

What Is an Electrocardiogram (ECG, EKG)?

Patient The electrocardiogram (ECG or EKG) is a diagnostic tool that is routinely used to assess the electrical and muscular functions of the heart. While it is a relatively simple test to perform, the interpretation of the ECG tracing requires significant amounts of training. Numerous textbooks are devoted to the subject.

The heart is a two stage electrical pump and the heart's electrical activity can be measured by electrodes placed on the skin. The electrocardiogram can measure the rate and rhythm of the heartbeat, as well as provide indirect evidence of blood flow to the heart muscle.

A standardized system has been developed for the electrode placement for a routine ECG. Ten electrodes are needed to produce 12 electrical views of the heart. An electrode lead, or patch, is placed on each arm and leg and six are placed across the chest wall. The signals received from each electrode are recorded. The printed view of these recordings is the electrocardiogram.

By comparison, a heart monitor requires only three electrode leads – one each on the right arm, left arm, and left chest. It only measures the rate and rhythm of the heartbeat. This kind of monitoring does not constitute a complete ECG.

What is it?

An electrocardiogram — abbreviated as EKG or ECG — is a test that measures the electrical activity of the heartbeat. With each beat, an electrical impulse (or “wave”) travels through the heart. This wave causes the muscle to squeeze and pump blood from the heart. A normal heartbeat on ECG will show the timing of the top and lower chambers.

The right and left atria or upper chambers make the first wave called a “P wave” — following a flat line when the electrical impulse goes to the bottom chambers. The right and left bottom chambers or ventricles make the next wave called a “QRS complex.” The final wave or “T wave” represents electrical recovery or return to a resting state for the ventricles.

Why is it done?

An ECG gives two major kinds of information. First, by measuring time intervals on the ECG, a doctor can determine how long the electrical wave takes to pass through the heart. Finding out how long a wave takes to travel from one part of the heart to the next shows if the electrical activity is normal or slow, fast or irregular. Second, by measuring the amount of electrical activity passing through the heart muscle, a cardiologist may be able to find out if parts of the heart are too large or are overworked.

Does it hurt?

No. There's no pain or risk associated with having an electrocardiogram. When the ECG stickers are removed, there may be some minor discomfort.

Is it harmful?

No. The machine only records the ECG. It doesn't send electricity into the body.