti-reflux stent is as safe and effective as the “Flamingo” stent in relieving malignant dysphagia and very successful in reducing symptomatic gastroesophageal reflux.

Hans-Ulrich Laasch, M.R.C.P., F.R.C.R., from South Manchester University Hospitals NHS Trust in England, and colleagues studied 50 consecutive patients with inoperable distal esophageal tumors, who had one of the two stents placed across the cardia.

They found improvement in dysphagia was identical in both groups. There was also no significant difference in survival, complication or re-intervention rate.

(*Radiology* 2002; 225:359-365)

DT-MRI Offers Expanding Potential in Research and Diagnosis

The National Institutes of Health has signed a licensing agreement with GE Medical Systems to produce and market diffusion tensor magnetic resonance imaging (DT-MRI). The expanded availability of this technology, used in many hospital emergency rooms to evaluate stroke patients, may allow researchers and physicians to study and diagnose a wide variety of other medical conditions.

DT-MRI is used to make detailed, three-dimensional maps of nerve pathways in the brain, heart muscle fibers and other soft tissues.

“The basic idea is that DT-MRI can follow the random motion of water in three dimensions,” says Peter Basser, Ph.D., chief of the National Institute of Child Health and Human Development (NICHD) Section on Tissue Biophysics and Biometrics, Laboratory of Integrative and Medical Biophysics (LIMB). Dr. Basser is the principal inventor of DT-MRI.

“It turns out that the jiggling motion of water is sensitive to the local microstructure and composition of the material with which that water is in contact,” Dr. Basser says. “So you are able to learn things about the geometry—the morphology of small structures—and sometimes about the composition of the tissue that the water is moving randomly within.”

Dr. Basser says the technology has been around for more than a decade. “The actual bench studies were performed more than a decade ago,” he says. “But recently, the Office of Technology

Transfer has been successful in identifying companies that are interested in licensing the technology and essentially bringing it from bench to bedside.”

Mapping the White Matter Pathways

“One of the uses of diffusion tensor is to actually show which way the white matter tracts in the brain are running,” says William G. Bradley Jr., M.D., Ph.D., chairman of the Department of Radiology at the University of California, San Diego School of Medicine, and one of the world’s leading experts in MR imaging.

Dr. Bradley says DT-MRI can show normal anatomy as well as diseased areas. “You can show tumors invading white matter so the surgeons know how far they can cut before they get into white matter that is displaced,” he says.

“Another example would be multiple sclerosis,” he continues. “Normally, white matter is very anisotropic. High anisotropy is normal; however, MS eats at the coverings of the wires and it destroys your insulation. So you don’t have the purely anisotropic measurements that you had before.”

Carlo Pierpaoli, M.D., Ph.D., a



Peter Basser, Ph.D.
Chief, NICHD Section on Tissue Biophysics and Biometrics
Laboratory of Integrative and Medical Biophysics

neurologist with NICHD’s LIMB, has done several studies using DT-MRI, including its application to white matter fiber tract mapping in the human brain. “With DT-MRI, we can start investigating white matter pathways noninvasively in living subjects,” he says. “So it’s a very powerful tool from that point of view.”

DT-MRI’s ability to identify the pathways suggests it could play a role in investigating disorders

such as schizophrenia, autism and attention deficit disorder.

“In many of these disorders there is a hypothesis that the functional disturbance or the functional deficit is somewhat related to an underlying anatomical abnormality,” says Dr. Pierpaoli. “The potential use of DT-MRI in the diagnosis of these disorders is related to the powerful detection of white matter pathways that DT-MRI allows.”

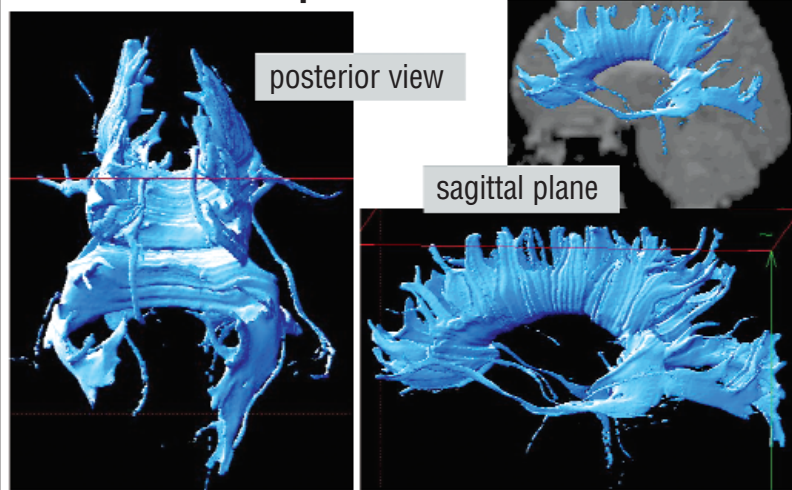
Dr. Basser says a number of groups, including the Institute of Psychiatry (IOP) in the United Kingdom, have been looking at what might be called “wiring problems.” “Groups at the IOP compute fiber tracts in white matter to see if there are relationships between nerve pathways in normal and abnormal subjects,” he says.

Other research has focused on cognitive disorders. Dr. Basser says Stanford University Psychology Professor

Continued on next page

DT-MRI's ability to identify the pathways suggests it could play a role in investigating disorders such as schizophrenia, autism and attention deficit disorder.

Corpus Callosum



3D rendering of computed trajectories within the corpus callosum. Trajectories are launched in both directions from a multislice ROI located in the body of the corpus callosum in the proximity of the midline. The majority of fiber trajectories continue upward toward the cingular cortex. The cingulum is the thin bundle running anteroposteriorly above the corpus callosum (see arrows in figure showing posterior view).

Basser et al, *Magnetic Resonance in Medicine* 44:625-632 (200)
Images courtesy of Dr. Basser

John Gabrieli, Ph.D., and former Stanford postdoctoral researcher Torkel Klingberg showed a correlation between one of the diffusion tensor-derived parameters and reading ability in dyslexia.

“Of course, these studies have to be repeated by many groups and findings have to be confirmed,” he says. “But it’s not a big stretch to imagine that a molecular developmental abnormality would manifest itself in a different white matter arrangement and distribution.”

Clinical Applications

Dr. Basser says the first main application of DT-MRI has been in acute stroke. “We identified a quantity called the trace of the diffusion tensor, which is related to the average mobility of water,” Dr. Basser says. “It’s an intrinsic property of tissue. It has been used to great effect in identifying ischemic areas in stroke.”

Dr. Bradley says traumatic brain injury is another area in which DT-MRI can be used. “When people have

head trauma, the white matter gets sheared,” he says. “It’s called diffuse axonal injury, or shearing injury in the vernacular. When you do diffusion tensor imaging of these patients, you see less anisotropy because the white matter tracks have been disrupted in that part of the brain.”

Dr. Pierpaoli points out that DT-MRI can be done on virtually all organs in the human body. “There are, for instance, studies in the muscle fibers in the heart,” he says. “It’s difficult to do DT-MRI in the beating heart. But there are groups that have attempted to do it and have interesting results. So, for instance, the organization of myocardial fibers in the heart destruction following an infarct or other cardiac disorders has been studied with DT-MRI.”

