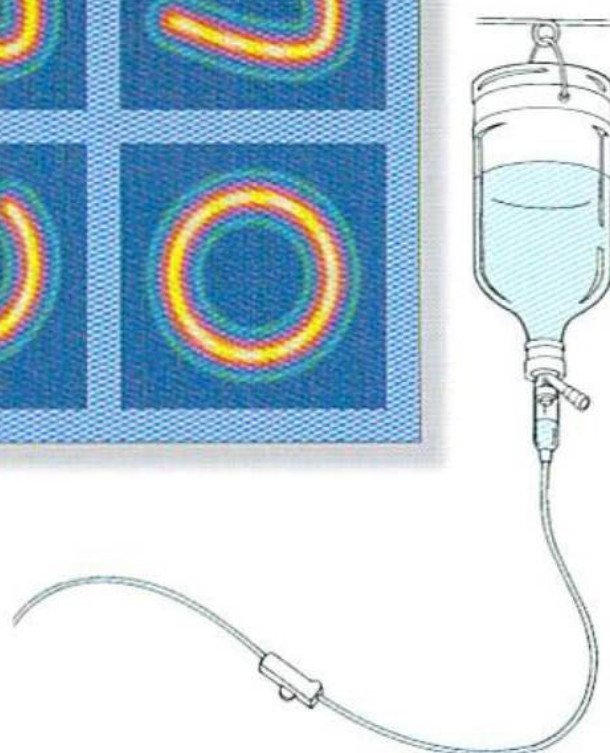
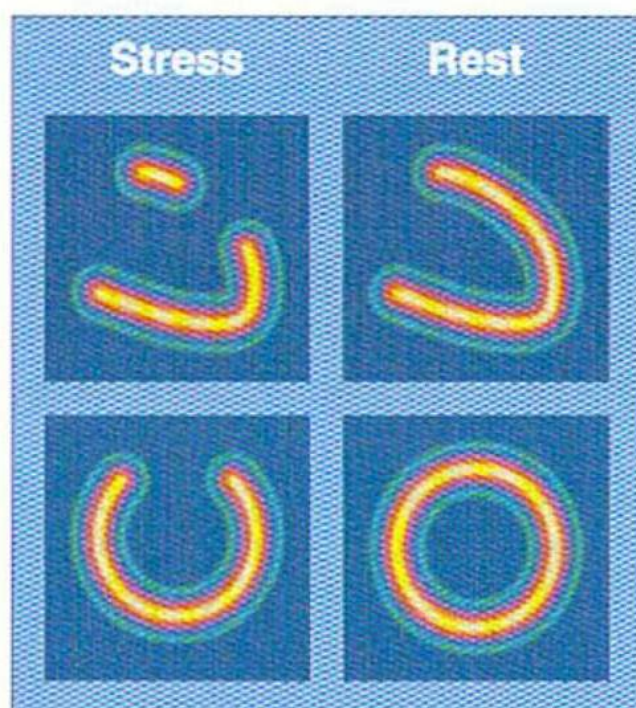


Adenosine Cardiac Perfusion Imaging

(Includes **Dipyridamole**)



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 study the flow of blood to the heart muscle. It produces images of the heart muscle during periods of exercise (or stress) and rest.

For patients who cannot exercise for some reason, the test may be done after the injection of a medicine that mimics the effect of exercise on the heart. This is known as pharmacologic stress testing.

The drugs most commonly used for pharmacologic stress testing are **adenosine** (Adenocard®) and **dipyridamole** (Persantine®).

(Other terms often used to describe cardiac perfusion imaging include: myocardial perfusion scan, cardiac nuclear imaging, and radionuclide stress test. Based on the specific tracer that is used, the test may also be called Thallium, Cardiolite, or Myoview scan.)

What Does It Show?

Cardiac perfusion imaging is particularly useful in diagnosing coronary heart disease, which is caused by narrowed or blocked **coronary arteries** (the vessels that supply blood to the heart muscle).

