

[Home](#) > [Navigating Cancer Care](#) > [Diagnosing Cancer](#) > [Tests and Procedures](#) > MUGA Scan

PDF generated on July 23, 2016 from

<http://www.cancer.net/navigating-cancer-care/diagnosing-cancer/tests-and-procedures/muga-scan>

MUGA Scan [1]

This section has been reviewed and approved by the [Cancer.Net Editorial Board](#) [2], 11/2015

A multigated acquisition (MUGA) scan creates video images of the lower chambers of the heart that hold blood (called “ventricles”) to check whether they are pumping blood properly. It shows any abnormalities in the size of the ventricles and in the movement of the blood through the heart. Other names for this test include cardiac blood pooling imaging, nuclear heart scan, nuclear ventriculography, and radionuclide ventriculography.

Some people may need a MUGA scan before chemotherapy to find a pre-existing heart condition. Doctors also use MUGA scans as follow-up care to identify potential long-term heart side effects called late effects. Cancer survivors who may need follow-up MUGA scans include:

- People who have had radiation therapy to the chest, spine, or upper abdomen
- People who have had a bone marrow/stem cell transplant or certain types of chemotherapy.

For these survivors, the test can identify heart-related late effects, which may occur more than five years after treatment. Learn more about [late effects of childhood cancer](#) [3].

Effects on the heart from drugs used to treat cancer

Some types of [chemotherapy](#) [4], such as anthracyclines, may damage the heart during cancer treatment. Examples include daunorubicin (Cerubidine, Rubidomycin), doxorubicin (Adriamycin),

and epirubicin (Elice). Other drugs used to treat cancer, such as trastuzumab (Herceptin), can also cause heart problems. Sometimes, heart damage from these drugs can cause congestive heart failure (CHF). CHF occurs when the heart does not pump enough blood to the rest of the body. People with CHF may experience swollen hands and feet, shortness of breath, dizziness, and an irregular heartbeat. Most often, however, the heart damage is mild and only seen on MUGA scans or [other heart tests](#) [5].

Who does my MUGA scan?

A MUGA scan is performed in the radiology department of a hospital or at an outpatient imaging center. It is performed by a nuclear medicine technologist who has been specially trained and certified to conduct the test. A radiologist or a nuclear medicine physician oversees the technologist. And a radiologist interprets the scan results.

Getting ready for a MUGA scan

When you schedule the scan, you will receive detailed instructions on how to prepare. These may include not eating or drinking for four to six hours before the test and avoiding caffeine and tobacco for up to 24 hours before the test. You also may be asked to wear comfortable clothing if your test includes exercise.

Tell your doctor or nurse about all medications you are taking, and ask whether you should take them on the day of the test. Heart medications, such as digoxin and nitrates, can affect the results of the MUGA scan. In addition, tell your health care provider if you have had recent nuclear tests, such as bone or thyroid scans.

If you are a woman, mention whether you are pregnant or breastfeeding. The small amount of radiation used in the test may harm a developing baby or pass through breast milk.

Other conditions may prevent you from having a MUGA scan or affect the results of the test. These include a fast, irregular heartbeat; obesity; and an inability to lie flat or still.

Before the procedure, you will be asked to sign a consent form stating you understand the risks and benefits of the MUGA scan and agree to undergo the test. Talk with your doctor about any concerns you have about the scan. And check your insurance plan to find out if it covers the exam and whether you will have any out-of-pocket costs.

During the procedure

When you arrive for your MUGA scan, you may need to remove your clothing from the waist up. This includes any jewelry or metal objects that could interfere with the scan.

The technologist will place stickers called electrodes on your chest to monitor your heart's electrical activity during the test. He or she will also inject a small amount of a radioactive material, called a tracer, into a vein in your arm. Sometimes the technologist will withdraw a

small amount of blood from your arm and mix it with the tracer. Then the technologist will put the mixture back into your body through an intravenous (IV) line inserted directly into a vein.

The radioactive material is like a dye. It binds to your red blood cells, which carry oxygen throughout your body, and shows how blood moves through your heart. The injection will feel like a small sting, but you will not be able to feel the tracer move through your body.

The technologist will then ask you to lie still on a table and place a special camera above your chest. The camera is about three feet wide and uses gamma rays to track the tracer. As the tracer moves through your bloodstream, the camera will take pictures to see how well the blood is pumping through your body. The pictures will be taken from many different views, and each one lasts about five minutes.

You may be asked to exercise in between pictures. This helps the doctor see how your heart responds to the stress of exercise. The technologist may also ask you to take nitroglycerin to open your blood vessels and show how your heart responds to the medication.

The scan may take up to three hours to complete. The timing depends on how many pictures are needed.

After the procedure

After the MUGA scan, you will be able to leave the exam room. But the technician may ask you to wait in the hospital while the images are processed in case you must undergo the scan again if the images are blurry.

You can expect to return to your normal activities—including driving—immediately after the test. Drink plenty of fluids and urinate frequently for one to two days after the MUGA scan to help the tracer leave your body.

Results of the procedure

The test monitors the amount of blood pumped out of your ventricles. A result of 50% or higher is considered normal, meaning that your heart is efficiently pumping blood throughout your body. On the other hand, an abnormal result may mean you have a blockage in an artery, poor pumping function, heart valve disease, or another disorder. If you have an abnormal result, your doctor may decide to switch treatments or give you a different type of chemotherapy.

Questions to ask your doctor

Before having a MUGA scan, consider asking your doctor the following questions:

- Why are you recommending this procedure?

- Who will perform the MUGA scan?
- What will happen during the procedure?
- How long will it take?
- What are the risks and benefits of having a MUGA scan?
- Who can I talk to about the costs of this test that I may have to pay?
- What will happen if I don't have this procedure?
- When will I find out the results?
- Who will explain the results to me?
- If my results are abnormal, what is the next step?
- Will I need to repeat this test during my treatment?

More Information

[Tests and Procedures](#) [6]

Additional Resource

Medline Plus: [Nuclear Ventriculography](#) [7]

Links

- [1] <http://www.cancer.net/navigating-cancer-care/diagnosing-cancer/tests-and-procedures/muga-scan>
- [2] <http://www.cancer.net/about-us>
- [3] <http://www.cancer.net/node/24571>
- [4] <http://www.cancer.net/node/24723>
- [5] <http://www.cancer.net/node/24509>
- [6] <http://www.cancer.net/node/24959>
- [7] <https://www.nlm.nih.gov/medlineplus/ency/article/003822.htm>

