



Pacemaker and Atrio- Ventricular Node Ablation for Atrial Fibrillation

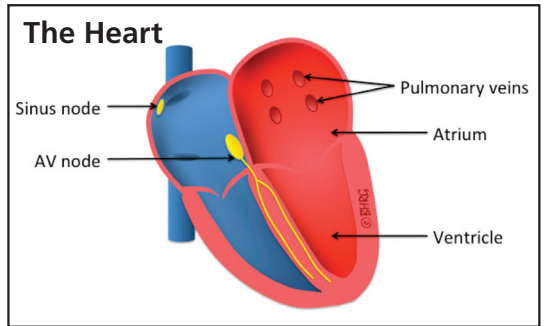
Building healthier lives

UHB is a no smoking Trust

To see all of our current patient information leaflets please visit
www.uhb.nhs.uk/patient-information-leaflets.htm

About this patient information leaflet

This patient information leaflet is about atrial fibrillation, one of the main heart rhythm problems we treat with a pacemaker. It is one of a series of leaflets that we have produced, written in everyday language that explains what a particular heart rhythm condition is, what its symptoms are, why it occurs and how it is treated.

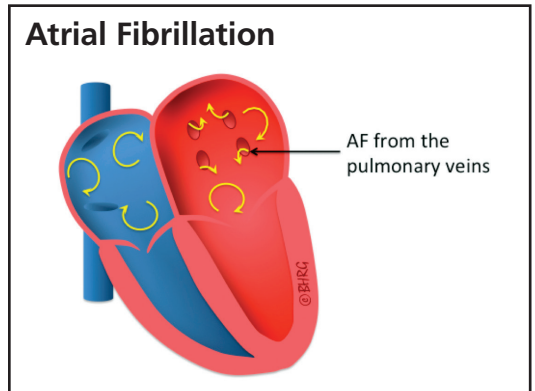


This booklet has been prepared for people preparing to undergo one of the procedures described or for people looking for more information about these procedures. The information provided within this booklet does not replace the consultation that takes place between the patient and the doctor.

Atrial fibrillation

What is atrial fibrillation?

During normal heart rhythm the heart contracts in an organised and controlled way resulting in regular blood flow through the heart. Atrial fibrillation (AF) is an irregular and chaotic heart rhythm that occurs in the upper chambers (atria) of the heart. This abnormal heart rhythm disturbs the organised heart contraction and produces irregular blood flow through the heart. In most cases patients experience palpitations, breathlessness, tiredness or light-headedness. Sometimes patients do not feel these symptoms and are unaware they have AF. People can experience AF continuously or in periodic attacks lasting up to days.



Is atrial fibrillation dangerous?

AF is not life threatening. Individuals may feel unwell during the attacks or may also be breathless if the AF is continuous. Patients who are older or have other medical problems such as diabetes and high blood pressure have a higher chance of developing a stroke if they have AF.

How is atrial fibrillation diagnosed?

Individuals with palpitations often see their doctor or attend the emergency department where they have a recording of their heart rhythm (electrocardiogram or ECG) performed during their symptoms. The ECG may show that the heart has AF. Alternatively, your doctor may have arranged for you to take a heart rhythm monitor (Holter monitor or loop recorder) home to record your palpitations. Sometimes atrial fibrillation is also detected during a routine medical check at your GP surgery.

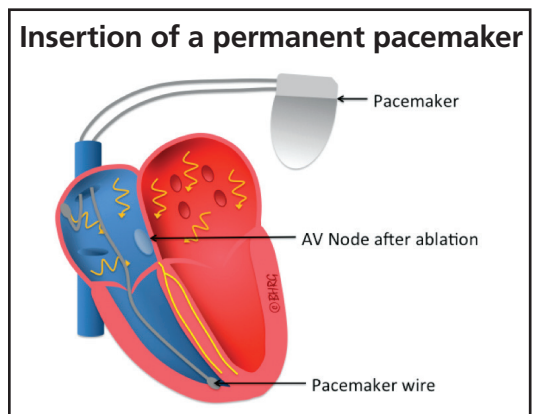
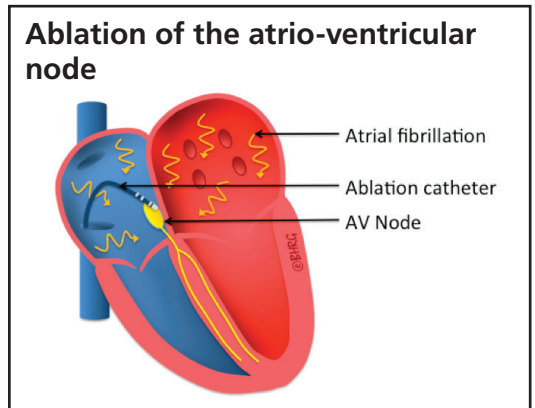
Atrio-ventricular node ablation and pacemaker insertion for atrial fibrillation