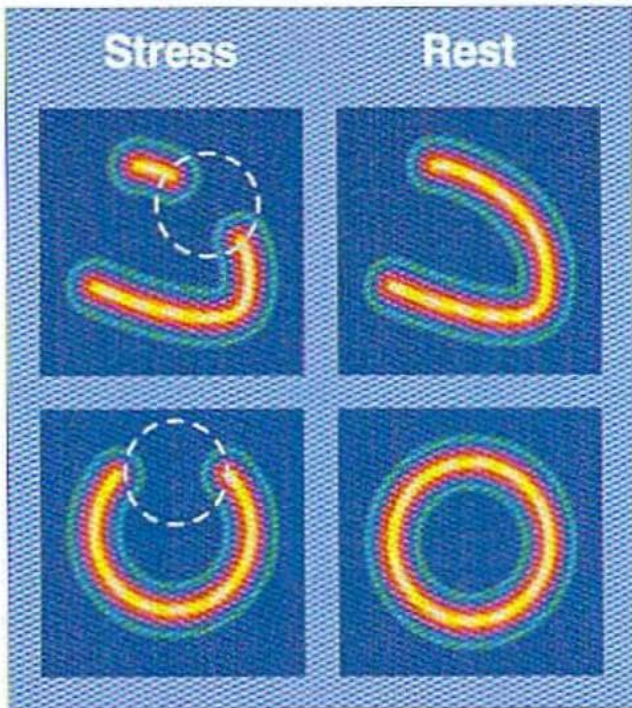
During the test, adenosine or dipyridamole is injected into a vein. The drug causes the coronary arteries to **dilate** (widen), which increases blood flow to the heart muscle. Arteries that are diseased cannot dilate as much as healthy arteries. As a result, blood flows mostly to areas supplied by healthy arteries.

After the dilating drug is given, a small amount of tracer is injected. The tracer collects in those parts of the heart muscle that have good blood flow.

The tracer gives off a small amount of radiation that is detected with a **scanning camera**. A computer processes the information and produces images that show how radioactivity is distributed in the heart.

If an area of the heart receives less blood than the rest of the heart (because of a narrowed or blocked artery), it will pick up less radioactivity and will show up as a lighter area, called a “defect.”

Additional tracer is injected while you are at rest, and another set of images is taken. 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.



Cardiac Perfusion Scan

The images show the heart from two different “angles” during stress and at rest.

The stress images show a “defect,” which disappears at rest. This suggests a narrowing in the artery which supplies blood to that area of the heart muscle.

Preparing for the Test

- Generally, you will be instructed not to eat or drink for at least 4 hours before the test. If you have diabetes and take medication for it, ask your doctor for special instructions.
- This test may not be right for patients with asthma, emphysema, or chronic lung disease. If you have any of these conditions, be sure to let your doctor or nurse know.
- Do not take any medications that contain theophylline (such as Theo-Dur, Theolair, or Uniphyll) for 48 hours before the test. These medications can affect the test. If you do not know which medications to avoid, ask your doctor or nurse.
- Do not drink coffee, tea, cocoa, colas, or soft drinks containing caffeine (such as Tab or Mountain Dew) for 24 hours before the test. Avoid chocolate. Avoid medicines containing caffeine (such as Anacin or Excedrin).
- Wear comfortable clothing and shoes that are suitable for walking, as you may be asked to exercise at a low level.
- The procedure will be explained to you and you will be asked to sign a consent form. Feel free to ask any questions you may have.

What Happens During the Test?

Cardiac perfusion imaging is usually performed in a hospital radiology or nuclear medicine department, a doctor's office, or at an outpatient clinic.

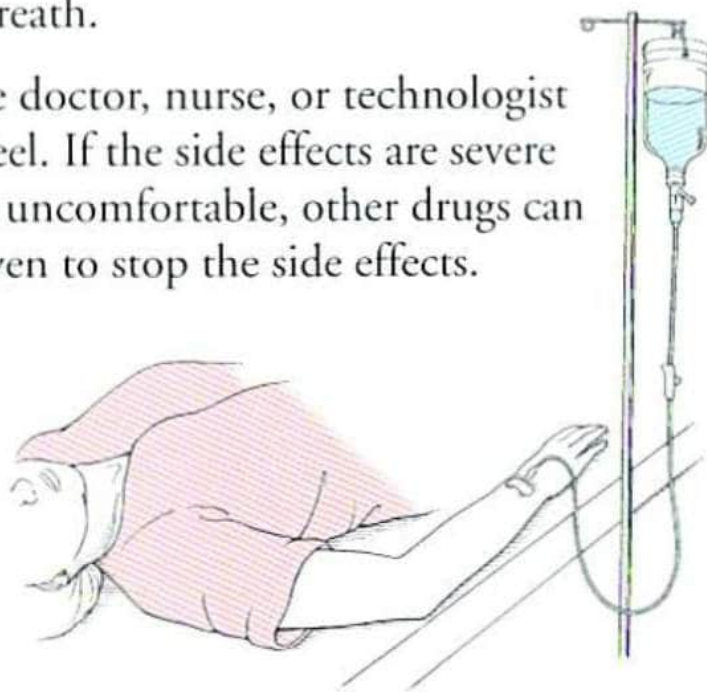
Usually, two sets of images are taken. One set is taken after the dilating drug is given (stress portion), and another set is taken after a period of rest. Depending on the department's routine, either the stress or the rest portion may be done first.

