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# Diagnostic tests for syncope

## Electrocardiogram (ECG)

An electrocardiogram (ECG) is used to record the electrical activity of the heart. Each heartbeat is triggered by an electrical impulse normally generated from a specialised group of 'pacemaker' cells in your heart. An ECG records these electrical signals as they travel through your heart, producing a waveform that can be use to diagnose various heart conditions.
An ECG is a noninvasive, painless test. At no point does this put electricity into your body, or cause any side effects.

An ECG test takes about five minutes. Twelve electrodes (small sticky pads) are attached to your arms, legs and chest and the wires connect to the ECG machine. The recorded information is printed onto paper and the doctor can immediately look at the results.

An ECG can help diagnose many heart conditions:

- Irregular heart rhythms (arrhythmias)
- Some electrical problems even when you are well
- Structural heart defects
- Problems with your heart's valves
- Blocked or narrowed arteries (coronary artery disease)
- A heart attack, in emergency situations
- A previous heart attack

It is common to have more than one ECG recorded while being investigated for blackouts. This gives individual clinicians a chance to review a fresh test to give their opinion on the heart trace. This also can help if the trace is slowly changing over time.

## Portable ECG Recorders

If you are experiencing irregular or unexplained symptoms then it may be necessary for you to have a continuous ECG over a longer period of time, often 24-72 hours, but may be as long as two weeks. You will be given a small monitor to wear all the time and this is able to detect any abnormal heart rhythms during that period. You can maintain all normal activity during this time.

During this period you should note down your activities and any symptoms that you may have. This will enable your doctor to compare your 'diary' with the ECG trace recorded by the monitor which may help with making a diagnosis. This field is growing rapidly and there are new devices entering the market frequently. They all can record heart rhythms outside the clinic, and each has special features. Please ask your physician about the best one for you.

## Implantable Loop Recorder (ILR)

If doctors are unable to diagnose what is causing your symptoms with an ECG and maybe a portable ECG recorder, then they may consider an implantable loop recorder (ILR).

An ILR may be used to monitor heart rhythms for months at a time if the episodes are less frequent than every 30 days. The device can remain in place for up to three years.

The ILR can determine whether your fainting is related to a heart rhythm problem. It is a small device and is inserted just beneath the skin in the chest area. This procedure is carried out in an outpatient clinic under local anaesthetic and will take between 15 – 20 minutes.

An ILR records your heart rate and rhythm and captures these during an actual faint. This will help the doctor to rule in or rule out an abnormal heart rhythm and other cardiac conditions.
When you have experienced a faint or pre faint symptoms, you either need to return to the hospital for the results to be downloaded, or if you have received a loop recorder with remote capabilities,you can send the stored information to your doctor from home. In some instances,

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these results may produce a diagnosis. If so, the ILR may be removed and appropriate treatment given. However, it is not uncommon for the ILR to remain in place for up to 3 years.

If the results show that your episodes are nothing to do with your heart rhythm then the doctor can consider other reasons for your symptoms.

## Tilt Table Test

A tilt table test is a diagnostic test to help establish the cause of unexplained fainting = which will then help doctors find the best treatment for you.

The reason for the test is to reproduce your symptoms pre-syncope (sweating, nausea, dizziness) and syncope (fainting/blacking-out) to determine the underlying cause.

In preparation for the test, you will be asked not to eat or drink for several hours beforehand, and your doctor will clarify which of your medications to take or omit on the day of the tilt table test.

During the procedure, you will lie on a bed (tilt table). Your feet will be on a footplate and two straps will be placed around you to prevent you from falling. The bed will be adjusted to an upright position while your blood pressure and ECG measurements are recorded. Several healthcare professional will be with you during the entire procedure.

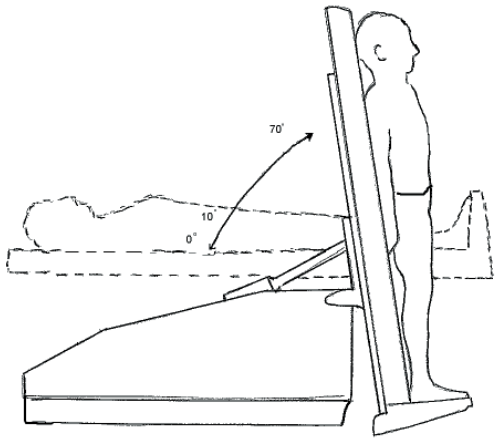
If you faint at any time during the test while you are in the vertical position, the table is returned to horizontal immediately. Most people regain consciousness almost immediately. If you feel faint or your blood pressure and heart rate change indicating you are about to faint, the table is returned to a horizontal position, and you may not actually lose consciousness.

The test could last up to an hour and you may feel tired afterwards – as you perhaps do following a normal syncopal attack.When your tilt table test is complete, you may return to your normal activities for the remainder of the day.

- If you don't faint or experience any other symptoms during the initial test, sometimes nitroglycerin may be given by mouth or isoproterenol may be given through an IV line. Isoproterenol works similarly to adrenaline and may make your heart beat stronger and faster. It may make you more sensitive to the tilt table test and elicit syncopal symptoms. After you receive one of these medications you will remain in the upright position and be monitored for another 15 to 20 minutes to see how your body responds.

## Results

- Results are based on your heart rate and blood pressure changes during the test, and whether or not you faint. If your blood pressure does not fall during the test, and you have no other symptoms, the results are negative (normal). Further investigations may then be required. If your blood pressure drops during the test and you feel faint or dizzy, the test is positive. Your doctor may suggest changing your treatment or having more tests.




**Approved by:** STARS Medical Advisory Committee

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