

Patient Information

Cardiology

Electrophysiological studies and ablation treatment

This booklet aims to:

- Give you an understanding of how your heart and its electrical system work
- Explain why you need electrophysiological studies and any treatment
- Provide you with information you will need before, during and after your admission

Please read the booklet before your admission and then keep it as a handy reference.

If you have any concerns or queries, remember that help is only a 'phone call away.



Patient Information

Contacts

Below are the contact numbers for all the cardiology departments of the hospitals in the network.

Your procedure will be done at UHCW either the Coventry or Rugby site.

At UHCW we work in close collaboration with Dr. Shamil Yusuf (Heart of England NHS Foundation) and Dr. Will Foster (Worcester Royal Hospitals). We carefully plan our lists. Although we will attempt at list you with the consultant you have seen, this may not always be possible.

University Hospitals Coventry and Warwickshire NHS Trust:

024 7696 4000

Arrhythmia Nurse Specialist: 024 7696 4794

General Cardiology Ward 10: 024 7696 5637

George Eliot Hospital NHS Trust, Nuneaton: 024 7635 1351

Cardiology Day Unit: 024 7696 5661

Cardiology Specialist Nurse: 024 7686 5195

South Warwickshire Hospitals NHS Foundation Trust: 01926 495321

Cardiology Unit Manager: 01926 495321

Secretary contact details:

To contact the Waiting list-coordinator for procedural dates: 024 7696 5767

Professor Osman, Professor Dhanjal, Dr. Panikker and Dr Yusuf secretary:
024 7696 5668

Dr. Will Foster's secretary (Worcester Royal Hospitals): 01905 760217

You will find other useful telephone numbers and websites at the back of this booklet.

Patient Information

Your heart

The heart is a strong hollow muscle. It's about the size of a fist and is found in the centre of the chest and is tilted to the left.

The heart beats throughout your life. It usually beats between 60 to 90 times per minute.

The heart is divided into two sides – left and right. It has four chambers. The two upper chambers are called the atria and the two lower chambers are known as the ventricles.

The job of the heart is to pump blood, oxygen and nutrients to all parts of the body.

When we breathe in we take in oxygen. Oxygen is vital to keep all living tissues healthy and working well. The oxygen enters our blood, and the left side of the heart pumps the blood around our body through arteries. These deliver oxygen to the tissues, muscles and organs.

As the tissues use the oxygen, they make carbon dioxide. This is removed in the bloodstream. The carbon dioxide is taken to the right side of the heart to be pumped to the lungs. In the lungs, we breathe out the carbon dioxide and breathe in vital oxygen. This is a continuous process.

The electrical system of the heart

The pumping mechanism of the heart is controlled by electrical signals. These signals are produced in the heart's natural pacemaker. This is called the sinus or sinoatrial node (SA node).

The SA node is found in the upper right chamber of the heart. The SA node is the power source that stimulates your heart to beat properly. This allows the blood to travel out of the heart and travel around the body.

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Usually, electricity flows through the heart in a regular pattern. This lets the chambers of the heartbeat efficiently. Each electrical impulse from the SA node causes the heart to beat.

Why do I need electrophysiological studies?

Your symptoms and heart tracings suggest the electrical signals in your heart are not working properly. You were referred to see the consultant electrophysiologist (a specialist cardiologist).

You may be suffering from one of the following conditions:

- Supraventricular tachycardia (SVT)
- Wolf-Parkinson-White syndrome (WPW)
- Atrial flutter
- Atrial fibrillation
- Ventricular tachycardia

These conditions result in abnormal heart rhythms known as arrhythmias.

Your consultant will have reached a diagnosis as a result of previous tests you will have had. They will be happy to discuss this with you.

Whatever the specific diagnosis, your heart will sometimes be beating abnormally. You may also suffer episodes of:

- Palpitations
- Dizziness
- Breathlessness

Your consultant will have explained that it would be better for you to undergo electrophysiological studies. This decision is based on your initial investigation and tests. Electrophysiological studies are done to determine the origin of your arrhythmia and to decide on the best form of treatment for you.

What are electrophysiological studies?

Electrophysiological studies (EPS) involve introducing wires (electrodes) into the heart. This is done through a vein in your right groin.

The electrodes will measure the activity of your heart's electrical system. They will map out any fast or irregular heartbeats. The electrodes will usually be able to provide information about which area(s) of your conduction system is causing the symptoms you are experiencing.

