

DOBUTAMINE STRESS ECHOCARDIOGRAM

What is a dobutamine stress echocardiogram?

A dobutamine stress echocardiogram is a diagnostic procedure that may be used when a physician wants to assess the heart muscle under stress.

If exercise on a treadmill is not an option (too much stress on the heart) due to a person's medical condition, a physician may use an intravenous medication called dobutamine. Dobutamine causes the heart to beat faster and will mimic the effects of exercise on the heart.

An echocardiogram is a noninvasive (the skin is not pierced) procedure used to assess the heart's function and structures. During the procedure, a transducer (like a microphone) sends out ultrasonic sound waves at a frequency too high to be heard.

When the transducer is placed on the chest at certain locations and angles, the ultrasonic sound waves move through the skin and other body tissues to the heart tissues, where the waves echo off of the heart structures.

The transducer picks up the reflected waves and sends them to a computer. The computer interprets the echoes into an image of the heart walls and valves.



Reasons for the Procedure

Possible indications for a dobutamine stress echocardiogram may include, but are not limited to, the following:

- to assess the heart's function and structures
- to determine limits for safe exercise in patients who are entering a cardiac rehabilitation program and/or those who are recovering from a cardiac event, such as a heart attack (myocardial infarction, or MI) or heart surgery
- to evaluate blood pressure during stress testing
- to assess stress or exercise tolerance in patients with known or suspected coronary artery disease
- to evaluate the cardiac status of a patient about to undergo surgery

There may be other reasons for your physician to recommend a dobutamine stress echocardiogram.

Risks of the Procedure

Possible risks associated with a dobutamine stress echocardiogram include, but are not limited to, the following:

- chest pain
- severely high blood pressure
- irregular heartbeats

- dizziness
- nausea and extreme fatigue
- heart attack (rare)

Patients who are allergic to or sensitive to medications or latex should notify their physician.

If you are pregnant or suspect that you may be pregnant, you should notify your physician due to risk of injury to the fetus from a dobutamine stress echo. If you are lactating, or breastfeeding, you should notify your physician.

There may be other risks depending upon your specific medical condition. Be sure to discuss any concerns with your physician prior to the procedure.

Certain factors or conditions may interfere with a dobutamine stress echocardiogram. These factors include, but are not limited to, the following:

- smoking or ingesting caffeine within three hours of the procedure
- beta-blocking medications may make it difficult to increase the heart rate

Before the Procedure

- Your physician will explain the procedure to you and offer you the opportunity to ask any questions that you might have about the procedure.
- You will be asked to sign a consent form that gives your permission to do the test. Read the form carefully and ask questions if something is not clear.
- Notify the physician if you are allergic to or sensitive to medications or latex.
- Fasting may be required before the procedure. Your physician will give you instructions as to how long you should withhold food and/or liquids. In some cases, cigarettes and caffeinated beverages, such as coffee, tea, and cola may be restricted several hours before testing.
- If you are pregnant or suspect that you may be pregnant, you should notify your physician.
- Notify your physician of all medications (prescription and over-the-counter) and herbal supplements that you are taking.
- Notify your physician if you have a pacemaker.
- Based upon your medical condition, your physician may request other specific preparation.

During the Procedure

A dobutamine stress echocardiogram may be performed on an outpatient basis or as part of your stay in a hospital. Procedures may vary depending on your condition and your physician's practices.

Generally, a dobutamine stress echocardiogram follows this process:

1. You will be asked to remove any jewelry or other objects that may interfere with the procedure. You may wear your glasses, dentures, or hearing aids if you use any of these.
2. You will be asked to remove clothing from the waist up and will be given a gown to wear.
3. You will be asked to empty your bladder prior to the procedure.
4. An intravenous (IV) line will be started in your hand or arm prior to the procedure for injection of medication and to administer IV fluids, if needed.
5. You will lie on your left side on a table or bed, but may be asked to change position during the procedure.
6. You will be connected to an ECG monitor that records the electrical activity of the heart and monitors the heart during the procedure using small, adhesive electrodes. Your vital signs (heart rate, blood pressure, breathing rate, and oxygenation level) will be monitored during the procedure.

The ECG tracing that will record the electrical activity of the heart will be compared to the images displayed on the echocardiogram monitor.

7. The room will be darkened so that the images on the echo monitor can be viewed by the technologist.
8. The technologist will place warmed gel on your chest and then place the transducer probe on the gel. You will feel a slight pressure as the technologist positions the transducer to get the desired image of your heart.
9. The dobutamine infusion will begin at a rate determined by your weight. The rate of the infusion will be increased every few minutes until you have reached your target heart rate (determined by the physician based on your age and physical condition), or until the maximum dose of dobutamine has been reached.
10. After the dobutamine is started and after each increase in the dobutamine rate, your blood pressure will be checked, an ECG tracing will be performed, and echocardiogram images will be obtained.
11. The technologist will move the transducer probe around on your chest so that all areas and structures of your heart can be observed. The different echocardiogram techniques described above (M-mode, 2-D, Doppler, and color Doppler) may be used.

You will not be aware of the different techniques except that during the Doppler or color Doppler, you may hear a "whoosh-whoosh" sound, which is the sound of the blood moving through the heart.

12. Once you have reached your target heart rate or the maximum amount of the dobutamine, the medication will be stopped. Your heart rate, blood pressure, ECG, and

echo will continue to be monitored for 10 to 15 minutes until they have returned to the baseline state.

13. You should notify the technologist if you feel any chest pain, breathing difficulties, sweating, or heart palpitations.
14. Once all the images have been taken, the technologist will wipe the gel from your chest, remove the ECG electrode pads, and remove the IV line. You may then put on your clothes.

After the Procedure

You may resume your usual diet and activities unless your physician advises you differently.

Generally, there is no special type of care following a dobutamine stress echocardiogram. However, your physician may give you additional or alternate instructions after the procedure, depending on your particular situation.

Videos of An Exercise Stress Echocardiogram

Positive stress echo showing that anterior wall does not move as well with exercise - patient had blockage in LAD artery –

<http://www.kcheart.com/video/Positivestressecho1.avi>

Positive stress echo showing that anterior wall does not move as well with exercise –

<http://www.kcheart.com/video/Positivestress2.avi>