

Electrocardiogram

Definition

An electrocardiogram (ECG) is a test that records the electrical activity of the heart.

See also:

- Holter monitoring.
- Stress test

Alternative Names

ECG; EKG

Why the Test is Performed

An ECG is used to measure:

- Any damage to the heart
- How fast your heart is beating and whether it is beating normally
- The effects of drugs or devices used to control the heart (such as a pacemaker)
- The size and position of your heart chambers

An ECG is a very useful tool for determining whether a person has heart disease. Your doctor may order this test if you have chest pain or palpitations.

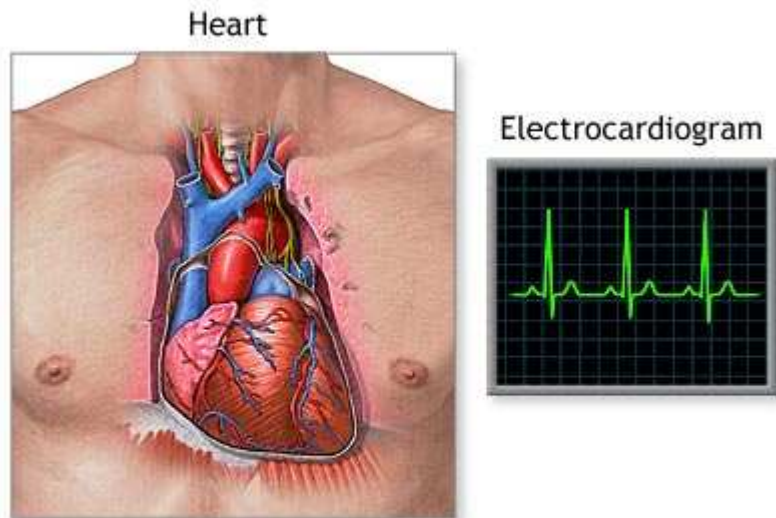
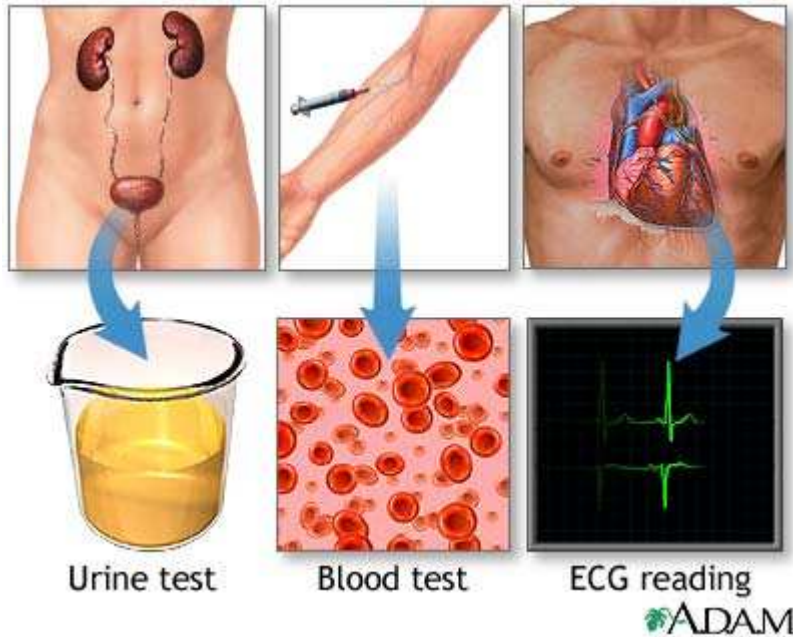
How the Test is Performed

You will be asked to lie down. The health care provider will clean several areas on your arms, legs, and chest, and then attach small patches called electrodes to the areas. It may be necessary to shave or clip some hair so the patches stick to the skin. The number of patches used may vary.

The patches are connected by wires to a machine that turns the heart's electrical signals into wavy lines, which are often printed on paper. The test results are reviewed by the doctor.

