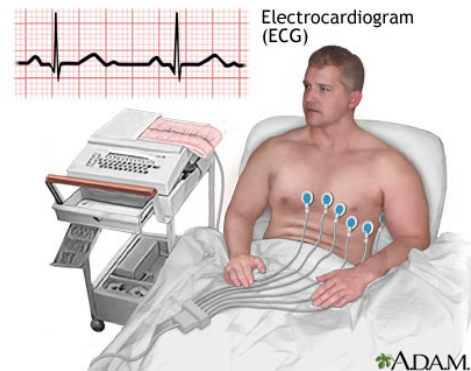


ELECTROCARDIOGRAM

An electrocardiogram (EKG or ECG) is a test that checks for problems with the electrical activity of your heart. An EKG translates the heart's electrical activity into line tracings on paper. The spikes and dips in the line tracings are called waves. See an illustration of the EKG components and intervals

The heart is a muscular pump made up of four chambers. The two upper chambers are called atria, and the two lower chambers are called ventricles. A natural electrical system causes the heart muscle to contract and pump blood through the heart to the lungs and the rest of the body.



Why It Is Done

An electrocardiogram (EKG or ECG) is done to:

- Find the cause of unexplained chest pain, such as a heart attack, inflammation of the sac surrounding the heart (pericarditis), or reduced blood flow to the heart muscle (ischemia).
- Find the cause of symptoms of heart disease, such as unexplained chest pain, shortness of breath, dizziness, fainting, or rapid, irregular heartbeats (palpitations).
- Check the heart's electrical activity.
- Find out if the walls of the heart chambers are too thick (hypertrophied).
- Check how well medicines are working and whether they are causing side effects that affect the heart.
- Check how well mechanical devices that are implanted in the heart, such as pacemakers or implantable cardioverter-defibrillators (ICDs), are working to control a normal heartbeat.
- Check the health of the heart when other diseases or conditions are present, such as high blood pressure, high cholesterol, cigarette smoking, diabetes, or a family history of early heart disease.

How To Prepare

Many medicines may change the results of this test. Be sure to tell your doctor about all the nonprescription and prescription medicines you take. If you take heart medicines, your doctor will tell you how to take your medicines before you have this test.

Remove all jewelry from your neck, arms, and wrists. Men are usually bare-chested during the test. Women may often wear a bra, T-shirt, or gown. If you are wearing stockings, you should take them off. You will be given a cloth or paper covering to use during the test.

Talk to your doctor about any concerns you have regarding the need for the test, its risks, how it will be done, or what the results will indicate.

How It Is Done

You may receive an EKG as part of a physical examination at your health professional's office or during a series of tests at a hospital or clinic. EKG equipment is often portable, so the test can be done almost anywhere. If you are in the hospital, your heart may be continuously monitored by an EKG system; this process is called telemetry.

During an EKG:

- You will lie on a bed or table. Areas on your arms, legs, and chest where small metal discs (electrodes) will be placed are cleaned and may be shaved to provide a clean, smooth surface to attach the electrode discs. A special EKG paste or small pads soaked in alcohol may be placed between the electrodes and your skin to improve conduction of the electrical impulses, but in many cases disposable electrodes are used that do not require paste or alcohol.
- Several electrodes are attached to the skin on each arm and leg and on your chest. These are hooked to a machine that traces your heart activity onto a paper. If an older machine is used, the electrodes may be moved at different times during the test to measure your heart's electrical activity from different locations on your chest. After the procedure, the electrode paste is wiped off.
- You will be asked to lie very still and breathe normally during the test. Sometimes you may be asked to hold your breath. You should not talk during the test.

How It Feels

The electrodes may feel cool when they are put on your chest. If you have a lot of hair on your chest, a small area may need to be shaved to put the electrodes on. When the electrodes are taken off, they may pull your skin a little.

Risks

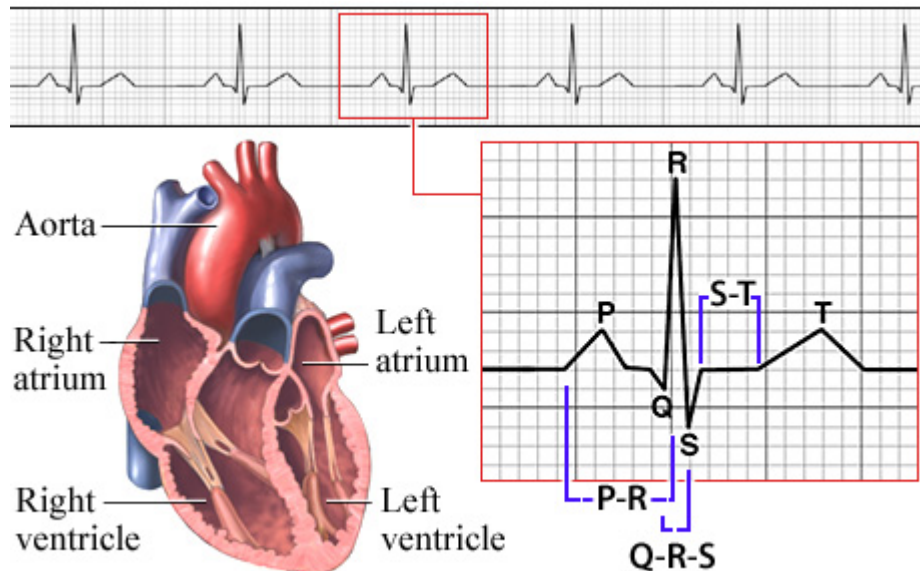
There is no chance of problems while having an electrocardiogram (EKG or ECG). An EKG is a completely safe test. In most cases, there is no reason why you should not be able to get an EKG.

