Having a Coronary Angiogram or Percutaneous Coronary Intervention (PCI)

This booklet provides information regarding your cardiac procedure and general information to help you during your stay in the Angio Department at Calderdale Royal Hospital.

Please read through this booklet carefully when you receive it and again shortly before you are due to undergo your procedure.

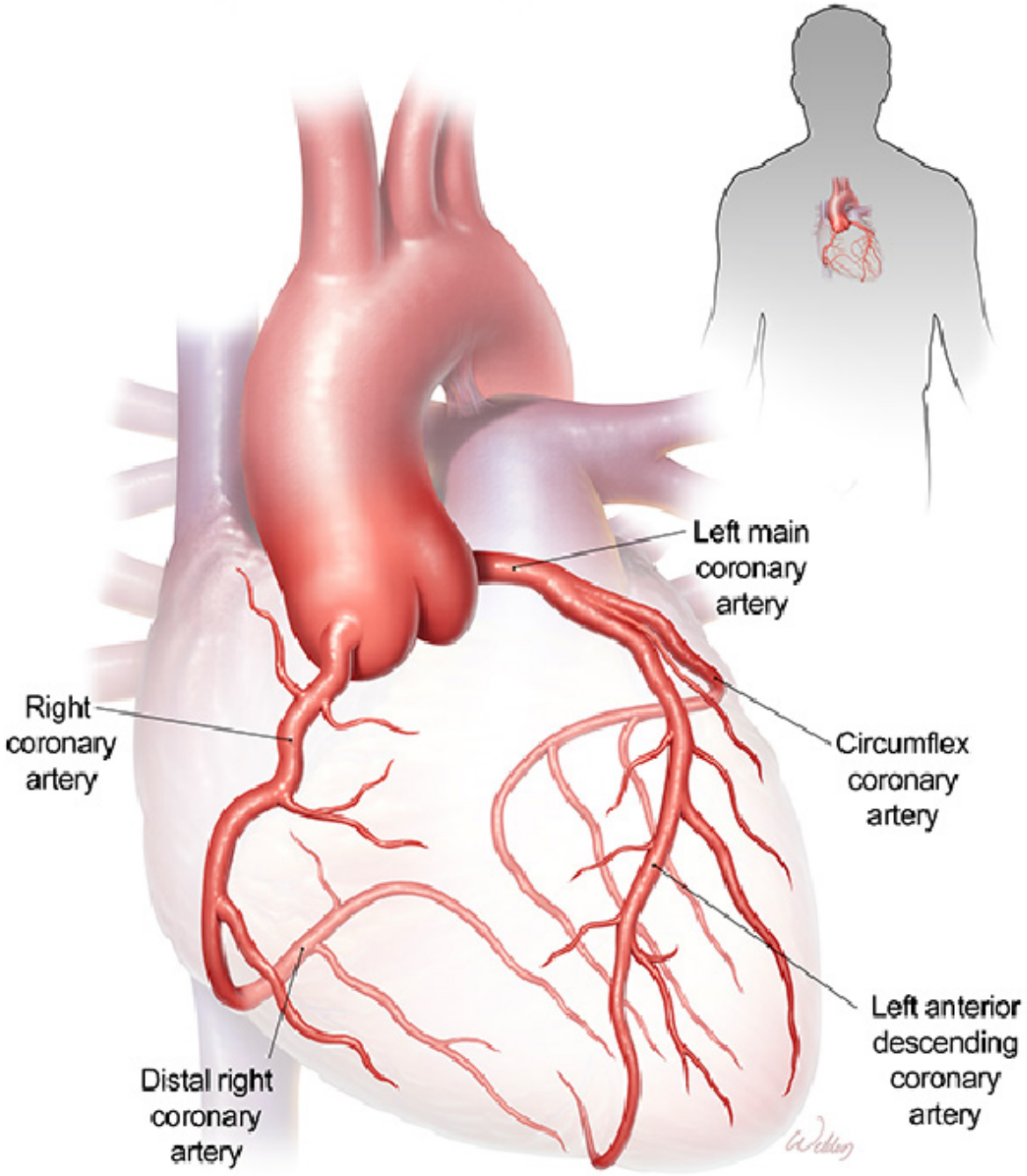
Please encourage your family, friends or carers to read this booklet as some of the information will also be useful to them especially if they are accompanying you to hospital on the day or caring for you after the procedure.

