



Patient Information

Cardiac Angiography with or without Percutaneous
Coronary Intervention (PCI)
Pre – Procedure Leaflet



You have been referred for a Diagnostic or Percutaneous Coronary intervention (PCI):

This service is provided by Oxford University Hospital consultants as well as Milton Keynes University Hospital consultants.

Why have I been referred?

You have been referred for this procedure, after careful consideration, by the health care professional (doctor or specialist nurse) looking after you based on their assessment of your symptoms at that time. Coronary angiogram not only looks at your coronary arteries to assess for Coronary Heart Disease but is also used for investigating coronary artery disease for other conditions such as congenital heart disease or heart valve disease prior to surgery.

You may be coming to Milton Keynes for one of the following reasons':

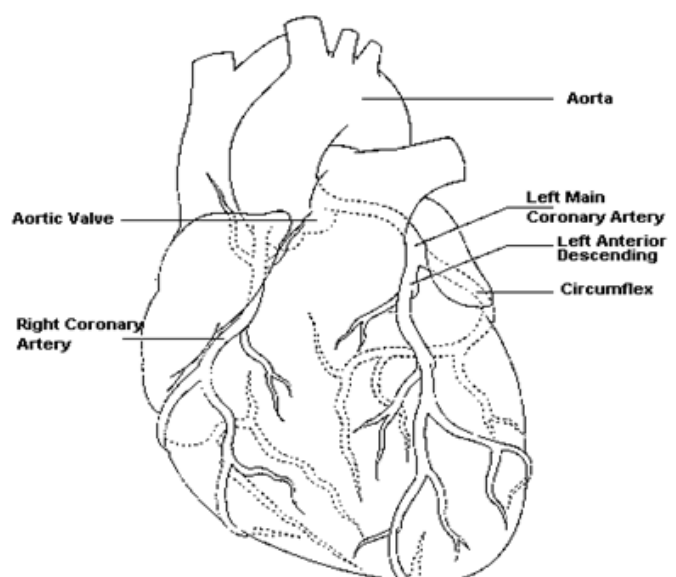
- To have a coronary angiogram to assess your coronary arteries for disease.
- A percutaneous coronary intervention (PCI). (Also known as angioplasty or stenting)
- An angiogram with the potential to proceed to PCI.

While you are patient here you may be invited to take part in research or a clinical trial, which may benefit you and other future patients. It is important to understand that whether you agree to take part your treatment will not be affected.

The Heart

The heart is divided into four chambers called the right and left atrium and the right and left ventricle. The right side of the heart pumps blood to the lungs to obtain oxygen, the blood then travels to the left side of the heart to be pumped around the body.

The heart has its own blood supply vessels called the coronary arteries. There are 2 main arteries the left and right coronary which divide into a number of smaller branches. Usually in coronary artery disease one or more of these arteries are narrowed or blocked. If the narrowing in the artery is significant enough that not enough blood gets to the heart muscles (particularly during exercise or emotional stress) you may get discomfort in the chest. This is called angina.





Pre-Procedure:

Please read this information book carefully, if you have any questions, please bring these with you to your pre-assessment appointment or call us if no pre-assessment appointment has been given.

You are not allowed to drive after these procedures. You must organise a person on the day of the procedure to collect you and someone to stay with you for 24 hours post procedure.

- If you **take Warfarin, Apixaban, Rivaroxaban, Edoxaban or Dabigatran** please contact the ward on 01908 996539 and ask to speak to one of the nurses, ensure you do this at least a week before your appointment.
- If you are a **diabetic** and take **Metformin** (sometimes known as **Glucophage**) you must NOT take it the morning of your Procedure, nor for 2 days after your procedure.
- If you are a **diabetic** on **Insulin**, please take $\frac{1}{2}$ your normal dose in the morning and bring your insulin with you.
- Please bring all the medications you are taking, or a list of them, to the hospital with you on the day
- Your admission letter will give you details of where you need to come on the day of your procedure.
- You may wish to postpone taking any 'water tablets' (diuretics) on the day of the procedure and take them after your procedure has been performed.
- Please **do not have anything to eat after 4.00 am** on the day of your procedure. You may, however, continue to **drink water ONLY** prior to your procedure.
- If you have an allergy to contrast dye, can you please can you contact the department prior to your procedure.

