Cardiac Nuclear Medicine

What are some common uses of the procedure?

Physicians use cardiac nuclear medicine studies to help diagnose cardiac disease. The symptoms include:

- unexplained chest pain
- chest pain brought on by exercise (called angina)

Cardiac nuclear medicine imaging is also performed:

- to visualize blood flow patterns to the heart walls, called a myocardial perfusion scan
- to evaluate the presence and extent of suspected or known coronary artery disease
- to determine the extent of injury to the heart following a heart attack, or myocardial infarction
- to evaluate the results of bypass surgery or other revascularization procedures designed to restore blood supply to the heart
- in conjunction with an electrocardiogram (ECG), to evaluate heart-wall movement and overall heart function with a technique called cardiac gating

How should I prepare?

You may be asked to wear a gown during the exam or you may be allowed to wear your own clothing.

Women should always inform their physician or technologist if there is any possibility that they are pregnant or if they are breastfeeding their baby.

Jewelry and other metallic accessories should be left at home if possible, or removed prior to the exam because they may interfere with the procedure.

You should avoid caffeine (caffeinated as well as decaffeinated coffee, hot and cold tea, energy drinks etc.) and smoking for 24 hours before your examination.

You should not eat or drink anything after midnight on the day of your procedure, but you may continue taking medications with small amounts of water unless your physician says otherwise. If you take beta-blocker medication (Inderal, metoprolol, etc.) you should specifically ask your physician about temporary discontinuation.

How is the procedure performed?

Nuclear medicine imaging is usually performed on an outpatient basis, but is often performed on hospitalized patients as well.

You will be positioned on an examination table. A nurse or technologist will insert an intravenous (IV) line into a vein in your hand or arm.

The exam will begin with a stress test, which requires you to exercise either by walking on a treadmill or pedaling a stationary bicycle for a few minutes. While you exercise, the electrical activity of your heart will be monitored by electrocardiography (ECG) and your blood pressure will be frequently measured. When blood flow to the heart has reached its peak, you will be given the radiotracer through your IV. About a minute later, you will stop exercising and you will be positioned on a moveable examination table.

If you are unable to use a treadmill or bicycle, you will not exercise but you will be given a drug that will increase blood flow to the heart.

Approximately one half-hour later, the imaging will begin. Once the technologist has positioned the gamma camera, it will move slowly in an arc over your chest.

This same heart scan will be performed at another time, when you have not been exercising (called a resting scan). Images of your heart obtained after you exercise will be compared with images of your resting heart.

What will I experience during and after the procedure?

Most nuclear medicine procedures are painless and are rarely associated with significant discomfort or side effects.

You will be asked to exercise until you are either too tired to continue or short of breath, or if you experience chest pain, leg pain, or other discomfort that causes you to want to stop.

If you are given a medication to increase blood flow because you are unable to exercise, the medication may induce a brief period of feeling anxious, dizzy, nauseous, shaky or short of breath. Mild chest discomfort may also occur. Any symptoms that do develop typically resolve as soon as the infusion is complete. In rare instances, if the side effects of the medication are severe or make you too uncomfortable, other drugs can be given to stop the effects.

It is important that you remain still while the images are being recorded. Though nuclear imaging itself causes no pain, there may be some discomfort from having to remain still or to stay in one particular position during imaging.

Unless your physician tells you otherwise, you may resume your normal activities after your nuclear medicine scan. If any special instructions are necessary, you will be informed by a technologist, nurse or physician before you leave the nuclear medicine department.