

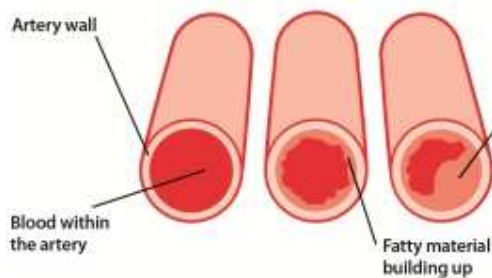
# Cardiac Catheterization or Angiogram

## Information sheet

### Why Do I Need a Cardiac Cath?

Your doctor uses cardiac cath to:

- Evaluate or confirm the presence of heart disease (such as coronary artery disease, heart valve disease, or disease of the aorta)
- Evaluate heart muscle function
- Determine the need for further treatment (such as an interventional procedure or bypass surgery)



Narrowing of the artery due to fatty material build up

### How Should I Prepare for a Cardiac Cath?

You can wear whatever you like to the hospital.

Leave all valuables at home. If you normally wear dentures, glasses, or a hearing device, plan to wear them during the cardiac cath.

Your doctor or nurse will give you specific instructions about what you can and cannot eat or drink before the procedure.

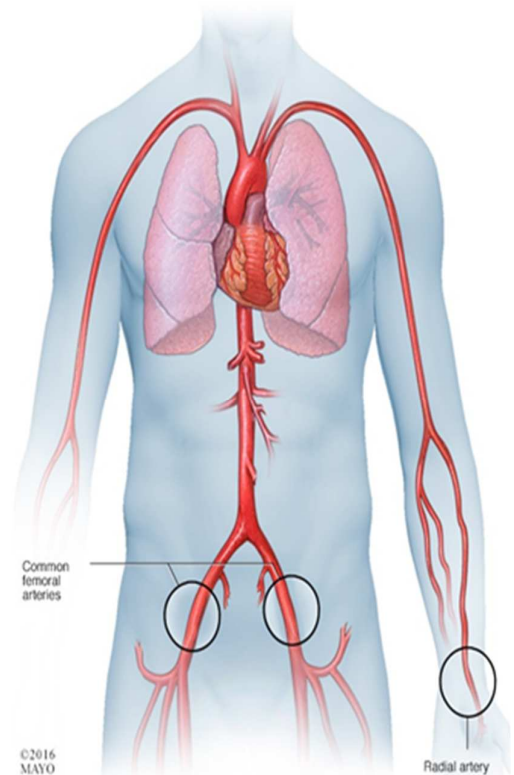
Tell your doctor all of the medications you are currently taking, including herbal products and dietary supplements.

Ask your doctor what drugs should be taken on the day of your cardiac cath. You may be told to stop taking certain medications, such as a blood thinner, for a few days before the procedure.

If you have diabetes, ask your doctor how to adjust your diabetes drugs the day of your test.

Tell your doctor and/or nurses if you are allergic to anything, especially iodine, shellfish, X-ray dye, latex, or rubber products (such as rubber gloves or balloons) or penicillin-type medications.

You may or may not return home the day of your procedure. Bring items with you (such as a robe, slippers, and toothbrush) to make your stay more comfortable. When you are able to return home, arrange for someone to take you home.

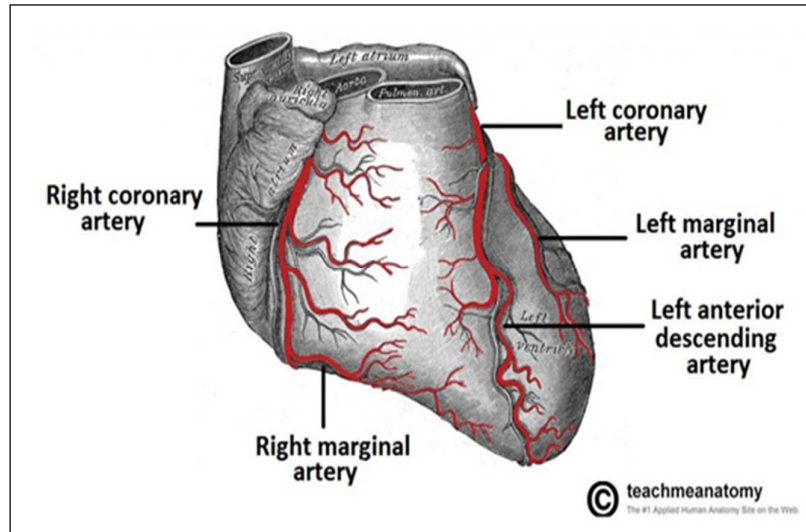


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## How Long is the Cardiac Cath Procedure?

