Liverpool Heart and Chest Hospital
NHS Foundation Trust

Information for Patients & Families

Percutaneous Coronary Intervention (PCI)

(Procedure to open narrowings in the arteries that supply blood to the heart)

Excellent, Compassionate and Safe care for every patient, every day

This leaflet has been written to provide information about a procedure to treat narrowings in the arteries that supply blood to the heart (Percutaneous Coronary Intervention). We hope it answers some of the questions or concerns you may have about the procedure. It is not intended to replace talking with medical or nursing staff.

What is Percutaneous Coronary Intervention?

Percutaneous Coronary Intervention (sometimes called PCI, coronary angioplasty or stenting) is a procedure that aims to treat narrowings or blockages in the arteries supplying blood to the heart.

The heart is a muscle that pumps oxygen-rich blood around the body, enabling the bodies' organs and muscles to work effectively. The heart also needs a constant supply of oxygen in order to work effectively. This is brought to the heart, in the blood, through the coronary arteries (blood vessels).

Narrowing or blockages can occur in these arteries as a result of fatty material building up within the artery wall (atherosclerosis) causing them to narrow, or in some cases become totally blocked. This effectively restricts the flow of blood to the heart, which can lead to angina and heart attacks. This is referred to as coronary artery disease.

Normal coronary artery

Atherosclerosis

Where does the procedure take place?

The procedure takes place in the catheter laboratory which is a specialised theatre. The catheter laboratory contains a lot of equipment including a bed or theatre table that has large x-ray

cameras above it. These cameras move around the bed during the procedure and on occasion it is necessary to move the table.

You will notice that on occasion, some parts of the equipment are quite close to your chest and head but they will not touch you. This allows the doctor to get good images of your heart and coronary arteries. The closer the equipment is to you, the less radiation you will be exposed to during the procedure.

There is a team of approximately 6 healthcare professionals in the catheter laboratory throughout the procedure. This includes one or two doctors, two nurses, a radiographer (x-ray specialist who moves the cameras and records the images) and a cardiac physiologist (who monitors your heart tracing and blood pressure throughout the procedure). The staff will be in theatre clothing and will also be wearing lead aprons to protect them from radiation exposure. The staff will be required to step away from the theatre table at certain points during the procedure. You will hear some noises from the equipment such as beeping or clicking throughout but this is normal, so do not be alarmed.

You will be awake and fully alert during your procedure. Therefore, you will hear the team speaking to each other and discussing the procedure through. This will include them saying some technical terms and measurements out loud, which are completely normal, so please do not be alarmed at this. Images will be taken and recorded during your procedure and you may be aware that the doctor may request a lot of equipment from the nursing or technical staff during the procedure, again it is normal to expect this.

As this is a teaching hospital there may be junior medical staff assisting or in attendance and the doctor may talk to them during the procedure. Again, it is normal that the doctor may require to concentrate at times and/or ask the other staff for their opinion.

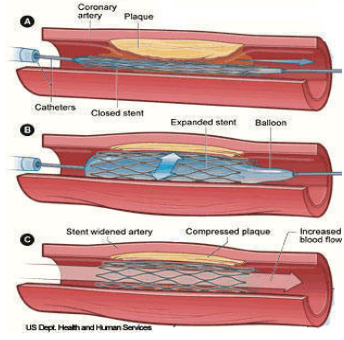
How is the procedure performed?

The procedure is usually performed through blood vessels in the wrist or groin. You will be awake during the procedure and will be required to lay flat with one pillow. You will be given a local anaesthetic to numb the skin around the area where the procedure is performed. A small cut is then made either in the wrist or groin. A sheath (long thin plastic tube) is inserted into the blood vessel. This stays in place during the procedure and acts as a guide, through which the catheters and wires are then inserted and guided up to the heart. This may cause a warm sensation, which is nothing to worry about. The doctor can see the coronary arteries on the x-ray screen, which will be on your left hand side. Should you so wish, you will be able to watch the images yourself.

A fine wire is then passed through the narrowed part of the artery and over this wire a balloon is passed over and inflated in the narrowing. This squashes back the fatty tissue (sometimes referred to as atherosclerosis or plaque) responsible for the narrowing.

A stent, which is a small tube of stainless steel mesh 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 and doctor before it is given.



Will I have any pain during the 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 particulary, 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.

How long does the procedure take?

The procedure usually takes about an hour although this varies depending upon the numbers of narrowings to be treated. Some procedures involve treatment of blocked arteries which can be more complex and might take longer.

How do I prepare for the procedure?

You may be invited to a pre-admission clinic where you will get important information about the procedure and about your recovery. The Nurse Practitioner at the pre-admission clinic will also talk to you about how to keep your heart healthy and about cardiac rehabilitation.

Most people will be given extra anti–platelet drugs (drugs to thin the blood) before the procedure. These will be given to you either at the pre-admission clinic or when you come into hospital for the procedure. The drugs will help reduce the risk of blood clots forming around the new stent.

