

For more information:
Leslie White
(585) 273-1119
Leslie_white@urmc.rochester.edu

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Safe Nuclear Cardiology Camera at URMC Hastens Diagnosis of Heart Disease

Doctors can detect evidence of heart disease faster than ever before using new 3-D nuclear imaging technology at the Paul Yu Heart Center in the University of Rochester Medical Center's Heart and Vascular Center.

The high-speed D-SPECT[®] digital gamma camera system provides "crystal clear images with a fraction of the radiation dose," said Ronald Schwartz, M.D., M.S., director of Nuclear Cardiology. "This camera is a huge leap forward from all other available technology for accuracy, speed, and comfort for our patients and providing ultra low dose imaging capability."

A single-photon emission computerized tomography (SPECT) camera is used to measure heart muscle blood flow and function for patients with heart disease or suspected heart problems. This very popular technique uses a safe, very low dose of radioactive tracer to create 3-D images or "moving maps," that show the blood flow through the heart muscle and heart chambers.

"These moving maps can be rotated to examine carefully every square inch of the heart muscle to look for damage or jeopardized areas," said Schwartz, the region's most experienced nuclear cardiologist.

Patients can now be evaluated very safely with a fraction of the radiation dose available by other invasive and non-invasive x-ray coronary imaging techniques and without the use of contrast agents, a known risk for patients with kidney disease.

For patients who cannot exercise and require a medication stress test, SPECT continues to offer important safety advantages. "The stress medication, Regadenoson, is the most widely prescribed pharmacologic stress agent, and has been proven safe for patients with advanced stages of kidney disease, asthma and emphysema in recent large clinical trials," Schwartz said.

The D-SPECT system, located in the Paul Yu Heart Center, offers a 10-fold increase in sensitivity and enhanced spatial resolution, similar to cardiac PET scan. The enhanced sensitivity allows nuclear cardiologists to reduce the amount of radioactive material to ultra-low dose levels never before achieved. Obese patients, as heavy as 540 pounds, can be imaged with high clarity

and accuracy of diagnostic information, which has never previously been possible with this or other cardiac imaging techniques.

Results of personalized, patient-centered imaging using D-SPECT technology allows cardiologists to determine the need for heart catheterization, angioplasty or bypass surgery, or medications for patients with heart disease. In addition, nuclear imaging helps doctors evaluate the effectiveness of these therapies.

“We have already begun to take advantage of the remarkable efficiency of the D-SPECT nuclear cardiology camera to assess patients suspected of having heart disease in about an hour,” said Schwartz, professor of Medicine and Imaging Sciences.

“Our patients and doctors are very happy with this added capability. The D-SPECT camera makes the experience much better during a stressful time,” said Maria Mackin, M.S., C.N.M.T., R.T. (N), chief technologist and supervisor of Nuclear Cardiology laboratories.

The open design of the scanner allows patients to sit in a padded reclining chair, similar to those in a dentist’s office, and the camera is positioned in front of the patient’s chest to capture the images. It is a significant benefit for people who experience claustrophobia during similar imaging tests that involve passing through a donut-shaped scanner.

The D-SPECT system is installed throughout the world including leading institutions in the U.S. such as Cedars Sinai Medical Center, Brigham & Women’s Hospital, Emory University Hospital Midtown, Lenox Hill Hospital, the Mayo Clinics, Parkland Hospital, & Stanford University Hospital.

Schwartz expects the technology will support URM’s research into the benefits of specialized pacemakers in heart function, measurement of absolute coronary blood flow, the assessment of the viability of cardiac muscle that does not contract normally and can benefit from angioplasty or bypass surgery, and improving ways to prevent heart failure after chemotherapy for cancer.

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