A cardiac cath procedure usually takes about 30 minutes (and longer if you undergo an intervention), but the preparation and recovery time add several hours. Plan on being at the hospital all day for the procedure.



## What Happens During a Cardiac Cath?

You will be given a hospital gown to wear. A nurse will start an intravenous (IV) line in your arm so that medications and fluids can be administered through your vein during the procedure.

The cardiac cath room looks similar to an operating room. You will lie on a special table. If you look above, you will see a large camera and several TV monitors. You can watch the pictures of your cardiac cath on the monitors.

The nurse will clean your skin (and possibly shave) the site where the catheter will be inserted (arm or groin). Sterile drapes are used to cover the site and help prevent infection. It is important that you keep your arms and hands down at your sides and not disturb the drapes.

You will be given a mild sedative to help you relax, but you will be awake and conscious during the entire procedure. The doctor will use a local anesthetic to numb the catheter insertion site.

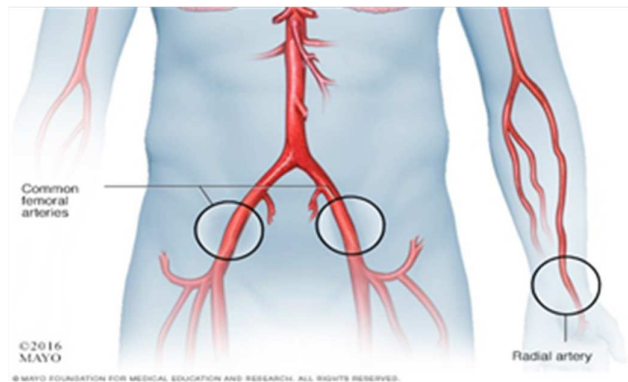
When the catheter is in place, the lights will be dimmed and a small amount of dye (or "contrast material") will be injected through the catheters into your arteries and heart chambers. The contrast material outlines the vessels, valves, and chambers.

When the contrast material is injected into your heart, you may feel hot or flushed for several seconds. This is normal and will go away in a few seconds. Please tell the doctor or nurses if you feel itching or tightness in the throat, nausea, chest discomfort, or any other symptoms.

The X-ray camera will be used to take photographs of the arteries and heart chambers. Your doctor may ask you to take a deep breath, hold your breath, or cough during the procedure. You will be asked to hold your breath while the X-rays are taken. When all the photos have been taken, the catheter will be removed and the lights will be turned on.

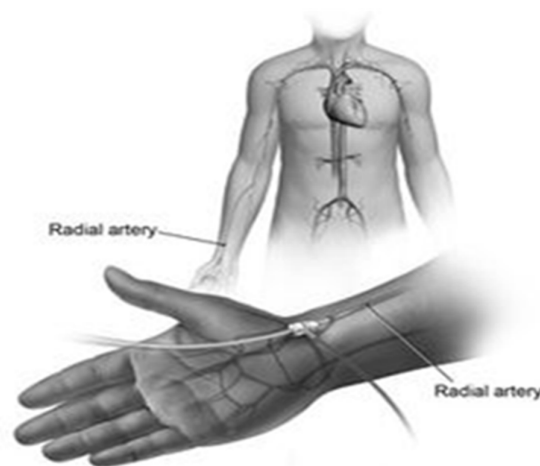
## Femoral Approach

If the catheter is to be inserted at the groin (called the "femoral" approach), a local anesthetic will be injected to numb the area. A small incision will be made over the blood vessel through which the catheter and introducer sheath will be inserted. The catheter will be inserted through the sheath and threaded to the arteries of your heart. Again, if you feel pain, tell your health care providers.



## Radial Approach

If the catheter is to be inserted into your wrist (called the "radial" approach), a local anesthetic will be injected into the skin in your arm to numb the area. A small incision will be made over the blood vessel through which the catheter introducer sheath (a tube through which the catheter is passed) and catheter will be inserted. The catheter will be inserted through the sheath and threaded to the arteries of your heart. Although you may feel pressure as the incision is made or when the sheath and catheter are inserted, you should not feel pain; tell your health care providers if you do.



