

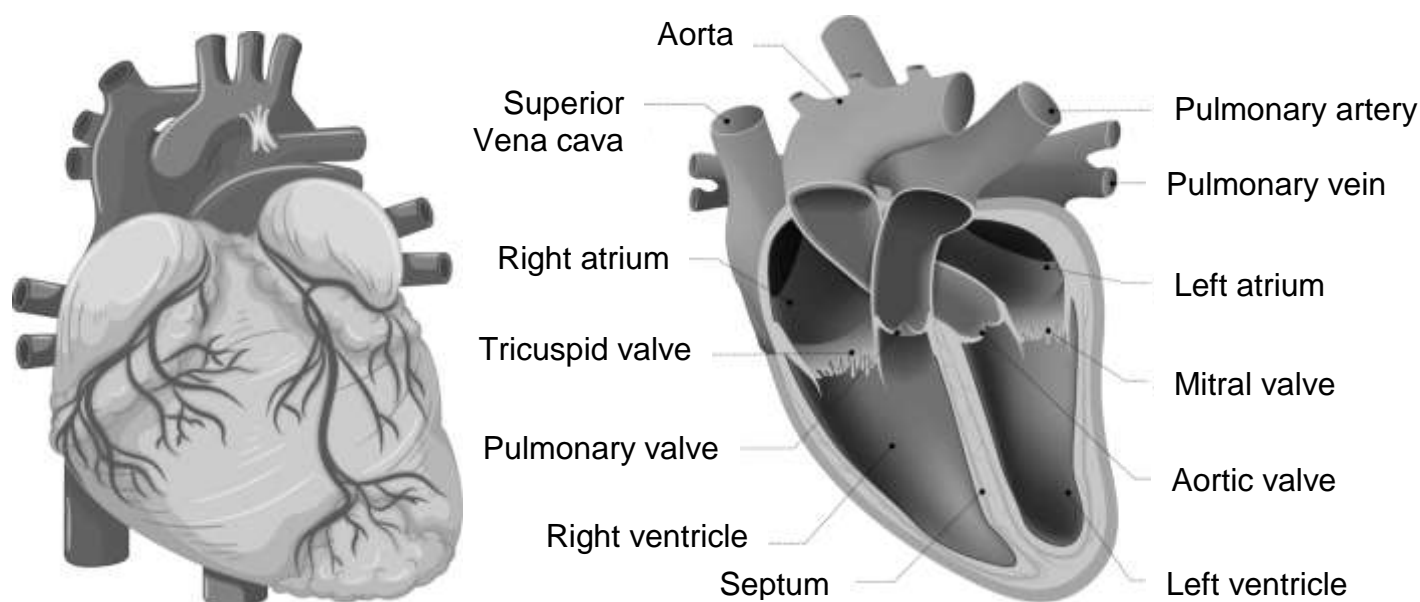
Patient information

Left Cardiac Catheterisation

Cardiology Care Group

Your doctor has suggested that you undergo a test called cardiac catheterisation. This is a special X-ray investigation that supplies important information about your heart, allowing you and your doctor to make decisions regarding your treatment. The purpose of the test is to obtain some or all of the following information about your heart:

- The pressures in different parts of the heart - these may be abnormal when the valves of the heart (figure 1) are narrowed (stenosis) or leaky (regurgitation or incompetence).
- Pictures of the main pumping chamber of the heart (left ventricle) - a colourless contrast agent (dye) is injected to allow assessment of the strength of your heart beat.
- Pictures of the coronary arteries (coronary angiogram) - dye is injected separately into the right and left coronary arteries (figure 1). The left divides into two large branches so that we refer to three main coronary arteries in all. The pictures obtained show the location and severity of any narrowing or blockages in these arteries.



The test will be done at the Royal Liverpool University Hospital or Aintree University Hospital as discussed with yourself.

Do I need to be admitted to hospital?

The test can usually be done as a day case so that you will be able to be admitted in the morning and go home in the evening. In some cases however, this may not be possible, either because of the type of test that you are due to have, because of your individual medical condition or because of the hospital bed situation. In these cases you would be admitted to hospital for one, or rarely, two nights.

How is it done?

Before the date of your procedure you will be asked to attend a pre-operative assessment clinic. Here you will be seen by a cardiac specialist nurse who will explain the procedure and ask you to complete and sign a consent form. You are encouraged to ask questions about the test. Before you leave the hospital you will be asked to provide a swab to screen for MRSA (a type of skin bacteria). This is routine for any patient admitted or undergoing a procedure. You will also be asked to have bloods taken to assess your kidney function and full blood count.

On the day of your procedure you will be asked to attend our day case unit. Here we will complete the final checks and prepare you for the test.