Radiologists are already interpreting the diffusion images collected from stroke patients. Dr. Basser believes they will also begin looking at some of the maps produced by the technology, particularly

the color maps such as those pioneered by Dr. Pierpaoli and fellow NIH researcher Sinisa Pajevic, Ph.D.

“I think those are particularly informative because they tell you where the white matter is and what the local

orientation of the fibers is. I think that radiologists may find them pleasing and informative—more so than some of the conventional MRIs of white matter,” he suggests. □

Practice Radiology the way it USED to be in Historic Gettysburg, PA

Join the wellspan Radiology Center in charming, historic Gettysburg, PA. Gettysburg has a small town community spirit but is less than 1 1/2 hours from Baltimore and Washington, D.C. With the additional provider call will be 1:00 and each provider averages only 12,000 readings/year.

For the interested candidate, there is an opportunity to work in a new Women's Diagnostic Center. This private practice offers attractive work hours, partnership opportunities and an exclusive contract with Gettysburg Hospital. Direct inquiries to Carol Stowell, toll-free: 1-866-230-1477. Fax your CV to 717-851-2968. EOE.



Visit our Web site: www.wellspan.org

IHE: Making Workflow Work for You

The Integrating the Healthcare Enterprise (IHE) initiative is an industry-wide collaborative effort to implement communication standards that improve sharing of information and optimize clinical care. IHE provides solutions to many critical problems encountered in electronic radiology, such as efficiently maintaining the integrity of patient demographic information, and optimizing workflow for scheduled patients and exception cases, including trauma patients.

Keeping images consistent

After three years of successful vendor demonstrations, IHE will offer education in two separate venues at RSNA 2002 to show how vital improvements to workflow and information sharing are being realized in healthcare institutions today.

The **IHE Theater** will feature information and tools for acquiring and implementing integrated systems:

- A multimedia presentation, given twice hourly, with the essentials on IHE: how it works, why it matters and how you can make it work for you
- User success stories from institutions that have implemented integrated systems
- Tools for implementing integrated systems including a matrix for evaluating products, key questions to ask vendors, and requirements language for RFPs

The **IHE Classroom** will offer a full slate of in-depth, targeted educational sessions about the benefits of true integration, the standards and implementation process necessary to achieve it and the tools available through IHE to acquire and implement it in healthcare enterprises today.



Companies participating in IHE 2002 had the unique opportunity for advanced integration testing during the IHE Connectathon in October at RSNA Headquarters in Oak Brook, Ill.

Participating in IHE helps vendors coordinate their efforts to implement truly integrated systems. IHE capabilities are now available in many commercial products and are being adopted by institutions around the world. They can be used today to help optimize patient care.



IHE defines a carefully documented framework of standards and provides tools and a testing process to help implement them. In October participating companies brought their systems to RSNA Headquarters to participate in the annual Connectathon and complete an extensive program of integration testing. □

IHE 2002-2003 Participants

Agfa Healthcare	IDX Systems Corporation	Mitra Imaging, Inc.
Algotec Systems Ltd.	IMCO Technologies	Philips Medical Systems
Canon Medical Systems	Instrumentarium Imaging	Rasna Imaging Systems
Cedara Software	Konica Medical Imaging	Siemens
Cerner Corporation	Lorad/Hologic	Softmedical
Chung-Shan Institute of Science and Technology	Marotech, Inc.	Stentor
Eastman Kodak Company	McKesson Information Solutions	StorCOMM, Inc.
Emageon	Medcon	Swissray Medical AG
Fujifilm Medical Systems USA, Inc.	Medical Manager Health Systems, a WebMD Company	Tiani Medgraph AG
GE Medical Systems	Mediface Co., Ltd.	Toshiba
Hitachi Medical Corporation	Merge eFilm	UltraVisual Medical Systems
		Vital Images, Inc.
		Voxar Ltd.

Densitometry Courses and Certification Offered Immediately Following RSNA 2002

The International Society for Clinical Densitometry (ISCD) will host educational lectures on bone densitometry and certification examinations December 7–8, 2002, at the Marriott's Courtyard Downtown Chicago hotel.

Lectures and certification are available for both clinicians and technologists. Clinicians will learn about equipment technology as well as interpretation and reporting. Technologists will learn about proper positioning and procedure consistency. The courses are open to physicians, Ph.D.s, technologists, allied healthcare professionals, nurse practitioners and physician assistants.

"ISCD is an industry-neutral, non-profit organization committed to improving the quality of bone densitometry. Consequently, RSNA is delighted to facilitate ISCD's educational efforts," says Brian C. Lentle, M.D., chair of the RSNA Board of Directors. "RSNA wanted to work with ISCD because of ISCD's interest in quality practice, education and research."

The ISCD/RSNA partnership developed due to a shared target audience. ISCD believes that Chicago is a good location for the courses because of Chicago's accessibility and the number of bone densitometry machines in use in the metropolitan area.

"ISCD is a strong proponent of the partnership between the technologist who performs the bone density tests and the clinician who interprets them. We are trying to increase the number of radiologists who accept and understand the importance of knowledge and training in interpreting bone density tests,"

explains Linda C. Hartman, a former ISCD certification manager who helped to coordinate the partnership.

Densitometry is a radiologic technique measuring bone density that is practiced in the United States and Canada by a variety of practitioners—gerontologists, endocrinologists, internists, obstetricians and radiologists.

In the past, RSNA has offered a number of popular programs on osteoporosis. ISCD is offering a course beyond osteoporosis while also providing densitometry certification.

"Radiologists must stay at the forefront of densitometry to assist our colleagues who are using this important

Radiologists must stay at the forefront of densitometry to assist our colleagues who are using this important technology to evaluate their patients.

—Brian C. Lentle, M.D.

technology to evaluate their patients. I hope that an increasing number of bone density scans will be referred to radiologists for interpretation. In addition to densitometry, radiologists must have a thorough understanding of osteoporosis as well," says Dr. Lentle.

"ISCD is an experienced organization dedicated to providing standardized, yet cutting-edge information in the field of bone densitometry. ISCD's focus is on certification programs and

bone densitometry education as well as standardization. Technicians should be highly skilled and capable of performing everything correctly the first time.

This level of expertise saves money throughout the healthcare industry," Hartman says.

The RSNA Board of Directors is interested in testing

the synergy between the two organizations by scheduling one meeting following the other. "It may be that ISCD adds an extra spark to the end of the RSNA meeting and that more people are able to attend ISCD because they are already in Chicago. We hope to find that this is a beneficial arrangement for both groups," adds Dr. Lentle.

The clinical track offers 11 CME category 1 credit hours, while the technical track offers 10.5 credit hours accepted by the American Registry of Radiologic Technologists and the American Society of Radiologic Technologists. A certification exam for the clinical and technical tracks will be given on Sunday, December 8, 2002. Lecture hours for both tracks can be applied toward ISCD recertification. ISCD certification is valid for five years. For more information including pricing, contact ISCD at (202) 367-1132 or www.iscd.org. □



Internet for You—Part 7

Internet Security

Viruses

Computer data can be damaged or altered by programs called malware, pest programs or vandalism created by computer hackers. More typically, these programs are called viruses. A computer virus is a program that attaches itself to a file, reproduces itself and spreads to other programs. A virus can corrupt and/or destroy data, display an irritating message or disrupt computer operations.