■ *Stress Portion*

Several electrodes (small sticky patches) are placed on your chest to monitor your heartbeat during the test. An **intravenous (IV) line** is inserted into a vein in your arm.

The dilating drug (adenosine or dipyridamole) is then injected slowly through the IV line in your arm. As the drug is given, you may feel flushed or experience chest pressure, headache, nausea, anxiety, dizziness, or shortness of breath.

Be sure to let the doctor, nurse, or technologist know how you feel. If the side effects are severe or make you too uncomfortable, other drugs can sometimes be given to stop the side effects.



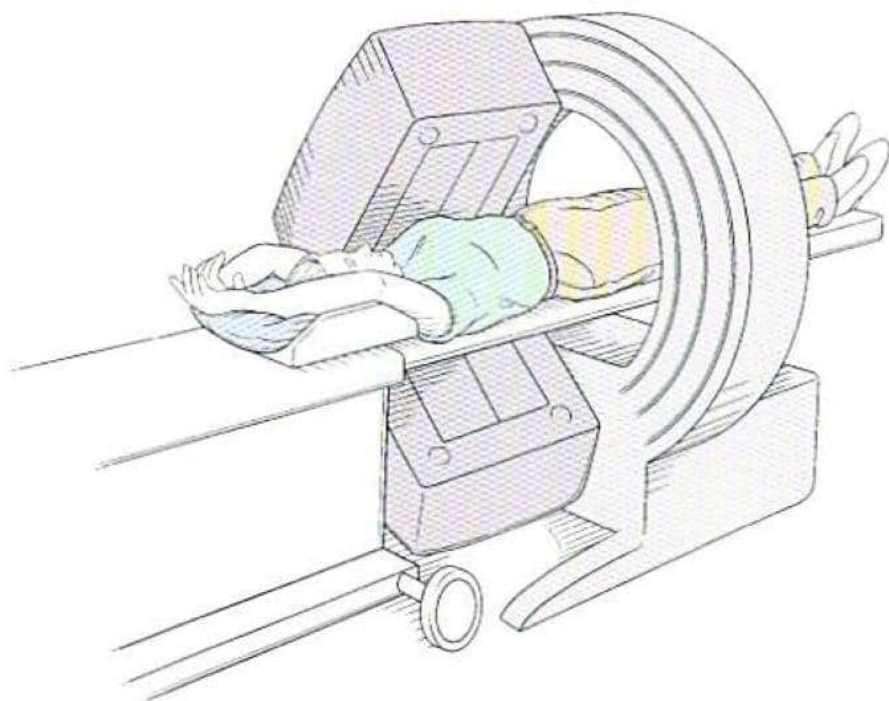
In some cases, you may be asked to perform low-level exercise after the dilating drug has been injected. This helps improve the quality of the test and lessen any side effects from the drug.

Once the dilating drug has been given, or soon after, the radioactive tracer is injected into the vein.

Next, you lie flat on a special table under a large scanning camera. During **imaging**, the camera moves slowly over the front of your chest, taking pictures of your heart from different angles. You must remain still while the pictures are being taken. The imaging part of the test takes about 15 to 30 minutes.

■ *Rest Portion*

A tracer will be injected one other time, and another set of pictures will be taken while you are at rest. These images are then compared to the images taken during the stress portion of the test.





How Long Does It Take?

Perfusion imaging can take from 2 to 5 hours. If you are an outpatient, you may be allowed to leave the test area between the two parts of the test. In some cases, you may be asked to return the next day for more imaging.

Is the Test Safe?

The radiation exposure during perfusion imaging is small, and the doses used are safe. However, if you are pregnant, suspect you may be, or are a nursing mother, be sure to let your doctor know.

The injection of dilating drugs is also safe. A small amount of risk does exist, however, because the heart is stressed. Possible *rare* complications include severe shortness of breath, abnormal heart rhythms, and heart attack. Trained medical personnel are there to handle any emergency.

Your Test Results

Your doctor will discuss the results of the test with you during a future office visit. The results help the doctor accurately diagnose your condition and develop a treatment plan that is best for you.

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