If you have any questions or concerns about any of the information in this booklet you will have an opportunity to discuss these at your pre-assessment appointment. Alternatively, please contact a member of the Angio team using one of the useful telephone numbers listed at the end of this booklet. If you are currently an inpatient you can speak to a member of staff on the ward.

Coming into hospital for a Coronary Angiogram or Percutaneous Coronary Intervention (PCI)

What is wrong with my heart?

If you are coming into hospital for a cardiac procedure this means that you may have coronary artery disease and you need to be assessed to confirm the best treatment for your symptoms. Alternatively, your diagnosis and treatment has already been decided and you need to have a stent. The most common heart diseases are coronary artery disease (CAD) and heart valve disease.

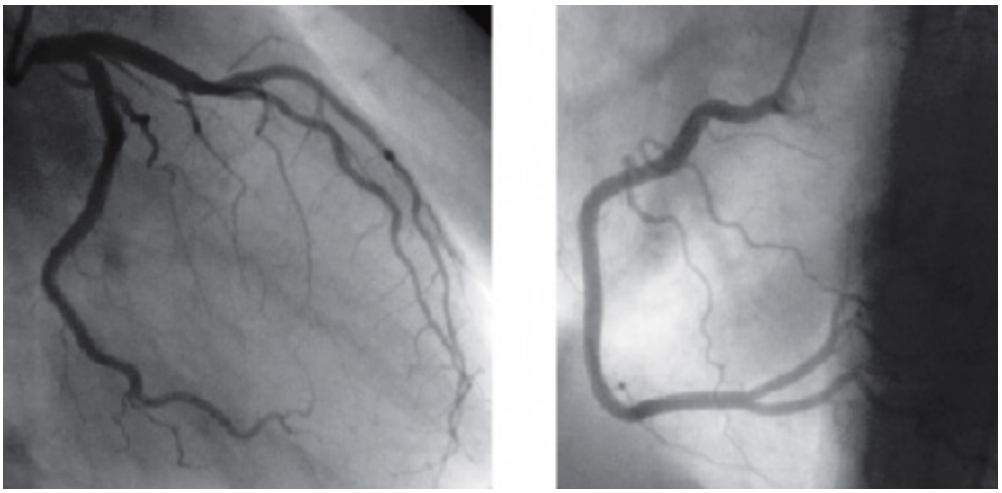


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Cardiac procedures covered in this booklet:

Coronary Angiogram – a diagnostic x-ray of the coronary (heart) arteries.
This procedure may also include a study of the heart valves, the aorta and the main pumping chamber of the heart known as the Left Ventricle. In addition to the coronary arteries, your consultant will have already determined which type of procedure you require. You may not need to undergo all parts.

Examples of the Xray Pictures Obtained from a Coronary Angiogram



Percutaneous Coronary Intervention (PCI, angioplasty or stenting)

This is a treatment for narrowing or blockage in the coronary arteries causing your symptoms. You may have been referred for this procedure by your cardiologist after an angiogram performed on a previous occasion. Alternatively this procedure may follow on directly after your coronary angiogram.

What is Coronary Artery Disease (CAD)?

This is also known as ischaemic heart disease or angina. They are all medical terms which refer to the same heart condition. The coronary arteries supply blood to the heart muscle. There are three main arteries, two on the left and one on the right, which in turn divide into a number of smaller branches. This resembles the branches of a tree. In coronary artery disease one or more of the main arteries become narrowed or blocked.

