

Electrophysiology (EPS) patient information



Working together to improve the diagnosis, treatment
and quality of life for all those affected by arrhythmias

Glossary

Atria The two upper chambers of the heart

AV node Part of the electrical pathway located between the atria and the ventricles

Catheter ablation The use of catheters to deliver energy into the heart to destroy abnormal tissues that may lead to arrhythmias

Ectopic beat These are extra beats arising from the atria or ventricles

Electrophysiologist A cardiologist who specialises in the electrical side of the heart, meaning the heart's rhythm

Supraventricular tachycardia (SVT) An abnormal heart rhythm

Ventricles The two lower chambers of the heart. The right ventricle pumps blood to the lungs and the left ventricle pumps blood around the body

Important information

This booklet is intended for use by people who wish to understand more about electrophysiology (also known as electrophysiological) studies. The information comes from research and previous patients' experiences and should be used in addition to the information given to you by your doctors, nurses and physiologists.

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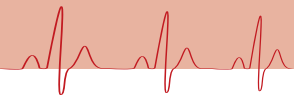
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How does the heart work normally?

The heart is a muscular pump that delivers blood containing oxygen to the body. It is divided into two upper chambers or 'atria', which collect blood returning via the veins, and two lower chambers or 'ventricles', which pump blood out through the aorta (main artery) and the lungs.

Normally the heart beats in a regular, organised way, at a rate of 60 - 100 beats per minute. This is because it is driven by the 'sinus node', a clump of specialised cells situated in the right atrium which emit electrical impulses.

These electrical impulses spread through the atria and then into the ventricles via a connecting relay-station (the 'AV node'). The sinus node controls the timing of the heart according to the needs of the body. An example of this is during exercise, when the heart rate speeds up.

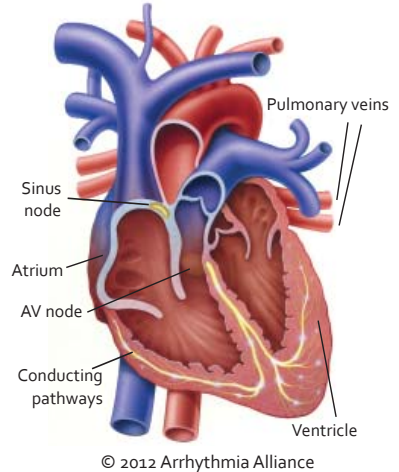
When the heart is beating normally like this, we refer to it as 'sinus rhythm'. In most cases an extra beat (ectopic beat), can trigger the short-circuit, and a fast heart beat. It can travel down an extra pathway and up the normal conduction system.

If this continues, palpitations can result. The heart can suddenly 'bump' then start to race, causing a fast pulse.

Why do I need an electrophysiology study?

An electrophysiology study is a procedure conducted by a heart rhythm cardiologist (electrophysiologist) in a hospital. Patients can be seen as a day case or an overnight stay. Electrophysiology studies test the electrical activity of your heart to find where an arrhythmia (abnormal heartbeat) is coming from.

The heart and normal conduction



These results can help you and your doctor decide whether you need medicine, an ablation, a pacemaker or an implantable cardioverter defibrillator (ICD).

Recording wires are carefully placed in the heart, through needle punctures into the veins. These recording wires are used to analyse the function of the heart's electrical system. It can enable your doctor to determine the cause or risk of abnormal heart rhythms and assist him/her in making decisions in relation to future treatment (if required).

What can happen if there is an abnormality in the electrical system of my heart?

If the abnormal heart rhythm comes from the upper chambers of the heart, this is known as supraventricular tachycardia or SVT. There can be different causes of an arrhythmia which are better studied with an electrophysiology study.

These types of heart rhythm disturbance are usually not life-threatening, but can cause unpleasant symptoms and interfere with your quality of life.

If the abnormal heart rhythm comes only from the lower, pumping chambers of the heart (the ventricles), it can be dangerous, particularly if it is associated with fainting, and especially if a patient already has a heart condition, such as a previous heart attack scar.

What does the procedure involve?

Before the study is performed you may be asked to stop taking some of your medications depending on your individual doctors preference prior to the procedure. You will also have some routine tests such as blood sampling, a physical examination and an ECG. Your doctor/nurse will see you ahead of admission (a pre-admission visit), to discuss details of the procedure, and any

risks and benefits that may be associated with it. You will be given the opportunity to ask questions before you sign a consent form for the procedure.