Before you come into hospital it is helpful if you shave each side of your groin (bikini line or crease at the top of each leg) and your right wrist. You will need to have a bath or a shower, prior to your procedure before you come into hospital.

For most procedures you do not need to fast beforehand. You will be informed if and when you are required to stop eating prior to the procedure. You can drink fluids up until your procedure.

What are the benefits of having the procedure?

The procedure may have been recommended to increase the flow of blood to the heart following a heart attack or 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 life style changes and to take the medication your doctor prescribes, please ensure you eat healthily and exercise to prevent future problems.

Will it work?

The procedure is performed in large numbers throughout the world and is usually very successful. If an artery is totally blocked, however, success rates are less. In order to reduce the future risk of developing further narrowings 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 life style change with healthy eating and exercise.

What are the risks involved?

The procedure is performed in large numbers at this hospital and is usually very safe.

Some of the general risks associated with the procedure are outlined below; individual patients however may have a greater risk of developing some or all of the complications.

Your individual risks will be discussed with you in more detail before you sign a consent form.

- Bleeding or bruising can occur at the place where the tubes are inserted in your arm or groin. This bruising may be extensive in some cases. This may be due to the blood thinning drugs used prior to, and during the procedure.

- An allergic reaction to the sheath (plastic tube) can occur but this is now very rare. This may present as a red raised area and can cause swelling and discomfort at the puncture site. This reaction has the same appearance as an infection, although it is not an infection, just a reaction and will resolve in time.

- There is a small risk of blood clots forming within the artery and sticking to the new stent. This could cause the artery to become blocked and may lead to a heart attack. **Taking anti platelet drugs (to thin the blood) for a while after the procedure may help to prevent this. Your doctor will give you important information about this.**

More serious but rare complications include;

- Damaging the arteries, causing them to narrow or block suddenly. This could cause a heart attack and may require treatment with an emergency bypass operation.
- Having a stroke either during the procedure, or as a result of the drugs that are used during the procedure to make the blood less sticky.

What alternatives do I have?

This depends on your heart condition, what your angiogram (a test to examine the arteries that supply blood to the heart) shows and how bad your symptoms are.

Not all patients with coronary artery disease are suitable for a Percutaneous Coronary Intervention. These patients may be offered coronary artery bypass surgery as an alternative. Bypass surgery also works well at relieving angina. People with angina

whose symptoms are stable may be treated with drugs alone. Alternative treatments will be discussed with you, if they are applicable.

What can I expect after the procedure?

Following the procedure a pressure band will be applied to your wrist if this is the site where your procedure was performed. If your procedure was performed through the groin, the staff will apply manual pressure to this area to stop any bleeding. The staff will apply a lot of pressure and may press hard. This can either be performed on the theatre table or in the recovery area. You will then be taken back to the ward. The nurse looking after you will check your heart rhythm and blood pressure and observe the puncture site regularly. You will be able to eat and drink unless you require further tests.
If your procedure has been performed via your groin, then you will require to have bed rest for a number of hours following the procedure. You will be advised of this by the nursing staff.

Following the procedure you may experience some soreness or discomfort in your chest and at the puncture site for a few days. You can take simple analgesia (pain relieving drugs) for this, such as Paracetamol. You may also experience some bruising around the puncture area.

When can I resume normal activities?

You should be able to go home the same day following your procedure but some patients need to remain in hospital overnight. **You should not drive for one week following your procedure.** This is a DVLA requirement. If you drive a vehicle for which you require a special licence, you will need to refrain from driving for six weeks. Please check with the DVLA for more information.

You should take approximately 1 week off work, although this varies depending upon the type of job you do. Avoid lifting heavy objects for approximately 1-2 weeks.

This advice will be discussed with you in more detail before you go home and you will be given a discharge advice sheet.

You will usually be seen in the outpatient clinic approximately 4-6 months following the procedure. All patients are referred to a local cardiac rehabilitation, this may be at the Liverpool Heart and Chest Hospital or at your local hospital where you will be given important information and advice in order to reduce the risk of developing further coronary artery disease in the future.

Staff at the rehabilitation centre will contact you directly, usually a couple of weeks after the procedure.

NOTES

For further information visit:

www.nhsdirect.nhs.uk
www.bhf.org.uk
www.dipex.org

Or contact:

The British Heart Foundation Heart Information Line on 0845 070 8070.

If you require a copy of this leaflet in any other format or language please contact us quoting the leaflet code and the language or format you require.

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如果您想索取一份以其他語文或形式（如大字體）編印成的資料傳單，請致電 0151 600 1257向我們查詢，並說明您所需要的形式和語文。
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W celu uzyskania niniejszej informacji w innym języku lub formacie (np. dużym drukiem), prosimy o kontakt z nami pod numerem 0151 600 1257 podając wymagany format lub język.
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