The morning of the test:

- **We advise that you leave all valuables at home.**
- You should take all your normal medications **EXCEPT Warfarin, Apixaban, Rivaroxaban, Edoxaban, Dabigatran, Metformin and water tablets**. If you take insulin, only take half your usual dose that morning.
- Bring a dressing gown, comfortable footwear, book, or newspaper. You may use electronic devices **if you do not play sound out loud** so, please bring headphones if you wish to watch videos on devices.
- Do not have anything to eat the morning of your procedure after 4am. You may drink **water only** until you come for your procedure.



On arrival, please report to the Cardiology department at the rear of the hospital site where you will be able to park in the car park B.

- It is important that you arrive on time in the morning.
- Angiograms and percutaneous coronary interventions (PCI) are performed between 08:00 and approximately 16.00 hrs. Every effort is made to ensure your waiting time is kept to a minimum.
- Occasionally delays can occur; the nursing team will keep you informed of any changes. The Day Ward in the Cardiac suite is a single sex unit. We try our best to ensure this, however there may be times when we have to mix – we make every effort to maintain your dignity whilst in the day unit.
- Your relative or friend will not be permitted to accompany you onto the Angiography unit however they must be available at any time on the day to come and collect you. They will be telephoned approximately 1 hour prior to your discharge. Please inform the person coming to pick you up that they should report to the main Cardiology reception desk, and the receptionist will inform us that they have arrived to collect you.
- In some circumstances it may be necessary for a relative or friend to remain in the department, in which case this will be discussed at your pre-assessment appointment, Or prior to the admission day.

On arrival to the day ward:

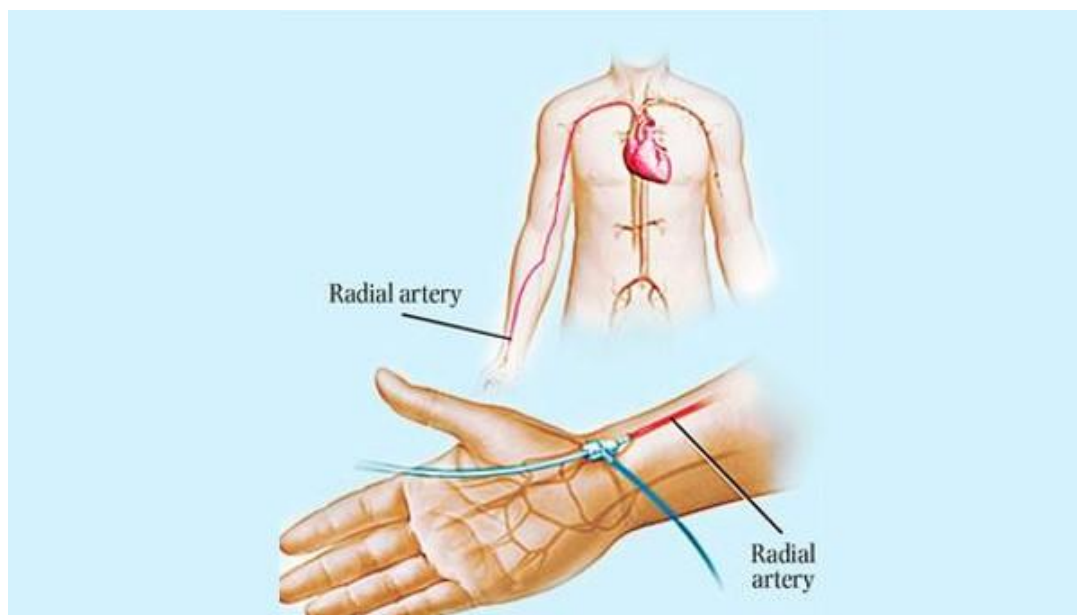
- The nurse will walk you through to the ward and ask you to get changed into a gown, they will then check your blood pressure, pulse, ECG and blood sugar if indicated. The nurse will also go through a check list with you.
- A small tube called a cannula will be inserted into a vein in your arm. Through this we can give you some medication to help you relax if needed and any medications required during your stay.
- The doctor will then come around and go through your consent form with you and answer any questions you might have about the procedure.
- The procedure is carried out in a specially designed room which is set up like an operating theatre. There will be a number of staff present throughout the procedure including: - Doctors, Nurses, Cardiac Physiologists and Radiographers. There may also be some staff undergoing training.
- You will be asked to walk from the Day Ward area into the Lab area; if you are unable to walk, we will provide a trolley or wheelchair.

