

# Patient Information on Nuclear Imaging

## WHAT YOU NEED TO KNOW

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**CORONARY ARTERY DISEASE (CAD)** is a narrowing of the blood vessels that supply blood and oxygen to the heart. The narrowing is usually caused by fatty deposits inside the coronary arteries that lead to the heart. Such narrowing can restrict the heart from pumping efficiently, cause chest pain, and lead to serious problems such as heart attack or death.

**NUCLEAR IMAGING** is a common procedure given to millions of people every year. This safe and useful test will help your physician see whether you have CAD.

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### **Q. WHAT IS NUCLEAR IMAGING?**

A. Nuclear myocardial perfusion imaging (MPI) is a procedure that lets your physician look at the flow of blood to the heart muscle. Let's break it down.

*Nuclear* refers to the tracer that is injected into your bloodstream. This tracer contains a small amount of radiation similar to that used in a common x-ray.

*Myocardial* refers to the heart muscle (myocardium).

*Perfusion* refers to the passage of blood through the circulatory system.

*Imaging* refers to the computer generated pictures taken during the test by a special camera.

### **Q. WHAT INFORMATION CAN BE LEARNED FROM THIS PROCEDURE?**

A. A nuclear MPI will help your physician determine:

1. If your heart is receiving enough blood.
2. If you have CAD.
3. If more tests are necessary.

## **Q. HOW DOES NUCLEAR MPI WORK?**

A. A nuclear MPI test is performed in two parts – when the heart is at stress and when it is at rest. The two parts can be performed in either order.

PART 1. The camera takes two sets of pictures. The first set of images shows the pictures of the heart when the blood vessels are dilated (referred to as “at stress”). The second set shows the heart during normal functioning (referred to as “at rest”). The two sets of images are compared. A heart with healthy coronary arteries shows little or no difference between images taken during stress and those taken at rest. In a heart with narrow arteries, images taken during stress are different from those taken at rest.

PART 2. The heart is stressed. The arteries are expanded (dilated) either by exercise or by using a prescription medication. Patients who are unable to exercise on a treadmill or stationary bike can receive a medication that creates an effect on the heart that is similar to exercise. Healthy coronary arteries dilated more than unhealthy narrow arteries. Once the blood vessels are dilated, a small amount of a radioactive imaging agent is injected. Images taken by a special camera will then show if any part of your heart is not getting enough blood.

## **Q. WHAT IF I NEED MEDICATION TO DILATE MY ARTERIES?**

A. If you are unable to exercise adequately, you are given a dilating medication which is infused over a period of approximately 4 to 6 minutes for most patients. A blood pressure cuff is placed on one arm, and a small intravenous needle is inserted in your other arm. Small round pads will be gently attached to your chest. The pads are attached to wires that lead to an electrocardiograph (ECG). During this time, your physician will continue to monitor your heart. You may experience side effects similar to exercise, including flushing, chest pressure/pain, and/or shortness of breath. This can be expected. Most adverse affects usually resolve quickly and spontaneously after the infusion is stopped.

## **Q. WHAT HAPPENS DURING IMAGING?**

A. For approximately 15 minutes, you will rest on your back, usually with your arms comfortably extended about your head. The camera is then used to take images of the blood flow of your heart. The camera will not come in contact with your body, and doesn't hurt or emit any radiation.

## **Q. IS NUCLEAR MPI SAFE?**

A. Like many people, you may be worried about the radioactive tracer you will receive during the test. That's very understandable. But you can feel comfortable about nuclear MPI. The radiation amount is the same or less than what you would receive during a typical x-ray, and your body quickly eliminates it through natural means.

If you have any further questions, don't hesitate to ask your physician, nuclear technologist, or nurse. He or she can tell you everything you want to know about your nuclear MPI test.