A narrowing or blockage in the artery may reduce the amount of blood flowing to one or more areas of the heart (such as during exercise). You may experience a cramp like feeling or tightness in your chest. This is called angina. In some people the pain may also affect the arms, neck or jaw. Sometimes the pain in your chest is associated with breathlessness. Some people have slightly different symptoms to this but may still have angina. If your chest pain lasts for more than 15 minutes this could be a sign that you are having a heart attack and we advise that you dial 999 for an emergency ambulance.

If you are experiencing symptoms like this, your consultant will have decided that you should undergo a coronary angiogram. However, there may be other reasons why the coronary angiogram has been recommended, for example if you have a problem with one of the heart valves. Your consultant will have explained these reasons to you already.

After the angiogram, some people can be reassured that they do not have coronary artery disease and angina. Therefore their symptoms may be due to another cause.

The Benefits of a Coronary Angiogram

A coronary angiogram is a diagnostic X-ray which assesses the blood supply to the heart muscle. The results are used to help determine the most appropriate treatment for you. The procedure is performed through a small plastic tube called a 'sheath' inserted into an artery in your groin (Femoral) or wrist (Radial) usually on the right side. The doctor performing the procedure will determine which of these arteries will be used on the day. An angiogram is performed using local anaesthetic often with light sedation.

After your angiogram, the treatment options are:

- Tablets - medicines to reduce symptoms and help to prevent disease progression
- Coronary angioplasty and stenting (also known as PCI)
- Heart surgery - coronary artery bypass grafting and/or valve replacement surgery

Many people with heart disease respond to prescribed medication and this is usually the first line. As well as tablets, it is sometimes necessary to undergo one of the other treatments listed above to manage your symptoms. The doctor and nurse will help to explain the treatment options that apply to you on the day of your procedure. You will have an opportunity to discuss your treatment with the consultant.

Before your Angiogram

You will be admitted to Calderdale Royal Hospital Angio Ward via one of two routes:

1. Planned admission after a pre-assessment clinic visit (Day Case patient)

You will receive a letter with the date of your pre-assessment and a separate letter with the date of your angiogram. The procedure is usually 1-2 weeks after your pre-assessment appointment. Admission details and instructions will be contained in this letter. Please bring it with you when you come to hospital. A member of the nursing team will discuss the procedure with you during your pre-assessment appointment. This will be arranged for you. The nurse will complete the relevant documentation and answer any questions. Please bring an up-to-date list of your medication with you to the pre-assessment and also on the day of your procedure.

At the pre-assessment the nurse will order any relevant blood tests and take routine swabs for MRSA. You may also be required to undergo further blood tests on the day of the procedure. If you have any allergies to medicines or shellfish please inform the nurse during pre-assessment. If you've suffered an allergic reaction during a previous test in hospital please mention this to the nurse. The nurse will ensure that you are fully prepared for your procedure.

2. Acute admission to the cardiology ward, usually via A&E and the Medical Assessment Unit (Inpatient)

The cardiology team will assess you and allocate a date on the procedure list as soon as possible. We try to make sure your procedure is performed within 3 days of your admission to hospital, but your procedure can be delayed due to emergencies, weekends, if you are taking anticoagulants (blood thinners) and to make sure you are as fit as possible to undergo the procedure.

Positive Identification

To make sure that you receive the safest possible care while you are being treated in hospital, it is important that we identify you correctly at all stages.

Therefore, before you have any test, treatment or procedure, and before you are given any medicines we will ask you to confirm your name and date of birth. Although this can seem repetitive, please support our staff members to ensure these important checks are performed.

All members of staff are required to wear identification badges.

Medication

If you are taking **Warfarin** this will be stopped at least 5 days prior to your procedure. A blood sample will be taken on the morning of the procedure to ensure that your INR is within acceptable limits for the procedure to be performed safely.
If you take warfarin and have an artificial heart valve please inform the nurse during your pre-assessment. If you are an inpatient this information will already be available to the cardiology team.

Please also mention if you are taking any other type of 'blood thinner' medication:
- Dabigatran
- Apixaban
- Rivaroxaban
- Edoxaban

If you take any of these, you will be asked to stop taking them at least 3 days prior to your procedure and this will be discussed with you. You will normally be able to restart warfarin or the other blood thinners the day after your procedure. If you are taking warfarin you will need an INR test and this will be organised prior to your discharge.