What is atrio-ventricular node ablation and pacemaker insertion for atrial fibrillation?

The AV node ablation and pacemaker insertion operation is a procedure that aims to regulate the abnormally fast heart rate caused by AF. It does not stop the AF in the atria but instead controls the heart rate in the lower chambers (ventricles). The normal central electrical connection of the heart (called the atrio-ventricular node or AV node) is modified during the procedure so that the AF does not affect the main pumping chambers of the heart.

Who benefits from having AV node ablation and pacemaker insertion to control their atrial fibrillation?

The AV node ablation and pacemaker insertion procedure is very effective at treating palpitations that have been difficult to control. The AV node ablation is a quicker and much shorter procedure than the alternative catheter ablation for atrial



fibrillation procedure. If your cardiologist has suggested that you have an AV node ablation and pacemaker insertion procedure this may be because:

- Medication has not been effective or has resulted in unwanted and unpleasant side effects
- Catheter ablation for atrial fibrillation has been considered as a possible treatment but may not be suitable
- Catheter ablation for atrial fibrillation has been attempted and has been unsuccessful

What does AV node ablation and pacemaker insertion involve?

The procedure involves passing one or two long fine wires (called catheters) into the heart via the blood vessels. Strong sedatives and local anaesthetic are used to make it comfortable and virtually painless. The procedure is performed as a keyhole operation through a small puncture in the skin of the groin. Once in the heart, the catheter end is placed in contact with the AV node. Heat applied through the tip of the catheter modifies the AV node resulting in a constant slow heart rate.

A pacemaker then needs to be implanted to control and speed up the heart rate otherwise the heartbeat will be too slow. Individuals who already have a pacemaker will not need to have a new pacemaker inserted.

Are there alternatives to AV node ablation and pacemaker insertion?

As AV node ablation and pacemaker insertion is not able to cure all patients of their symptoms of AF and some patients may choose not to have this procedure, alternatives are available:

- Continuing to find a medication that is effective
- Continuing with medication that is preventing the AF even though it is producing undesirable side effects
- Catheter ablation for atrial fibrillation
- Alternative non-medical therapies such as hypnotism or aromatherapy

What happens before the procedure?

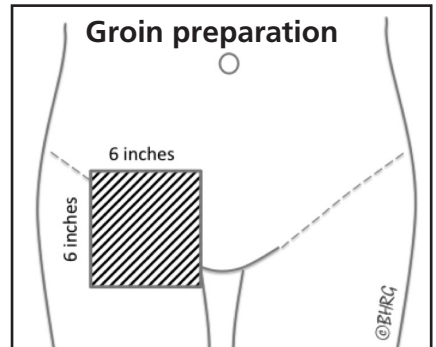
Once you have decided to have an AV node ablation and pacemaker insertion procedure your cardiologist will explain the operation to you in detail, go through the potential risks and answer all your questions.

During the week prior to your scheduled procedure you will be asked to attend a pre-admission clinic at the Queen Elizabeth Hospital. At this visit you will be asked what medication you are taking, your heart will be examined briefly and blood tests will be done. You will be given further instructions in

preparation for your procedure and you will have the opportunity to ask any questions. This is also a good time to inform the medical team of any of your allergies.

If we have asked you to stop taking warfarin, then this should be stopped 3 days before your procedure. It will be restarted again after the procedure. If you are unsure whether to stop the warfarin or not then you should continue taking it as usual.

On the day before your procedure it is helpful if you can prepare the right groin area by carefully shaving an area of about 15cm x 15cm (6in x 6in) as in the diagram. If you are unable to do this then we will do it either beforehand on the ward or at the time of the procedure.



What happens on the day of my procedure?

