

Patient Information Sheet

Coronary Angiography / Pressure Wire / Coronary Angioplasty

What is this document about?

This document is designed to provide you with information so that you will understand about the cardiac procedure which you are due to undergo. Please take your time to read this information. Do not worry if you are uncertain about some of the information as you will also be given an opportunity to ask more questions when you meet with cardiology staff at pre-assessment and on the day of the procedure.

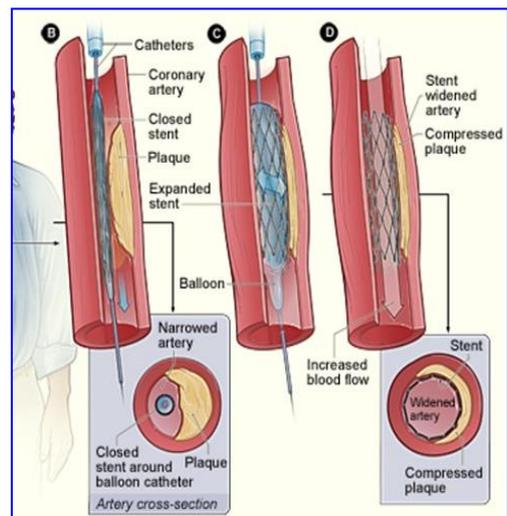
The consent form is an important document and, if you agree to proceed, you should bring the signed form in with you on the day of the procedure.

Why am I having this procedure?

Your cardiologist suspects that you may have one or more narrowing's in your coronary (heart) arteries or heart valve issues which may require further treatment. Such problems can explain symptoms like chest pain (angina) or shortness of breath. Coronary angiography is a standard diagnostic test which allows your cardiologist to look for narrowing's in your coronary arteries and check the heart valves.

Many patients have coronary angiography as a daycase procedure which enables an initial assessment of any problems. However, in some cases, patients are admitted for additional pressure wire tests which allows the cardiologist to measure whether a partially narrowed artery is significantly reducing coronary blood flow.

If significant narrowing's are detected, coronary angioplasty can be used to treat the narrowed artery by inflating a small balloon inside the artery and then placing a stent (a small metal scaffold) to hold the artery open; see diagram to the right of this section.



What preparation will I need?

Once your appointment is confirmed, we will normally organise a pre-assessment for you either at the hospital or by telephone. During this appointment, we will check the following:

- Your blood test results are satisfactory.
- Ensure that you are taking the right tablets for you to safely have the procedure.
- Perform swab checks to check for any infection risks.
- We will also check whether you have allergies to any medication, latex or medical sticking tapes.

Do I need to take any special measures on the day of the procedure?

It is important that you do not eat anything up to six hours before the procedure; however you can drink water up to the time of the procedure to keep yourself well hydrated. You will be advised what tablets to take on the day of the procedure during pre-assessment. You will take most of your tablets as you would normally but some tablets may be stopped (these include warfarin and metformin but you should double check with the pre-assessment nurse).

What will happen on the day of the procedure?

You will normally be admitted in the morning on the day of the procedure. The name of the ward and time you need to arrive will be specified in your admission letter. The nurses on the ward will perform some routine checks and you will be asked to put on a hospital gown. Then you will be taken to the cardiac catheter laboratory where the cardiologist and the team will meet you and do some final checks before the procedure. Your cardiologist will confirm that you understand what is planned and that you agree to have the procedure.

What does the procedure involve?

The cardiology consultant or specialist registrar will perform the procedure with the team in the catheter laboratory including nurses and technicians.

The angiogram procedure involves passing very thin tubes called catheters in through the arteries to the heart starting at either the wrist or in the groin. Local anaesthetic will be used to numb the skin over the artery before starting the procedure. You may also be given some sedative drug to help reduce any anxiety you may be feeling. A special iodine based dye is injected through the catheter to take pictures of the coronary arteries and heart chambers. The x-ray equipment (called the C-arm) is placed at various positions around your chest to get the best pictures. The X-ray dye may cause a metallic taste in your mouth or a warm flushing feeling but this passes off very quickly.

After the angiogram, a pressure wire test may be performed if it is not clear whether a narrowed artery needs further treatment. This test involves a tiny pressure monitor which is placed into the coronary artery. An infusion of a special drug (Adenosine) is given through a drip line to increase the blood flow down the artery which allows an accurate measurement. The Adenosine can make you feel tight in the chest but this passes off very quickly.