This procedure may take up to one hour.

Radiofrequency catheter ablation therapy

Once the area(s) in your heart responsible for your arrhythmia has been identified, the specialist will most likely proceed straightaway to radiofrequency ablation therapy. The doctor will proceed if they feel that this technique will benefit your heart condition.

A catheter is used to destroy any abnormal conduction tissue. This restores your heart to its normal rhythm. We can either use radiofrequency ablation or cryoablation (freezing).

You will have been asked for your consent before the start of your procedure.

Which procedure is done for which arrhythmia?

We provide for a number of different types of electrophysiology studies and ablation procedures. Please read carefully for the one which applies to you.

SVT (Supraventricular tachycardia) and WPW (Wolff-Parkinson White syndrome)

A tough piece of heart tissue usually separates the upper and lower chambers of the heart.

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These arrhythmias result from a soft piece of tissue that connects the upper chambers to the lower chambers. This soft tissue allows electrical impulses to bypass the normal conduction pathways. This results in palpitations.

EPS identifies the exact location of this soft tissue and the ablation procedure will destroy it.

To let the doctor identify the exact location, they will stimulate your heart to produce palpitations during your procedure. There is no need to worry about this - you are in a safe environment, and you will only experience the palpitations for a short period of time.

Atrial flutter

Most atrial flutters result from a tough piece of tissue in the right upper chamber of the heart. This short circuits and causes a 'flutter circuit'.

You do not need to be in atrial flutter on the day for the procedure to go ahead. The doctor already knows which piece of tissue is responsible.

The doctor can draw a small line across this area with the ablation catheter. This will destroy the abnormal circuit and prevent further atrial flutter.

After the procedure, you will need to continue to take your blood thinning medication as before. This should be done until you are seen in the outpatient clinic.

If you are taking warfarin:

It is important that your blood tests for warfarin (INR) are above 2 for four consecutive weeks before you come for the procedure.

Please attend for an INR check 1-2 days before so your procedure is not delayed on the day.

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If you are taking other blood thinners:

You may also be on one of the other types of blood thinners (rivaroxaban, dabigatran, apixaban or edoxaban). **You need to make sure you have taken these every day as prescribed in the 4 weeks leading up to your procedure.**

You will need to continue these when you come in for the flutter ablation procedure. **Do not stop these as this risks us cancelling your flutter ablation on the day**

Atrial fibrillation

This procedure involves electrically isolating the pulmonary veins in the left upper chamber of the heart. You do not need to be in atrial fibrillation at the time of the procedure.

If you are taking warfarin:

Your INR test must be above 2 for four consecutive weeks before your procedure.

If you are taking other blood thinners:

If you are taking the blood thinners dabigatran, rivaroxaban, apixaban or edoxaban, you need to make sure you have taken these every day as prescribed before your procedure.

After the procedure, you will need to continue to take your warfarin and your anti-arrhythmic drugs until your cardiologist decides whether or not it is safe to stop them.

Atrial tachycardia

This involves the study (for normal heart structure) and mapping the upper chambers of the heart to identify the specific tissue responsible for the arrhythmia. Identifying the tissue can allow the area to be ablated.

Ventricular tachycardia (for normal heart structure)

This procedure involves the study of the lower chambers of the heart to identify which area is causing the arrhythmia. The area may be ablated to prevent further arrhythmia. Identifying the tissue can allow the area to be ablated.

The tissue is ablated through a procedure called Complex VT ablation. This is done for people with structural abnormalities in their heart and people with ICD's.

Complex VT ablation is a much longer procedure. We study the areas of the heart which are responsible for this VT and ablate where the consultant thinks we need to.

What are the risks associated with the EPS procedure?

As with all invasive procedures that involve inserting something temporarily into the body, there are some risks. It is our duty as part of the consent process to make sure that you are fully aware of them.

Please do not hesitate to ask if you have any questions before you sign the consent form.

At the time of the procedure, there may be:

- Bleeding from the wound in the groin where the catheter and electrodes are inserted
- Injury to the veins used to insert the catheter and electrodes
- Reaction to the drug used to sedate you
- Damage to the conduction tissue which could lead to having a permanent pacemaker fitted (1 in 100 risk of this).

During the procedures to correct your arrhythmia, you may need a cardioversion. This is a procedure where the heart is given a jolt to bring it into normal rhythm. You will be given extra sedative for this, so you will not have any recollection of the cardioversion.