At the time of your procedure you will be brought from the ward to the X-ray room, which contains a lot of X-ray and video equipment. You will lie on a firm X-ray table whilst ECG (heart monitor) wires are attached to you. Throughout the procedure the doctors and nurses will be wearing surgical gowns and possibly hats and masks.

This test is now frequently performed through the right radial artery, which is the blood vessel in your right wrist where the pulse is usually taken, although in some cases the left wrist or the groin will need to be used. The skin of the area selected will be cleaned with a cold solution, and if your groin is going to be used, this will have been previously shaved. Apart from your head, you will be covered with sterile towels or sheets. Some local anaesthetic will be injected into this area to 'freeze' it.

A needle will then be used to make a small hole in your artery, into which a short, soft 'sheath' will be placed. A three foot long, thin, flexible tube (called a catheter) will then be passed through the sheath and up to the heart, but since the arteries do not have nerves on their inside, most people do not feel this.

Contrast agent (dye) will be injected through the catheter into the heart and several pictures taken with the X-ray equipment that will be rotated around you as you lie still on the bed.

Please note that the catheter goes through the blood vessel to the heart, so you do not feel this. It is only this fine tube that goes into your artery and the cameras travel around the outside of the body.

You will be asked to control your breathing at different times during the recording of the pictures. At the end of the first set of pictures, the catheter will be changed (through the sheath) for a different shaped one and the procedure repeated. No further needles are used.

Usually, two different sets of pictures are obtained using two different catheters, although in some cases a third picture is taken to look at the main pump (ventricle) of the heart. If this is the case, you will usually feel a hot flush when the dye is injected and may even feel as if you are passing urine, although this is not actually the case.

When all the pictures have been taken, the sheath and catheter are removed and the hole in the blood vessel is sealed, either with pressure, or more usually with a device that plugs the vessel or presses on it. You will then be returned on a trolley to the ward.

How long does it take?

The test usually takes about 30 to 40 minutes in all but this can change, depending upon what information is required. It is important that you keep as still as possible during this period.

Mild sedative tablets are sometimes given about an hour beforehand to make this easier and also to reduce any anxiety you may have. Each procedure is tailored for a particular patient.

Does it hurt?

Patients are usually pleasantly surprised by how little pain is felt during the test. The 'fear of the unknown' often makes you expect the worst.

You will feel the prick of the needle through which the local anaesthetic is injected. You may feel some 'pushing and pulling', which is normal, but no further sharp pains.

During the injection of dye into the left ventricle, most patients feel a very hot, rather unpleasant, flushing sensation spreading from the chest to the groin. Some feel sick (a bowl will be provided if necessary), others note a metallic taste in the mouth and a few feel as though they have 'wet' themselves (though they haven't!) Happily, all these sensations pass off in about a minute.

If you have had a reaction to this dye in the past, you must let the doctors and nurses know.

Sometimes, patients can get their usual angina pain during the injections into the coronary arteries. If so, you will be given GTN or something stronger if necessary.

You can watch most of the pictures on the TV screens around the table, which most patients find very interesting and it takes their minds off what is happening.

Is it safe?

Cardiac catheterisation has been performed on a regular basis for many years. With modern techniques, the vast majority of procedures are uncomplicated. However, occasional problems do occur. The most common complication is bleeding into the groin and thigh from the hole made in the artery, which is why we more commonly use the radial artery if we can. This occurs either during the test itself or more commonly, afterwards. This can be painful and may form a local swelling (haematoma).

Very occasionally, a small local operation is necessary to close the hole in the artery. If bleeding does occur into the leg, it almost always disappears on its own, without requiring any treatment, though it can take several weeks to do so.

Serious complications are very rare. There is a very small risk of damage to the coronary arteries causing a heart attack or of a serious disturbance to the rhythm of the heart. Very rarely this will require urgent treatment using an operation such as coronary artery by-pass grafting (see below).

Overall, the risk of death or serious complication during the procedure is only about one or two per thousand. However, a catheter test would not have been recommended for you unless it was felt that the benefit of the test greatly out-weighed this small risk.

The serious or more common risks are shown below: -

- Death – less than 1 in 1000
- Embolism, including stroke – 1 in 500

Damage to a coronary artery causing it to suddenly narrow or block – less than 1 in 500. This could cause a myocardial infarction (heart attack) and may require treatment with an emergency angioplasty or a coronary artery bypass operation.

