

**Patient
Information**

Stress echocardiogram (echo)

Introduction

This leaflet gives you information about your planned stress echocardiogram.

What is a stress echocardiogram?

You may have already had an echocardiogram (usually just called an 'echo') performed. This is a non-invasive imaging test using ultrasound to look at your heart.

Ultrasound is very high-frequency sound which cannot be heard by the human ear. It is used to gain information about the heart muscles, chambers of the heart and structures within the heart such as the valves. The test is safe and painless.

A stress echo is done to see how your heart responds to "stress" or exercise, which increases the heart rate. We will perform an echo, as described above, before we stress the heart; this is called a 'resting' echo.

You may have another echo during or shortly after doing some exercise. Or you may have an echo while you are given a medication (dobutamine) to make the heart beat harder and faster, this mimics the effect of exercise.

Your appointment letter will tell you which type of stress echo you are having done. Please read the parts of this leaflet which are related to the test you are having.

The stress echo will usually be supervised by a Cardiologist and/or a specially trained Cardiac Physiologist and can take up to an hour, including preparation and recovery time.

Why am I being asked to come for this test?

Your heart specialist (doctor or nurse) has asked for this test to assess your heart function when it is working harder.

Having this test can help us find whether the symptoms you experience during physical stress or exercise are due to a heart problem.

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Department

Cardiology

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Sometimes we do the test when we already know you have a heart problem and we want to find out if exercise makes it worse, or might stop you exercising safely.

Exercise stress echocardiogram (ESE)

This test combines a normal echo with an exercise test. We usually do this test if you have a heart muscle or heart valve problem as it can help us see:

- The effect exercise has on your heart problem or how it affects your ability to exercise.
- If your symptoms are related to your heart problem.

You will have a resting echo and then you will be asked to do some exercise, by walking on a treadmill. We will monitor your blood pressure, heart rhythm and heart rate while you exercise.

The speed and resistance of the exercise machine will usually be increased during the test. We will ask you to exercise for as long as you are able, or until your heart rate reaches your target, which is calculated from your age. We will then perform another echo.

Dobutamine stress echocardiogram (DSE)

This test combines a normal echo with a medication to stress your heart. We give the medication into a vein in your arm (intravenously).

This test is performed when we want to:

- Investigate chest pain which we think might be due to coronary artery disease (“furring up” of the blood vessels (coronary arteries) supplying the heart muscle).
- See how well previous coronary artery intervention (angioplasty or “stents” or a heart bypass operation) treatment is working.
- Check whether your heart muscle has been permanently damaged after a heart attack, or can recover.
- Find out more about a known heart valve problem.

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You will have a resting echo and then you will then be given the medication (dobutamine) to stress your heart. Dobutamine has similar effects to exercise on the heart and circulation. It increases your heart rate and the strength of its contractions without exercising.

We will monitor your blood pressure, heart rhythm and heart rate until your heart rate reaches your target calculated from your age.

Echo pictures will be taken at different times during the test.

What does the stress echo involve?

You will be weighed and have your height measured before the test begins, this is so we can calculate some of our measurements.

The test will be explained to you, including a discussion about the symptoms you may experience and possible risks.

You may be asked to sign a consent form. By signing this form, you will have agreed to have the test performed and that you understand why it is needed. This does not take away your right to have the test stopped at any time.

Resting echo

- You will be asked to undress to the waist and offered a hospital gown to wear. The gown should be left open to the front (like a coat). You will then be asked to lie on a couch and 3 ECG electrodes (sticky pads) will be attached to your chest and connected with wires to the echocardiogram machine. This will monitor your heart rate and rhythm during the test.
- If you are having a dobutamine stress echo (DSE), we will insert a small plastic tube (cannula) into one of the veins in your arm. If you are having an exercise stress echo (ESE), this will not be necessary.
- You will then be asked to lie on your left-hand side. If you are unable to lie on your left side, we can carry out the echo while you are lying on your back. The test is performed in semi-darkness so the lights will be dimmed once you are comfortable.