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After the procedure, there may be:

- Excessive bruising
- Blood clots that can cause an embolism
- Pericardial effusion –fluid builds up in the sac (pericardium) which covers the heart. There is a 1-2% risk of this.

We will do an echocardiogram to check for this. In a small number of cases, we may have to drain this fluid to relieve the pressure on the heart.

Complications are rarely life threatening. But you may have to stay in hospital for a little longer than is usual for this procedure.

Before admission

Please read this section carefully so that you know what to do before you come into hospital.

If you are pregnant or suspect that you may be pregnant, please let us know before your admission. It may not be advisable to proceed with your EPS during your pregnancy.

You will be given instructions at your pre-admission appointment, or over the phone. Below is the general advice we give. In certain cases we may slightly change this. If this happens will advise you.

Any anti-arrhythmic drugs that you are taking will need to be stopped 4 days before your admission. This is so that we can induce your palpitations and study your heart's conduction system more easily.

If you are on warfarin, please bring in the booklet with the record of your blood results (INR).

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Please note, warfarin is to be continued for:

1. Patients who are listed for an atrial flutter ablation
2. Patients who are listed for an atrial fibrillation ablation

What blood thinning options are available other than warfarin?

Direct anticoagulants (DOACs)

These are an alternative blood thinning medication that need no INR blood monitoring. They are usually a fixed dose tablet that are taken once a day or taken twice a day.

Patients who are listed for an atrial flutter ablation (CTI) and are on direct anticoagulants:

- Please continue to take your medication as usual. If you stop your blood thinning medication we will most likely need to cancel your procedure on the day.

Rivaroxaban, dabigatran, apixaban or edoxaban

If you are going to be listed for an atrial fibrillation ablation and you are on one of the above medications, you will be required to consistently take your medication. Only stop as directed below:

- Patients taking dabigatran twice a day tablets - please take your evening tablet no later than 6pm and stop on the day of procedure.
- Patients taking rivaroxaban or edoxaban – please stop on the day of procedure.
- Patients taking apixaban twice a day tablets - please take your evening tablet no later than 6pm and stop on the day of procedure

For atrial fibrillation

If you have a mechanical heart valve replacement, please discuss alternative blood thinning medication with the doctor who will be doing your procedure before you come in.

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Information about your admission

Length of stay

This will depend on the area where your ablation has been done and also if you have any complications.

Most procedures are done as a day case.

Transport

Please do not drive yourself to hospital. Arrange for someone to bring you in and collect you, because you will not be allowed to drive for a short time after your procedure.

The DVLA does not allow you to drive for 2 days after an ablation. But because your heart is accessed through the blood vessels in the groin, we recommend not driving for 1 week.

If you do not have someone who can help you, please ring your consultant's secretary for advice as soon as you receive this information.

Items to bring in

Bring an overnight bag with toiletries, nightwear and slippers in case you need to stay overnight. Please bring a dressing gown in.

Bring **all** your medication with you in their original containers, as the doctors and nursing staff will need to see them.

If your procedure is being done at our mobile laboratory at the Rugby St Cross Hospital, there is no cash machine and the car parking machines will only take coins.

Please remove all make-up, nail varnish and false nails before arriving. We need to be able to see your natural skin colour during and after your procedure.

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Please do not use any bath oil or moisturising body lotions/creams. This may cause difficulty in sticking the ECG pads onto your skin to monitor your heart during the procedure.

Valuables

For your own safety, **do not** bring any valuables or large amounts of money into the hospital.

Please remove all jewellery (except wedding rings) before coming into hospital.

Preparing for your admission

You will be given an admission time depending on where you are on the doctor's list.

Do not eat for 6 hours before your admission time. You may have sips of water until you come to the hospital.

Take your usual morning tablets, apart from any **diuretics (water tablets)** if you normally take these.

Don't forget that you have stopped taking your anti-arrhythmic drugs for the four days before your admission.

All the other tablets you usually take in the morning should be taken when you have a light breakfast.

If you are on insulin, take half your normal morning dose with your breakfast.

What happens when I arrive at the hospital?