To be a candidate, patients must have good blood supply to their hands, through both the radial artery and the ulnar artery. The blood supply from both arteries has to be good in the rare case that the radial artery becomes blocked (occluded) after the procedure. If the blood flow through both arteries is good, then it would not matter if the radial artery becomes blocked, because the ulnar artery can take over entirely and supply enough blood to the whole hand.

Doctors determine if the blood supply to the hands is good by performing the **Allen test**. In the Allen test, your doctor presses his or her thumb against the ulnar artery, which is located in the "pinkie finger" side of the wrist. Your doctor will then press his or her other thumb on the radial artery, which is located on the thumb side of the wrist. You will be asked to open and close your hand until it turns pale. Then, your doctor will release the pressure over the ulnar artery. If a normal color returns to your hand in 8 seconds or less, your doctor knows that the ulnar artery can supply all of the blood that your hand needs in the rare event that your radial artery occludes.

This approach also cannot be done in patients who are very thin or who have small or twisted arteries

## What Happens After the Cardiac Cath?

If the catheter was inserted in your groin, the introducer sheath will be removed and the incision will be closed with a collagen seal, or applied pressure. A collagen seal is a protein material that works with your body's natural healing processes to form a clot in the artery.

If the catheter was inserted in your wrist, the catheter and sheath are removed. The incision will be closed with stitches and bandaged. You will be able to walk around. You will be observed for a few hours to make sure you are feeling well after the procedure. You may receive medication to relieve discomfort in your arm after the anesthetic wears off. You will be given instructions regarding how to care for your arm when you return home. Tell your nurse if you think you are bleeding or feel any numbness or tingling in your fingers.

A sterile dressing will be placed on the groin area to prevent infection. You will need to lay flat and keep the leg straight for two hours to six hours to prevent bleeding. Your head cannot be raised more than two pillows high (about 30 degrees). Do not raise your head off the pillows, as this can cause strain in your abdomen and groin. Do not try to sit or stand. The nurse will check your bandage regularly, but tell your nurse if you think you are bleeding (have a wet, warm sensation) or if your toes begin to tingle or feel numb. You may receive medication to relieve discomfort in the groin area after the anesthetic wears off. Your nurse will help you out of bed when you are allowed to get up.

Your doctor's orders will determine when you will be allowed out of bed to go to the bathroom. You will need assistance getting out of bed, so ask for help. The nurse will help you sit up and dangle your legs on the side of the bed.

## What should you do after your catheterization:

- **Limit your activity** during the first 24 hours after you return home. You can move about, but do not strain or lift heavy objects.
- **If you notice new blood on the dressing**, place your fingers over the site and press firmly for about 20 minutes. If bleeding continues, call your doctor or go to the nearest emergency room while continuing to apply pressure.
- **A black-and-blue mark** (bruise) or a small lump under the skin at the insertion site are common. These generally disappear within three to four weeks.
- **Call the doctor** if the insertion site becomes painful or warm to the touch, or if it shows signs of infection.
- **Ask the doctor when you can return to your normal activities**, and whether there are any specific restrictions.
- Ask the doctor about your cholesterol levels.

## What Happens During an Angiogram?

First, you'll have what's called a cardiac catheterization. Medication will be given to relax you, then the doctor will numb where the catheter will go with anesthesia.

Next, a thin plastic tube called a sheath is inserted into an artery -- sometimes in your groin, sometimes in your arm. A long, narrow, hollow tube called a catheter is passed through the sheath and guided up a blood vessel to the arteries surrounding the heart.

A small amount of dye is put into your blood vessel through the catheter. It's photographed with an X-ray as it moves through your heart's chambers, valves, and major vessels. From those pictures, doctors can tell if your coronary arteries are narrowed and, in some cases, whether the heart valves are working correctly.

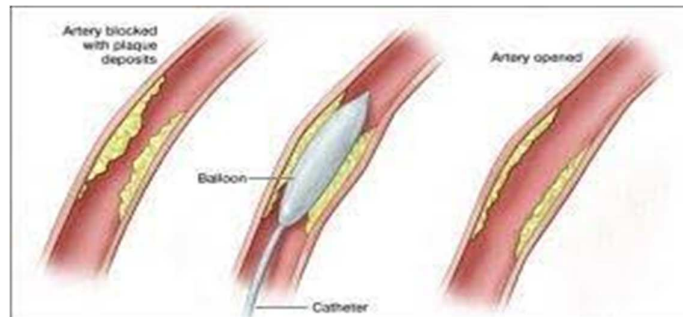
If the doctor decides to perform angioplasty, he will move the catheter into the artery that's blocked. He'll then do one of the procedures described below.

