

Heart Health Tests

Heart diseases are the number 1 killer in the U.S. They are also a major cause of disability. If you do have a heart disease, it is important to find it early, when it is easier to treat. Blood tests and heart health tests can help find heart diseases or identify problems that can lead to heart diseases. There are several different types of heart health tests. Your doctor will decide which test or tests you need, based on your symptoms (if any), risk factors, and medical history.

Cardiac Catheterization

Cardiac catheterization is a medical procedure used to diagnose and treat some heart conditions. For the procedure, your doctor puts a *catheter* (a long, thin, flexible tube) into a blood vessel in your arm, groin, or neck, and threads it to your heart. The doctor can use the catheter to

1. **Do a coronary angiography**—This involves putting a special type of dye in the catheter, so the dye can flow through your bloodstream to your heart. Then your doctor takes X-rays of your heart. The dye allows your doctor to see your coronary arteries on the X-ray and to check for coronary artery disease (plaque buildup in the arteries).
2. **Take samples of blood and heart muscle**
3. **Do procedures such as minor heart surgery or angioplasty, if your doctor finds that you need it**

Cardiac CT Scan

A cardiac *CT (computed tomography) scan* is a painless imaging test that uses X-rays to take detailed pictures of your heart and its blood vessels. Computers can combine these pictures to create a three-dimensional (3D) model of the whole heart. This test can help doctors detect or evaluate

1. Coronary artery disease
2. Calcium buildup in the coronary arteries
3. Problems with the aorta
4. Problems with heart function and valves
5. Pericardial diseases

Before you have the test, you get an injection of contrast dye. The dye highlights your heart and blood vessels in the pictures. The CT scanner is a large, tunnel-like machine. You lie still on a table that slides you into the scanner, and the scanner takes the pictures for about 15 minutes.

Cardiac MRI

Cardiac *MRI (magnetic resonance imaging)* is a painless imaging test that uses radio waves, magnets, and a computer to create detailed pictures of your heart. It can help your doctor figure out whether you have heart disease, and if so, how severe it is. A cardiac MRI can also help your doctor decide the best way to treat heart problems such as

1. Coronary artery disease
2. Heart valve problems
3. Pericarditis
4. Cardiac tumors
5. Damage from a heart attack

The MRI is a large, tunnel-like machine. You lie still on a table that slides you into the MRI machine. The machine makes loud noises as it takes pictures of your heart. It usually takes about 30-90 minutes. Sometimes before the test, you might get an injection of contrast dye. The dye highlights your heart and blood vessels in the pictures.

Chest X-Ray

A *chest X-ray* creates pictures of the organs and structures inside your chest, such as your heart, lungs, and blood vessels. It can reveal signs of heart failure, as well as lung disorders and other causes of symptoms not related to heart disease.

Coronary Angiography

Coronary angiography (angiogram) is a procedure that uses contrast dye and X-ray pictures to look at the insides of your arteries. It can show whether plaque is blocking your arteries and how severe the blockage is. Doctors use this procedure to diagnose heart diseases after chest pain, sudden cardiac arrest, or abnormal results from other heart tests such as an EKG or a stress test.

You usually have a cardiac catheterization to get the dye into your coronary arteries. Then you have special X-rays while the dye is flowing through your coronary arteries. The dye lets your doctor study the flow of blood through your heart and blood vessels.

Echocardiography

Echocardiography, or *echo*, is a painless test that uses sound waves to create moving pictures of your heart. The pictures show the size and shape of your heart. They also show how well your heart's chambers and valves are working. Doctors use an echo to diagnose many different heart problems and to check how severe they are.

For the test, a technician applies gel to your chest. The gel helps sound waves reach your heart. The technician moves a *transducer* (wand-like device) around on your chest. The transducer connects to a computer. It transmits ultrasound waves into your chest, and the waves bounce (echo) back. The computer converts the echoes into pictures of your heart.

Electrocardiogram (EKG), (ECG)

An *electrocardiogram*, also called an *ECG* or *EKG*, is a painless test that detects and records your heart's electrical activity. It shows how fast your heart is beating and whether its rhythm is steady or irregular.

An EKG may be part of a routine exam to screen for heart disease, or you may get it to detect and study heart problems such as heart attacks, arrhythmia, and heart failure.

For the test, you lie still on a table, and a nurse or technician attaches *electrodes* (patches that have sensors) to the skin on your chest, arms, and legs. Wires connect the electrodes to a machine that records your heart's electrical activity.

Stress Testing

Stress testing looks at how your heart works during physical stress. It can help to diagnose coronary artery disease and to check how severe it is. It can also check for other problems, including heart valve disease and heart failure.

For the test, you exercise (or are given medicine if you are unable to exercise) to make your heart work hard and beat fast. While this is happening, you get an EKG and blood pressure monitoring. Sometimes you may also have an echocardiogram, or other imaging tests such as a *nuclear scan*. For the nuclear scan, you get an injection of a *tracer* (a radioactive substance), which travels to your heart. Special cameras detect the energy from the tracer to make pictures of your heart. You have pictures taken after you exercise and then after you rest.

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