

NUCLEAR CARDIAC PERFUSION IMAGING

A Patient's Guide

What is Cardiac Perfusion Imaging?

Cardiac perfusion imaging is a medical test that uses a radioactive substance, known as a **tracer**, to access the flow of blood to the heart muscle. It produces images of the heart muscle during periods of exercise (or stress) and rest.

What Does It Show?

Cardiac perfusion imaging helps doctors diagnose coronary artery disease, which is caused by narrowed or blocked **coronary arteries** (the vessels that supply blood to the heart muscle).

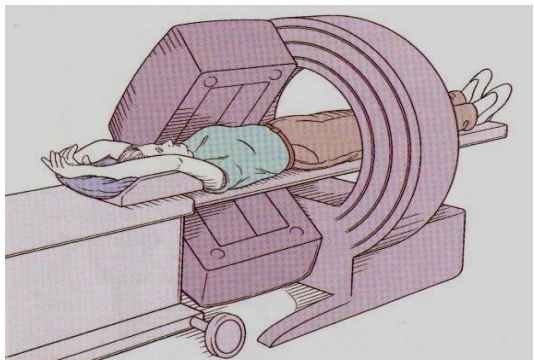
During a cardiac perfusion test, a small amount of tracer is injected into a vein in your arm, once while you exercise, and once at rest. The tracer travels in the bloodstream and is picked up by the heart muscle. Areas of the heart muscle that have a good supply of blood pick up the tracer right away. Areas that do not have a good supply pick up the tracer very slowly or not at all.

The tracer gives off a small amount of radiation that is detected with a **scanning camera**. A computer processes the information and produces **3D** and **sliced images** of the heart. One set of images is taken after you exercise (or chemically stressed). Another is taken while you are at rest.

By comparing the stress and rest images, doctors can identify areas of the heart muscle with reduced blood flow as well as areas that are scarred from a previous heart attack.

What Happens During The Test?

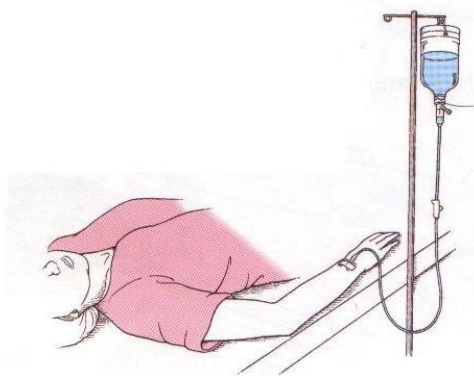
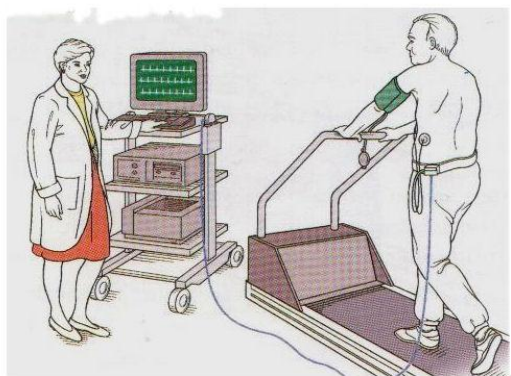
Rest Portion: A tracer is injected in a vein in your arm. Next, you lie flat on a table under a large scanning camera with your **arms above your head**. During imaging, the camera moves slowly in an arc over the front of your chest, taking pictures of your heart from different angles. ***You must remain very still while the pictures are being taken for about 20 minutes.***



Stress Portion: Electrodes (small sticky patches) will be placed on your chest to monitor your heartbeat and a blood pressure cuff on your arm to monitor your blood pressure. An **intravenous line (IV)** will be inserted into a vein in your arm.

You then walk on a treadmill that moves slowly at first, and then the speed and incline gradually increase. You **must walk for a minimum of 5 minutes** and get your heart rate sufficiently elevated.

If you are unable to walk on a treadmill, or unable to get your heart rate up high enough, or if you have a pacemaker, you will be given a **pharmacologic stress test**. The drug most commonly used for this is called **adenosine**. During the test, adenosine is slowly infused through the IV line for a period of 6 minutes. The drug causes the coronary arteries to **dilate (widen)**, which increases blood flow to the heart muscle as if you were exercising. While the dilating drug is being given, a small amount of tracer is also injected so the stress images can be performed.



Following the stress portion, you will return to the scanner for another set of images.

Is The Test Safe?

The radiation exposure during perfusion imaging is small and the doses used are safe.

There are no side effects or reactions to the radioactive tracer.

The stress test (whether on the treadmill or chemically) is also safe. A small amount of risk does exist because the heart is stressed, however, trained personnel are there to handle any emergency.

There are no after effects from either portion of the test, and you will be able to drive.