CORONARY ANGIOGRAPHY (Angiogram)

What is Coronary Angiography?
A coronary angiogram (also known as a cardiac catheter) is a test to look for narrowings or blockages in the arteries that supply blood to the heart (the coronary arteries). This test can also be used to measure the pressures inside the heart and to assess the pumping strength of the heart. It can also give an assessment of the function of the heart valves.

A special x-ray dye is injected into your heart arteries through a long thin tube called a catheter and x-ray images of your heart arteries are taken. An x-ray of the pumping chamber of the heart is usually taken at the same time. The pressures within the heart are measured through the catheter tube.

Why is a coronary angiogram performed?
A coronary angiogram allows your cardiologist to make the best decision regarding your ongoing treatment based on an accurate assessment of the condition of your heart function and the state of your arteries. This treatment may include continuing medical therapy, balloon angioplasty with stent insertion or open heart surgery.
Coronary angiography is most commonly performed to assess chest pain suspected to be related to narrowed heart arteries or following a heart attack. It can also be performed to assess shortness of breath, heart valve problems or if other non-invasive cardiac tests suggest significant underlying cardiac problems.

How is a coronary angiogram performed?
A coronary angiogram is performed by a cardiologist in hospital in a specially designed operating theatre called a Cardiac Catheterisation laboratory (Cath lab). It is performed under local anaesthetic, so you will be awake but will be given a sedative to relax you. This is usually given through an intravenous cannula.

You will be taken into the catheter laboratory and placed on a narrow bed and attached to a heart monitor. Above the bed will be a large X-ray machine that will take the pictures of your heart arteries. This machine will rotate around you under the control of your cardiologist to obtain the required images of your heart arteries.

The initial preparation is performed by the assistant, usually an experienced cardiac nurse. Your groin or wrist will be coated with a sterile solution to sterilise the skin (this is usually quite a cold solution) and the area will be covered with sterile sheets. These sterile sheets will also cover your body like a blanket, but your head will not be covered.

Your cardiologist will inject local anaesthetic around the artery in your groin or wrist and through a tiny incision around 3mm in length the catheter will be inserted into the artery and moved with the aid of a guiding wire and under x-ray control to the heart. There are no nerves inside the arteries, so you do not feel the catheter moving through your body.

Once the catheter is in position in the mouth of the heart artery, the x-ray dye is injected and the x-rays are obtained. The x-rays will be taken from several different positions and you may be able to see the pictures on a monitor, although sometimes the x-ray equipment will block your view. It is common to use several different catheters during the procedure to image the different arteries and heart pumping chamber.

It is uncommon to have any symptoms during the procedure although rarely some people develop nausea or chest discomfort. Be sure to notify your cardiologist or the staff assisting if you have any concerns. The pumping chamber shot will give you a feeling of a hot flush or you may feel like you have wet yourself but don't worry as this is only the sensation of the dye travelling around the body and will settle in around 10 seconds.

When the test is completed, you may progress onto coronary angioplasty if required, otherwise the tube will be removed and pressure applied over the artery until there is no bleeding. You will then be transferred back to the ward.

How long does the angiogram take?
This procedure usually takes around 45 minutes including all of the preparation. The actual angiogram itself generally takes around 20 minutes.

You can be discharged around 4 hours after an uncomplicated procedure. You will normally be observed overnight if an angioplasty is performed so it is a good idea to come prepared for an overnight stay.

Are there any risks involved?
The vast majority of coronary angiograms are performed without complication. Serious complications are rare but can occur. The most serious complications of death, a heart attack or stroke, occur in around 1 in 500 to 1 in 1000 angiograms. Less serious complications like bleeding or arterial damage are more frequent but still uncommon. The incidence of complications increases with increasing age as well as with associated health problems. People with diabetes and renal impairment are at increased risk from the test and special precautions are usually taken to protect the kidneys from damage from the dye. These groups of people also tend to have greater benefits from having the procedure performed. The benefits from a coronary angiogram generally far outweigh the risks.

Is there any preparation for the test?
A blood test will normally be done prior to the test to assess your kidney function, the chemicals in the blood and blood count.

If you are taking Warfarin (Coumadin/Marevan) this will generally need to be ceased 5 days prior to your angiogram. *Please discuss this with your cardiologist.*

Medications for diabetes will also need to be adjusted. Metformin (Diabex/Diaformin) needs to be ceased 48 hours prior to the procedure. Insulin and other diabetic tablets will need to be reduced or withheld. *It is important to discuss this with your cardiologist.*

Fluid tablets and some blood pressure tablets may need to be withheld or the dose reduced. *Please discuss this with your cardiologist.*

It is very important to continue other blood thinners like aspirin and Clopidogrel (Plavix/ Iscover). *Do not stop these medications without discussing this with your cardiologist.*

On the day of the test you will need to fast for 4-6 hours prior to the test. You can take medication with a small amount of water.

Please do not drive yourself to the hospital as you cannot drive yourself home after this procedure.

What happens when I arrive at hospital?
You need to present to the Admissions Department from there you will be taken to either the day procedure area or ward. You will be admitted by a member of the nursing staff and prepared for the procedure. You will change into a hospital gown, have your groin/ wrist shaved and an intravenous cannula inserted. You may be given intravenous fluids. A consent form for the procedure will need to be signed if not already done.

What happens after my procedure?
Your cardiologist will normally give you the results of the angiogram immediately after it is completed, or you may be transferred to the ward and your cardiologist will see you there to discuss the results. Any further instructions will be given to you at that time. Referral to a cardiac surgeon will be arranged if required.

You can eat and drink immediately after the procedure. If your procedure has been done through the wrist, you can sit up. If it has been done through the groin, you need to lie flat for approximately 2 hours and be in bed for approximately 4 hours.

You need to ensure you drink plenty of fluids following the angiogram to flush out the dye. This is colourless and you will not notice any change to the colour of your urine.

You can be discharged 4 hours after the procedure if there are no complications. You may stay overnight if your procedure is late in the day.

You cannot drive yourself home.

You should take things quietly for the next week, with no heavy lifting. After that time, you may return to normal activity. You may resume your normal medication unless instructed otherwise.

An appointment for follow up will be made on discharge if required.

If you have problems with bleeding or swelling at the site of the angiogram when you get home, lie flat and place pressure over the area for 10-15 minutes. If it does not settle, contact your cardiologist or if it is outside of usual business hours, contact the hospital. If you are concerned, you should present to the nearest hospital emergency centre for assessment.

Summary
In summary, coronary angiography is an important investigation where significant heart disease is suspected. It is minimally invasive, performed under local anaesthetic, usually as a day procedure. There is no prolonged recovery time and although it does carry a small risk, the benefits far outweigh the risks involved.

If you have any concerns regarding the need for this procedure, please discuss this with your cardiologist.