

IMAGING 2001

SCIENTIFIC SESSION NEWS
SPOTLIGHT ISSUE

American College of Cardiology Echocardiography Symposium

March 18, 2001

American College of Cardiology Nuclear Cardiology Symposium

SPOTLIGHT ON

Echocardiography

Echo 2001 Focuses on Latest Imaging Techniques and Technology

With the advancement and evolution of ultrasound technology, echocardiography has become one of the most important diagnostic tools in the fight against heart disease. In fact, approximately 15 million echocardiograms are performed each year in the United States.



Thomas Ryan, MD

Physicians have an opportunity to learn about the latest advances in echocardiography at Echo 2001, one of five spotlight sessions preceding the American College of Cardiology 50th Annual Scientific Ses-

sion. Echo 2001 is co-sponsored by the American Society of Echocardiography.

"This all-day, three-tiered symposium provides a focused and comprehensive update on echocardiography and its use in managing valvular and ischemic heart disease," said James D. Thomas, MD, Echo 2001 co-chair and director of cardiovascular imaging in the Department of Cardiology at the Cleveland Clinic



James D. Thomas, MD

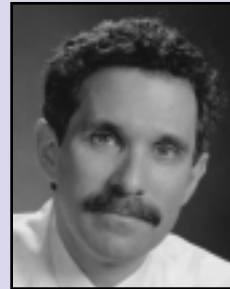
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SPOTLIGHT ON

NUCLEAR CARDIOLOGY

New Symposium Highlights What's Hot in Nuclear Cardiology

Nuclear cardiology has emerged as a pivotal modality in the noninvasive diagnosis of heart disease, the assessment of disease extent, and the prediction of outcomes in coronary artery disease. Nuclear 2001, a new full-day, multiple-track symposium co-hosted by the American College of Cardiology (ACC) and the American Society of Nuclear Cardiology, highlights state-of-the-art developments in the field, according to one of its co-chairs, James E. Udelson, MD, associate professor of medicine



James E. Udelson, MD

at Tufts-New England Medical Center in Boston.

"Our goal is to highlight the best of what the field has to offer," Dr. Udelson said. "The program is designed not only for those who currently practice nuclear cardiology but also for those cardiologists who wish to incorporate nuclear cardiology into their practice."



Frans J. Th. Wackers, MD

Frans J. Th. Wackers, MD, serves

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Telemedicine Allows Wider Access to Imaging Services

Recent advances in telecommunications have allowed medical professionals around the world to communicate and share information more quickly and more conveniently than ever before. Perhaps no areas of medicine have seen more practical and useful applications of these advances than nuclear cardiology and echocardiography.

In many parts of the country, accessibility can be a major problem in the delivery of imaging services. Necessary equipment and trained staff are usually located in large population centers, whereas large portions of the population live in rural areas. Remote networks for the transfer and sharing of data and computing functions are one solution to this problem.

Both the Echo 2001 and Nuclear 2001 spotlight sessions will feature

presentations addressing the recent advances in telecommunications that have made delivery of sophisticated cardiac diagnostic care to outreach sites a reality.

Linking cardiac professionals, who in many cases are concentrated at tertiary care centers in large cities, with patients in rural areas around the world is a challenge that is being addressed by the expansion of telemedicine, according to Bijoy K. Khandheria, MD, professor of medicine at the Mayo Medical School in Rochester, Minn. Dr. Khandheria noted that the Mayo Clinic is a leader in this area, offering an echocardiography outreach program that extends to sites throughout southeastern Minnesota, Wisconsin, North Dakota, and Iowa.

Dr. Khandheria will present a lecture titled "Telemedicine: Utility, Imple-

mentation, and Medical/Legal Issues" as part of the Echo 2001 spotlight session.

Although echocardiographic services are traditionally provided either by specialists traveling to the patient or following transport of the patient to the tertiary care center, Dr. Khandheria noted, telemedical echocardiography can enable accurate, timely, and cost-efficient diagnosis and care.

In pediatrics, for example, congenital heart disease is the leading cause of infant mortality in the United States, and echocardiography is the main diagnostic test in the newborn nursery for ruling out suspected heart disease. Echocardiography is also used in the management of premature infants and patients with respiratory distress, with more than 270,000 requests for echocardiograms nationwide each year.