## What Types of Procedures Are Used in an Angiogram?

There are several your doctor will choose from. They include:

### What is a Coronary Angioplasty (PTCA)

**Coronary Angioplasty** is a procedure that relieves symptoms of coronary artery disease by improving blood flow to your heart. A small puncture will be made either in the groin or the arm to insert a guiding catheter into your artery and moved up to your heart. A special catheter called a **balloon catheter** is then placed in the middle of the blocked coronary artery and inflated several times resulting in a wider opening and better blood flow. Some mild chest discomfort is common during the procedure as the blood flow is temporarily blocked. You may be given a sedative but you will be able to talk during the procedure. It is important that you communicate exactly what you are feeling to your doctor during this time. A medicine will be used to deaden the skin where the catheter is inserted. Dye will be injected to help the doctor see the blockage as it is being reduced. The balloon catheter will be removed at the end of the procedure. There is a chance that the artery can narrow down causing blockage over months despite an excellent initial result.

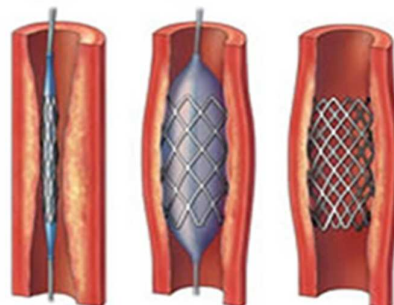


Balloon Catheter

### What is a Coronary Stent?

**Coronary Stent** is a small, mesh tube that is placed in a narrowed artery immediately following a coronary angioplasty. The stent permanently holds the artery open to improve blood flow and helps reduce the possibility of re-narrowing of the artery. Some stents contain medicine (drug eluting stent) and are designed to reduce the risk of the artery getting blocked again (your doctor may call that restenosis). The doctor will decide if this is the right stent for your blockage. You may be placed on aspirin and other medications to help prevent blood clots. There is a small chance that that stent can narrow down causing repeat blockage over time.

With any procedure there can be complications and these will be treated appropriately should they arise. We therefore, usually ask patients going for an angiogram or angioplasty to sign consent for emergency bypass operation, should this become necessary.



Coronary Stent

## Understanding the Risks

The risks of cardiac catheterization are fairly low. They are usually outweighed by the benefit of knowing the exact condition of your heart. Your doctor will discuss any risks and side effects with you. Then you will be asked to sign a legal consent form. This gives your doctor permission to perform the procedure.

Bleeding or clotting

Perforation of the heart muscle or blood vessel

Arrhythmia (Abnormal heartbeat)

Allergic reaction to the x-ray contrast or dye

Heart attack or stroke

## Be sure to tell your Doctor and the ward sister if:

You are pregnant. Cardiac catheterization will probably be postponed until after your baby is born.

You've had allergic reactions to iodine-containing x-ray contrast or shellfish. You may be given medication before the procedure to help prevent an allergic reaction during catheterization.

If you are on Warfarin: this must be stopped 5 days before the procedure.

If you are diabetic or have had kidney problems.

## What do you need to do before Your Procedure?

Patients must please fill out a bed booking form in the doctor's office, as you leave the consulting rooms. This is handed in at reception to speed up your admission process. Please contact your **medical aid for a pre authorization** number. If you are an inpatient discuss authorization with the hospital administration.

**Private cases** will be asked for a deposit by both Dr Routier and the hospital before the doctor can do any procedure. This must be arranged with the hospital staff during office hours.

The night before your catheterization, you may not eat anything after 10pm. You **MUST** drink water to keep hydrated. You take your usual medication. Please bring any current medication with you when you are admitted.

You must arrive early at the hospital to be **admitted to the hospital at 06H00** on the day of the procedure.

## Other General Information:

**Professional staff** involved in the catheterization include medical technologist and a radiographer. As these staff do not work for the hospital or the doctor, they will present you with separate accounts.

After an **Angioplasty or Stent** you will be monitored in the **Cardiac Intensive Care Unit** for 12 to 24 hours