Your electrophysiology study will be performed in a cardiac catheter laboratory, a room which is similar to an operating theatre, equipped with x-rays. There will be a team of people present, some of whom you may have met before.

The doctor or electrophysiologist will carry out the procedure with the help of a physiologist who gives technical support, nurses who will look after you and assist the doctor, and a radiographer who will assist with the x-ray equipment.

An electrophysiology study is an invasive procedure which is usually performed using local anaesthetic, and small needle-punctures are used to access the heart via the veins. You may also be given some sedation, which makes you feel relaxed and sleepy.

During the study you will be required to lie flat and the local anaesthetic will be administered to your right groin and possibly in the side of your neck or upper chest. Some fine tubes will then be inserted into the vein where the local anaesthetic has been applied.

Fine wires or electrical recording catheters are then passed through the tubes and positioned within the heart. This is done with the guidance of an x-ray machine, therefore it is important that you tell your nurse or doctor before the procedure if you think you may be pregnant. This may delay your procedure.



These heart rhythm disturbances can be treated in a variety of ways and your doctor will discuss treatment options with you, either before or after he/she has performed your electrophysiology study.



Once the wires are positioned within the heart the doctor is able to record electrical activity from specific areas of your heart. Extra beats are also delivered using an external pacemaker, which may bring on your palpitations. This is necessary to see where the heart rhythm is coming from. It is possible to put the heart back into normal rhythm within a few seconds, by delivering some extra beats. Electrical signals produced by your heart will be picked up by the special catheters and recorded. This is called cardiac mapping.

The procedure should enable the doctor to detect any abnormalities in the electrical system of your heart, and normally takes between 45 and 60 minutes.

Once the procedure is over, the wires and tubes will be removed and the nurse or doctor will apply some light pressure over these areas for a few minutes to stop any bleeding. You will then be transferred back to the ward where you will be asked to rest in bed for two to four hours. However, in some centres, under certain conditions, your electrophysiologist may have talked to you about proceeding directly to a catheter ablation treatment immediately after the electrophysiology study is completed, and the number, type and location of extra pathways in your heart have been demonstrated.

The reason for proceeding directly will be the desire to avoid having to go through a further similar procedure all over again. If ablation is being contemplated after the study, this will have been fully explained to you in advance, and you will have been asked to consent to the procedure and to sign that you have understood all the risks and benefits fully. There is further information on radiofrequency catheter ablation available in the Arrhythmia Alliance booklet: Catheter ablation for cardiac arrhythmias.

What are the benefits and risks associated with the electrophysiology study?

The benefit of having an electrophysiology study is that it can enable your doctor to determine the cause or risk of any abnormal heart rhythms and assist them in making recommendations in relation to your future treatment (if required).

There is no procedure in medicine that is completely risk-free and an electrophysiology study is no exception, although it is very safe.

The risk of any serious complications occurring during the study is less than 0.1%. Your doctor or nurse will discuss this with you in more detail before the procedure is performed but the most common risks are arrhythmias, blood clots, and small groin injury or infection. If a catheter ablation procedure is done after the electrophysiology study, the additional risks will have been explained in full.

How long will I have to stay in hospital?

Most people recover quickly from the procedure and feel well enough to go home later on the same day. However, your doctor may want to initiate further treatment while you are in hospital depending on the findings of your study. This will be discussed with you after your procedure. You should be able to carry on with normal activities the following day, but avoid heavy lifting for about two weeks afterwards. If a catheter ablation procedure is done after the electrophysiology study, you may stay in hospital for one night.

DVLA restrictions apply if your doctor goes on to perform an ablation procedure. However if your arrhythmia causes incapacity or is likely to cause incapacity (for example fainting) then there is a driving restriction until your doctor has treated this. Please discuss this with your doctor. It is recommended to rest the groin area and not to drive for two days.

Following the electrophysiology study it is quite common to be aware of your own heartbeat, even in normal rhythm.

Some people are aware of extra or 'missed beats'. Try not to worry too much about these symptoms. They usually settle down with the passage of time.





Arrhythmia Alliance

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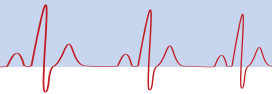
Working together
to improve the
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all those affected by
arrhythmias

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Please remember that this publication provides general guidelines only. Individuals should always discuss their condition with a healthcare professional.

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