The problem is that there are only about a thousand credentialed pediatric cardiac sonographers to perform these echocardiograms and approximately twice as many pediatric cardiologists to interpret them.

Telemedicine is one way to make the best use of these limited resources, Dr. Khandheria said.

One recent development is likely to further boost the expansion of telemedical echocardiography, he noted. In late December 2000, President Clinton signed long-awaited legislation increasing Medicare reimbursement for telemedicine services. This bill is set to go into effect Oct. 1 this year.

"Approval of the improved coverage is a clear sign of support for the continued expansion of telemedicine

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Echo 2001

Future of Echocardiography: Accessible and Cost-Efficient

Echocardiography will continue to improve with the development of new technologies, and the procedure will become more cost-effective and more widely available to the patient population.

Those are just a couple of the predictions of Mario J. Garcia, MD, who will discuss "How Echocardiography Will Be Different in the Future" as part of the Echo 2001 spotlight session being held in conjunction with the Annual Scientific Session. Dr. Garcia is director of echocardiography at the Cleveland Clinic Foundation.

"As the technology improves, echocardiography will expand its diagnostic capabilities while maintaining a relatively low cost, and it will provide information cardiologists need to provide better patient care," Dr. Garcia said. "This will translate into better patient outcomes, reduced hospital stays, and cost savings."

Telemedicine will play a major role

in the future of echocardiography, Dr. Garcia predicted.

"Currently there is limited interactive consultation and little exchange of imaging between primary care institutions and secondary and tertiary care hospitals," he said. "This leads to duplication in testing, which results in increased costs."

When there is sharing of echocardiograms, he noted, the results are most often sent by courier or mail, which causes delays in diagnosis and treatment.

"Although it has been difficult in the past to post echo images on the Internet, the introduction of new compression tools and increasing bandwidth now permit the posting of limited clips from echocardiography," Dr. Garcia said. "I am fully convinced that within the next four to five years we will be able to transmit complete echocardiographic studies via telemedicine."

Dr. Garcia also believes the introduction of more compact, less expensive ultrasound equipment will have an important impact on improving access to echocardiography.

"New technology is being introduced at a price that is a fraction of the cost of traditional ultrasound equipment," he said. "Also, equipment is becoming more compact and portable."

One important implication of this trend, he noted, is ensuring the competency of those interpreting echocardiograms.

Another concern will be reimbursement for the new technology, he said.

"But the bottom line is that any new

technology that will ultimately result in improved patient outcomes will be worth the cost," Dr. Garcia said.

Echocardiography will continue to be important in the diagnosis of cardiovascular heart disease, he said, despite the increased availability of other modalities, such as ultrafast computed tomography (CT), high-resolution spiral CT, and magnetic resonance imaging.

"Echocardiography continues to be more readily available, more economical, and more portable," he said. "And I believe this will be the case for a long time to come."

TECHNIQUES, TECHNOLOGY

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Foundation. "Our goal is to provide cardiologists with a review of the principles of how echocardiography is used in various clinical settings and to show them what is new in the field."

Thomas Ryan, MD, serves with Dr. Thomas as co-chair of Echo 2001. Dr. Ryan is associate professor of medicine at Duke University Medical Center in Durham, N.C.

The program begins with three concurrent sessions on—

- *Echocardiography in valvular heart disease*: "We'll be examining issues surrounding not only diagnosis and quantification but also management," Dr. Thomas said. "This is a relatively new area for echocardiography, and faculty will discuss an approach to valve repair that should be of interest to all cardiologists."

- *Echocardiography in ischemic heart disease*: "Part of the discussion will focus on the use of stress echocardiography in diagnosing coronary artery disease and predicting viability," Dr. Ryan said. He noted that this program is followed by presentations on diastology.

- *Echocardiography in congenital heart disease*.

Echocardiography has grown from a mere diagnostic tool to an application to assist and guide surgeons in the operating room, Dr. Thomas noted. A special Echo 2001 session will feature two live intraoperative cases broadcast from the Cleveland Clinic. Echocardiographic findings and surgical

footage will be broadcast from Cleveland while a panel in Orlando will provide discussion and commentary. Between the live presentations will be lectures focusing on intraoperative echocardiography.

