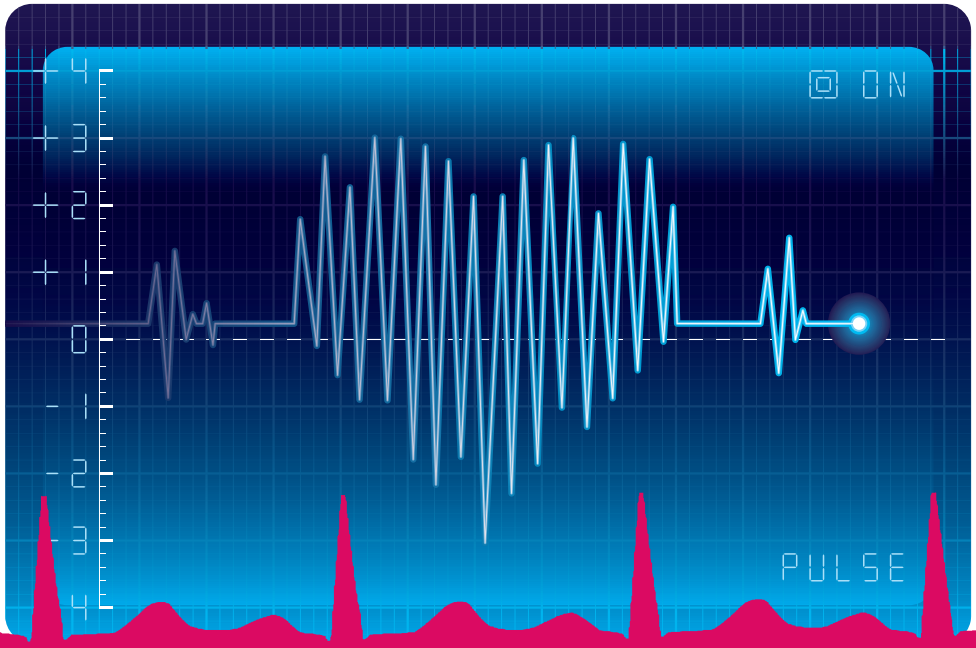
Arrhythmia Alliance

The Heart Rhythm Charity

Promoting better understanding, diagnosis, treatment and quality of life for individuals with cardiac arrhythmias



Electrophysiology Studies (EPS) Patient Information

www.heartrhythmcharity.org.uk

Introduction to Electrophysiology Studies (EPS)

This booklet is intended for use by people who wish to understand more about EPS. The information within this booklet comes from research and previous patients' experiences.

This booklet offers an explanation of EPS. Additional information can be sourced from the provided websites.

Arrhythmia Alliance (A-A) is a coalition of charities, patient groups, patients, carers, medical groups and allied professionals.

These groups remain independent, however, work together under the A-A umbrella to promote timely and effective diagnosis and treatment of arrhythmias.

A-A supports and promotes the aims and objectives of the individual groups..

Contents

Arrhythmia Alliance patient booklets are reviewed annually.
This booklet will be next updated December 2010,
if you have any comments or suggestions
please contact A-A.

Glossary of terms

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 is to pass energy into the heart to cauterise abnormal tissues that may lead to arrhythmias

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

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

SVT
Supra-Ventricular-Tachycardia 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.

Why do I need an electrophysiology study?

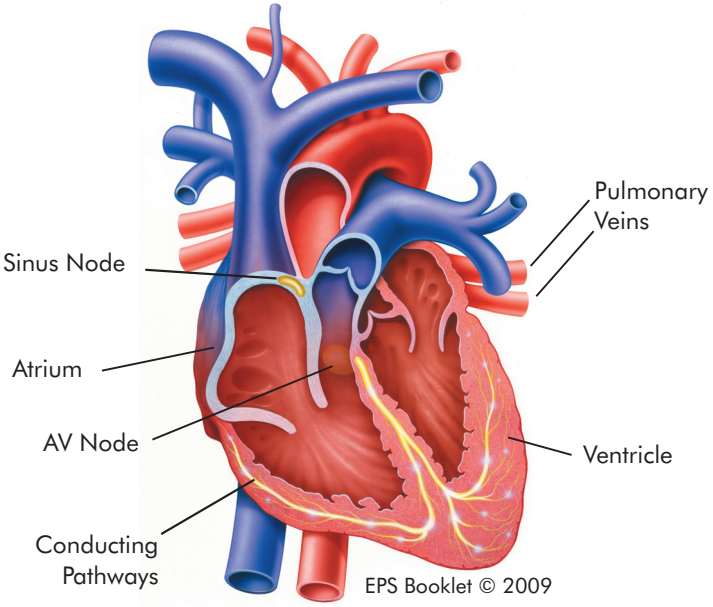
An electrophysiology study is a procedure conducted by a heart rhythm cardiologist in hospital. Patients can be seen as a day case or an overnight stay. Recording wires are carefully placed in the heart, through needle punctures into the veins. These recording wires are used to analyse the function of the heart's electrical system, and to diagnose abnormal heart rhythms. It can enable your doctor to determine the cause of the abnormal heart rhythms and assist him/her in making decisions in relation to future treatment (if required).

How does the heart work normally?

The heart is a muscular pump which 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 atria which emits electrical impulses.

The heart and normal conduction



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" or "normal sinus rhythm".