Please take your medication on the morning as you would normally at home unless we have specifically asked you not to take certain drugs. On the day of your procedure you should go to the Ambulatory Care Ward unless your appointment letter has requested you go to a different ward. We ask you to be there early, usually between 07:30 and 08:00. If you have not previously signed the consent form then you will have the opportunity to read it and ask questions before you sign it.

Unless you have been instructed differently, please ensure that you do not eat anything after 04:00 on the morning of your procedure. You may drink water up to 06:00.

Once you are at your bed and changed into a hospital gown, a small cannula (or tube) will be inserted into the back of your hand or arm veins. This is used to administer the sedative and any other medication needed before, during and after the procedure.

We are unable to give you an exact time your procedure will start as procedures are undertaken throughout the day and we cannot predict how long each will take. Although you may be admitted in the morning, you might only have your procedure in the afternoon. The team on the ward will keep you updated while you wait for your procedure.

What happens at the start of my procedure?

A nurse or doctor will come and fetch you from the ward and either walk with you or take you on your bed to the operating room. You will notice that the theatre has large-scale X-ray equipment and many computer screens that are used for the procedure. The theatre staff will introduce themselves and help you onto the operating table. Usually a nurse, a radiographer, a cardiac physiologist and one or two doctors are present in the room with you. When you are lying down you will be attached to a heart monitoring system (ECG).

The nurse will begin to give you the pain control medication and sedation using the cannula in your arm. An oxygen mask will be placed over your mouth and nose. The skin over the top of the right leg where you shaved will be exposed and cleaned with alcohol fluid. A sheet will be draped over you which will cover you from the neck to your feet and only the small shaved area will be exposed. Local anaesthetic will be injected into your right groin as the sedative begins to take effect. The nurse will remain with you throughout the procedure ensuring that you are as comfortable as possible. You will more than likely sleep through most of the procedure following the sedation that was given to you.

Once your skin in the groin is numb, one or two tiny punctures will be made with a needle into your vein. This will allow the insertion and movement of the catheters up into the heart under X-ray guidance. When the AV node has been found we will ablate it. We will check that you are free from pain at regular intervals during the procedure.

If a pacemaker has not previously been inserted then we will do this while you are still asleep. The skin on the chest, under the left collarbone, will be cleaned with alcohol fluid. Local anaesthetic will be injected into the skin. When the skin is numb a small cut will be made (about 1 inch in length). The ends of one or two pacemaker wires will be passed under the collarbone and into the vein that leads to the heart. X-ray is used to help guide the wires gently into the heart where they will remain permanently. The opposite ends of the wires, outside of the heart, will be attached to the pacemaker box (which contains the computer and battery of the pacemaker). The box with the wires attached to it will be placed deep under the skin and the cut will be closed with skin stitches. A dressing will be placed over the stitched skin.

When the procedure is complete the catheters will be withdrawn from the heart and removed from the groin. It is at this stage that you may start to wake up and feel us putting gentle pressure on the puncture sites. This is done for a few minutes to stop the bleeding. When the bleeding has stopped a small plaster will be placed over the puncture sites. From this point onwards we ask that you lie on your back for a few hours and avoid bending your legs, particularly the right leg as the groin punctures may still bleed. We will help you move back onto your bed from the operating table by sliding you on a sheet so that you don't need to bend your leg.

What happens after the procedure?

You will be returned to the ward where you were admitted. It is possible that you may not remember anything from the operating room and might only wake up fully when you are back on the ward. This is normal. The person who accompanied you to the hospital can visit you as soon as you get back to the ward. You may feel sleepy for the rest of the evening as the sedative continues to wear off. We can give you more pain relief medication if you have any pain.

Once you are back on the ward you should lie on your back for 2 hours and after this, if there is no bleeding from the groin, we will allow you to sit up for a further 2 hours. If all has gone well you will be able to walk 4 hours after the procedure. You can drink water (through a straw) within the first hour after the procedure and then you can eat and have other drinks after that as long as you are not too drowsy.

During the first 4 hours after the procedure you will be attached to a heart monitor and regular checks of your blood pressure and puncture sites will be carried out. Your doctor will come and talk to you about the outcome of your procedure and check your recovery. If you had been taking warfarin you will be asked to continue your warfarin (or other oral anticoagulation) in the evening after the procedure unless you have had a bleeding complication.

The following day you will have a chest X-ray to check the position of the pacemaker wire and to check that no air has escaped from the lungs. Your doctor will advise you about your medication and answer any questions you may have about the procedure.