When you arrive

- Report to the Main Reception area on the ground floor to book in. Show the receptionist your admission letter. You will be given a registration form and directions to the Cardiology Day Unit. The Unit is on the first floor of the East Wing of the hospital.
- On arrival at the ward, you will be allocated a bed or trolley bed.
- You will be met by a nurse or support worker who will be looking after you. They will help you get ready for your procedure.
- You will be fitted with a wristband that will have your name on it and your unique hospital number. This will be used to identify you during your hospital stay. Please do not remove it until you are ready to go home.
- You will be asked some questions and have your blood pressure and pulse recorded. You will have the opportunity to ask questions.

Before the procedure

- Blood tests will be taken to check your blood clotting (INR) if you are on warfarin.
- A doctor will come and see you to explain the procedure. If there is anything that you don't fully understand, please ask the doctor at this time.
- They will then ask you to sign a consent form if you have not already done so. This states you agree to have the EPS procedure and radiofrequency ablation if we are able to proceed.
- A small plastic tube will be inserted into the back of your hand, or in your arm, and taped into place. This allows any necessary drugs to be given.
- 30 minutes before your procedure, the nurse will bring you a hospital gown. Wear easy to remove clothing when you come in to hospital so it is easier when the time comes for you to change.
- It is advisable to empty your bladder before going for your procedure. Please ask for help if you need it.

The procedure

Cardiac Catheter Laboratory

- The insertion of the electrodes has to be carried out under sterile conditions. The procedure is done in the Cardiac Catheter Laboratory. The laboratory is a clinically clean room, equipped with an X-ray camera facility, monitoring equipment and a narrow table.
- You will be asked to lie down on the narrow table, with help if necessary. The area in your groin will be cleaned with a skin disinfectant solution before covering you with sterile drapes.
- You will be given a local anaesthetic to numb the groin. You will also be given a sedative drug given via a vein in your arm or hand, to make you feel relaxed and comfortable.

Electrophysiological studies

- Your electrophysiologist will place the wires via the veins up into the heart with the help of X-ray pictures. These will allow the doctor to study your heart conduction and identify the area that needs treating.
- The doctor will stimulate the heart to induce the rhythm disturbance via the electrodes that are in place, or by using drugs. You will become aware of the palpitations. But this is done in a controlled environment - the doctor has drugs available to bring the heart back into normal rhythm. The doctor only needs a few minutes of palpitations to identify where the area is that will need treating.

Ablation treatment

- Once identified, the doctor may use **radiofrequency ablation therapy or freeze the tissue (cryo)**. This is to destroy the tissue responsible for the rhythm disturbance.
- An ablation catheter is passed along the veins into the heart through the same puncture wounds.
- When in place, the catheter will deliver high energy to or freeze the tissue responsible for the arrhythmia. This will destroy it.
- You will be given morphine to relieve any discomfort during the ablation.

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After the procedure

- When the procedure is finished, the electrodes are removed. Firm pressure is applied to the groin (to prevent excessive oozing from the veins used). A clean dry dressing is applied. No stitches are required.
- You will then be returned to the ward.

Returning to the ward

- Your ward nurse will check the pulse in your feet. They will also check your wound sometimes to look out for any signs of bleeding or swelling.
- You will be connected to a heart monitor while you are in bed.
- Please keep your leg relaxed, still and straight while you are resting. This reduces the risk of bleeding or excessive bruising in your groin area.
- It is wise to rest for a couple of hours after your procedure. Most patients prefer to sleep for a while after their procedure, due to the effects of the sedative.
- Your blood pressure will be taken at intervals during this time.
- If you feel the urge to cough or sneeze, put your hand over the dressing in your groin and apply pressure. This will prevent any strain on the area which could cause bleeding from the insertion site.
- You may find that you are more aware of your heartbeat. This usually settles. Please let the staff know if you are worried, so that they can advise you.
- You will have a 'quick look' echocardiogram to check for any fluid around the heart.

When can I eat after the procedure?

- You will be able to eat and drink as soon as you feel like it, unless you need further tests.

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When can I go home after the procedure?

- You will be able to go home when the clinical staff are happy that you are recovering well, either on the same day or the day after.
- You must have someone to collect you and drive you home. For your own safety you must not use public transport to take you home.

What medication do I need to take after the procedure?

- The doctor will let you know if you need to restart your anti-arrhythmia medication after the procedure.
- If you have had SVT, then you will need to take Aspirin 150mg for 6 weeks after the procedure.
- If you had an ablation for atrial flutter then you will need to continue to take your blood thinning medication. We will review this when you come for your clinic check-up.