Several medical terms are used to describe virus operation. A computer is a “host” that becomes “infected” with a virus. The virus “replicates” and spreads from one computer to another. A computer can be “inoculated” against viruses, but when it becomes infected, “antiviral” software is used to “disinfect” it.

Viruses can spread if an infected floppy disk is in the disk drive when the computer boots up, when the user runs an infected program or opens an infected file. Downloading a file from the Internet or opening an e-mail attachment might also infect the user’s computer. A computer virus is a segment of program code that implants itself in a computer file and spreads systematically from one file to another, replicating itself on the hard disk. Some viruses place a virus marker inside the programs that they infect, so they can manage the viruses’ activities. If a virus detects one of these markers, it knows that the program is already infected so it does not replicate itself in this particular program.

Viruses attack four parts of a computer: its executable program files, its file directory system that tracks the location of all computer files, its boot and system areas that are needed to

start the computer and the data files themselves.

Types of Virus

There are four main types of viruses: boot sector viruses, file viruses, Trojan horse viruses and macro viruses.

A **boot sector virus** replaces the boot program used to start a computer with a modified infected version of the boot program that loads the virus into the computer’s memory. Once the virus is in the memory, it spreads to any disk inserted into the computer.

A **file virus** attaches itself to or replaces program files; the virus then spreads to any file that accesses the infected program.

A modern **Trojan horse** is a computer program that appears to perform one function while it actually does something else. It is not a virus because it does not replicate itself, but it may carry a virus. A Trojan horse usually destroys data or steals passwords while looking like a login screen. As a user tries to log in, the Trojan horse collects the user’s ID and password. This information is then e-mailed to a hacker for easy access to the data stored on the network. The typical purpose of a Trojan horse is to defeat network security measures.

A **macro virus** uses the macro language of an application, such as word processing or a spreadsheet, to hide the



Katarzyna J. Macura, M.D., Ph.D.
The Russell H. Morgan Department of Radiology and Radiological Science, Johns Hopkins Medical Institutions

virus code. When the document with an infected macro is opened, the macro virus loads into the memory. A virus is usually activated as soon as a program or file is used, or at the specific times or dates determined by the virus creator.

A **logic bomb** is a computer virus that activates when it detects a certain condition, such as appearance or disappearance of certain data. A time bomb is a type of logic

bomb that activates when the predetermined time or date registers on the internal clock of the computer.

Another type of malicious program is a **worm**. Worms are programs designed to infect networks through security holes. Like a virus, a worm replicates itself. Unlike a virus, a worm does not need to be attached to a document or executable program to reproduce. Worms travel from a networked computer to another networked computer, replicating themselves along the way. The worm copies itself repeatedly in the memory or disk space until no memory or disk space remains. Worms are not likely to affect personal computers, because they are designed to attack network servers.

Antiviral Applications

There are three kinds of antiviral applications that protect computers against viruses: scanners, eradication programs

Continued on next page

Continued from previous page

and inoculators.

A **scanner** checks if the computer has any files that have markers indicating the presence of a virus. A scanner may also check the size of a program to detect any changes in file size or file creation date. An antivirus program can identify a virus through recognition of a specific pattern of known virus code, called a virus signature.

An **eradication** program disinfects, or removes viruses from the hard disk.

An **inoculator** does not allow a program to run if it contains a virus. Currently, several thousands of known viruses exist, but fewer than 10 cause significant damage. The Symantec AntiVirus Research Center's Online Encyclopedia offers the most up-to-date information on recent threats at www.symantec.com/avcenter/vinfodb.html

Encryption

Encryption is a technique for scrambling and unscrambling information. The unscrambled information is called clear-text and the scrambled information is called cipher-text. Once data is encrypted, it can be sent via e-mail messages or stored just as any other data. To read the data, the recipient must decrypt, or decipher, it into a readable form. To encrypt the data the originator of the data applies an encryption key, secret values that computers use along with complex mathematical formulas to encrypt messages. The recipient of the data then uses an encryption key to decrypt the data.

There are two basic types of encryption, private key and public key. With private key encryption, symmetric encryption, both the originator and recipient use the same encryption key to encrypt and decrypt the data. Public key encryption uses two encryption keys: a public key known to everyone and a private key known by only the receiver. To decode an encrypted message, a computer must use the public key, provided by the originating com-

puter and its own private key.

Many browsers include encryption software that allows the user to encrypt e-mail messages or other documents. Secure Socket Layer (SSL) is one of the more popular Internet encryption methods, which provides two-way encryption along the entire route data travels to and from a computer. Web pages that use SSL begin with the https protocol, instead of http protocol. To check if the communication is carried over a secure channel that uses SSL, the user should look for a padlock icon on the browser and make sure that the URL is in the form of *https://* as opposed to *http://*. Before entering any sensitive data, such as a credit card number or Social Security number, it is important to verify that the user's computer is communicating with the right server and not an imposter that is trying to steal personal information. To verify this, the user should check the authentication certificate, which could be accessed by double-clicking on the padlock icon.

Firewalls

The nature of the Internet, an open public network that allows for free exchange of information and files, makes it vulnerable to attack. Every time a computer connects to the Internet it faces potential danger of being open to hackers who could theoretically break into the system and cause damage. One way of protecting the networks and individual computers from intruders is the installation of a firewall that shields the internal (corporate/educational/private) networks from the Internet.

A firewall is a combination of hardware and software used to prevent hostile programs from entering a network,

usually by filtering out suspicious data packets. Firewalls can also be used to prevent unauthorized access to the information within the particular network. Recognizing the efficiency and power of the Internet, many organizations have applied Internet technologies to their own internal networks called intranets.

An intranet, sometimes called an enterprise network, is a small version of the Internet used within an organization, which uses the same file exchange protocols, supports multimedia and

Before entering any sensitive data, such as a credit card number or Social Security number, it is important to verify that the user's computer is communicating with the right server and not an imposter that is trying to steal personal information.

allows access via browsers. Intranets generally make company information accessible to authorized users, employers, and facilitate working in groups. An intranet may also allow access by authorized users outside the company, forming an extranet. With a firewall, the internal networks work as networks normally do, with servers providing internal services

such as e-mail, access to corporate databases and the ability to run programs from servers.