You usually need to remain still during the procedure. The health care provider may also ask you to hold your breath for a few seconds as the test is being done. Any movement, including muscle tremors such as shivering, can alter the results. So it is important to be relaxed and relatively warm during an ECG recording.

Sometimes this test is done while you are exercising or under minimal stress to monitor changes in the heart. This type of ECG is often called a stress test.



How to Prepare for the Test

Make sure your health care provider knows about all the medications you are taking, as some can interfere with test results.

Exercising or drinking cold water immediately before an ECG may cause false results.

How the Test Will Feel

An ECG is painless. No electricity is sent through the body. The electrodes may feel cold when first applied. In rare cases, some people may develop a rash or irritation where the patches were placed.

Risks

There are no risks. No electricity is sent through the body, so there is no risk of shock.

Considerations

The accuracy of the ECG depends on the condition being tested. A heart problem may not always show up on the ECG. Some heart conditions never produce any specific ECG changes.

If you have had a heart attack or have heart disease, you may need more than one ECG. Your doctor will tell you when you need the next one.

There is no reason for healthy people to have yearly ECG testing unless they have a family or personal history of specific heart diseases or other medical conditions that affect the heart.

Normal Results

- Heart rate: 60 to 100 beats per minute
- Heart rhythm: consistent and even

What Abnormal Results Mean

Abnormal ECG results may be a sign of

- Abnormal heart rhythms (arrhythmias)
- Cardiac muscle defect
- Congenital heart defect
- Coronary artery disease
- Ectopic heartbeat
- Enlargement of the heart
- Faster than normal heart rate (tachycardia)
- Heart valve disease
- Inflammation of the heart (myocarditis)
- Changes in the amount of electrolytes (chemicals in the blood)
- Past heart attack
- Present or impending heart attack
- Slower than normal heart rate (bradycardia)

Additional conditions under which the test may be performed include the following:

- Alcoholic cardiomyopathy
- Anorexia nervosa
- Aortic dissection
- Aortic insufficiency
- Aortic stenosis
- Atrial fibrillation/flutter
- Atrial myxoma
- Atrial septal defect
- Cardiac tamponade
- Coarctation of the aorta
- Complicated alcohol abstinence (delirium tremens)
- Coronary artery spasm

- Digitalis toxicity
- Dilated cardiomyopathy
- Drug-induced lupus erythematosus
- Familial periodic paralysis
- Guillain-Barre
- Heart failure
- Hyperkalemia
- Hypertensive heart disease
- Hypertrophic cardiomyopathy
- Hypoparathyroidism
- Idiopathic cardiomyopathy
- Infective endocarditis
- Insomnia
- Ischemic cardiomyopathy
- Left-sided heart failure
- Lyme disease
- Mitral regurgitation; acute
- Mitral regurgitation; chronic
- Mitral stenosis
- Mitral valve prolapse
- Multifocal atrial tachycardia
- Narcolepsy
- Obstructive sleep apnea
- Paroxysmal supraventricular tachycardia
- Patent ductus arteriosus
- Pericarditis
 - Bacterial pericarditis
 - Constrictive pericarditis
 - Post-MI pericarditis
- Peripartum cardiomyopathy
- Primary amyloid
- Primary hyperaldosteronism
- Primary hyperparathyroidism
- Primary pulmonary hypertension
- Pulmonary embolus
- Pulmonary valve stenosis
- Restrictive cardiomyopathy
- Right-sided heart failure
- Sick sinus syndrome
- Stable angina
- Stroke
- Systemic lupus erythematosus
- Tetralogy of Fallot
- Thyrotoxic periodic paralysis
- Transient ischemic attack (TIA)
- Transposition of the great vessels
- Tricuspid regurgitation
- Type 1 diabetes
- Type 2 diabetes
- Unstable angina
- Ventricular septal defect
- Ventricular tachycardia
- Wolff-Parkinson-White syndrome



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