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- The sonographer will place the echocardiogram transducer/probe on your chest (this is like a thick blunt pen) with cold lubricating jelly (this helps to get good contact with the skin).
- While you are lying on the couch, a number of pictures of the heart will be recorded from different areas of your chest; this is the resting echo. Once the resting echo has been done, we will either ask you to do some exercise, or start the medication to stress the heart.

Stress echo – exercise

After you have had your resting echo, you will be asked to do some exercise by walking on a treadmill.

- Treadmills (moving walkway) are seen in most gyms. You will walk on the treadmill and once the treadmill stops, we will ask you to get back onto the couch. Another echo will be performed while your heart is still beating fast.
- Before you start to exercise, we will put 9 more ECG electrodes on your chest to record your heart's electrical activity. We will measure your blood pressure before you start and at various points during the test.
- The exercise will get harder every 3 minutes. When you reach your target heart rate, we will stop the treadmill and we will do another echo.
- We may stop your exercise early if you start having any symptoms such as:
 - Chest discomfort
 - Shortness of breath
 - Dizziness or weakness
 - Leg discomfort
 - Significant change in your blood pressure or ECG
- You will be asked to stay lying down until your heart rate and blood pressure have returned to their resting levels. Once you feel well, we will take off the electrodes and you will be able to get dressed.

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Stress echo – dobutamine

After you have had your resting echo, we will use a medication called dobutamine to make your heart beat harder and faster.

- Dobutamine is given intravenously by an infusion (drip) over 15 minutes, via the cannula inserted into a vein in your arm. The dose of the drug is calculated based on your weight and the dose is increased every 3 minutes which will gradually increase your heart rate.
- In some cases, an ultrasound enhancing agent (called SonoVue®) may be used. This can help to improve the image quality and make the results easier to read.
- During the test, you will feel your heart beating harder and faster, as if you are exercising.
- We will take some more echo pictures when the infusion has been running for around 3 minutes.
- When you reach your target heart rate, which is calculated based on your age, we will stop the infusion and take some more echo pictures. We may stop the infusion medication early if you have:
 - Chest discomfort
 - Shortness of breath
 - Weakness or dizziness
 - Significant changes in your blood pressure or ECG

Sometimes we need to use another medication called atropine during the test to get your heart rate to target; we will not know if this is needed until the test itself. **If you are given this medication, you cannot legally drive for 24 hours.**

After the test you will remain lying down for a few minutes. This is to allow your heart rate and blood pressure to return to your resting levels. When you feel well, the electrodes will be taken off and you will be able to get dressed.

You will then be asked to sit in the waiting room for 10 minutes to make sure that the effects of the medication have completely worn off before going home.

It is essential that you are collected from hospital and have a responsible person to stay with you for the rest of the day. **You must not drive or operate machinery after this test.**

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Preparing for the stress test

You may need to stop taking **betablockers** (atenolol, bisoprolol, metoprolol) for up to **48 hours** before the test. We will telephone you before your appointment to advise you whether you need to do this. If you are not sure, please contact the Cardiac Investigations team to check – the contact details are at the end of this leaflet.

On the day of your appointment, take all of your usual medication (except betablockers) as normal. We recommend that you only eat a light meal before the test. **Do not have anything to eat for 2 hours before your appointment. Also do not smoke for 2 hours before the test.** You can continue to drink normally.

You should wear comfortable, loose-fitting clothing such as a top and skirt or trousers (not a dress).

If the test you are having includes doing exercise, you should wear shoes or trainers which will not slip off your feet.

There will be cold drinking water available but you may wish to bring your own drink.

You must tell us if you are:

- Pregnant or think that you may be pregnant. The test should not be carried out until after your baby is born.
- Lactating or breastfeeding, you can resume breastfeeding 2 to 3 hours after the test as any medications given will be quickly removed from the body by breathing.