Diagnostic angiogram procedure:

The procedure normally takes about 40 minutes to perform; occasionally it could take longer. You will be awake throughout the procedure; we can give you medication to help you relax before we start the procedure. **You will need to be able to lie flat for this procedure** – if you are not able to do this, please contact the Angio department and discuss this with us before your appointment.

Once inside the room you will be asked to lie on the x-ray table. A local anaesthetic will be injected into your wrist or groin where the doctor will make a small incision.

Using x-ray guidance, a long narrow tube called a catheter will be passed into the artery in your wrist or groin and guided to the arteries in your heart. Contrast (a liquid that shows up under x-ray) is then injected into the catheter so the arteries can be seen on the x-ray screen.



An x-ray machine will rotate around the table and take pictures as the contrast flows through your heart arteries. These pictures will be reviewed by your consultant.

You will be monitored closely during and after the procedure, if you are having any discomfort, please inform your nurse or doctor.

This aim is to give us information about your heart and its blood supply which will allow you and your doctors to decide on the best course of treatment for you.



After the procedure:

When the catheter is removed from your wrist or groin pressure will be applied to prevent any bleeding and reduce bruising.

- If the catheter was inserted in the wrist, a pressure device will be placed on the wrist after the procedure - the nurse will then gradually reduce the pressure over a period of time and the device will be removed.
- If the catheter was inserted into the groin, a small device to stop the bleeding may be placed. If this is not done, pressure will be applied to the groin to stop any bleeding. The nurse will let you know of any discharge instructions relevant to the groin before you go home.

When you return to the day ward, your blood pressure, pulse and puncture site will be checked by a nurse. You may need to rest in bed until your nurse tells you it is ok to get up. The puncture site may bleed a little after the procedure, so it is important to stay in bed if your nurse tells you.

You will be offered food and drink post procedure. Please ensure you drink plenty of water after the procedure to eliminate the contrast from your system. Please let the nurse know if you have any specific dietary requirements when you check in.

Possible outcomes:

The doctor might decide that you do need any further treatment; but if you do, you might require one or more of the below:

Medical Therapy

Medicines (tablets) are used to manage your coronary artery disease. This is well accepted and a normal part of the treatment. Not all coronary artery narrowing's will be suitable for percutaneous coronary intervention (PCI). Your medications will be explained to you before you go home.

Percutaneous Coronary intervention (PCI) - see information provided on next pages.

Coronary Artery Bypass Grafting (CABG)

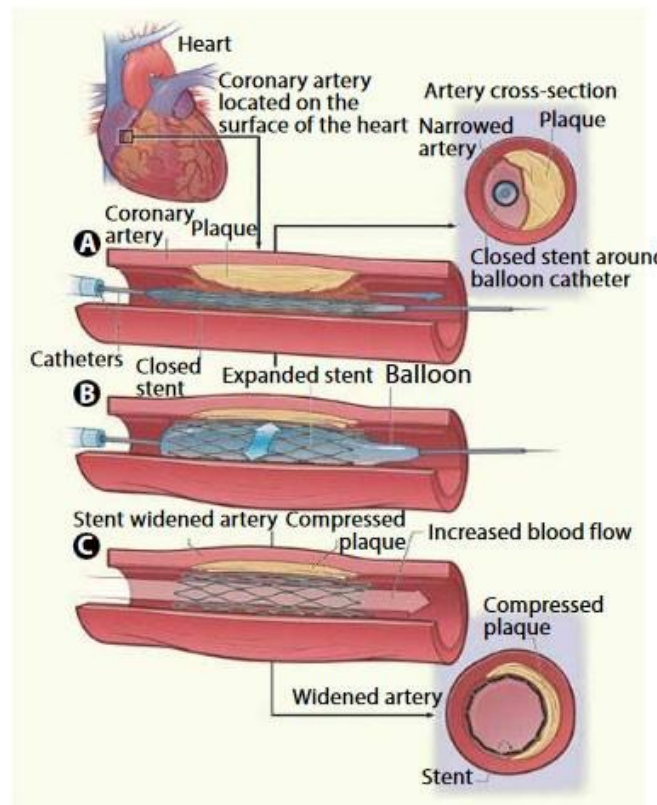
If this is necessary, your doctor will talk discuss this in more detail prior to your discharge. The nurse will give you a British heart foundation leaflet on CABG - if they do not, please ask.

