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Nuclear Medicine Cardiac (Heart) Stress-Rest Test

An Introductory Guide For Patients And Their Families

You may be wondering why your doctor ordered this exam. You might have questions such as: How does this test work? What can I expect? Do I need to do anything to prepare? Is it safe? When will I know the results?

This brochure will help answer these and other questions. As always, talk with your doctor if you have additional concerns.

Why has my doctor ordered a nuclear medicine cardiac (heart) stress-rest test?

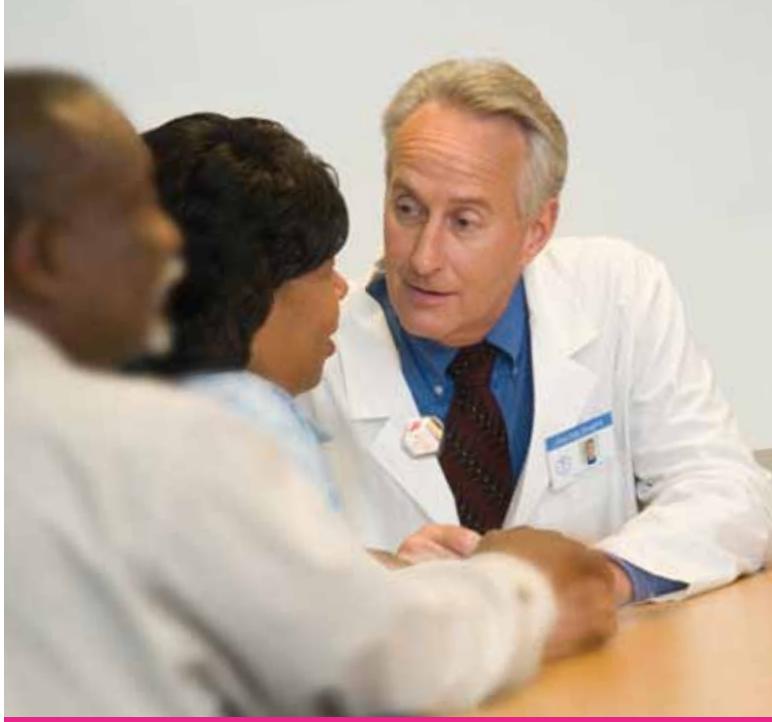
A nuclear medicine cardiac (heart) stress-rest test lets doctors see pictures of your heart while (or shortly after) exercising and when you're resting. It gives important information about how well the heart muscle is getting blood and how well it is pumping blood.

Your doctor may have ordered this test to find out:

- if there is adequate blood flow to your heart
- how well your heart responds to stress (exercise)
- the amount of damage to the heart muscle after a heart attack
- the cause of chest pains (angina)
- the health of your heart's arteries (blood vessels)
- how well treatments are working to improve blood flow to the heart

The results will help your doctor recommend the best treatment plan for your long-term heart health.

The nuclear medicine cardiac stress-rest test helps doctors see the heart in action when you are resting, exercising or both. In comparison, a traditional stress test with an electrocardiogram (ECG) only measures the heart's electrical activity.



What is nuclear medicine?

Nuclear medicine is a type of medical imaging that uses small amounts of radioactive material (called tracers) to help find and/or treat a variety of diseases, including heart disease, kidney disease, many types of cancers and other health problems.

Nuclear medicine scans give doctors important information about how various parts of the body are working. Millions of Americans have nuclear medicine imaging exams each year.[1]

1 Goethals P, Zimmermann R. Nuclear Medicine Market, Nuclear Medicine Procedures. In: Nuclear Medicine World Market Report and Directory. MEDrays Intell. June 2016: 45.

How does a nuclear medicine stress-rest test work?

You will be given a small amount of radioactive material (called a tracer). This tracer is usually injected into a vein in your arm or hand. It quickly travels through your bloodstream to your heart muscle where it sends signals to special cameras that:

- detect the tracer in your heart
- take pictures of your heart muscle
- record and store information on a computer

There are several types of nuclear medicine cardiac stress-rest imaging tests. Your doctor will select the type of imaging test used based on the goals of your scan.

The most common include:

SPECT scans: The SPECT camera will rotate around you, taking pictures as the tracer is absorbed by the heart muscle. SPECT tests are used to:

- find blockages of blood vessels in the heart
- determine the rate or volume of blood flow to the heart
- diagnose heart conditions or determine the effectiveness of previous treatment.