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

There is normally only one electrical connection between the atria and ventricles, the AV node. Some people are born with extra pathways that can lead to short circuits causing abnormal fast heart rhythms. However, sometimes this pathway can be bypassed due to extra electrical connections or pathways, or extra pathways combine with the normal pathway and result in a short-circuit. These short-circuits can result in a rapid heartbeat. Often these pathways are present at birth, but may only start to work in adulthood. At other times, or in other patients, heartbeats arise from a "rogue" or "ectopic" source, rather than the normal mechanism. If such beats arise early in the normal cycle of a heartbeat, they can give rise to sensations of extra beats, or missed beats.

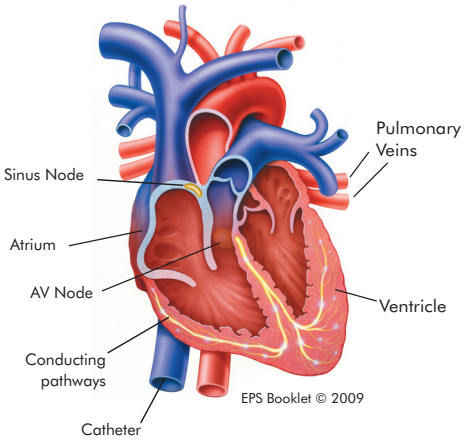
An extra beat (ectopic beat), can trigger the short-circuit, and a fast heart beat. It can travel down the pathway and up the normal conduction system. If this continues, palpitations can result. The heart can suddenly "bump" then start to race, causing a fast pulse. If the abnormal heart rhythm comes from the upper chambers of the heart, this is known as Supra-Ventricular Tachycardia or SVT.

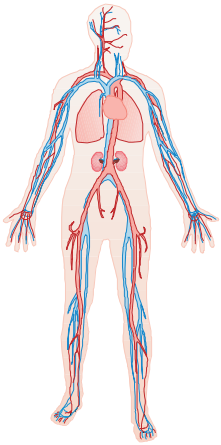
This type of heart rhythm disturbance is usually not life-threatening, but can cause unpleasant symptoms and interfere with your quality of life. If the abnormal heart rhythm comes only from the lower, pumping chambers of the heart (the ventricles), it can be dangerous, particularly if it is associated with fainting, and especially if a patient already has a heart condition, such as a previous heart attack scar.

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.

What does the procedure involve?

Before the study is performed you may be asked to stop taking some of your medications for up to two weeks prior to the procedure. Your doctor/nurse should give you specific advice about this. You will also have some routine tests such as blood sampling and a physical examination. Your doctor/nurse will visit you, or 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 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.

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.

The procedure should enable the doctor to detect any abnormalities in the electrical system of your heart, and normally takes approximately 45-60 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 2-4 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.

There is further information on radiofrequency catheter ablation available in another patient leaflet. 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.

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 of any abnormal heart rhythms and assist the patient in making decisions 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 1%. Your doctor or nurse will discuss this with you in more detail before the procedure is performed. 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 whilst 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 are likely to stay in hospital for one night.

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.

Useful websites

A list of useful sites can be found at:- www.heartrhythmcharity.org.uk This list is not exhaustive and it is constantly evolving. If we have excluded anyone, please accept our sincerest apologies and be assured that as soon as the matter is brought to the attention of the Arrhythmia Alliance, we will quickly act to ensure maximum inclusiveness in our endeavours.

If you wish to contact us direct please phone on 01789 450 787 or email:
info@heartrhythmcharity.org.uk

Further reading

The following list of Arrhythmia Alliance Patient booklets are available to download from our website or to order please call 01789 450 787.

- Arrhythmia Checklist - Could your heart rhythm problem be dangerous?
- Atrial Fibrillation (AF)
- AF Checklist
- Blackout Checklist
- Bradycardia (Slow Heart Rhythm)
- CRT/ICD
- Catheter Ablation
- Catheter Ablation for Atrial Fibrillation
- Drug Treatment for Heart Rhythm Disorders (Arrhythmias)
- Electrophysiology Studies
- Exercising with an ICD
- FAQs
- Genetic Testing for Inherited Heart Disorders
- Highlighting the Work of Arrhythmia Alliance
- ICD
- Implantable Loop Recorder
- Long QT
- National Service Framework Chapter 8
- CRT/Pacemaker
- Pacemaker
- Palpitation Checklist
- Remote Monitoring for ICDs
- Sudden Cardiac Arrest
- Supraventricular Tachycardia (SVT)
- Tachycardia (Fast Heart Rhythm)

Please feel free to discuss any concerns with your doctor, physiologist or specialist nurse, at any time.

Please help us to improve services for all those affected by arrhythmias and to save lives by making a donation today. Please complete the donation form below and return to P.O Box 3697, Stratford upon Avon, CV37 8YL or visit www.heartrhythmcharity.org.uk and click the donate icon.

Membership is free to individuals, however, if you would like to make a DONATION please complete and return.

I would like to make a donation to A-A and enclose:	£
I have made a donation to A-A via PAYPAL at www.arrhythmiaalliance.org.uk to the sum of:	£
I have arranged a standing order from my Bank/ Building Society Account to A-A, (min amount £10p.a.)	£
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Standing Order Authority

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Please Pay: A-A, Account: 02685818 Sort Code: 30-98-26, Lloyds TSB Plc, 22 Bridge St, Stratford upon Avon, CV37 6AG

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Sort Code:	Signature:
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Arrhythmia Alliance

The Heart Rhythm Charity

Executive Committee

endorsed by DH Department of Health

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Please remember these are general guidelines and individuals should always discuss their condition with their own doctor.

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