Please continue taking all your other prescribed medicines as normal unless advised to the contrary. Please bring your usual medication to the hospital on the day of your procedure.

What happens before your procedure

Your nurse will be able to tell you the approximate time of your procedure. This time may change during the day usually because of emergencies and because each procedure is different and takes a variable amount of time to perform.

Please try and have a shower or bath on the morning of your procedure. You can enjoy a light breakfast.

Please remove any jewellery. You may wear a dressing gown and slippers. You can wear your glasses, hearing aids or false teeth as normal. The nursing staff will provide you with a hospital gown and paper pants to wear.

If you are **diabetic** take your medication/insulin as normal. **Please ensure you bring your blood sugar monitor with you to the hospital.**

Prior to your procedure the nursing staff will insert a cannula in your arm or hand. You will also have an ECG (heart tracing). The doctor will discuss the procedure with you, allow you to ask any questions and then ask you to sign a consent form. You will have the option to keep a copy of your consent.

Your nurse will collect you from the ward and take you to the angiography suite, the special room where your procedure will take place. This room contains a lot of equipment and lights. A team of nurses, doctors, cardiac physiologists and radiographers will be with you throughout the procedure.

What happens during your Procedure

You will need to lie flat on your back and as still as possible during the procedure. There is no specific length of time for the procedure. Every procedure is slightly different. Typically it takes between 30 and 90 minutes but this depends on the type of procedure you are having done.

You will be awake throughout the procedure. You will be offered sedation to help you relax. This is administered through a cannula in your arm or hand. The skin will be cleaned, you will then be covered with a drape and the local anaesthetic administered. If you have any concerns or discomfort during your procedure please notify any member of the team at the time. You may be asked to hold your breath or take a deep breath for a few seconds during some parts of the procedure.

The angiography room sometimes has observers. The majority of these observers are healthcare professionals, either qualified or training, or specialist company representatives. They will have no active role in your procedure. If you do not wish observers to be present during your procedure please inform a member of staff.

Will it hurt?

When administering the local anaesthetic this may cause mild discomfort or a stinging sensation. You may also be aware of gentle pressure when the sheath is inserted. You may experience a warm feeling like a 'hot-flush' around your body during the procedure and this is due to the contrast dye used. These are normal sensations and are nothing to worry about. Please inform a member of the team at any stage of your procedure if you are uncomfortable or in pain.

The potential risks associated with a coronary angiogram

Having a coronary angiogram is a very safe procedure and fortunately serious complications are uncommon. The more frequently occurring complications (about 1 in every 10 patients or 10%) may include local bruising or bleeding at the site where the sheath is inserted in the groin or wrist. Rarely this may require an operation to repair the damage.

Your heart rhythm can change and may become abnormal during the procedure but this is most often short lived and requires no specific treatment. You may feel this as a palpitation or an awareness of your heart beat. In rare circumstances this may lead to a loss of consciousness and treatment may be necessary with drugs or an electric shock.

A reduction in your kidney function caused by the contrast dye. This is more likely to occur if you have a pre-existing problem with your kidney function before the procedure. The team will be alert to any potential problems and may administer intravenous fluids or ask you to drink plenty of water before and/or after your procedure. Your kidney function will be closely monitored before and after your procedure with a simple blood test. The contrast dye rarely causes any long term problems with your kidney function. Very rarely and if your kidney function is severely affected you may require dialysis in the short term until your kidneys recover.

An allergic reaction to the contrast dye. This may cause you to feel sick or to develop a skin rash. Symptoms usually resolve without any further action. Severe allergic reactions to the contrast are very rare.

More serious complications are very uncommon but include a heart attack or stroke in about 1 in 500 cases or very rarely death.

If you require percutaneous coronary intervention (PCI or angioplasty)

The term percutaneous coronary intervention (sometimes called PCI, angioplasty or stenting) describes a range of procedures that treat narrowing or blockages in the coronary arteries which supply blood to the heart.