Risks, contraindications and possible side effects of the test

A stress echo is very safe, there are no known risks from the clinical use of ultrasound for scanning. However, as with all medical procedures, there can be risks.

The level of exercise you will be asked to do is much the same as climbing stairs or carrying heavy shopping.

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Dobutamine, atropine and SonoVue® are all medicines which may cause side effects, although not everybody will get them. Most of the side effects are rare and are not usually serious. Some patients may experience serious side effects which may require treatment.

Please let the Cardiac Investigations team know if you have a heart condition which has recently worsened, including increasing frequency of angina (chest pains) or rhythm disturbance or if you have artificial heart valves.

We also need to know if you have an acute general inflammation or infection and if you have any severe liver or kidney disease.

If you have had allergic reactions to any medicines before, please let us know before starting the test.

During the test, **tell the doctor straight away** if you notice any of the following side effects, as you may need medical treatment:

- Swelling of the face, lips, mouth or throat which may make it difficult to swallow or breathe; skin rash; hives; swelling of the hands, feet or ankles.

Possible risks of a stress echo include:

- The heart developing an abnormal rhythm (1 in every 1,000 patients). This will usually settle down without needing treatment but may require an electric shock to restore normal heart rhythm.
- A bad attack of angina, a heart attack or a stroke (1 in every 2,000 patients).
- A severe, life-threatening allergic reaction to any of the medications used during the test (1 in every 10,000 patients).

You may also notice symptoms that you might have developed during normal exercise. These include:

- Chest pain
- Breathlessness
- Dizziness or feeling faint

Dobutamine can also cause the sensation of your hair standing on end, or tingling in the skin.

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Most symptoms usually go away when we stop the test.

There will always be medical professionals present during the test who are trained to manage any of the complications mentioned.

Dobutamine is contraindicated (cannot be used) if you have:

- A phaeochromocytoma
- Uncontrolled tachycardia (fast heart beat)

Atropine is contraindicated (cannot be used) if you have:

- Myasthenia gravis
- Closed angle glaucoma
- Uncontrolled hypertension (high blood pressure)
- Certain gastrointestinal (gut) conditions
- Urinary retention

SonoVue® is contraindicated (cannot be used) if you have:

- An allergy to sulphur hexafluoride, macrogol 4000, distearoylphosphatidylcholine, dipalmitoylphosphatidylglycerol sodium or palmitic acid
- A right-to-left heart shunt
- Severe pulmonary hypertension (pulmonary artery pressure more than 90mmHg)
- Uncontrolled hypertension (high blood pressure)
- Adult respiratory distress syndrome (a severe, medical condition characterised by widespread inflammation in the lungs)

After the procedure

You will not normally be given the results straight away as we need to make measurements and interpret the echo pictures. We will write to the doctor who referred you for the stress echo.

We recommend that you take things easy for the rest of the day after a stress echo.

If you have had any medications as part of your stress echo, you must be collected from hospital and have a responsible person remain with you for the rest of the day. You must not drive or operate machinery following the test.

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Contact information

If you have any questions or worries about this test, please contact Cardiac Investigations.

Cardiac Investigations

Tel: 0300 422 6551

Monday to Friday, 9:00 am to 4:00 pm

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Making a choice

Shared Decision Making

If you are asked to make a choice, you may have lots of questions that you want to ask. You may also want to talk over your options with your family or friends. It can help to write a list of the questions you want answered and take it to your appointment.



Ask 3 Questions

To begin with, try to make sure you get the answers to three key questions if you are asked to make a choice about your healthcare.

1. What are my options?
2. What are the pros and cons of each option for me?
3. How do I get support to help me make a decision that is right for me?

These resources have been adapted with kind permission from the MAGIC Programme, supported by the Health Foundation

* Ask 3 Questions is based on Shepherd HL, et al. Three questions that patients can ask to improve the quality of information physicians give about treatment options: A cross-over trial. Patient Education and Counselling, 2011;84: 379-85



<https://aqua.nhs.uk/resources/shared-decision-making-case-studies/>