These scans may sometimes be used to take real-time images during exercise to better assess the condition of the heart.

MUGA scans (multi-gated SPECT scans): This is a type of SPECT test that uses an ECG to time precisely when a series of images is taken. MUGA scans create images of the heart when it is contracting (systole) and relaxing (diastole). They are usually used to determine the amount of blood being pumped from the left ventricle (lower chamber of the heart). This is called the ejection fraction (EF), which is an important predictor of cardiac risk.

PET scans: This test shows blood flow and the use of oxygen and nutrients by heart cells using radioactively-labeled chemicals (tracers) that give off energy called positrons. PET scans are used to determine whether a portion of the heart muscle is still viable (living and functioning) after a heart attack. Because PET scans provide exceptionally detailed images, they are often used when other tests have not provided a definitive diagnosis.

Are there any concerns with nuclear stress-rest tests?

Don't let the words "nuclear" or "radioactivity" scare you. These tests are designed to expose you to the least amount of radiation possible. The drug or drugs that will be used during the exam have been approved by the U.S. Food and Drug Administration. However, there is always a chance that you may have a reaction to the drugs.

Your doctor will explain the risks before the test. It is important to tell your doctor or the technologist performing the test of any side effects you experience. Some people may feel fatigue, muscle cramps, shortness of breath or chest pain during the exercise test.

If you are pregnant, trying to get pregnant or breast feeding, tell your doctor before having the test.

The exam is minimally invasive and generally painless except for the injection.

What will the procedure be like?

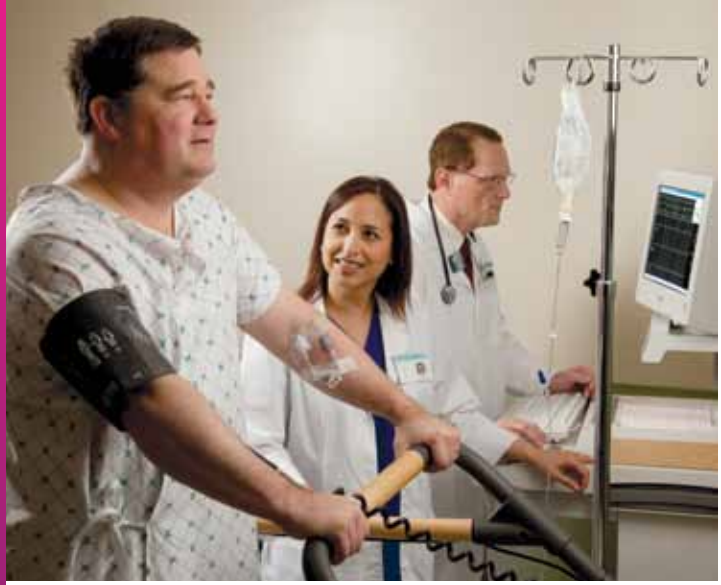
The test is usually done at a hospital or outpatient clinic that offers this type of imaging. Although the procedure may vary, nuclear medicine heart rest-stress tests all have a similar process. Usually, a technologist with special training in nuclear medicine will conduct the test.

Do I need to prepare for the test?

Your doctor will give you instructions about when to stop eating/drinking before the exam. You will need to avoid caffeine (for example, teas, coffee, sodas, chocolates and certain pain relievers) for a period of time.

Ask your doctor if there are certain medications that you shouldn't take before undergoing the exam.

On the day of the test, you should wear comfortable walking shoes and loose-fitting clothes. During check-in, be sure to tell your technologist about any health problems that may interfere with your ability to exercise such as asthma, chronic lung problems or issues with your balance, knees or hips.



What can I expect?

Here is a basic description of what you can expect. As a reminder, this process may vary depending on the patient or where the test is performed. The number of injections you receive and the length of any waiting periods will depend on the type of test. Sometimes, patients return several days later to obtain additional images.

Step 1. You may be asked to undress and wear a hospital gown. Leave your jewelry at home and be sure to remove any metal objects (for example, belts or change in your pockets).

Step 2. The technologist will insert a tube called an intravenous (IV) line in your arm or hand to administer the tracer. You may feel a slight prick.

Wait. You may be escorted to a separate area where you will wait for the tracer to be taken up by the heart muscle and clear itself from the surrounding tissue. Wait time may vary; however, it generally takes 30-60 minutes.