When someone on the local network wants to access the Internet, the request and data must go through an internal screening router. This interior router examines the packets of data traveling in both directions, between the network and the Internet. Information within the packets' headers gives the router the source and destination of the packet, the protocol being used to send the packet and other identifying data. Based on the information in the headers, the screening router will allow certain packets to be sent or received, but will block other packets. System administrators set the rules to specify acceptable communications from locations, individuals, or in certain protocols and to determine which packets to

Some symptoms of virus infection:

1. Computer displays annoying messages
2. Computer develops unusual visual or sound effects
3. Files mysteriously disappear or are difficult to save
4. Computer reboots unexpectedly
5. Computer suddenly slows down
6. Executable files increase in size

Tips for preventing virus infection:

1. Install and regularly run an antivirus program on all of your computers. Obtain updates to the antivirus signature files. The cost of antivirus software is much less than the cost of rebuilding damaged files.
2. Write-protect your rescue disk by sliding the write-protect tab into the write-protect position. Beware, however, that although a virus cannot transfer onto your disk when it is write-protected, you must remove the write-protection each time you save a file on the disk. With the write protection removed, your disk is open to virus attack.
3. Never start computer with a floppy disk in drive A. All floppy disks contain a boot sector. During the startup process, the computer attempts to execute the boot sector on a disk in drive A. Even if the attempt is unsuccessful, any virus on the floppy disk's boot sector can infect the computer's hard disk.
4. Do not accept files from high-risk sources. Before using any floppy disk, use the antivirus scan program to check the disk for viruses. Even commercial software has been infected and distributed to unsuspecting users.
5. Do not download from sites that do not test and secure their files. Check all downloaded programs for viruses. Viruses are often placed in seemingly innocent programs so they will affect a large number of users.
6. Before opening and/or executing any e-mail attachments, ensure that the e-mail is from a trusted source. If an e-mail is from an unknown source, it should be deleted without opening or executing any attachments. Avoid running attachments that are .EXE files, even if they come from your friends.
7. Back up your files regularly. Scan the backup program prior to backing up disks and files to ensure the backup program is virus free.

allow in and which ones to block.

A software firewall can be installed on the computer at home that has an Internet connection. This computer is considered a gateway because it provides the only point of access between the home network and the Internet. With a hardware firewall, the firewall unit itself becomes a gateway, for example, the Linksys Cable/DSL router. It has a built-in Ethernet card and hub. Computers on the home network connect to the router, which in turn is connected to either a cable or DSL modem. The router can be configured via a Web-based interface that can be accessed through the browser. The user can set any filters. Hardware firewalls are secure and not very expensive. Home versions that include a router, firewall and Ethernet hub for broadband connections can be found for well under \$100. A free firewall testing for security flaws is available at www.securitymetrics.com/portscan.adp.

Virtual Private Network

A firewall is an important security feature for any Internet user. However, firewalls do not protect data from threats within the Internet network itself. Once the data gets outside the

firewall, the user names, passwords, account numbers, server addresses and other sensitive information are visible to hackers. The Virtual Private Network (VPN) by using the encryption algorithms, give users the ability to utilize the public shared Internet for secure data transmission after it leaves the protection of the firewall.

The feature that makes a VPN "virtually private" is a tunnel. What makes a VPN transmission a tunnel is the fact that only the recipients at the other end of transmission can look inside the protective encryption shell. Tunneling technology encrypts and encapsulates the network protocols within Internet Protocol (IP). Using special tunneling protocols and complex encryption procedures, data integrity and privacy is achieved in the VPN in what seems like a dedicated point-to-point connection. At either end of the VPN tunnel there is a VPN gateway in hardware and software form. The gateway at the sending location encrypts the information into cipher-text before sending the encrypted information through the tunnel over the Internet. The VPN gateway at the

receiving location decrypts the information back into clear-text. The encryption algorithm uses the secret code, a key, to create a unique version of cipher-text. Transmission security strength depends on the length of the keys used; the formula used is 8-bit keys =

We need to remember that while the Internet is a vast and exciting resource, it is also a public place.

256 combinations or two to the eighth power, or 16-bit keys = 65,536 combinations or two to the 16th power. In other words, if the key used is a 16-bit key, an intruder might have to make 65,536 attempts at cracking the combination. This would be a quick and fairly simple task for computers. That is why most of VPN products are using at least 168-bit keys, creating two to the 168th power possible combinations.

VPN allows connecting remote sites or users together in two ways, via a remote-access or a site-to-site connection. A remote-access, called a virtual private dial-up network (VPDN), is used for a user-to-LAN connection set up by a company that has employees who need to connect to the private network from remote locations. Typically, a corporation that wishes to set up a

Continued on next page

Continued from previous page

large remote-access VPN will out-source to an enterprise service provider (ESP).

The ESP sets up a network access server (NAS) and provides the remote users with desktop client software for their computers. The telecommuters can then dial a toll-free number to reach the NAS and use their VPN client software to access the corporate network. In a site-to-site link, a company can connect multiple fixed sites over a public network through the use of dedicated equipment and large-scale encryption.

A word on cookies

Some Web sites track users' visits. These sites use cookies to remember the dates of visits, e-mail address, onsite activities and links used. A cookie is a message, text strings, sent from a Web server to the user's computer that is stored on the user's hard disk. This small data file with the user's name and viewing preferences is frequently used in Webcasting, e-commerce, and other


Web applications that rely on cookies to track information about viewers, customers, and subscribers. Any time the user visits a particular Web site, the browser retrieves the cookie from the hard disk and sends data in the cookie to the Web site. A Web site can only read data from its own cookie file; it cannot access or view any data on the user's hard disk. Cookies are not harmful, they are just short text strings, and they can often improve browsing by allowing a server to recall any customized information the user has set. Cookies cannot transmit viruses. Web sites can use cookies for various purposes: for personalization, for tracking users activities, and for targeting advertisements.

Some Web sites sell or trade information stored in the cookie to advertisers, so if the user does not want personal information being distributed, he/she should limit the amount of information provided to a Web site during registration of a cookie. Any browser can be set to accept a cookie or disable cookie use altogether.

The advent of the Internet has irrevocably changed the way we interact with the world and each other. As we rely more and more on the Internet in our daily activities, interests and relationships, the potential for the spread of common computer threats is increasing. In our world of ever-advancing technology, privacy becomes a casualty. Web server logs do not forget and the technology for correlating information and building data shadows about people is constantly improving. Therefore, we need to remember that while the Internet is a vast and exciting resource, it is also a public place. We should apply common sense, put safety first and protect our privacy the same way we do while visiting other public places. □

Editor's Notes: This is the final installment in the "Internet for You" series. The original mini-tutorial on the Internet by Katarzyna J. Macura, M.D., Ph.D., was published in the AAWR Newsletter Focus. Dr. Macura updated her series for RSNA News.

AAWR
www.aawr.org

 The entire *Internet for You* series is available on our Web site at www.rsna.org/tech/internet/index.html.

RSNA Board of Directors Report

Continued from page 4

management services for the three societies, which have missions congruent with RSNA, and whether an academic council should be formed for the purpose of pursuing projects of mutual interest.

Radiology and the Media

The Board of Directors has approved a recommendation by the RSNA Public Communications Committee to host a media briefing in New York to educate the medical media and the public about the role of a radiologist and the field's contribution to healthcare. One media briefing, the specific topics not yet determined, will be held in 2003. The activity will be evaluated following the briefing.

Volunteers Needed

RSNA depends on the expertise of its many committed volunteers. The Board of Directors has been studying ways to encourage more people to volunteer as well as to recognize those people who have dedicated their time and resources to the Society. Among the suggestions approved by the Board were streamlining committee functions, using Web conferencing to reduce committee member travel and featuring volunteer members in *RSNA News*.

2003 Derek Harwood-Nash International Fellow

The Board has approved a recommendation from the Committee on International Relations and Education to appoint Maka Kekelidze, M.D., from

the republic of Georgia as the 2003 Derek Harwood-Nash International Fellow. Dr. Kekelidze will spend six to 12 weeks studying at a North American institution so that when she returns to the former Soviet Union, she will be able to help improve the practice of radiology in her home institution as well as the radiologic community.