"Our goal is to use these live cases to explain how we use echocardiography in the operating room," Dr. Ryan said. The live case presentations will be followed by a program on transesophageal echocardiography.

The program also includes a session focusing on interesting case studies. Faculty will discuss provocative cases from around the world, Dr. Thomas said. There will be a special emphasis on how cardiologists can use the principles learned in their own laboratories and practices.

Completing the spotlight session will be special presentations on new technologies. "Of particular interest will be the concentration on contrast echocardiography, which is probably the most exciting emerging application in the field," Dr. Ryan said.

This broad range of material covered during the Echo 2001 spotlight session will serve as a perfect complement to the more in-depth offerings of the Annual Scientific Session, Dr. Ryan said.

"The echocardiography symposium was a big success last year, and this year we expect to attract even more attendees who wish to expand their knowledge about echocardiography," he said.

Echo 2001

MCE Proves Useful in Assessing Myocardial Perfusion

Myocardial contrast echocardiography (MCE) is a relatively new technique that allows the assessment of myocardial perfusion using intravascular microbubble contrast agents during ultrasound examination. In the past few years, major advances have been made in this field.

Kevin S. Wei, MD, and associates at the University of Virginia have developed new techniques using this technology to quantify myocardial blood flow and volume using MCE during a continuous infusion of microbubbles.

"We have used this method to localize and quantify coronary stenoses and have also developed new insights into myocardial blood volume changes," said Dr. Wei, who is assistant professor of research in the university's Division of Cardiovascular Medicine.

Dr. Wei will present a lecture titled "Myocardial Perfusion: The Holy Grail of Contrast Echocardiography" as part of the Echo 2001 spotlight session.

He noted that newer, more stable microbubbles and state-of-the-art imaging systems that take advantage of specific microbubble properties have recently been commercially

developed. With these advances, microbubbles can now be injected intravenously, and the perfusion of almost any tissue accessible to ultrasound can be studied.

"The microbubbles are very easily detected by ultrasound systems, so we can follow their movement through the heart muscle and get an assessment of the blood flow within the heart muscle itself," Dr. Wei said.

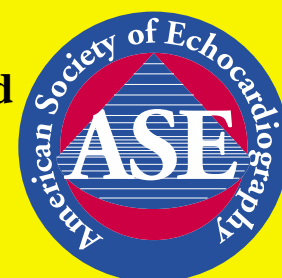
In his presentation, Dr. Wei will explain how ultrasound technology can be used to determine the potential cause of any heart malfunction.

"Predominantly, we want to know if there is a blockage in the coronary artery that is leading to the abnormal heart function," he said. "More important, though, we want to determine whether the malfunctioning area of the heart can recover if we were to improve the blood flow to it."

Dr. Wei stressed that cardiologists must understand that not all heart muscle that is dysfunctional is dead.

"We can use myocardial contrast echocardiography to determine the presence of viability," he said. "MCE is a clinically useful, noninvasive tool for the assessment of myocardial perfusion with echocardiography."

The American College of Cardiology expresses gratitude and appreciation to the American Society of Echocardiography for its co-sponsorship of Echo 2001.



Nuclear 2001**NRC Considering New Training and Credentialing Regulations**

New regulations regarding training and experience requirements for physicians who use radioactive materials are currently under consideration by the Nuclear Regulatory Commission (NRC). These proposed regulations will have important implications for nuclear cardiologists, according to Manuel Cerqueira, MD, associate chief of cardiology and director of nuclear cardiology and the Exercise Laboratory at Georgetown University Medical Center in Washington, D.C.

Dr. Cerqueira will discuss the new

NRC regulations as part of his presentation on "Trends From Within the Beltway: Ambulatory Payment Classifications (APCs), Practice Expense, and Medicare Carrier Policies" during the American College of Cardiology Nuclear 2001 spotlight session.

"The NRC is developing a risk-based system, whereby the number of hours of training and experience will decrease," said Dr. Cerqueira, who is the cardiology representative and chairman of the NRC Advisory Committee on the Medical Uses of Isotopes.