Percutaneous Coronary intervention (PCI):

The term Percutaneous Coronary Intervention (sometimes called PCI, angioplasty or stenting) describes a range of procedures that treat a narrowing or blockages in the coronary arteries which supply blood to the heart. The procedure usually takes 45-90 minutes.

A diagnostic angiogram might be performed first, then a small inflatable balloon on the tip of a narrow tube (called a catheter) is passed through the artery in your arm until it reaches the narrowed section of the coronary artery. The balloon is gently inflated so that it squashes the fatty tissues responsible for narrowing the artery.

Then a stent, which is a small metallic mesh tube is inserted into the narrowed part of the coronary artery. This sits on top of a balloon which inflates and expands the stent. The stent acts as scaffolding to keep the blood vessel open, restoring good blood flow. The balloon is then deflated and removed, leaving the stent in place.



Sometimes it is necessary to perform an assessment of how severe the narrowed part of the coronary artery in order to be sure that treatment of the narrowing is appropriate. This is done by using a fine wire with a pressure monitor at its tip. The wire is placed beyond the narrowing to measure the pressure drop. Sometimes we inject a drug called adenosine to enable us to accurately assess the narrowing. This drug can cause some very brief side-effects, and you will be warned about this by the nurse.



Will I feel any pain during either procedure?

You may experience some mild discomfort at the puncture site (groin or wrist area) during the procedure. The discomfort can be experienced in the arm particularly, as the blood vessels are quite small. It is also quite common to be aware of a dull ache during the procedure. Please inform the nurse in the catheter laboratory if you are uncomfortable so that they can support you as necessary. You may get a slight pain or experience any pain in your chest while the balloon is inflated, similar to angina symptoms you may have had previously. The pain should ease very quickly when the balloon is let down. If you feel any pain during or after the procedure you must inform the medical or nursing staff. You may feel your heart misses a beat or makes an extra beat while the catheter is in the artery in your heart. This is entirely normal.

Benefits of PCI

The procedure may have been recommended to increase the flow of blood to the heart to improve the symptoms of angina. Following the procedure there is still a possibility that you will develop further heart disease and repeat procedures may be necessary. It is important to make lifestyle changes and to take the medication your doctor prescribes; please ensure you eat healthily and exercise to prevent future problems. The procedure is performed in large numbers throughout the world and is usually very successful. In order to reduce the future risk of developing further narrowing's in other parts of the coronary arteries, you will be referred to a cardiac rehabilitation centre. You will be given advice on the importance of taking the medication prescribed for you and how you can help prevent further heart disease through a lifestyle change with healthy eating and exercise.

Risks and Complications

The Procedure is safe, and the risk of serious complications is less than 2% (less than 2 in 100 patients). The chances of success and the risks associated with any procedure vary for each person. Important factors include age, degree of heart disease, and other medical conditions i.e. diabetes or kidney failure. This leaflet explains some of the complications that some people may experience. However, it is not comprehensive, and the figures quoted are average figures. If you experience other side effects and want to ask about anything related to your treatment, please speak to the nurse or the consultant on the day when you sign your consent form.



