Intermountain® Healthcare

Cardiac Nuclear Perfusion Imaging

What is it?

Cardiac nuclear perfusion imaging is a lot to say, but don't worry — it's a basic test to check the health of your heart and arteries. Your doctor might also refer to it as a SPECT scan, a nuclear scan, a cardiolyte scan, or a sestamibi scan.

In this test, a radioactive chemical "tracer" is injected into your bloodstream. The tracer gives off a small amount of radiation. As the tracer moves to your heart, the radiation creates an image on a device called a **gamma camera.** Areas that don't get enough blood show up as dark spots on the image.

You will lie on a table under a gamma camera, often with your arms over your head. Pillows will be used to make you comfortable.

Why do I need it?

This test might be recommended for several reasons. It can be helpful if you've had chest pains, a heart attack, or other heart symptoms. Nuclear imaging of your heart can be used in various ways:

- To assess whether you have coronary artery disease and how much your arteries are blocked
- To test your heart for damage after a heart attack
- To check how well bypass surgery or other treatment has restored blood flow to the heart

Talking with your healthcare providers about this test

The table below lists the most common potential benefits, risks, and alternatives for cardiac nuclear perfusion imaging. Other benefits and risks may apply in your unique medical situation. Talking with your healthcare providers is the most important part of learning about these risks and benefits. If you have questions as you talk with your healthcare providers, be sure to ask them.

Potential benefits	Risks and potential complications	Alternatives
This test provides information about whether your heart is getting enough blood and whether your heart muscle has any damage. It can help in diagnosing coronary artery disease and planning treatment. This test is non-invasive (doesn't involve any cuts).	While cardiac nuclear perfusion imaging is generally very safe, there can be risks with any diagnostic test. Risks and potential complications include: • Symptoms caused by the extra workload on your heart during the stress test, such as chest pain, high blood pressure, irregular heartbeats, dizziness, nausea, or heart attack. You will be carefully monitored during the test to prevent these symptoms or to react quickly if they occur. • Exposure to radiation, which can slightly increase your lifetime cancer risk (for more information, see Intermountain's *Guide to Understanding Radiation*). • Allergic reaction to medication given to stress your heart if you can't exercise. This complication is extremely rare.	Other tests used in diagnosing coronary artery disease include: • Blood tests • Electrocardiogram (EKG) • Echocardiogram • Stress test with echocardiogram or EKG • Angiogram (cardiac catheterization) • Chest X-ray or cardiac CT scan

How do I prepare?

Here are some basic ways to prepare for the test:

- **Tell your doctor about medications** you are taking, including over-the-counter drugs and herbal supplements. Your doctor may tell you to stop some medications before the test, such as beta blockers or asthma medication.
- **Tell your doctor if you are allergic** to any medication or if you have asthma.
- **Ask your doctor about the test schedule.** The test may happen on two separate days, or it may happen on one day. If the test happens on a single day and has two parts, you may need to wait for a few hours between the parts.
- **Avoid eating** for 4 hours before the test, as directed by your doctor. If you have diabetes, ask your doctor for special directions.
- **Avoid caffeine and tobacco** for 24 hours before the test, as directed by your doctor.
- **Dress for comfort.** Wear comfortable clothes and walking shoes to the test.

What happens during the test?

Cardiac nuclear imaging can be done while the heart is at rest or while the heart is under stress. Most often, you will have both a resting test and a stress test. Depending on the procedures at your clinic or hospital, either test may happen first.

The stress test

The stress test usually takes about 2 hours. Here's what happens:

- **Preparation.** You will remove clothing above the waist, and put on a gown. An IV will be placed in your arm or hand, and electrodes (sensors) might be placed on your chest to monitor your heart.
- **Increasing your heart's workload.** Your heart will be placed under stress in one of these ways:
  - If you are able, you'll **walk on a treadmill.** It starts slowly, and becomes faster and steeper every few minutes until you reach a target heart rate. Healthcare providers will monitor your heart. If you don't feel well, ask them to stop the treadmill. Allow it to stop before you step off.
  - If you can't exercise, you'll receive **medication** through the IV to stress your heart. Tell your healthcare providers if you have any chest pain, a fluttering heartbeat, trouble breathing, or sweating.
- **Injecting the tracer.** While you're still exercising and your heart rate is increased, the radioactive tracer will be injected into your bloodstream through the IV.
- **Placement.** You'll lie on an exam table with a gamma camera that surrounds your chest. You may be asked to hold your arms over your head.
- **Images.** The camera will record images of your heart created by the radiation.

The resting test

The resting test takes about an hour. Here's what happens:

- **Preparation.** You'll prepare as described for the stress test.
- **Placement.** You'll lie on an exam table with a gamma camera, as described for the stress test.
- **Images.** A healthcare provider will use the IV to inject the radioactive tracer. The camera will capture images created by the radiation as you lie still and relax.

What happens afterward?

The IV line and electrodes will be removed, and there is no special self-care needed. Your doctor will give you results.

When should I call the doctor?

Contact your doctor if you experience any heart symptoms after the test, such as a racing or fluttering heartbeat, chest pain, or difficulty breathing.

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