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Hospital for Children
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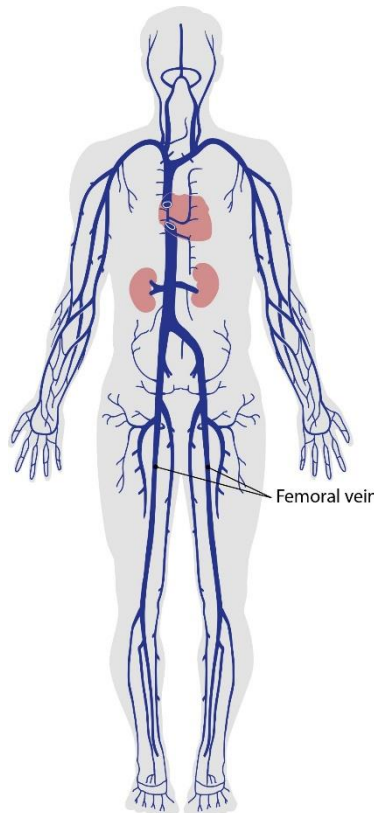
What is an electrophysiology study and why do I need one? Information for young people

An electrophysiology (EP) study is used to look at the electrical signals making your heart pump blood around the body. The heart muscle sends out an electrical signal every time your heart beats. Usually you won't feel it, but if you have an abnormal heartbeat (arrhythmia), you might sometimes feel your heart fluttering or pounding. An EP study lets doctors to look at the electrical signals your heart muscle is making so that they can work out how to control your abnormal heartbeat using a method called ablation. This information sheet from Great Ormond Street Hospital (GOSH) describes electrophysiology studies and ablation and what to expect when you have one.

An electrophysiology study or EP study for short is a keyhole procedure where the doctor puts a catheter (thin, soft, plastic tube) into a vein at the top of your leg and threads it through to your heart. Then the doctor can measure the electrical signals to see if there are any abnormal ones causing your arrhythmia or racing heartbeat and if needed, treat the problem during the same procedure.

Are there any other tests to show this?

An electrocardiogram (ECG) also measures the electrical signals but not in as much detail. If you only have an abnormal heartbeat occasionally, an ECG might not be at the right time to show it. During an EP study, the



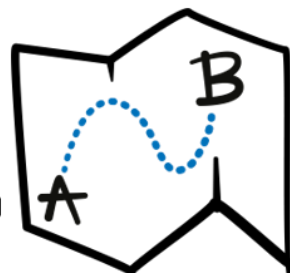
doctor can make your heartbeat faster so it's easier to find the abnormal signal.

Usually, the results of both an ECG and an EP study help the doctors decide what treatment would suit you best.

Getting ready

You will see a doctor or a nurse practitioner at the clinic and they will explain the EP study and/or ablation in detail and answer any questions you or your parents might have.

Most EP studies at GOSH are done when you're under a general anaesthetic. This makes it much more comfortable and easier for you to lie still while the study is happening.



A few days before the EP study you might need to come for a pre-admission appointment, or this may be done over the phone. They will check that you understand what will be happening and when to stop taking your medicines.

You'll need to stop eating and drinking for a few hours before the study is due to start so the anaesthetic is as safe as possible. We will tell you the last times you can have something to eat and drink during your pre-admission appointment.

The day of the EP study and/or ablation

We try to do most EP studies as a day case, which means that you come to GOSH in the morning and can usually go home that evening, without having to stay in hospital overnight. If you have an EP study in the afternoon then you might need to stay overnight and will go home early the following morning.

Your admission letter will tell you what time to come to Walrus Ward (Cardiac Day Care). If you haven't signed it already, a doctor will explain the procedure again and ask you and your parents for permission to carry out the procedure – this is called consent. An anaesthetist (specialist doctor) will also visit you to explain about the anaesthetic.

Your nurse will check that you are ready for the EP study and/or ablation and help you into a hospital gown before taking you to the anaesthetic room. The anaesthetist will give you a medicine so you can't feel anything or know what is happening with either a mask or a small needle in the back of your hand.

What happens next?

The first thing the doctor will do is the EP study followed by ablation if you need it.

EP study

Once you are under anaesthetic, the doctor will stimulate your heart to cause your abnormal

heartbeat and measure the electrical signals from various areas of your heart. They will do this using the long catheters that will be threaded through the vein in your leg up into your heart. These signals will identify the problem with your heart rhythm.

Ablation

If the abnormal heartbeat needs treatment, and it is starting in a safe part of the heart, the doctor will use either heating (radio frequency ablation) or freezing therapy (cryoablation) on the affected area, which should stop the abnormal signals.

Ablation works by using a targeted beam of energy to destroy the tissues causing the abnormal signals. Radio frequency (RF) ablation heats the area causing the abnormal rhythms and is effective in around 90 per cent or more of cases. An alternative method, cryoablation, is used where RF ablation is not suitable.

Cryoablation freezes the affected area and is effective in about 80 per cent of cases, but is safer to use in certain areas of your heart. You won't feel the heating or freezing within the heart.

After the EP study and/or ablation has finished, the doctor will remove the catheter through the veins the same way it was inserted. We will put pressure on the area where the catheter was inserted to help it to heal. Occasionally, the doctors are unable to find any abnormal signals so the test might need to be repeated at a later date, or another study planned.