BRIAN C. LENTLE, M.D.

CHAIRMAN, 2002 RSNA BOARD OF DIRECTORS

Editor's Note: In our continuing efforts to keep RSNA members informed, the chair of the RSNA Board of Directors will provide a brief report in RSNA News following each board meeting. The next RSNA Board Meeting is in December.

RSNA Fellow Bridges Gap Between Laboratory and Clinic



Is it possible to sustain the career link between patient care and the research laboratory?

Alan Pollack, M.D.,

Ph.D., has succeeded in doing so.

He is the senior member and chairman of the Department of Radiation Oncology at Fox Chase Cancer Center in Philadelphia. In 1991-1992, he was the recipient of the RSNA Research and Education (R&E) Foundation Research Fellow Grant. "RSNA helped get me back into the lab in a much bigger way than my previous experience. Through the Fellowship, I realized I could manage work in both the clinic and lab. I wanted to be a part of bridging that gap," he says.

Dr. Pollack conducted his Fellowship research in "Solid Tumor Repopulation Kinetics after X-Irradiation Using Antibodies to Bromodeoxyuridine and Iododeoxyuridine" at the University of Texas M.D. Anderson Cancer Center in Houston. He received support for the project from RSNA and the American Society for Therapeutic Radiology and Oncology.

While giving him the opportunity to develop projects in cell kinetics during his Fellowship, Dr. Pollack strengthened his interest in translational methods to manipulate the response of cancer cells to radiation. He refined a cell kinetics technique and then applied it to different cancer cells. He then studied the response of prostate cancer cells to hormone therapy.

That early training served him well. Today, he is investigating biologic agents to treat prostate cancer, as well as combination therapy with radiation and hormone ablation.

Remembering His RSNA Roots

Dr. Pollack hasn't forgotten his ties to RSNA. He is a frequent contributor to the RSNA Scientific Assembly and Annual Meeting in Chicago. At RSNA 1999 and RSNA 2000, he was the invited lecturer for refresher courses on the management of regionally localized, high-risk prostate cancer. Also in 2000, he was an invited participant in "New Pathways for Educating Radiologists for the Future" a consensus conference to identify future directors for radiologic education, held in Oak Brook, Ill.

Last year at RSNA 2001, Dr. Pollack was responsible for the refresher course, "Management of Regionally Localized High Risk Prostate Cancer with Radiotherapy: A Summary of Androgen Deprivation Therapy plus External Beam Radiotherapy with an Emphasis on Survival Results."

Dr. Pollack says his career choice was easy because he was always interested in radiation oncology. For those considering radiation oncology, Dr. Pollack says this is a great time to be in the field. "Radiation oncology is an exciting area. There are tremendous advances in the technology of radiation delivery and imaging. New imaging modalities help us to define and hit the cancer target. In the laboratory, we are researching small molecule and biologic agents. There is so much promise," he adds.

Fox Chase Cancer Center prostate



Alan Pollack, M.D., Ph.D.
1991-1992 Research Fellow

cancer patients are undergoing treatment with intensity modulated radiation therapy or IMRT. "We use MRI in planning, and daily ultrasound to monitor and correct prostate movement," he says. IMRT allows radiation oncologists to precisely target the prostate with much higher radiation doses and still spare healthy organs.

Dr. Pollack and his radiation oncology colleagues at Fox Chase are particularly interested in hypofractionation—the delivery of bigger doses of radiation per fraction. He is the principal investigator of a phase III intensity modulated radiotherapy dose escalation trial for prostate cancer using hypofractionation.

The radiation department at Fox Chase has a dedicated MR simulator to define anatomy and tumor extent. "It's unusual to have an MR simulator in a radiation department, but we have found that it allows for a much greater level of certainty in defining anatomy over CT," he says.

In September, the radiology department at Fox Chase installed a CT on rails in the Liniac room. "This CT-guided treatment allows for pin-pointing target positions in sites where motion is prevalent. This equipment will be of particular value in the application of IMRT abdominal and pelvic sites, and perhaps tumors in the chest as well," he says.

Continued on next page

Continued from previous page

Dr. Pollack earned his bachelor of science degree in chemistry from the University of Florida in Gainesville. He received his Ph.D. in microbiology and immunology from the University of Miami. He gained his medical degree from the University of Miami as well. He is certified in therapeutic radiology by the American Board of Radiology.

Dr. Pollack served his residency in radiation therapy at the University of Texas M.D. Anderson Cancer Center in Houston. Later, he was named a professor in the Department of Radiation Oncology at the University of Texas. He joined the Fox Chase Cancer Center in 2001. The National Cancer Institute has designated the Fox Chase Cancer Center as one of the nation's comprehensive cancer centers. □

The RSNA Research Fellow Grant

...is targeted to physicians who are nearing the end of their radiologic training. These grants are intended to give physicians an opportunity to devote a year to research under the guidance of an experienced scientific advisor. The Research Fellow will gain further insight into scientific investigation and develop competence in research and educational techniques and methods. The Research Fellow Grant awards a stipend of \$45,000 to qualified North American radiologists. The award may be renewed for a sec-

ond year with a stipend of \$50,000. In addition, the host institution will be granted \$5,000 each year to help underwrite a part of the research expenses. The deadline for applications is January 15. **2003 Topic of Interest: Molecular Imaging.**

For information on this and other RSNA Research and Education Foundation grants and awards, contact Scott Walter at (630) 571-7816 or walter@rsna.org or look on the RSNA Web site at www.rsna.org.

RESEARCH AND EDUCATION: OUR FUTURE



Research and Education Foundation Donors

THE BOARD OF TRUSTEES of the RSNA Research and Education Foundation and its recipients of research and educational grant support gratefully acknowledge the contributions made to the Foundation between **August 31, 2002 and September 30, 2002.**

DIAMOND (\$10,000+)

Cook, Inc.

PLATINUM (\$1,000 - \$4,999)

American Association of Physicians in Medicine
Arkansas Heart Hospital
David C. McMurray, M.D.
Marvin D. Nelson Jr., M.D.
Anne & Walter L. Robb, Ph.D.

GOLD (\$500 - \$999)

Giovanna Casola, M.D.
John R. Hesselink, M.D.
William F. Lytle Jr., M.D.

SILVER (\$200 - \$499)

Ronald C. Ablow, M.D.
Sungkee S. Ahn, M.D.
William M. Angus, M.D., Ph.D.
Chin-Yu Chen, M.D.
Terrence C. Demos, M.D.
Kathleen G. Draths-Hanson, M.D.
Andrew G. Efremov, M.D.
Linda L. Gray, M.D.
Tamela S. & Steven M. Greenberg, M.D.
Julius H. Grollman Jr., M.D.
Wayne D. Harrison, M.D.
Denzil J. Hawes-Davis, D.O.
Ian Isherwood, M.D.
Vilim A. Kamler, M.D.

Carolyn A. & Thaddeus Alan Laird, M.D.