Other complications include: -

- Damage to the artery in the leg or arm where the tubes are inserted – less than 1 in 200. This could lead to excessive bleeding or a blockage of the artery. This may require a (usually minor) operation to correct. In extreme circumstances, it could even lead to the loss of a limb, but this is very rare indeed.
- Development of an abnormal heart rhythm – less than 1 in 500. In rare circumstances this may lead to loss of consciousness. Treatment with either drugs or an electric shock may be required.
- Perforation of (making a hole in) one of the heart chambers, leading to a collection of blood around the heart – less than 1 in 1000. This may require drainage either via a tube placed below the breastbone or with an operation.
- Damage to the kidneys. The contrast dye used to take X-ray pictures of the heart chambers and coronary arteries can cause kidney function to deteriorate. This is extremely rare for patients with normal kidney function before the procedure (less than 1 in 500).
- Bruising in the leg or arm at the place where the tubes are inserted. A small amount of bruising is very common (about 1 in 10 patients) but in rare cases (less than 1 in 200) this may be extensive and a blood transfusion may be required.
- An allergic reaction to the contrast dye used to take X-ray pictures of the heart chambers and coronary arteries. This may cause nausea or a rash but symptoms do not last long.

Are there any alternatives to this procedure?

Cardiac catheterisation is a specialised investigation, which provides detailed information about your coronary arteries. Coronary angiography can now also be performed using a CT scan, although the quality of the information is not as good in many cases, which is why you have been recommended to have this test done. If you wish to discuss this alternative further however, please get back in touch with the doctor who referred you for the test, or the nurse at the pre-assessment clinic.

What will happen if I don't have this procedure done?

Cardiac catheterisation is performed for different reasons and your doctor will have discussed with you the reason why they have suggested that you have this test.

Sometimes it is recommended in order for the doctor to confirm your diagnosis. If this is the case, without the procedure being performed, they will not be able to say for certain whether you have coronary heart disease or not.

On other occasions the doctor has recommended this test in order to assess the severity of the narrowing or blockages in your coronary arteries. Without the cardiac catheterisation it is not possible to know how significant your coronary heart disease is, and what the risk to your health is. Without knowing this it will not be possible for your doctor to refer you for either coronary angioplasty or a coronary artery by-pass operation (see later) to improve your symptoms or reduce the risk of you having a heart attack.

If your doctor has told you that you may require surgery for a problem with one of the valves in your heart, the cardiac catheterisation has to be performed before you can be referred to one of the surgeons who perform these operations.

What happens after the test?

Once you arrive back in the ward, you will be asked to lie flat and still in bed for two to four hours. If the catheter has been inserted into your arm, there is no need to lie in bed afterwards, though you will need to keep your arm as straight as possible for the next 24 hours.

A nurse will check your pulse, blood pressure, breathing rate and wound. After this time, you will be allowed to sit up in bed for a similar period of time.

During this time you should try and avoid strains such as talking a lot, coughing, laughing or passing water, as these increase the chances of a late bleed from the arterial puncture site. You will be able to eat and drink normally.

What about the results of the test?

The films taken, are studied by your doctor in order to interpret the results. Sometimes this can be done while you are still in the hospital, so that the results and the treatment decisions can be discussed with you before you leave.

Occasionally, this cannot be done until later - the results will then be discussed with you at your next outpatient appointment.

If you are having the catheter test for a problem with the valves in your heart then the decision will be made as to whether you require surgery and if so, whether to replace or repair the valve. Alternatively, your narrow valve can sometimes be widened using a special balloon catheter (balloon valvuloplasty) without the need for a formal operation.

Most patients undergo the catheter test because of known or suspected coronary artery disease. In this case, the test may show one of the following results: -

1. In around a third of patients, there is no evidence of coronary artery disease to explain your symptoms. In this case, either your symptoms are not caused by your heart (such as "muscular" or "gullet" causes), or you have a condition of angina with normal coronary arteries. Whatever the cause, this has an excellent prognosis. It is therefore a very reassuring finding, not requiring any form of intervention.
2. You have relatively minor coronary artery disease, not severe enough to limit the flow of blood to the heart muscle. You may need to continue on your present medical (tablets) therapy or perhaps make some minor changes to it.
3. You have significant narrowing in one or more coronary arteries. In some cases the angiogram may not be sufficient to be sure whether or not a narrowing seen within one of your coronary arteries is actually having any effect on the flow of blood. In this case you will be referred to a specialist heart centre for an additional procedure to assess the significance of the narrowing. If the narrowing is significant, a stent is normally performed during the same procedure.

How soon can I return to normal activities after the catheter test?

Most patients can resume light to moderate activities the day after leaving hospital. Heavier exertions should be postponed for 48 hours. If there has been bruising from the test, this may limit your activities (usually only for a few days).

Feedback

Your feedback is important to us and helps us influence care in the future.

Following your discharge from hospital or attendance at your outpatient appointment you will receive a text asking if you would recommend our service to others. Please take the time to text back, you will not be charged for the text and can opt out at any point. Your co-operation is greatly appreciated.