You will be able to go home the following morning after your procedure if you are well enough to be discharged. A discharge letter with an updated list of your medication will be given to you to take to the GP. We will give you a supply of any new medication. One of the nursing team will discuss your medication with you again before you leave. You will be advised about the type of stitches that have been used during the procedure and when they need to be removed. We will make arrangements for a follow up consultation.

What can I expect when I go home?

What can I expect when I go home?

If your puncture site starts to ooze, then lie down to help slow the bleeding, and press firmly on the puncture site for 10 minutes. If the wound continues to bleed after 10 minutes of firm pressure, go to your nearest Emergency Department.

If your puncture site starts spurting a lot of blood, lie down and call an ambulance immediately.

You may notice a small pea-sized lump develop under the puncture to the skin – this is normal. If the lump becomes larger than this, becomes tender or starts to develop a redness or discharge, contact Ambulatory Care on 0121 371 3125.

You can have a shower the day after you get home, and can remove your dressing at this point. You will only need to put a dressing back on if the wound starts to bleed. Avoid taking a hot bath for 2–3 days as this could cause further bleeding.

What can I do when I get home?

Once you get home you can go about your normal routine but there are a number of activities that should be avoided after your procedure to allow the groin to heal and the pacemaker wires to attach firmly:

- Avoid lifting heavy objects for 7 days
- Avoid rigorous exercise for 5 days. We suggest walking if you wish to exercise
- The DVLA recommends that you do not drive for 7 days after a pacemaker insertion
- You should not fly within 7 days
- Your arm that is on the same side as the pacemaker should not be raised above your head for the first 6 weeks while the pacemaker wire attaches to the heart

You should advise the DVLA and your car insurance company that you have had a pacemaker inserted.

Most people are back to work within a week (it depends upon what job you do and how strenuous it is) and most are back to all their normal activities within 2 weeks.

If the stitches used to close the pacemaker wound are not dissolvable then the stitches will need to be removed by your GP or nurse about 10 days after the procedure.

What symptoms should make me seek urgent medical help?

If you experience any of the following then we urge you to contact your local hospital or GP:

- Increased swelling, pain or bleeding from the groin
- Increased shortness of breath
- Severe chest pain
- Increased swelling and pain over the pacemaker area
- Discharge from the pacemaker wound
- Fever and nausea

If these occur you may need to be admitted to hospital for tests and observation. Your local hospital or GP should be able to deal with these in the first instance. If you get admitted to another hospital we would be very happy to give any advice to the doctors that are treating you at the time and we encourage them to contact our team to let us know what has happened to you.

What are the possible complications of AV node ablation and pacemaker insertion?

Although this procedure can be considered a “keyhole” procedure, it involves the heart and unfortunately, sometimes things can go wrong. Common complications are not dangerous but can be uncomfortable for a period of time. Dangerous complications are rare. If something goes wrong you may need to stay in hospital for a few more days.

Common but not dangerous complications

Pain

Pain in the centre of the chest can occur during the ablation as a result of the heat produced by the catheter. Usually this is adequately controlled by the pain medication given to you before and during the procedure. The groin where the punctures were made can also be painful after the procedure. The shoulder and chest where the pacemaker has been inserted can be painful for a few weeks. Pain after the ablation can be controlled with paracetamol or anti-inflammatory medication such as ibuprofen.

Bleeding (haemorrhage)

A small amount of blood oozing from the groin and the pacemaker incision

straight after the procedure is common. Very rarely when the bleeding takes a little longer to stop we may need to push on these areas to stop the bleeding. By the time you are discharged the bleeding should have stopped.

Bruising and swelling (haematoma)

A small bruise may develop around the groin puncture and pacemaker sites. The bruises may increase in size and form a lump after you have been discharged. It may take up to 3 weeks to improve or disappear and the bruising may change colour as time passes, usually to green and yellow. If you are worried about your bruise then contact your GP who will be able to advise you.

Allergic reactions (anaphylaxis)

During the procedure some patients may develop a rash from the medication or from the monitoring stickers that have been placed on the skin. If this happens then we can give you medication during the procedure to counteract the allergic reaction.

Pacemaker wire movement (displacement)

The pacemaker wires may detach from the inside of the heart and when this happens the pacemaker will not work properly. A further operation will be needed to adjust the wires. The risk of pacemaker wire displacement is 1 in 100 (1%) and usually occurs within the first 6 weeks while the wires are becoming attached permanently to the heart.