Georges B. LeRoux, M.D.
Martha B. Mainiero, M.D.
Timothy C. McCowan, M.D.
Robert C. McKinstry, M.D., Ph.D.
Theodore L. Megremis, M.D.
William S. Morrow, M.D.
Steven R. Nokes, M.D.
G. Craig Ramsay, M.D.
Patricia A. Randall, M.D.
Anna Scheurecker, M.D.
Richard M. Seger, M.D.
Pradeep K. Sharma, M.D.
Ira Silberman, M.D.
Viacheslav A. Solovov, M.D.
Richard G. Stiles, M.D.
James H. Thrall, M.D.
Amy S. Thurmond, M.D.
Cynthia S. & Paul T. Weatherall, M.D.

BRONZE (\$1 - \$199)

Brian L. Anderson, M.D.
Kimberly N. & J. Edward Bass, M.D.
James B. Beard, D.O.
Robert C. Berlin, M.D.
Harold A. Bjork, M.D.
Jill Alling & Joseph Bonn, M.D.
Ronald M. Boyd, M.D.
Leonard J. Bristol, M.D.
Chin-Wei Chien, M.D.

Janusz Czechowski, M.D., Ph.D.
Charles J. DeMarco, M.D.
Edward S. Horton Jr., M.D.
Margaret Domoto & Shozo Iba, M.D.
Valorie L. & Christopher A. Jackson, M.D.
Sung M. Kim, M.D.
Keith Y. Kohatsu, M.D.
Gabriel P. Krestin, M.D., Ph.D.
Allison H. & Andrew B. Landes, M.D.
David R. Lehnerr, M.D.
May Siang Lim Lesar, M.D.
Victoria C. & Felipe N. Lim, M.D.
Douglas W. MacEwan, M.D.
Michael J. Opatowsky, M.D.
Carlos S. Restrepo, M.D.
Henrietta K. Rosenberg, M.D.
Robert S. Seigel, M.D.
Troy R. Smith Jr., M.D.
Mark J. Tenenzapf, M.D.
Ina L. Tonkin, M.D.
Mary & Allen F. Turcke, M.D.
Robert H. Wilkinson Jr., M.D.
Edward Y. Wong, M.D.
Edward E. Yu, M.D.

COMMEMORATIVE GIFTS

Marco A. Amendola, M.D. & Beatriz E. Amendola, M.D.
In Memory of Howard Pollack, M.D.
Marcello Caratozzolo, M.D.
In Memory of Riccardo Maceratini, M.D.
Ernest J. Ferris, M.D.
In Memory of Delmar J. Stauffer
Eli Glatstein, M.D.
In Memory of Henry S. Kaplan, M.D.
Howard T. Harcke, M.D.
In memory of John A. Kirkpatrick, M.D.
Hamsaveni K. & Subbia G. Jagannathan, M.D.
In Memory of Subbia G. Jagannathan Sr.
Rudolph Y. Lin, M.D.
In memory of Royce C. Lin, M.D.
Robin D. Clark & Mary Mackiernan, M.D.
In honor of James J. McCort, M.D.
Suresh K. Patel, M.D.
In honor of Jerry P. Petasnick, M.D.
Joann S. & Thomas B. Poulton, M.D.
In memory of Ronald A. Wittel, M.D.
Catherine R. Allen & Bing Tai, M.D.
In Memory of Arthur Reynolds, M.D.
Janet Iwatsubo & Frank R. Tamura, M.D.
In honor of Hideyo Minagi, M.D.



Online donations can be made at www.rsna.org/research/foundation/donation.

NEW!

ACRIN Seeks Four Fellows

The American College of Radiology Imaging Network (ACRIN) is accepting applications for four new Fellowships. The goal is to train radiologist researchers capable of developing and leading rigorous, multi-disciplinary, multi-institutional clinical trials. The National Cancer Institute recently gave ACRIN a grant to recruit and train three new fellows a year for at least three years. These fellows may have interest in any subspecialty of radiology. In addition, the Avon Foundation has provided funding for an additional fellow to pursue training specific to clinical trials in breast imaging.

Applications and additional information can be found at www.acrin.org. The application deadline is January 15, 2003.

An editorial on these new Fellowships will appear in the December issue of *Radiology* (radiology.rsna.org).

NEW!

Fellow Needed for Cardiovascular Imaging Program

The first RSNA Research and Education Foundation Institutional Clinical Fellowship in Cardiovascular Imaging Grant has been awarded to the Section of Cardiovascular Imaging of the Division of Radiology at the Cleveland Clinic Foundation. The three-year grant provides \$50,000 salary support for one fellow per year, under the scientific guidance of Richard D. White, M.D. (Head, Section of Cardiovascular Imaging). The Cleveland Clinic is seeking the first fellow to participate in

the program from July 2003-June 2004. Interested applicants must be citizens or permanent residents of a North American country, have completed their residency training in the radiologic sciences, hold an M.D. degree or the equivalent as recognized by the American Medical Association, and must be ACGME-certified in radiology or be eligible to sit for such certification.

For more information, contact Richard D. White, M.D., at (216) 444-2740 or whiter@ccis1.ccf.org.

BIROW

Register online for the Biomedical Imaging Research Opportunities Workshop (BIROW) to be held January 31-February 1, 2003, at the Hyatt Regency, Bethesda. The workshop is co-sponsored by RSNA, AAPM, ARR

and BMES along with support from many other radiological, engineering and basic imaging science societies.

To register or for more information, go to www.birow.org or send an e-mail to birow@aapm.org.

RSNA: Working for You

E-Zone: A New Feature of RadioGraphics Online

Because of the flexibility of electronic publishing, *Radiographics Online* has a new section called E-Zone that highlights online-only articles prior to publication of the issue with which they will be associated online and in which they will be cited. When the issue is published, the articles will leave the E-Zone and become part of the issue, as before.

The abstracts and URLs of the online-only articles will continue to appear in the print version

of the issue. The reader is reminded that online-only articles differ from those in the print version only in that they are interactive or that the number of images needed to support the purpose of the article is greater than the number that can be published in print. Online-only articles are reviewed with the same rigor as those published in the print version.

Go to radiographics.rsna.org and then click on "E-Zone."

Press Conferences at RSNA 2002

Some of the scientific studies and exhibits at RSNA 2002 will be presented to the new media via a series of press conferences. Topics include:

- Effects of violent media exposure by adolescents with disruptive behavior disorder as measured by fMRI activation patterns in frontal lobe
- Sonographic findings in the scrotum and hormonal and semen profiles in extreme mountain bikers
- Breast arterial calcification detected on mammography is a risk factor for coronary artery disease
- Accidental falls in children under 5 years of age
- Correlation of proton MR spectroscopic imaging with Gleason Score based on step section radical prostatectomy
- A grouping of education exhibits on "Medical Imaging of Terrorist Attacks" and "The Radiology of War"
- Radioarcheology: an advanced CT evaluation of a sunken confederate submarine

RSNA press releases can be viewed online at www2.rsna.org/pr/pr1.cfm.

Continued on next page

Patient Education Brochures

RSNA has developed new patient education brochures to help patients prepare for various radiologic procedures. Five brochures are available, including one on CT of the Body. This brochure provides insight into why and how the procedure is performed, as well as an introduction to the physicians and professionals who perform the exam. The other brochures are Mammography, Abdominal Ultrasound Scanning, MRI of the Musculoskeletal System and Radiology & Your Health.

