

Diagnostic Electrophysiology (EP) Studies +/- Radiofrequency Ablation

What is it?

EP studies make it possible for your cardiologist to study the heart's rhythm and any disturbances under controlled circumstances. The electrophysiologist (the cardiologist who performs these studies) places special catheters inside your heart to record the electrical activity. These catheters may also be used to reproduce abnormal heart rhythms and cauterize the cause of any abnormal rhythms.

Preparation

The EP study requires that you have an empty stomach. Unless you are told otherwise **DO NOT EAT OR DRINK AFTER BREAKFAST ON THE DAY OF THE TEST** except for sips of water to help you swallow any medications. You will be given something to eat and drink following your EP study, and, if diagnostic study is all that is performed, you may not need to stay overnight in hospital. However, in the event of an ablation being performed, you will be required to stay for approximately one or two nights.

It is important for your doctor and nurse to know the exact names, dosages and time of any medications that you take. It is a good idea to bring all medication currently being taken, in the original packaging, with you to the hospital. Some medications may interfere with the EP study and your cardiologist may advise you to stop taking these for one or more days beforehand.

This will lessen the likelihood of interference with the test.

It is also important to let your doctor know if you are allergic to anything, especially medicines.

What to bring on the day

- Medicare & any concession or private health fund cards
- All medication currently being taken, in the original packaging

For overnight stays please also bring:

- Night attire, including dressing gown and slippers (non-slip)
- Toiletries

Procedure

Following admission to hospital an Intravenous (IV) catheter will be inserted into your arm. This IV is needed for two reasons:

- It provides a reliable way of administering sedation and any other medications required.
- It can be used to give extra fluid if required.

The EP nurse or technician will shave your groin area (usually before the procedure) and possibly the area below the left collar bone where the catheters will be inserted.

You may be prescribed a premedication to help you relax. It is important during the EP study that your muscles be relaxed as tense muscles can affect the electrical recordings from your heart.

Sedation is routinely given once you are in the cath lab.

When it is time for your EP study someone will escort you to the cath lab on a stretcher.

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Once you are positioned comfortably on the table in the lab you will be attached to a variety of monitors:

- Two large sticky pads will be placed onto your chest and back.
- The EP nurse or technician will place some electrodes onto your limbs or trunk. The areas where the electrodes are to be placed may need to be shaved.
- A cuff will be placed on one or both arms so our blood pressure can be measured during the procedure.
- A device like a clothespin will be attached to your finger and will measure your blood oxygen level.
- Oxygen tubing will be placed in your nose through which a small amount of oxygen will flow.

Once the monitoring is attached you will be given sedation medication to help you relax. Your nurse/anaesthetist will be right at your side to answer your questions and give you support throughout the procedure.

Antiseptic solution will be used to cleanse the areas where the catheters will be placed.

A sterile drape will be placed over you up to your neck, leaving the groin and/or shoulder area(s) exposed.

The doctor will prepare the area of catheter insertion by administering local anaesthetic. You will feel some stinging for a short while and then the area will become numb.

Your cardiologist will use a special needle for locating the vein. You may feel some pressure but if you feel any pain during this step please speak up so more local anaesthetic can be given.

The catheter will be gently threaded up your vein and into the chambers on the right side of your heart. Occasionally one may feel a mild sensation or brief discomfort as the catheter is moved up to the heart.

During the procedure you may feel your heart beat rapidly and this may cause some discomfort. This is a normal part of the test. If you find it too uncomfortable please speak to the staff and more sedation can be given.

A drug that mimics adrenaline may be given to speed up the heart. It is usually only required for a short period of time. Occasionally it may make you feel nauseated and anxious; this is a normal effect of the drug.

When an ablation is performed a small piece of heart muscle is cauterized using microwave energy. The heart does not have pain fibres and often you will not be aware of the ablation. Sometimes heat from the ablation may be felt in the body around the heart and may be felt as discomfort. Please let the staff know if you are uncomfortable during the ablation.

Risks

Haematoma (Bleeding or bruising)

Insertion of catheters requires the puncture of blood vessels. If blood should leak around the puncture site into the surrounding tissue a haematoma (collection of blood) may result.

The chance of this is about 1%. This will resolve in time as the blood is slowly absorbed by the body. Bleeding may also occur through the skin puncture site after the catheters are removed.

This potential problem is lessened by following the bed rest requirement following the procedure.

Very rarely, significant internal bleeding can occur - your doctors will be prepared to deal with this risk.

Perforation

The catheters that are used for the procedure are soft and flexible. However, the heart wall is only 3-5mm thick and there is a small chance that one of the wires may go through the wall of the heart despite the utmost care of your cardiologist. The heart usually seals of the hole when the catheter is drawn back. There is a small chance of less than 1% that a small amount of blood may leak out after the catheter is removed and this may lead to blood collecting around the heart. If this is a small amount of blood the body will reabsorb it. Rarely, a larger haematoma can occur which causes the heart to beat less effectively. Should this occur a minor procedure may need to be performed to drain the haematoma.

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Pacemaker

Occasionally rapid heart rhythms may use the normal electrical system to beat quickly, or they may use an electrical circuit close to the normal electrical system. During ablation of the abnormal circuit the normal electrical system may be damaged. The risk of this is 1 in 500. The damage may recover or may be permanent. If the damage to the normal system is permanent you may require a pacemaker.

This complication is very rare, and some rhythm circuits have a higher risk. Your cardiologist will discuss this with you if there is a high risk of a damaging the normal electrical system.

Thrombosis (blood clot in the leg)

As part of the normal healing process a blood clot forms at the puncture site on removal of the catheters.

There is a small risk that other blood clots may form in these vessels causing an obstruction. Blood thinner medication can be used to both prevent and treat blood clot formation. The likelihood of this occurring is less than 1%.

Radiation

X-rays are necessary to allow the critical placement of the mapping and ablation catheters. A lead shield will be used to protect your reproductive organs if you are of child bearing age.

The procedure should not be performed if there is any chance you might be pregnant.

Infection

Infection is rare and usually occurs in the area of skin overlying the catheter insertion sites. If an infection should occur it will be treated with the appropriate antibiotic.

Skin burn

Occasionally the heart rhythm goes so fast that it makes you lose consciousness and it has to be terminated by cardioversion (passage of an electric current through the chest). This may result in minor local skin burn/discomfort.

Pneumothorax

This is an air leak from the lung and may occur if your cardiologist needs to insert a catheter into a vein under the collar bone. This complication is rare with a risk of less than 1%.

A small leak requires no action as the body gets rid of the air. A large air leak will need to be drained by inserting a catheter (under local anaesthetic) into the chest cavity. This risk of this occurring is less than 1 in 200.

Results

The results of the EP test and/or the ablation will be explained to you by the doctor at the end of the procedure.

Discharge instructions

Immediately following the procedure you will need to rest in bed for 4 hours during which time staff will monitor your heart rate, blood pressure and check on the puncture wounds in your leg. You may eat and drink after the procedure.

Following this period you will be able to mobilise and you will be advised by staff about discharge or transfer to a hospital bed. There is a small chance of the puncture wound in the leg bleeding. If you have a warm feeling at the top of the leg please inform the staff immediately.

Discharge from hospital will involve a review by staff and your cardiologist before you leave to ensure there have been no problems related to the procedure.

Follow up appointment

A routine appointment for follow-up with your cardiologist will be made before you leave the hospital.

If you have any questions or concerns about the risks involved with this type of procedure please discuss them with your cardiologist.

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