Uncommon but more serious complications

Groin problems (haematoma and false aneurysm)

In about 1 in 200 (0.5%) of cases there is more bleeding than we would expect in the groin where we performed the punctures. We may need to place tight bandages or a pressure clamp to control the bleeding until it stops. This may be because the artery next to the vein was inadvertently punctured. The bleeding may also spread under the skin and form a blood clot making a lump under the skin. Very rarely an operation, in less than 1 in 1000 (0.1%) cases, is needed to repair the blood vessels in the groin. Although these groin problems are noticed and treated before you go home, a swelling can occur once you are back home. You will need to be seen by a doctor should this happen.

Blood around the heart (pericardial effusion)

Sometimes blood leaks out of the heart through a puncture made by one of the catheters or pacemaker wires. The blood accumulates around the heart. If the puncture does not seal off spontaneously and the blood leak is large then the blood must be removed. A thin tube is introduced through the skin in the

front of the chest using local anaesthetic and placed near the heart to drain the accumulated blood. This drain can be removed 24 to 48 hours later.

Occasionally the blood leak is noticed later when you are back on the ward and a drain will be inserted then. The risk of needing a drain around the heart is about 1 in 500 (0.2%).

Punctured lung (pneumothorax)

When the pacemaker wires are inserted underneath the collarbone there is a 1 in 100 (1%) risk that the lung underneath may be punctured. The punctured lung allows air to escape and accumulate around the lung. If the puncture does not seal off spontaneously and the air leak is large then the air must be removed. A thin tube is introduced through the skin on the side of the chest (under the armpit) using local anaesthetic and placed near the lung to drain the accumulated air. This drain can be removed 24 to 48 hours later. A punctured lung is diagnosed with a chest X-ray.

Infection

The pacemaker, the pacemaker wires or the area around the pacemaker may become infected after the pacemaker insertion. This can happen months after the procedure. If any infection occurs then both the pacemaker and the wires need to be completely removed and replaced with new ones. The risk of infection is 1 in 100 (1%).

Stroke

This is a very rare complication during AV node ablation and pacemaker insertion. It may occur if the AV node needs to be ablated in the left ventricle. It happens in less than 1 in 1000 (0.1%) cases and occurs because a small clot or a small bubble of air blocks the blood supply to a part of the brain. During the procedure small clots can form on the catheters or become dislodged from inside the heart when the catheters are in the left ventricle. The clots travel in the blood circulation to the brain.

Should you develop a stroke, in most cases, it will get better within 24 hours to a week. However, it can have permanent effects such as reduced mobility on the one side of the body or difficulty with speech. In some cases it may lead to coma or even death. If a stroke occurs we will ask stroke specialists to help with your treatment and recovery.

Death

The risk of dying from this procedure or from one of the above complications is less than 1 in 10,000 (0.01%). Although all the complications can be treated, in very rare cases the treatment may not be successful.

Making comments or complaints

We hope that you have no cause for complaint during your stay at the Queen Elizabeth Hospital, however, should you have any problems please do not hesitate to tell the nurse, and we will try to resolve the matter there and then.

Alternatively, the Patient Advice and Liaison Service (PALS) will be happy to resolve any problems, concerns or complaints that you might have. The contact details for PALS are printed at the end of this booklet.

How to contact us

Queen Elizabeth Hospital, Birmingham

Ambulatory Care Ward	0121 371 3115 0121 371 3125
Ward 304	0121 371 3049
Patient Advice and Liaison Service (PALS)	0121 371 3280
Cardiology Booking Clerk	0121 371 4037

Where can I get more information?

Arrhythmia Alliance	www.arrhythmiaalliance.org.uk
Atrial Fibrillation Association	www.afa.org.uk
The British Heart Foundation	www.bhf.org.uk
Age UK	www.ageuk.org.uk
British Cardiac Patients Association	www.bcpa.co.uk
DVLA Medical Enquiries	0300 790 6806 (car, motorcycle) 0300 790 6807 (bus, coach, lorry) 0845 850 0095 (fax)

Cardiology
Queen Elizabeth Hospital Birmingham
Mindelsohn Way, Edgbaston,
Birmingham B15 2WB
Telephone: 0121 627 2000
