



A Patient's Guide to Myocardial Perfusion Imaging *Common Questions and Answers About Nuclear Medicine*

You are reading this page because your doctor has recommended that you undergo a nuclear medicine procedure. He or she has made this decision because the information gained from such a test will be important in the diagnosis and the treatment of the medical problem you may have. You should know that the exam is safe, painless and commonly performed. In fact, approximately 10 to 12 million nuclear medicine procedures are performed each year in the United States alone.

We would like to explain to you what nuclear medicine is, how nuclear medicine procedures are performed and how they may help you. The first section of this page will give you a general overview of nuclear medicine. The next section will answer some of the most frequently asked questions about this field of medicine. If you have any questions that are not answered in this page, please ask your doctor, and he or she will be only too glad to answer them.

What to Expect - The Nuclear Medicine Procedure

Myocardial Perfusion

Myocardial Perfusion Imaging, commonly called Stress Test, is used to assess coronary artery disease or CAD. CAD is the narrowing of arteries to the heart by the build up of fatty materials.

CAD may prevent the heart muscle from receiving adequate blood supply during stress or periods of exercise. This frequently results in angina pectoris which is chest pain.

Perfusion imaging usually consists of stress and rest tests. Images are taken of your heart while at rest and after exercising or under stress. This allows your physician to compare blood flow during stress and rest.

Before the Test

You may be asked not to eat three to four hours before the test. The images taken of your heart will be better if your stomach is empty. This will also minimize nausea after exercising.

Your physician may ask you to discontinue certain medications before your exam. Some heart medications may interfere with the quality of the exam.

You should wear loose, comfortable clothing and comfortable walking shoes. This will make the exercise part of the exam easier on you.

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The Stress Test

Before the exercise portion of the test, small electrodes will be placed on your chest. These electrodes will be connected to a machine which will monitor your heart rate and rhythm. A tube will be placed in your arm for administration of a tracer. The tracer is a compound which contains a small amount of radioactivity which allows the picture to be taken of your heart. The exercise will consist of walking on a treadmill or riding a stationary bicycle. Both of these will increase in difficulty the longer you exercise. As you exercise harder and longer, your blood pressure and heart rate will increase. This is normal, and you will be monitored throughout the procedure. You will be encouraged to exercise as long as possible.

If you feel light-headed or nauseous while exercising, let the technician know as soon as possible and the proper steps will be taken.

If you are unable to exercise due to a medical condition, your physician may order a medication that will stimulate exercise-like symptoms.

The tracer will be injected shortly before you stop exercising. After exercising, the technologist will ask you to lie on a flat table under a special camera. You will have to lie still for about thirty minutes.

The Rest Test

The rest portion of the procedure may or may not involve a second injection of tracer into your arm, depending on the drug used. After the injection, you will be instructed to lie flat under a special camera for fifteen to thirty minutes.

During both imaging sessions, it is important to lie as still as possible so that the pictures taken are as clear as possible.

The nuclear medicine physician will analyze the pictures taken and discuss the results with your personal physician. Your physician will then discuss the results and implications with you.

The Nuclear Medicine Team

When your doctor believes that a nuclear medicine procedure is in your best interest, he or she entrusts you to the care of specially trained professionals. The nuclear medicine team includes the following:

- *A Nuclear Medicine Physician, who is specially trained in physics and chemistry and is licensed to use radioactive materials*
- *A Nuclear Medicine Technologist, who is educated in the theory of nuclear medicine procedures and experienced in their practice*
- *A Physicist, who is well versed in the technology of nuclear medicine and the care of the equipment*
- *A Pharmacist, or specially trained technologist, who is qualified to prepare the radioactive materials necessary*
- *These professionals work closely together to give you the best care and to give the most accurate information possible to your doctor.*

Questions and Answers

What are some benefits of nuclear medicine procedures?

These procedures provide valuable information that can enable your physician to achieve an early diagnosis of your medical problem. These tests are relatively painless (involving nothing more painful than an injection) and are considered to be among the safest diagnostic tests available.

How safe are nuclear medicine procedures?

Most medical procedures require benefit-versus-risk judgments. In nuclear medicine every possible precaution is taken to minimize the radiation exposure to as small an amount as possible in order to obtain the needed diagnostic information. The benefit of early and accurate diagnosis far outweighs the risk of receiving the extremely small quantities of radioactive material administered in a nuclear medicine procedure.

When contrasted to other medical tests that use radiation, nuclear medicine scans compare favorably, and, in fact, most scans involve the same amount or less radiation than that required for x-ray procedures.

Most of the compounds are quickly eliminated from the body - usually within hours or, at the most, in a day or two. Strict safety standards are adhered to by well-trained professionals.

Adverse reactions (side effects) to nuclear medicine procedures are very rare. If you have any concern about the safety of these procedures, talk to your personal physician or one of the members of the nuclear medicine team.

What preparation is required before a nuclear medicine procedure is performed?

Most of the tests require no special preparation on the part of the patient. However, if anything is necessary, your doctor will tell you ahead of time or you will be informed at the time your appointment is made.

What about after the test?

Your daily activities will generally not be affected because you have undergone a nuclear medicine procedure. However, if you had been taking any medication before the examination and your physician changed your drug schedule because of the procedure, be sure to ask if and when you should resume taking your medication.

Is there anything I should tell my doctor or the nuclear medicine team before I undergo one of these tests?

Yes. You should tell your physician if you think that you may be pregnant or if you are in such an early stage of pregnancy that your doctor may not readily recognize it.

You should also inform your physician if you are breast-feeding your baby.

Are nuclear medicine procedures performed on children?

Yes. It is not at all unusual to perform nuclear medicine procedures on children. The dosage of compound administered is adjusted according to the child's size, as is done with all pediatric medication. As is the case for adults, the benefits far exceed the concern about any possible side effects.

Why do some patients need a number of different tests in addition to nuclear medicine tests?

A diagnosis is often made by one nuclear medicine procedure. However, it may be necessary to compare or confirm the results of the nuclear study with other diagnostic tests in order to reach a more accurate understanding of your medical problem.