Further information

For further information, please contact your family doctor (GP) or

- **Royal Liverpool and Broadgreen Hospitals**

Dr M Fisher

Tel: 0151 706 3265 / Text phone number: 18001 0151 706 3265

Dr E Mckay

Tel: 0151 706 3577 / Text phone number: 18001 0151 706 3577

Dr A Chenzbraun

Tel: 0151 706 3488 / Text phone number: 18001 0151 706 3488

Dr J Pyatt

Tel: 0151 706 3571 /Text phone number: 18001 0151 706 3571

Dr V Sharma

Tel: 0151 706 2196 / Text phone number: 18001 0151 706 2196

Dr SP Verma

Tel: 0151 706 3239 / Text phone number: 18001 0151 706 3239

Dr KL Albouaini

Tel: 0151 706 5429 / Text phone number: 18001 0151 706 5429

Dr B Ruzsics

Tel: 0151 706 3577 / Text phone number: 18001 0151 706 3577

Dr R Ashrafi

Tel: 0151 254 3333 (ACHD hotline) Text phone number: 18001 0151 254 3333

Chest Pain Nurse

Tel: 0151 706 2000 ask for bleep 4909

Text phone number: 18001 0151 706 2000 bleep 4909

Julie Hughes

Catheter Lab Co-Ordinator

Tel: 0151 706 3187 / Text phone number: 18001 0151 706 3187

Cardio - Respiratory Dept

Tel: 0151 706 2710 / Text phone number: 18001 0151 706 2710

- **Aintree Hospital**

Dr Malcolm Burgess

Tel: 0151 529 2720 / Text phone number: 18001 0151 529 2720

Dr Zoltan Borbas

Tel: 0151 529 6401 / Text phone number: 18001 0151 529 6401

Dr Som Chuah

Tel: 0151 529 2584 / Text phone number: 18001 0151 529 2584

Dr Karen Clarke

Tel: 0151 529 2584 / Text phone number: 18001 0151 529 2584

Dr Homeyra Douglas

Tel: 0151 529 2584 / Text phone number: 18001 0151 529 2584

Dr Prathap Kanagala

Tel: 0151 529 2721 / Text phone number: 18001 0151 529 2721

Dr Aleem Khan

Tel: 0151 529 2720 / Text phone number: 18001 0151 529 2720

Dr Arun Ranjit

Tel: 0151 529 6401 / Text phone number: 18001 0151 529 6401

Dr Emeka Oguguo

Tel: 0151 529 6401 / Text phone number: 18001 0151 529 6401

Dr Charalampos Papadopoulos

Tel: 0151 529 2721 / Text phone number: 18001 0151 529 2721

Dr Rajiv Sankaranarayanan

Tel: 0151 529 2721/ Text phone number: 18001 0151 529 2721

Cath Lab Nurses

Tel: 0151 529 8231/ Text phone number; 18001 0151 529 8231

Tel: 0151 529 8551/ Text phone number: 18001 0151 529 8551

External Contacts

British Heart Foundation

Web: www.bhf.org.uk

Tel: 0300 3303311

NHS website

www.nhs.uk

Author: Cardio- Respiratory Department

Review Date: January 2023

All Trust approved information is available on request in alternative formats, including other languages, easy read, large print, audio, Braille, moon and electronically.

يمكن توفير جميع المعلومات المتعلقة بالمرضى الموافق عليهم من قبل انتمان المستشفى عند الطلب بصيغ أخرى، بما في ذلك لغات أخرى وبطرق تسهل قراءتها وبالحروف الطباعية الكبيرة وبالصوت وبطريقة برايل للمكفوفين وبطريقة مون والكترونياً.

所有經信托基金批准的患者資訊均可以其它格式提供，包括其它語言、易讀閱讀軟件、大字體、音頻、盲文、穆恩體 (Moon) 盲文和電子格式，敬請索取。

در صورت تمایل میتوانید کلیه اطلاعات تصویب شده توسط اتحادیه در رابطه با بیماران را به اشکال مختلف در دسترس داشته باشید، از جمله به زبانهای دیگر، به زبان ساده، چاپ درشت، صوت، خط مخصوص کوران، مون و بصورت روی خطی موجود است.

زانیاری پیوندیدار بهو نهخوشانهی له لایمن تراستهوه پساند کراون، نهگمر داوا بکریت له فور ماتهکانی تر دا بریتی له زمانهکانی تر، نیزی رید (هاسان خویندنهوه)، چاپی گموره، شریتی دهنگ، هنلی موون و نهلیکترونیکی همیه.

所有经信托基金批准的患者信息均可以其它格式提供，包括其它语言、易读阅读软件、大字体、音频、盲文、穆恩体 (Moon) 盲文和电子格式，敬请索取。

Dhammaan warbixinta bukaanleyda ee Ururka ee la oggol yahay waxaa marka la codsado lagu heli karaa nuskhado kale, sida luqado kale, akhris fudud, far waaweyn, dhegeysi, farta braille ee dadka indhaha la', Moon iyo nidaam eletaroonig ah.