

ELECTROCARDIOGRAM (ECG)

The electrocardiogram is commonly used to detect abnormal heart rhythms and to investigate the cause of chest pains.

What is an electrocardiogram?

An electrocardiogram or 'ECG' records the electrical activity of the heart. The heart produces tiny electrical impulses which spread through the heart muscle to make the heart contract. These impulses can be detected by the ECG machine. You may have an ECG to help find the cause of symptoms such as palpitations or chest pain. Sometimes it is done as part of routine tests, for example, before you have an operation.

The ECG test is painless and harmless. (The ECG machine records electrical impulses coming from your body – it does not put any electricity *into* your body.)

How is it done?

Small metal electrodes are stuck onto your arms, legs and chest. Wires from the electrodes are connected to the ECG machine. The machine detects and amplifies the electrical impulses that occur with each heartbeat and records them onto a paper or computer. A few heartbeats are recorded from different sets of electrodes. The test takes about five minutes to do.

What does an ECG show?

The electrodes on the different parts of the body detect electrical impulses coming from different directions within the heart. There are normal patterns for each electrode. Various heart disorders produce abnormal patterns. The heart disorders that can be detected include:

- Abnormal heart rhythms. If the heart is very fast, very slow, or irregular. There are various types of irregular heart rhythm with characteristic ECG patterns.
- A heart attack, and if it was recent or some time ago. A heart attack causes damage to heart muscle, and heals with scar tissue. These can be detected by abnormal ECG patterns.
- An enlarged heart. Basically this causes bigger impulses than normal.

Limitations of the ECG

An ECG is a simple and valuable test. Sometimes it can definitely diagnose a heart problem. However, a normal ECG does not rule out serious heart disease. For example, you may have an irregular heart rhythm that 'comes and goes', and the recording can be normal between episodes. Also, not all heart attacks can be detected by ECG. Angina, a common heart disorder, cannot usually be detected by a routine ECG. Specialised ECG recordings sometimes help to overcome some limitations. For example:

- Exercise ECG. This is where the tracing is done when you exercise (on a treadmill or exercise bike). This helps to assess the severity of the narrowing of the coronary arteries which causes angina.
- 24 hour ECG monitor. This is where you wear a small monitor for 24 hours which constantly records your heart rhythm. It aims to detect abnormal rhythms that may 'come and go'.

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