A small inflatable balloon on the tip of a narrow tube (called a catheter) is passed through the artery in either your wrist or groin until its tip reaches the narrowed section in the coronary artery. The balloon is gently inflated so that it squashes the fatty tissues responsible for narrowing the artery.

A stent, a short tube made of metallic mesh, is usually inserted. As the balloon is inflated, the stent expands so that it holds open the narrowed artery. The balloon is then let down and removed, leaving the stent in place.

The procedure typically takes between 45-90 minutes depending on how many narrowings need to be treated. During the procedure you may experience chest discomfort or symptoms similar to those that brought you into hospital. Please mention this to one of the members of the team and they will do what they can to help relieve it and maintain your comfort.

PCI is an important treatment option for patients with coronary artery disease and is performed in large numbers around the world. Some patients undergoing this procedure will have previously had a coronary angiogram to examine the condition of the coronary arteries. In other patients a PCI may be undertaken immediately after the coronary angiogram.

Prior to this procedure you will be started on a new medicine called clopidogrel or ticagrelor in combination with aspirin and other medicines. Clopidogrel and ticagrelor are blood thinning drugs that help to prevent blood clot formation on a stent. You will be required to take this for a specified length of time after your PCI. The length of time will be confirmed with you prior to discharge and you will be provided with an information card to carry with you.

Benefits of PCI

Most PCI procedures are successful (>95%). After a successful procedure most patients begin to feel a benefit in terms of improved symptoms and this will continue for the coming months. However, if an artery is totally blocked before the procedure, success rates are often less. In cases where the procedure is unsuccessful usually no harm is done and your symptoms are no worse than before.

In some circumstances successful PCI can also reduce the risk of a heart attack in the future. This may be the case if you undergo your procedure shortly after you have been admitted to hospital with an acute episode of chest pain.

Risks of PCI

This procedure is safe and the risk of serious complications is less than 2% (less than 2 in every 100 patients). The chances of success and the risks associated with any procedure vary for each person. In general, the risks of PCI are the same potential risks as those that may be encountered whilst having a coronary angiogram (see page 6).

However most of these risks are more likely to occur when undergoing a PCI procedure.
Other possible problems that may arise during a PCI are:
For some patients symptoms will return typically 3-6 months later and this may mean the artery has narrowed again. This is a chance event and it is not a reflection of the quality of the original procedure.
It can usually be treated with a repeat procedure.

Damage to the heart muscle may be caused by treating the artery responsible for your symptoms. This can be as a result of closure of a small branch vessel or the release of blood clot or debris (pieces of atheroma). Usually there are no consequences once your procedure has been completed. Problems in a major coronary artery during your procedure may result in a heart attack but this is uncommon.

Rarely, perforation in one of the coronary arteries leading to a collection of blood around the heart. This may require drainage of the blood with a tube placed below the breastbone into the space around your heart. This is performed as soon as the problem is recognised. Often there are no long term consequences. The perforation is repaired by placing a stent.
Very rarely PCI may result in a stroke or even death.

Before the procedure your cardiologist will discuss with you any specific risks or concerns.

After your Procedure

Once the procedure is completed you will be asked to remain still until you are helped onto a trolley to take you back to the recovery area or ward. Please **do not** attempt to climb off the X-ray table by yourself. You will be observed closely following your procedure. This is usually 2 hours following an angiogram and 4 hours after PCI. A pressure device is used to stop any bleeding from the access site whether this was in your wrist or leg.

If the artery in your leg was used you will be asked to lie flat during this period.

A nurse will provide you with a drink and something to eat. After resting you will be asked to gently mobilise to make sure that the artery has stopped bleeding. You may shower or bath the following day but do not rub the puncture site.

Please avoid getting the puncture site too wet. Please avoid lifting any heavy items for 24 hours. It is common to develop a small amount of bruising around the puncture site. This may take up to 2 weeks to resolve. You may develop a small pea sized lump under the skin. This is a normal occurrence and is often nothing to worry about.