If necessary, coronary angioplasty is used to open up significant narrowing's by inflating small balloons inside the coronary artery and then using stents (tiny metal scaffolds) to keep the artery open. The stent stays in the artery and often has a special drug coating to prevent the artery re-narrowing.

At the end of the procedure, the small hole in the artery in your wrist is sealed by applying a tourniquet band. If the procedure is performed from the groin approach, the hole in the artery is sealed with a special collagen plug device (Angioseal) or by applying firm pressure for about 10-15 minutes.

What happens after the procedure?

Your cardiologist will discuss the test results with you and discuss further plans for treatment. You will then be taken back to the ward where you will be carefully observed for approximately 4 hours. You should check with the nurse before getting out of bed during this observation period.

Many patients are able to go home the same day but some are kept in overnight. You will be provided with a 28 day supply of the correct tablets to take home with you. If you have had a stent, it is very important to continue taking two blood thinning (anti-platelet) drugs after the procedure; these normally include aspirin and one other drug such as clopidogrel. The dual anti-platelet treatment is usually continued for between 4 weeks and 12 months and must be taken regularly to help prevent the stent from blocking due to a blood clot.

When will my GP know the results?

The results of the test will be sent to your GP by discharge summary letter as soon as possible. The summary will also notify your GP of any changes to your medications.

What are the risks associated with these cardiac tests?

Most patients undergo these tests without any significant complications but there is a small risk of serious complications. The main recognised complications include:

- Pain and bruising over the arterial puncture site. Damage to major blood vessels and serious bleeding is rare but may need treatment with surgery or other X ray guided techniques.
- An allergic reaction to the contrast agent which may be severe on rare occasions
- A coronary artery can become blocked causing a heart attack during the procedure and may require emergency treatment including either stenting or coronary bypass surgery.
- A stroke (risk estimated at less than 1 in 5000)
- A change in heart rhythm which may need emergency treatment

In the case of serious complications, there is an associated risk of death but this risk is less than 1 in 10,000 for diagnostic angiography. If you are concerned about the risk of complications then you should discuss this further with the nurse or cardiologist.

Patient information on X-ray use during cardiac interventions

Why are X-rays necessary for some cardiac interventions?

Heart specialists use X-rays to take pictures of the heart during a variety of cardiac tests and treatments; these include angiograms, angioplasty, pacemaker implantation and electrophysiological / ablation procedures. The X-rays are essential to visualise the catheters used to perform the procedures inside the heart so that the procedure can be conducted effectively and safely.

The operators make every effort to minimise the dose of X rays which you receive during the procedure and it is generally accepted that the risks associated with X radiation in these circumstances are far outweighed by the risks of not receiving effective treatment for heart condition.

Are there any risks associated with X-ray exposure?

X-rays can result in damage to the cells of the body and the greater the dose received, the greater the risk of damage. This can be of two types:

1. Skin damage may occur over the areas exposed to the greatest X-ray dose, which in cardiac interventions is typically over the back of the chest. Risks may be cumulative if multiple procedures are required. Mild symptoms may include skin reddening and loss of hair, but very rarely in extreme cases there may be skin ulceration and chronic pain, which may be very difficult to treat. Such a severe reaction has only occurred in one patient during the entire history of cardiac interventions at Derriford Hospital (many thousands of procedures), since every effort is made to minimize the radiation exposure for each patient.
2. X-rays can damage the cell's DNA, resulting in a risk of cancer. This risk is greater as the dose of X-rays used increases. Following exposure, younger patients are at greater lifetime risk of developing cancer than older patients and for this reason female patients may be requested to first undergo a pregnancy test, since some cardiac interventions would be deferred until after the completion of pregnancy. For all cardiac interventions the lifetime risk of cancer from received X-ray doses is small and similar in magnitude to risks experienced during everyday life.

What determines the X-ray dose I receive during my procedure?

The most important factors associated with a greater X-ray dose include:

- Obesity, since a greater dose is required to penetrate the body and visualise the heart.
- Case complexity, since this is more likely to result in a longer procedure and greater overall use of X-rays.
- Need for redo treatment, due to a cumulative dosing effect.