For more information or to place an order, go to www.rsna.org/practice/index.html or call (800) 272-2920. RSNA members receive a discount.



RSNA Faculty Development Workshop



An RSNA Faculty Development Workshop was held in September in Oak Brook, Ill., as part of the RSNA Board of Director's initiative to incorporate principles of adult education into RSNA programs. The next workshop will be held in fall 2003.

Manuscript Central

Submit manuscripts to Radiology via the Internet at radiology.manuscriptcentral.com. Since February 1, Radiology has been accepting articles through Manuscript Central, the leading Web-based peer-review application. The system allows manuscripts to be submitted electronically and reviewed online, saving time and postage costs. It also allows authors to check on the status of their manuscripts at any time of the day or night.

Patient Link to Clinical Trials in Digital Mammography

RSNA's patient education Web site, **RADIOLOGYINFO** The radiology information resource for patients, RadiologyInfo.org, now provides patients with direct links to clinical trials in digital mammography. The links are accessed from pages describing the mammography procedure and breast cancer and from an article on digital mammography.

If you have a colleague who would like to become an RSNA member, you can download an application at www.rsna.org/about/membership/memberapps.html, or contact the RSNA Membership and Subscription Department at (630) 571-7873 or membersh@rsna.org.

WORKING FOR YOU PROFILE



SERVICE TO MEMBERS:

Through the efforts of six outstanding directors and their support staff, Steve is responsible for working with the Board of Directors and committee volunteers in conducting strategic development, management and administrative functions related to the Scientific Assembly and Annual Meeting; internal and external information system activities; and all

issues and projects of the Informatics Department. Specifics include contract negotiations, operations and logistics for the Scientific Assembly (housing, transportation, education program, *infoRAD* and technical exhibition); management of hardware and software for data processing and communications systems (needs analyses, development, implementation and operations), management of informatics projects and activities (DICOM and IHE technical document development and vendor demonstrations, MIRC, RadLex, *infoRAD* and *RSNA Link* [Web site and onsite meeting information systems]).

WORK PHILOSOPHY:

I believe in promoting the understanding among staff that we strive to serve the best interests of RSNA members. Rome was not built in a day, so no project or problem is insurmountable if managed one brick at a time. A happy work place is a productive one. Meeting challenges head-on is the quickest way to resolution. And, teamwork is not a cliché.

NAME:
Steve Drew

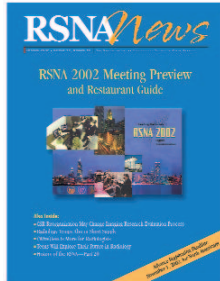
WITH RSNA SINCE:
July 6, 1989

POSITION:
Assistant Executive
Director: Scientific
Assembly &
Informatics

News about RSNA 2002

RSNA 2002 Highlights

The October issue of *RSNA News* contains an extensive listing of highlights and other important information for RSNA 2002, as well as a Chicago restaurant guide. The issue is available on the Internet at rsnanews.org.



One-Day Badge

A one-day badge is available to view the technical exhibits area only. The badge can be purchased onsite for \$150 per day at the Professional Registration Desk in the McCormick Place South Building, Room S100. A business card is required.

For more information on RSNA 2002, call (630) 571-7862 or e-mail reginfo@rsna.org.

Badge Wallets

RSNA 2002 badge wallets have been sent to Non-North American attendees who registered by October 11, 2002, and North American attendees who registered by November 1, 2002.

Badge wallets contain a name badge, tickets and attendance vouchers. Those who did not meet the deadline will have to register onsite. **Registration rates increase \$100 onsite.** Students (technical, medical and nursing) are eligible to register onsite at no charge with proper student identification.

Non-North American registrations received October 12 – November 1 require attendees to pick up badges and tickets onsite at McCormick Place, Desk A, Room S100 in the South Building.



DECEMBER 1 – 6
McCORMICK PLACE,
CHICAGO

Tour of the Technical Exhibits at McCormick Place

Spouses of RSNA 2002 attendees can get a firsthand view of the technical exhibits as radiologist Anton Hasso, M.D., escorts them on an informative walk through the exhibit halls. The tour is scheduled Wednesday, December 4, 2:00 p.m. – 4:00 p.m. For more information, see the *RSNA Tours & Events* brochure at www.rsna.org/rsna/advance_registration/pdf/RSNA2002tours_and_events.pdf, or visit the Tours & Activities Desk in the McCormick Place Grand Concourse or in the Palmer House Hotel, 6th floor.

Onsite Registration

South Building, Level 1, Room S100

Saturday (Nov. 30) 12:00 p.m.–6:00 p.m.

Sunday–Monday (Dec. 1-2) 7:00 a.m. – 6:00 p.m.

Tuesday–Thursday (Dec. 3-5) 7:00 a.m. – 5:00 p.m.

Grand Concourse, Level 3, Help Center

Friday (Dec. 6) 7:30 a.m. – 12:00 p.m.

Exhibit Space Summary

As of September 30, 2002, total exhibit space sold was 433,380 square feet with 614 companies registered to exhibit; among them more than 100 first-time exhibitors.

For more information, contact RSNA Technical Exhibits at (630) 571-7851 or exhibits@rsna.org.

Technical Exhibits Installation

For more information about dates and times, refer to the Target Floor Plan mailed in mid-September.

Buyer's Guide Available Soon

The 2002 *Buyer's Guide: Radiology Products and Services* will be available at the end of November. Each exhibitor will receive a copy by mail. The publication will also be available at McCormick Place and online at www.rsna.org/buyers-guide.html.

The Buyer's Guide is the official guide to the technical exhibits at RSNA 2002 showcasing radiology product offerings and services. Designed for year-round use, the Buyer's Guide includes important reference material for purchasers and decision makers.



Technical Exhibit Hours

Sun., Dec. 1 – Wed., Dec. 4
■ 10:00 a.m. – 6:00 p.m.

Thurs., Dec. 5
■ 10:00 a.m. – 2:00 p.m.

Important Exhibitor Dates for RSNA 2002

- Nov. 15** Advanced Shipments to Freeman Warehouse*
Floral and Plant Rental/Floral Exhibits Ltd.*
Lead Management Systems/ExpoExchange*
Computer Rental/Datasis*
Security Services*
Social Event Busing Requests*
Bottled Water Service/Sparkling Springs*
Temporary Personnel/Judy Venn & Assoc.*
- Nov. 25** Target move-in begins
- Nov. 29** General move-in begins
- Dec. 1-6** RSNA 88th Scientific Assembly and Annual Meeting

*Forms for these services can be found inside the RSNA Exhibitor Service Kit

ad-

Patient

Info broch

www.rsna.org

What's New at RadiologyInfo™?