However, if you develop sudden pain, worsening swelling or bleeding at the puncture site you should immediately apply firm pressure with your hand as you were advised by the nurse before your discharge.
If you have any concerns please contact the Angio Ward on (01422) 224524 Monday to Friday 7am to 8pm to seek further advice. Out of hours, including weekends and bank holidays, please contact the Coronary Care Unit on (01422) 224262 / 223108.

If you develop a large amount of bleeding or a large swelling or a cold and painful limb immediately call 999 for an ambulance.

Other useful Information

Length of stay
Generally this procedure is performed as a day case. However on occasions you may be required to remain in hospital overnight. This situation may arise if, for example, you live alone and don't have anyone to stay with you. You may sign a 'home alone' declaration enabling you to return home on the same day as your procedure. Your consultant may also advise that you remain in hospital overnight for your own safety.

Results of the procedure
The consultant will explain the results of your angiogram and any recommendations about your treatment before you leave hospital. A letter detailing the results and outcome will also be sent to your GP.

Medication
After your angiogram the consultant may alter your tablets. Before leaving the hospital you will receive any additionally prescribed medication that you need to take home. Your GP will be notified of the changes to your medication.

Blood Tests
A blood test to check the function of your kidneys is sometimes required 3 days after your procedure. This can be performed at the hospital or GP surgery. In the unlikely event that there are any concerns with the result of your blood test a nurse will contact you at home. If you are **not** contacted please assume that your results are not a cause for concern and no further action is required.
A nurse will inform you if any of the above is relevant to you before leaving hospital.

Physical Activity
We advise you to rest for a day or 2 after your procedure. It is best to avoid any demanding activities, like heavy lifting, for at least a week. Leisurely walking around the house, garden, shops or place of work is acceptable. You may be required or prefer to take some time off work during your recovery. The actual length of time will depend on the type of procedure performed and the physicality of your work. You may resume sexual activity after a week.

Driving
We advise that you do not drive for at least 24 hours after an angiogram. If you have had a PCI procedure you should not drive for at least one week. In some circumstances the consultant or nurse may advise longer. This can be for up to 4 weeks. You will need to make arrangements for someone to drive you home from hospital after your procedure.

Holidays
The majority of the time you will be able to take any holidays as normal at least 2 weeks after your procedure. However, we may advise you not to travel for 4 weeks after a heart attack.

Let us know your views
If you are pleased with the care you have received, or have any suggestions about how we can improve our services, please let us know. We welcome your comments.
If you are unhappy about any aspects of your care or treatment, please talk to the member of staff caring for you, who may be able to resolve the problem straight away.

Useful Phone Numbers

(01422) 224524 – Angio Recovery Ward
(01422) 224013 – Cardiac Scheduler (if there are any issues with your procedure dates)
(01422) 224388 – Angio Co-ordinator
(01422) 222082 – Angio Sister

If you would like more information on heart disease please contact the British Heart Foundation (BHF) or request one of the BHF patient information booklets www.bhf.org.uk

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If you have any comments about this leaflet or the service you have received you can contact :

Diagnostic and Interventional Cardiology Sister
Calderdale Royal Hospital
Telephone No: 01422 222082 or 223256
(Monday - Friday 9am - 5pm)

www.cht.nhs.uk

If you would like this information in another format or language contact the above.

Potřebujete-li tyto informace v jiném formátu nebo jazyce, obraťte se prosím na výše uvedené oddělení

Jeżeli są Państwo zainteresowani otrzymaniem tych informacji w innym formacie lub wersji językowej, prosimy skontaktować się z nami, korzystając z ww. danych kontaktowych

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اگر آپ کو یہ معلومات کسی اور فارمیٹ یا زبان میں درکار ہوں، تو
براہِ مہربانی مندرجہ بالا شعبے میں ہم سے رابطہ کریں۔

"إذا احتجت الحصول على هذه المعلومة بشكل مغاير أو مترجمة إلى لغة مختلفة فيرجى منك الاتصال بالقسم المذكور أعلاه"