Caring for yourself at home

You may find that you feel tired for a couple of days. This is because you are recovering from your procedure and particularly from the effects of the sedation.

There will be some bruising and slight swelling around the punctures. But it should not be excessive and the area should not ooze a lot or feel hot.

If you have any undue swelling in the groin, or bleeding from the insertion site, please contact:

Ward 21 - 024 7696 5637/ 024 7696 5774

If your insertion site bleeds heavily, apply direct pressure to the groin and call an ambulance immediately.

Use gentle, unperfumed soaps when you have a bath or shower. Don't use any talc, body lotions or deodorants until the area is fully healed. Pat the area dry with a soft clean towel.

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Don't do any heavy lifting for at least 2 weeks after you return home. This includes carrying heavy shopping bags or moving furniture.

Let your wound heal properly before you go back to your sporting activities.

The heart rhythm after ablation

- Many people are aware of their own heartbeat, even in normal rhythm.
- Some people are aware of extra or "missed beats".
- People report this as lasting a few seconds, and feeling as if their palpitation was about to start again; but did not.
- Some people report a discomfort or tight sensation in the chest area

Try not to worry about these symptoms. It is common to feel these for the first month or so after the ablation. This is usually just everything settling down after the procedure.

If you experience palpitations or a racing heartbeat lasting for a prolonged period, report this to your doctor.

You will get an outpatient appointment to review your progress.

Driving

DVLA restrictions from driving are for 48 hours after your procedure. But it may depend on your personal level of wound healing and fitness if you will be safe to drive then. Because of your groin wound, we recommend that you do not drive for one week.

If you hold a PCV/LGV licence, you must inform the DVLA that you have had the procedure. **You will not be able to drive your work vehicle for at least 6 weeks.**

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Let your insurance company know that you have had the procedure.

If you do not feel safe, then don't drive. Your insurance company will not cover you in the event of an accident.

Work

- We recommend that you take at least one week off to recover from your procedure.
- It may be necessary for you to take more time off, especially if you have a manual job.
- You will be able to get a sick note from your GP.

Flying

- You can fly 4 weeks after your procedure.
- Should you need to fly before this, seek the advice of your consultant or specialist nurse.
- Check with your airline and travel insurance company to make sure they have no restrictions to you flying.

When will I be back to normal?

- Most people recover quickly and can return to their normal activities within a day or two.
- Keep any exercise at a low level for at least a week after the ablation. Gradually build up to your normal routine.
- Avoid any manual lifting for 2 weeks.

Outpatient clinic

You will receive an appointment to come to the arrhythmia clinic in due course.

If you have any questions or concerns, please let the staff know when you visit.

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If you have any immediate concerns, please contact the arrhythmia nurse specialist on 024 7696 4794 (please leave a message and contact number).

Drugs

Your consultant or the arrhythmia nurse specialist will be happy to discuss your medication with you if you have any questions or concerns.

Advice for patients and carers

If you want any further information, below is a list of useful email addresses or telephone numbers to assist you:

Arrhythmia Alliance

PO Box 3697, Stratford upon Avon, Warwickshire, CV37 8YL

01789 450 787

www.arrhythmiaalliance.org.uk

British Heart Foundation

Greater London House, 180 Hampstead Road, London NW1 7AW

02075 540 000

Heart Information Line: 03003 303 311

www.bhf.org.uk

NHS Direct (health advice and information)

0845 46 47

www.nhsdirect.nhs.uk

We hope that reading this booklet has been helpful and given you an understanding of what will happen during your hospital admission.

If you have any concerns, please contact the staff involved in your care. You can find their number at the [beginning of this booklet](#).

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This booklet was an initiative of the Cardiovascular Network and has been regularly updated by the staff and consultants at University Hospitals Coventry and Warwickshire.

With special thanks to Professor Faizel Osman and Dr. Martin Been.

Particular thanks go to Helen Eftekhari, Arrhythmia Nurse Specialist, UHCW, for all her advice and assistance.

The Trust has access to interpreting and translation services. If you need this information in another language or format, please contact 024 7696 5637 and we will do our best to meet your needs.

The Trust operates a smoke free policy.

Did we get it right?

We would like you to tell us what you think about our services. This helps us make further improvements and recognise members of staff who provide a good service.

Have your say. Scan the QR code or visit:

www.uhcw.nhs.uk/feedback



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