Under a proposal by the NRC, 700 hours of training and experience would be required for physicians who use radioisotopes. The current requirement is 1,200 hours, composed of 200 hours of classroom and laboratory training, 500 hours of supervised work experience, and 500 hours of supervised clinical experience.

The NRC has also proposed to recognize certification by the Certification Board of Nuclear Cardiology as a pathway to achieve licensure. "Board certification provides documentation of training, experi-

ence, competency, and radiation safety issues," Dr. Cerqueira said.

The new rules and regulations are being reviewed by the NRC and are expected to be published later this year.

In his presentation, Dr. Cerqueira will also look at APCs and how they will affect reimbursement for nuclear cardiologists. The APC system was adopted by the Health Care Financing Administration to group together services that are comparable both clinically and with respect to resource use.

Nuclear 2001**High Standards Required to Obtain Hospital Privileges**

Cardiologists seeking hospital privileges and reimbursement to perform nuclear cardiology procedures face a standardized pathway of credentialing and training. This standardization has been key to ensuring quality patient care, according to Robert A. Vaccarino, MD,

director of Brooklyn Nuclear SPECT Imaging in Brooklyn, N.Y.

"The nuclear cardiology community has done a good job of 'policing' our own standardization," Dr. Vaccarino said. "Through this effort, we have ensured quality hospital and outpatient-based nuclear cardiology services."

Dr. Vaccarino will discuss "Obtaining Hospital Privileges and Reimbursement" during Sunday's Nuclear 2001 spotlight session.

"The bottom line is that we are taking

care of patients, and the diagnostic tools we use need to be performed by physicians who are trained in the appropriate way," he said. "This will allow our patients to benefit the most from our technology."

The growth of nuclear cardiology procedures reveals why standardized training and credentialing are important, he said. In 1997, a total of 3.3 million nuclear perfusion studies were performed in the United States. By 1999, that figure had increased to 4.2 million.

Dr. Vaccarino noted that hospital privileges in nuclear cardiology may be granted to cardiologists on the basis of the following:

- Certification in nuclear cardiology offered by the Certification Board of Nuclear Cardiology, or
- Training and experience in nuclear cardiology as defined in the ACC and American Society of Nuclear Cardiology COCATS (core cardiology training symposium) training guidelines.

ACC Thanks Echo and Nuclear 2001 Spotlight Supporters

The American College of Cardiology expresses sincere gratitude to the following companies for their educational grant support of Echo 2001 and Nuclear 2001.*

Echo 2001**Level B Supporter**

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- ADAC Laboratories
- Bracco Diagnostics Inc.
- Mallinckrodt Inc.

*Commitments as of Feb. 5, 2001.

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with Dr. Udelson as co-chair of Nuclear 2001. Dr. Wackers is professor of diagnostic radiology and medicine, Cardiovascular Nuclear Imaging at Yale University School of Medicine in New Haven, Conn.

The program consists of three parallel tracks, he noted. In the large session room, state-of-the-art clinical and technical developments in the field will be reviewed. Next will be a series of sessions in which the clinical applications of nuclear imaging in major clinical syndromes will be highlighted. Multiple illustrative cases will be discussed by a panel of experts as well as master general cardiology clinicians.

Parallel to this large-room programming, specific areas will be highlighted in smaller rooms, Dr. Wackers said. The focus in one of these rooms will be devoted to optimizing nuclear cardiology practice in an office-based setting, whereas sessions in the second small room will feature numerous interactive "Read With the Experts" sessions, each devoted to specific technical or clinical topics, with the goal of honing interpretive skills.

"Looking at the national data, the largest growth area in the field of nuclear cardiology is in private practice office

settings," Dr. Udelson said. "So, we are trying to gear a large part of the program to appeal to those who are incorporating nuclear cardiology into their practice and to those who are considering that option."

The target audience for the symposium includes clinical cardiologists, nuclear cardiologists, and allied health care providers who use or would like to use nuclear cardiology techniques to enhance the care of patients with cardiovascular disease, he said.