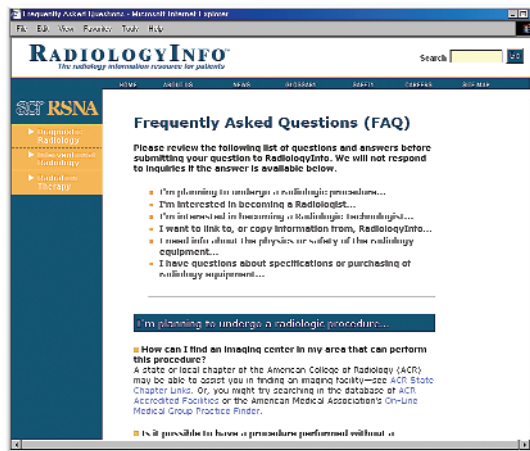
RSNA's patient information Web site, a joint project with the American College of Radiology, has added a few new features.

RadiologyInfo™ (www.radiologyinfo.org) now has a Frequently Asked Questions page. This page contains answers to the most frequently asked questions submitted by site visitors. The FAQ page also provides links to external information resources and radiologic organizations that may help visitors find answers to their questions. The FAQ page can be accessed from the Site Map or Contact Us page.

A "Recommend This Page To a Friend" link has been added near the bottom of each procedure page. This will make it easier for site visitors to share *RadiologyInfo* with their friends or family.

Patient-targeted information on MRI safety was recently added with a link to *MRI Safety.com* for more detailed information. The new section covers the following common questions/concerns:

- What is MRI and how does it work?
- How safe is MRI?
- How will I prepare for an MRI exam?



- What if I have claustrophobia?
- Pregnancy and MRI

The following patient handouts have recently been completed and can be downloaded as PDF files from the Printable Handouts page: Ultrasound-Guided Breast Biopsy, X-ray Guided Breast Biopsy, General Nuclear Medicine, Cardiac Nuclear Medicine, Vascular Access Procedures, Angioplasty and Vascular Stenting.

New Look for Radiology Online

The *Radiology* home page on the Internet (radiology.rsnaajnl.org) has been redesigned. The new look makes it distinct from other online journals published in association with HighWire Press. It also highlights the continuous publishing feature.

Most articles are published in *Radiology Online* several weeks before they appear in the printed version of *Radiology*. These online articles are the same version that will appear in print—namely, the final version that has been peer reviewed, revised, edited and approved by the authors.



New Address for Database of Funding Opportunities

RSNA's Department of Research has relaunched its Database of Funding Opportunities with a new Internet address: www3.rsna.org/dor/

Most visitors will find the revamped database more attractive and easier to use than the original. In addition to searches by type of funding source (such as federal, foundation or hospital), you can now search by individual funders. A new search-results page provides more information than its predecessor, including purpose and grant ranges. It is also easier to navigate large numbers of results.

Hospitals, universities, foundations, professional societies and other organizations that want to update their listings or notify RSNA of new funding opportunities should contact the Department of Data Management at (630) 368-3756 or ddm@rsna.org.

RadioGraphics Online Launches E-Zone

RadioGraphics has announced a new feature of *RadioGraphics Online* called E-Zone. This area contains online-only articles published in final form prior to publication of the issue with which they will be associated online. Details are available at radiographics.rsnaajnl.org/.

Other Web News

FDA Outlines Plans for Implementing Bioterrorism Law

The Food and Drug Administration has added to its Web site the text of the Public Health Security and Bioterrorism Preparedness and Response Act of 2002. The site also includes the FDA's plans for implementing sections relevant to the agency.

www.fda.gov/oc/bioterrorism/bioact.html

Unwanted Radioactive Sealed Sources

The Department of Energy has a Web site (osrp.lanl.gov/Home.html) with detailed information about its Off-Site Source Recovery (OSR) Project. The goal is to recover and manage unwanted radioactive sealed sources and other radioactive material.

Medical Meetings

December 2002 – March 2003

NOVEMBER 30

How to Write a Good Grant Application
(prior to RSNA 2002), McCormick Place, Chicago
• (630) 368-3758 or dor@rsna.org

NOVEMBER 30

Retirement Distribution Planning and Investment Seminars
(prior to RSNA 2002), McCormick Place, Chicago
• (630) 590-7715 or ed-ctr@rsna.org

DECEMBER 1-4

Introduction to Research (during RSNA 2002), McCormick Place, Chicago • (630) 368-3758 or dor@rsna.org

DECEMBER 1-6

RSNA 2002, 88th Scientific Assembly and Annual Meeting, McCormick Place, Chicago • www.rsna.org

DECEMBER 7-8

International Society for Clinical Densitometry (ISCD), Bone Densitometry Certification Lectures and Exam, Marriott's Courtyard Chicago Downtown • (202) 367-1132

DECEMBER 8-11

American Medical Association (AMA), Interim Meeting, New Orleans Hilton & Towers, New Orleans • (312) 464-5000

JANUARY 4-7

Indian Radiological & Imaging Association (IRIA), 56th Annual Congress, Jaipur, India • www.56iriajaipur.net

JANUARY 23-26

Radiation Therapy Oncology Group (RTOG), Hyatt Regency Houston • (215) 574-3189

JANUARY 31-FEBRUARY 1

Biomedical Imaging Research Opportunities Workshop (BIROW), RSNA/ARR/AAPM/BMES, Hyatt Regency, Bethesda • www.birrow.org

FEBRUARY 1-5

Mexican Society of Radiology and Imaging (SMRI), XXVII Annual Course of Radiology and Imaging, Sheraton Hotel Centro Historico, Mexico City •

FEBRUARY 6-7

Fourth National Forum on Biomedical Imaging in Oncology, NCI/FDA/CMS/NEMA, Hyatt Regency, Bethesda
• www3.cancer.gov/dctd/forum/

FEBRUARY 8-15

American Board of Radiology (ABR), Winter Meeting, Hualalai Resort, Kona, Hawaii • www.theabr.org

FEBRUARY 16-21

Society of Gastrointestinal Radiologists (SGR), 32nd Annual Meeting, Fiesta Americana Grand Coral Beach, Cancun, Mexico
• www.sgr.org

MARCH 2-6

Society of Thoracic Radiology (STR), Annual Meeting and Scientific Session, Loews Hotel, Miami Beach, Fla.
• (507) 288-5620

MARCH 7-11

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

MARCH 12-16

3rd Annual PACS Conference, University of Rochester Department of Radiology, Westin Riverwalk Hotel, San Antonio, Texas
• (585) 275-1050 or www.urmc.rochester.edu/pacs2003

MARCH 24-28

Society of Computed Body Tomography and Magnetic Resonance (SCBT/MR), 23rd Annual Course, Westin Mission Hills Resort, Rancho Mirage, Calif. • (507) 288-5620

MARCH 27 - APRIL 1

Society of Interventional Radiology (SIR), Convention Center, Salt Lake City, Utah • www.sirweb.org

connections Your online links to RSNA

RSNA Link
www.rsna.org

Radiology Online
radiology.rsnaajnl.org

Radiology Manuscript Central
radiology.manuscriptcentral.com

RadioGraphics Online
radiographics.rsnaajnl.org

Education Portal
www.rsna.org/education/etoc.html

CME Credit Repository
www.rsna.org/cme

RSNA Index to Imaging Literature
rsnaindex.rsnaajnl.org

RadiologyInfo™
ACR-RSNA public information Web site
www.radiologyinfo.org

RSNA Online Products and Services
www.rsna.org/member-services

NEW ADDRESS

Database of Funding Opportunities
www3.rsna.org/dor/