The electrodes are used to transfer an image of the electrical activity of your heart to tracing on paper. No electricity passes through your body from the machine, and there is no danger of getting an electrical shock.

Results

An electrocardiogram (EKG or ECG) is a test that checks for problems with the electrical activity of your heart. An EKG translates the heart's electrical activity into line tracings on paper. The spikes and dips in the line tracings are called waves.

The test usually takes 5 to 10 minutes to complete.



Normal EKG

- The **P wave** is a record of the electrical activity through the upper heart chambers (atria).
- The **QRS complex** is a record of the movement of electrical impulses through the lower heart chambers (ventricles).
- The **ST segment** corresponds to the time when the ventricle is contracting but no electricity is flowing through it. The ST segment usually appears as a straight, level line between the QRS complex and the T wave.
- The **T wave** corresponds to the period when the lower heart chambers are relaxing electrically and preparing for their next muscle contraction.

Electrocardiogram (EKG or ECG)	
Normal:	The heart beats in a regular rhythm, usually between 60 and 100 beats per minute.
	The tracing looks normal.
Abnormal:	The heart beats too slow (less than 60 beats per minute). The heart beats too fast (more than 100 beats per minute). The heart rhythm is not regular.
	The tracing does not look normal.

What Affects the Test

Reasons you may not be able to have the test or why the results may not be helpful include:

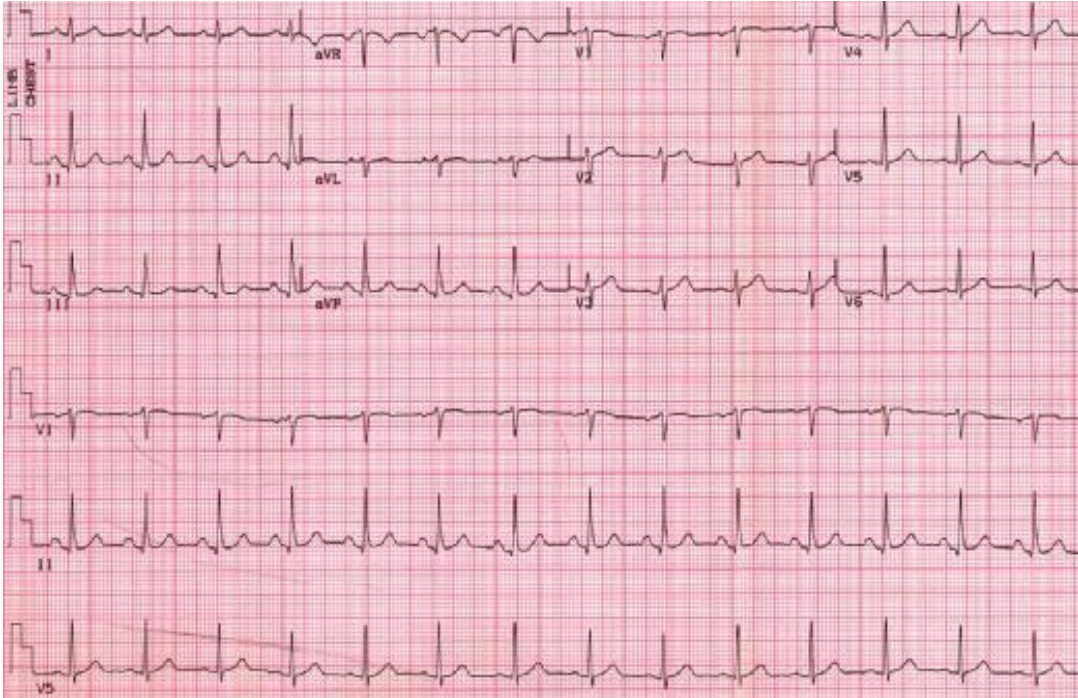
- Not having the electrodes securely attached to your skin.
- Moving or talking during the test.
- Exercising before the test.
- Being anxious or breathing very deeply or rapidly

What To Think About

- Sometimes your EKG may look normal even when you have heart disease. For this reason, the EKG should always be interpreted along with your symptoms, history, physical examination, and, if necessary, other test results.
- An electrocardiogram cannot predict whether you will have a heart attack.
- At first, an EKG done during a heart attack may look normal or unchanged from a previous EKG. Therefore, the EKG may be repeated over several hours and days (called serial EKGs) to look for changes.
- There are several other types of electrocardiograms, including telemetry, ambulatory (Holter) monitoring, and exercise EKG testing. For more information, see the medical tests Ambulatory Electrocardiogram and Exercise Electrocardiogram.
- Sometimes EKG abnormalities can be seen only during exercise or while symptoms are present. To check for these changes in the heartbeat, an ambulatory EKG or stress EKG may be done.
- An ambulatory EKG is a type of portable, continuous EKG monitor. For more information, see the medical test Ambulatory Electrocardiogram.
- A stress EKG is a type of EKG done during exercise. A resting EKG is always done before an exercise EKG test, and results of the resting EKG are compared to the results of the exercise

EKG. A resting EKG may also show a heart problem that would make an exercise EKG unsafe. For more information, see the medical test Exercise Electrocardiogram.

Some doctors think that people older than age 35 need a baseline EKG before problems develop. This baseline EKG may be compared to later EKGs to see if changes have occurred. However, a baseline EKG is expensive and may not be covered by insurance. Baseline EKGs may be most useful in people who have other conditions or diseases that increase their chances of having heart disease.



Normal Electrocardiogram 1