Echocardiogram

This factsheet is for people having an echocardiogram. An echocardiogram is a painless procedure that uses ultrasound to produce a moving image of the inside of your heart. It is a useful test for checking the structure of your heart and to see how well it is functioning– eg look at its chambers, valves, and main arteries; but not the coronary arteries, which are too small. Your care will be adapted to meet your individual needs and may differ from what is described here.

An echocardiogram uses an ultrasound probe, which is run over your chest to get a moving picture of your heart. Harmless high-frequency sounds are produced near the skin. You will not feel anything and the sound waves will not affect your body in any way. They go through the skin, bounce back from part of the heart, and produce an echo that comes back to the probe. The procedure is carried out in hospital by a cardiologist or a technician trained in the procedure. Possible reasons why you may have an echocardiogram include the following.

- to check whether your heart doesn't pump as well as it should
- to check for complications after a heart attack
- to look for damage to the heart valves if you have symptoms of heart valve disease
- to check for heart disease in newborn babies and young children
- to look for heart defects in unborn babies – fetal echocardiogram

When you are reclining comfortably a clear gel is applied to the skin on the left side of your chest. The probe, called a **transducer,** emits ultrasound waves. The sound waves are reflected back from the surfaces outside and inside your heart. It reveals any abnormalities of your heart valves and shows the size and shape of the chambers of your heart. Echocardiography also shows up any abnormal communications between two heart chambers. This is especially important for diagnosing babies and children. Ultrasound scanning can be used on fetuses in a womb before a baby is born.

Types of echocardiogram

The standard echocardiogram test uses an ultrasound probe that is run over your chest.

There are also some other types of echocardiogram.

In a transoesophageal echocardiogram (TOE), images of your heart are taken from a probe inside your gullet (oesophagus), which lies just behind your heart. This means that your ribcage and lungs won't interfere with the images, and doctors can get a clearer view of your heart valves. For this procedure, you will be asked to swallow a small probe, which is mounted on the end of a flexible tube. You may have a local anaesthetic, which means you will stay awake but all feeling from the gullet will be blocked. Or you may have a sedative that relieves anxiety and causes temporary relaxation, without putting you to sleep.

A stress echocardiogram takes an image of your heart while or after it's been put under stress (normally following exercise – such as walking on a treadmill). If you're unable to exercise, you may be given medicine to stimulate the stress on your heart instead. This test can be useful in diagnosing coronary heart disease.

A Doppler echocardiography measures how fast blood is flowing through different parts of your heart, and how well the heart valves are working.

Alternative tests

Doctors can use various tests to look at your heart. An echocardiogram is just one such test, and you may also have others. If your doctor thinks you may have heart failure for example, you will probably have an electrocardiogram (ECG), a chest X-ray, and/or blood and urine tests before having the echocardiogram.

Other tests include a radionuclide test or magnetic resonance imaging MRI.

A radionuclide test involves injecting you with a small amount of a harmless, radioactive substance either while you are exercising or after giving you something safe that makes your heart act similarly. A special camera picks up the rays sent out by the substance as it travels through your heart. See MIBI.

An MRI uses magnets and radiowaves to produce images of the inside of your heart.

However, doctors use echocardiograms more often than these alternatives, especially in children and babies, as it is safe, doesn't hurt and is easy to do.

About the procedure

If you are not already in hospital, you will need to go in on the day of the echocardiogram procedure.

Ultrasound machines can either be hand-held or on wheels and can be wheeled to your bedside.

Before the test is begun, the doctor or technician will rub a clear gel over the left side of your chest. This is to make sure there will be a good, airtight contact between your skin and the probe. The probe is put in position on your skin. When the ultrasound machine is switched on, the probe gives out harmless ultrasound waves that you won't be able to feel. As the probe is moved across your chest, the ultrasound waves will pass into your body and bounce off the different structures in your heart, and back into the probe. The echocardiogram machine can detect the ultrasound waves that have bounced back, creating a moving image of your heart on a screen. Your doctor will be able to see straight away how your heart is functioning and whether there is any structural abnormality or blood clots present.

The test normally takes between 15 and 45 minutes, but can sometimes take up to an hour.

Afterwards

When the cardiologist has seen your echocardiogram results, he or she will be able to advise you on the most appropriate course of action for you. It could be that your symptoms are not caused by a problem with your heart or that you need further tests. If the echocardiogram has identified a problem with your heart, your doctor may advise medication or surgery to treat you.

Fetal echocardiogram

A fetal echocardiogram is used to get a very detailed picture of your baby's heart, before your baby is born. It is used to check whether your developing baby has a heart defect.

You will be referred for a fetal echocardiogram if your obstetrician (the doctor who cares for you during pregnancy and childbirth) thinks there is a risk of your baby having a heart defect. This may be because you have a family history of congenital heart disease, because an abnormality has been detected during a routine ultrasound scan or because there are other problems with the development of your baby.

If there's a problem with your baby's heart, it's often first noticed when you have your routine 20-week ultrasound scan. However, doctors can only get quite a limited view of your heart from an ultrasound; an echocardiogram is much more detailed.

A fetal echocardiogram can show up abnormalities in the structure or function of the heart and problems with the heart rhythm. However, some heart problems can't be detected until your baby is born.

It can be a worrying time if you have been told you need a fetal echocardiogram. However, the best advice is to wait until your echocardiogram is done and you can discuss the results with a specialist – in some cases, the doctor will be able to reassure you that there is no problem.

Knowledge gained

The echocardiogram can produce a very detailed picture of the structures inside your heart (but not the details of the coronary arteries), allowing the doctor to identify if there are any problems.

The echocardiogram can be used to assess the size and function of the left ventricle – one of the lower chambers of the heart, which is responsible for pumping oxygenated blood around the body. Measuring how big the left ventricle is and looking at it's pumping action can allow doctors to see whether you have heart failure.

Echocardiograms can also uncover problems with your heart valves – structures that help to control the way blood flows through the heart. Doctors will look at the shape of the valves, how they are moving and whether they are calcified (have a build up of calcium deposits), in order to see whether you have a heart valve disease.

Other abnormalities in the structure of your heart can also be picked up on an echocardiogram.

Harmless and safe

Echocardiography is very safe. There are no known risks from the procedure.

An echocardiogram is a non-invasive procedure, which means it is done entirely outside the body and doesn't involve putting anything inside you. Because of this, it isn't painful and you won't feel any discomfort during the procedure.

Echocardiography uses ultrasound waves to get an image of the heart. This means you will not be exposed to any ionising radiation – which is used in some other tests, like X-rays and CT (computerised tomography) scans. There are no known risks associated with the use of ultrasound.

There are also no known risks of a fetal echocardiogram to the mother or her baby.

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