Drs. Udelson and Wackers said participants in the Nuclear 2001 will—

- Gain a better understanding of state-of-the-art techniques in nuclear cardiology;
- Learn how to develop and maintain a high-quality practice of nuclear cardiology in an office-based setting;
- Improve their interpretive skills, including artifact recognition;
- Understand applications of the latest technical developments in the field;
- Use case-based information in various clinical cardiology syndromes to

enhance patient-management decisions; and

- Understand the latest in certification and accreditation requirements, as well as reimbursement issues.

A highlight of the symposium will be the day-long series of "Read With the Experts" sessions.

"We have found that a cardiologist in private practice might be the only one who reads nuclear scans in his or her group, so he or she often doesn't have a lot of interaction in the process," Dr. Udelson said. "That's why these sessions are a great way for participants to see how experts go through the process of reading the images."

Concluding Nuclear 2001 will be a special session called "Stump the Stars: Challenges Presented to Experts and Attendees."

"In this session, we'll test the skills of a panel of experts by showing them a series of complicated images," Dr. Udelson said. "It should be a tremendous learning experience for participants."

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throughout the United States,” Dr. Khandheria said.

Likewise, these technological and legislative developments are enabling nuclear cardiologists to deliver important diagnostic care to historically underserved populations.

“It shouldn’t be assumed that because you live in a rural area you will receive a second tier of care,” said James A. Case, PhD. “Telemedicine allows for the possibility of providing big-center technology and service for just about anyone, anywhere.”

Dr. Case will present a lecture titled

“Establishing, Using, and Maintaining a Remote Network for Reading Nuclear Scans” as part of Nuclear 2001. He will describe the experience of providing a remote network system at Cardiovascular Consultants in Kansas City, Mo.

At that practice, Dr. Case noted, fewer than half of the total patients seen in the nuclear cardiology practice are seen on site. The majority of patients are seen at 12 remote sites in the Kansas City area, some as far away as 150 miles.

“Nuclear cardiology is well suited

for telemedicine because the data are digital to begin with and transfer electronically without loss of quality,” he said. “Some remote sites require very high-quality connections, such as optical fiber, while other sites that are used less frequently can be maintained by using a simple analog dial-up telephone connection.”

Telemedicine not only allows Cardiovascular Consultants to serve these rural areas, Dr. Case said, but it also permits the most cost-efficient use of personnel and equipment.

“In our practice, we are going beyond nuclear to remotely service a magnetic resonance scanner as well,”

he noted “With that comes the difficulties in transferring larger data sets.”

Dr. Case will discuss the future of electronic transmission of other imaging modalities, such as magnetic resonance, computed tomography, angiography, and echocardiography.

“Much relies on DICOM, or Digital Imaging and Communications in Medicine,” Dr. Case said. “This standard eventually will allow us to look at images from any modality, from any different vendor, on a single piece of machinery. Someday we will be able to bring all modalities into a common platform and communicate them across a network.”

Dr. Case also pointed out some important issues surrounding security in telemedicine. Currently, he noted, the Internet does not offer the necessary measures to ensure security of data and patient confidentiality.

“At this point, it is more secure for users to work within a secure wide area network, or an intranet, for transmission of data,” he said.

DICOM on Display at ACC 2001

The ACC and the Cardiac and Vascular Information Working Group of Digital Imaging and Communications in Medicine (DICOM) will demonstrate the DICOM Structured Reporting for Cardiology this week in Orlando. The demonstration, titled “Cardiovascular Structured Reporting” is the first full-scale demonstration of the use of DICOM’s new structured reporting (SR) capabilities for cardiology.

The goal of the demonstration is to further expand the dialogue among cardiovascular physicians, administrators, and vendors regarding the importance of integrating digital information in cardiovascular medicine. The target audience includes cardiovascular specialists, medical administrators, and purchasing agents who are interested in learning about the practical aspects of integrating cardiac information.

Approximately 20 companies are scheduled to participate in this seventh annual demonstration of the DICOM standard.

For more information about DICOM, pick up information from the ACC Central exhibit area, or attend one of the scheduled demonstrations. The demonstrations will take place from 11:00 a.m. to noon on Monday, from 3:30 to 4:30 p.m. on Tuesday, and from 9:30 to 10:30 a.m. on Wednesday.