Are there any risks?

We carry out lots of EP studies and ablations each year at GOSH and the teams are very experienced. However, as with all procedures, there are risks which, although unlikely, you should understand.

Healthy children cope well with anaesthesia but the risk increases if you have other health conditions. The risk is still very small.



The risk of infection is also very small, as there is only a small mark where the needle is inserted at the top of your leg. There is a risk of bleeding from the catheter site afterwards, but applying pressure reduces this greatly, although you may have a bruise there for a few days. The area might also feel a bit sore for a few days afterwards, but usually paracetamol is enough to deal with any pain.

There is a small chance that a clot could form in the vein and might need treatment, but this is rare.

The ablation part of the procedure also carries some small risks: around 1 in every 100 procedures for radiofrequency ablation and 1 in every 1000 for cryoablation. There is a chance that a clot could form in the heart but, like clots in the vein, these can be broken down with treatment.

Depending on the area of the heart needing ablation, very rarely, a pacemaker needs to be inserted afterwards, particularly if it is the area near the AV node that is treated. The procedure may also cause bleeding around the heart but this can be identified quickly using the x-rays and stopped.

As x-rays are involved in EP studies and ablations, we will ask all girls aged 12 years or older about their periods and ask for a urine (wee) sample for pregnancy testing.

What happens afterwards?

When you are awake from the anaesthetic, you will return to the ward. The nurses will be checking how well you are recovering by measuring your heart rate, temperature and breathing. There will be a dressing over the catheter site (either on one side or both). You will need to lie flat on your back for at least two hours afterwards to let the catheter site heal.

You might feel a bit sick after the anaesthetic, so you will have to wait a little while to have a drink.

Once you have had a drink and don't feel sick, you can have something to eat. When the nurses are happy that you have recovered well, you will be able to go home.

You may need to take aspirin every day for about six weeks if you have had treatment on the left hand side of your heart. This protects against clots forming, and even though young people shouldn't normally take aspirin, the doctors have prescribed it safely for you.

When you get home

The catheter site is a small puncture wound that doesn't need stitches. The clear dressing should stay in place until the following morning when you can remove it in the bath or shower – there is no need for another dressing.

Bleeding from the catheter site following discharge is rare but in the unlikely event of bleeding, apply pressure to the wound for 5 to 10 minutes. If the bleeding carries on after 10 minutes of pressure, call 999 for an ambulance or go to your nearest Accident and Emergency (A&E) department.

Try not to soak in the bath, rub the area or pick off the scab, as this could start it bleeding again. It is quite normal to have a bruise on your groin, which may take a few days to go down. If it is uncomfortable, you can take paracetamol according to the instructions on the bottle.

You may feel your heart give a big beat or a skipped beat during the first day or two after the procedure. This should feel different to how your heart beat before the procedure and is a normal reaction to the procedure. It shouldn't last more than a day or two after the procedure, but telephone us if you're worried.

You should call GOSH if:

- You start bleeding from where the catheter was inserted – press down hard on the area for 5 to 10 minutes and see if the



bleeding stops. If it doesn't, you should go to your local hospital.

- You feel dizzy or faint or feel palpitations – deal with them as you would usually do, going to your local hospital if needed, but contact us afterwards.
- You are in a lot of pain and pain relief doesn't seem to help
- The catheter site looks red, swollen and feels hotter than the surrounding skin

Getting back to normal

It is important to continue doing stuff as normal at home. Most people need two or three days' rest at home before they go back to school. However, you shouldn't do any sport, PE or anything else too strenuous for a week afterwards.

If you see your family doctor or dentist after the procedure, it is important to mention that you have had an arrhythmia – we can talk to them about this if needed. You don't need antibiotics if you have any dental procedures unless your cardiologist has told you otherwise.

When will I know if it has worked?

We will be able to tell you after your procedure if we think it has been successful. We will call you 24 to 48 hours after your procedure to make sure you are getting better. You will be reviewed in clinic for a year and discharged from GOSH if you remain well. Occasionally your symptoms may return and we may need to do another procedure.

What should I do if I get symptoms again?

If you get symptoms again, you should let your CNS know. You can email the team gos-ecg.tr.gosh@nhs.net or contact them via MyGOSH once you have registered. More information about MyGOSH is at www.gosh.nhs.uk/your-hospital-visit/mygosh. We will discuss these symptoms with you and decide if we think you may need further monitoring.

Any questions?

You can get in touch with the Arrhythmia Service on 020 7405 9200 extension 5298, email them on gos-ecg.tr.gosh@nhs.net or contact them via MyGOSH once you have registered. More information about MyGOSH is at www.gosh.nhs.uk/your-hospital-visit/mygosh. If you have any questions after the EP study and/or ablation, please telephone Walrus Ward (Cardiac Day Care) on 020 7813 8347. Out of hours, please telephone Bear Ward on 020 7829 8829.

Arrhythmia Alliance – call 01789 867 501 (24 hour helpline) or visit their website at www.hearrhythmcharity.org.uk

British Heart Foundation – call their Heart Helpline on 0300 330 3311 or visit their website at www.bhf.org.uk