The main risks include:

- **Serious bleeding (which may require blood transfusion)** – 1-2% (1-2 in every 100 people)
- **Damage to the artery in the arm or groin** in which the catheter was inserted, with the blood supply to the limb possibly being affected (1 in 100)
- **Heart attack** – a serious medical emergency where the heart's blood supply is suddenly blocked (1 in 500).
- **Death or Stroke**- less than 1% (1 in every 100 people) although this is more likely in an emergency than a planned procedure.
- **Kidney Damage**- in rare circumstances the dye that is used can affect your kidney function. Usually happens for a few days and then it gets better, but very occasionally it may mean you need dialysis. This is more likely if your kidneys are not functioning as they normally should.
- **Abnormal heart rhythm**- Heart rate goes too slow or too fast less than 0.5% (less than 1 in every 200 people). In rare circumstances this may lead to loss of consciousness and might need to be treated with drugs or an electrical shock.
- **Perforation** (making a hole) in one of the heart chambers or heart arteries, leading to a collection of blood around the heart – less than 0.1 % (less than 1 in 1000 people). This may require an operation or drainage using a special tube.
- **Sudden blockage of a major artery**- during or after the procedure less than 1 % (1 in every 100 people), this could cause a heart attack and may require treatment with an emergency coronary artery bypass.
- **Damage to the heart muscle**- damage to the heart muscle supplied by the artery being treated. This can be caused by closure of small branch vessels or the release of a blood clot or debris. This may occur to some extent in many cases, but it only causes a problem in 2-3% of cases (2-3 in every 100 people).
- **Sometimes symptoms can return**, this may mean the artery has narrowed again or became blocked. This happens to less than 5% of people (1 in 20). It is usually treated with the same procedure.

Contrast reaction

This is like an allergic reaction. If you have had problems in the past with a contrast dye you must inform the nursing staff and radiographer.

Risk of radiation from x-rays

X-rays are used as sparingly as possible, and the benefits of the procedure far outweigh the risks to your health from the x-rays. Alternatives Your doctor will have already discussed any alternative treatments with you. If there is anything you are unsure about or if you have questions, please ask the doctor before signing the consent form.



Going home

You must:

- **Have someone available to collect you** from the ward at any time, as you cannot drive home or for 48 hours after the procedure. Please make sure someone is available to pick you up when we call.
- **Have someone to stay with you overnight** for the first night after the procedure just in case the wound bleeds or you begin to feel unwell.
- Have 2 days off work following an angiogram.
- Avoid physical activity for the first few days while the puncture wound in your wrist or groin heals over completely. You can then build up activity gradually while avoiding heavy lifting. You should be back to normal activity levels within a week.

If you have any questions or problems when you have returned home you may contact the Day Ward for advice, but if you feel you need urgent assistance, please contact your own GP or your local Accident and Emergency department.

Further information

For further information on the above procedures please see the QR code links below.

Coronary angiography



To view the procedure video please go to:

www.explainmyprocedure.com/procedure/angiography-english

or scan this QR code. To scan this code on most phones or tablets, open the camera app, select the rear facing camera, hold the device so that the QR code appears in the viewfinder and tap the notification to open the associated link.

Angio ? Proceed



To view the procedure video please go to:

www.explainmyprocedure.com/procedure/angiography-with-possible-pci-English

or scan this QR code. To scan this code on most phones or tablets, open the camera app, select the rear facing camera, hold the device so that the QR code appears in the viewfinder and tap the notification to open the associated link.



PCI



To view the procedure video please go to:

www.explainmyprocedure.com/procedure/angioplasty-english

or scan this QR code. To scan this code on most phones or tablets, open the camera app, select the rear facing camera, hold the device so that the QR code appears in the viewfinder and tap the notification to open the associated link.

Other Contact details

Milton Keynes Hospital NHS Foundation Trust

Cardiac Angiography Unit

Department of Cardiology
Milton Keynes Hospital
Standing Way
Milton Keynes
MK6 5LD

Cardiac Angiography Unit 01908 996539

(Monday to Friday 8am-4pm)

If you have concerns outside normal working hours please contact the **Coronary Care Unit** on 01908 996419 and ask to speak to the nurse in charge for advice.



We encourage patients to be involved in their care by:

1. Being part of the conversation and shared decision making
2. Asking questions if something is not clear
3. Speaking up if you have concerns

Checks are there to protect you and you can be part of them. Behave with respect and kindness towards healthcare professionals.

We ask for information about you so that you can receive proper care and treatment. This information remains confidential and is stored securely by the Trust in accordance with the provisions of the Data Protection Act 2018/GDPR. Further guidance can be found within our privacy notice found on our Trust website: www.mkuh.nhs.uk

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