Step 3. After the waiting period is complete, you will be taken to the imaging room where a unique device, known as a gamma camera, will be used to obtain images of your heart. Your technologist will provide you with instructions specific to the imaging procedure. You will need to remain as still as possible to prevent images from blurring.

Step 4. During the stress portion of the test, you likely will be asked to walk on a treadmill or pedal a stationary bicycle until you reach a predetermined target heart rate. The heart normally pumps more blood during times of physical exertion. A tracer will, again, be administered at the peak of this exercise. A nurse or technologist will be monitoring you throughout the exam. Your blood pressure will be taken and your heart may be monitored with an electrocardiogram (ECG).

If you are unable to exercise due to a medical condition or physical limitation, a pharmacological stress test will be performed. In this procedure, you will receive medication through your IV that, much like exercise, increases the blood flow to your heart. A second dose of the radiotracer will also be administered.

Wait. After you have completed the stress portion of the test, you will be escorted to a waiting area where you will wait for the radiotracer to properly distribute. Wait time may vary; however, it generally takes 15-60 minutes.

Step 5. After the waiting period is complete, you will be taken to the imaging room where the gamma camera will be used to obtain images of your heart. Your technologist will provide you with specific instructions.

Step 6. At the end of the exam, the technologist will carefully remove your IV tube.

How long does the test take?

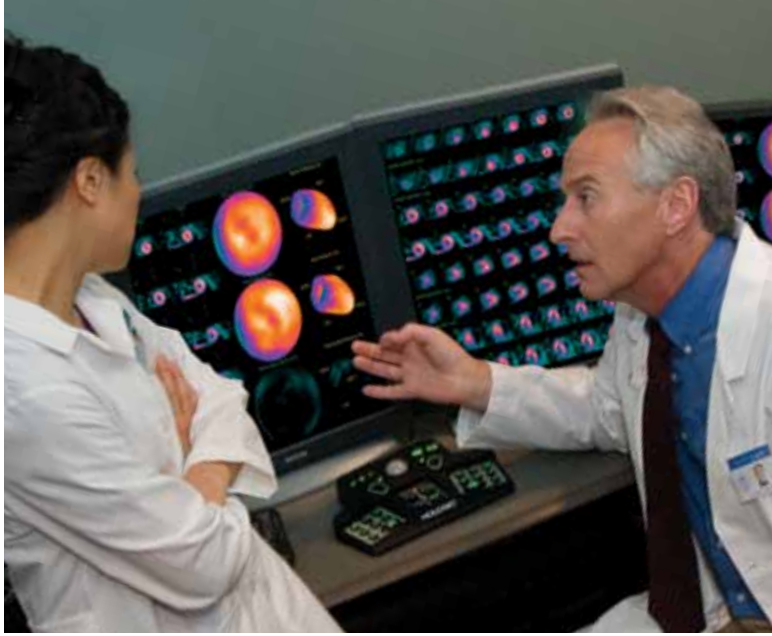
The entire test can take four or more hours, depending on the type and purpose of the scan. Your doctor and/or technologist should tell you in advance how long the test should last. You may also have a break in between the stress and rest tests. Once the test is finished, you may be asked to wait for a short time while the doctor (a radiologist who is trained to read the images), checks to see whether additional pictures are needed.

Is there anything I need to do after the test?

The radioactive tracer usually does not stay in your body for very long. Unless there is some reason that you should not drink a lot of fluid, it is advisable to drink plenty of liquids and urinate frequently after the test is complete. This will help flush any remaining radioactivity out of your body. Before your test, ask your doctor for specific instructions regarding normal activities or any special follow-up instructions. Usually, you can resume most normal activities, including your normal medication schedule, immediately.

How do I get the results of this test?

Normally, after your test is completed, the technologist will share your ECG results and reports of both scans with a nuclear cardiologist. He or she will review the images and send a written report to the doctor who ordered your test. Your doctor should then explain the results to you. Be sure to ask your doctor what the test results mean and what you should do next.



Talking with your health team.

Be sure to talk with your health team if you have any concerns. Here are some questions that you might want to ask:

- Why is this test being ordered?
- How long does the test take?
- What can I expect during the exam?
- Is it safe?
- Should I stop taking any of my medications before the exam?
- Will the test be covered by my health insurance?
- When will I get the results?
- When will I be able to resume normal activities?

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Your examination has been scheduled for:

Location:_____

Doctor:_____

Phone:_____

Date:_____

Time:_____

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