Coronary Calcium Scan

A coronary calcium scan is a test that can help show whether you have coronary artery disease (CAD). In CAD, a fatty material called plaque narrows your coronary (heart) arteries and limits blood flow to your heart. CAD is the most common type of heart disease in both men and women. It can lead to angina, heart attack, heart failure and arrhythmia.

Coronary calcium scanning looks for specks of calcium (called calcifications) in the walls of the coronary arteries. Calcifications are an early sign of heart disease. The test can show, before other signs and symptoms occur, whether you’re at increased risk for a heart attack or other heart problems.

A coronary calcium scan is most useful for people who are at moderate risk for a heart attack. You or your doctor can calculate your 10-year risk using the Risk Assessment Tool from the National Cholesterol Education Program. People at moderate risk have a 10 percent to 20 percent chance of having a heart attack within the next 10 years. The coronary calcium scan helps doctors decide who within this group needs treatment.

Two machines can show calcium in the coronary arteries — electron beam computed tomography (EBCT) and multidetector computed tomography (MDCT). Both use an X-ray machine to make detailed pictures of your heart. Doctors study the pictures to see whether you’re at risk for heart problems in the next two to 10 years.

A coronary calcium scan is simple and easy for the patient, who lies quietly in the scanner machine for about 10 minutes. Pictures of the heart are taken that show whether the coronary arteries have calcifications.

Figure A shows the position of the heart in the body and the location and angle of the coronary calcium scan image. Figure B is the coronary calcium scan image showing calcification in a coronary artery.

Other Names for Coronary Calcium Scans

- Calcium scan test
- Cardiac CT for calcium scoring

Sometimes people refer to a coronary calcium scan by the name of the machine used to take pictures of the heart:

- Electron-beam computed tomography (EBCT) or electron-beam tomography (EBT)
- Multidetector computed tomography (MDCT)

What to Expect Before a Coronary Calcium Scan

No special preparation is needed. You may be asked to avoid caffeine and smoking for four hours before the test. For the scan, you will remove your clothes above the waist and wear a hospital gown. You also will remove any jewelry from around your neck or chest.

What to Expect During a Coronary Calcium Scan
Coronary calcium scans are done in a hospital or outpatient office. The X-ray machine that’s used is called a computed tomography (CT) scanner.

The technician who operates the scanner will clean areas of your chest and apply small sticky patches called electrodes. The electrodes are attached to an EKG (electrocardiogram) monitor. The EKG measures the electrical activity of your heart during the scan. This makes it possible to take pictures of your heart when it’s relaxed, between beats.

The CT scanner is a large machine that has a hollow, circular tube in the center. You will lie on your back on a sliding table. The table can move up and down and goes inside the tunnel-like machine.

The table will slide slowly into the opening in the machine. Inside the scanner, an X-ray tube moves around your body to take pictures of your heart. You may be asked to hold your breath for 10 to 20 seconds while the pictures are taken. This prevents movement in the image.

During the test, the technician will be in a nearby room with the computer that controls the CT scanner. The technician can see you through a window and talk to you through an intercom system.

You may be given medicine to slow down a fast heart rate. This helps the machine take better pictures of your heart. The medicine will be given by mouth or injected into a vein.

A coronary calcium scan takes about five to 10 minutes. During the test, the machine makes clicking and whirring sounds as it takes pictures. It causes no discomfort, but the exam room may be chilly to keep the machine working properly.

If you become nervous in enclosed spaces, you may need to take medicine to stay calm. This isn’t a problem for most people, because your head will remain outside the opening in the machine.

**What to Expect After a Coronary Calcium Scan**

You're able to return to your normal activities after the coronary calcium scan is done. A doctor who is trained in reading these scans will discuss the results with you.

**What Does the Coronary Calcium Scan Show?**

After the coronary calcium scan, you will get a calcium score called an Agatston score. The score is based on the amount of calcium found in your coronary arteries. You may get an Agatston score for each major artery and a total score.

The test is negative if no sign of calcium deposits (calcifications) is found in your arteries. This means your chance of having a heart attack in the next two to five years is low.

The test is positive if calcifications are found in your arteries. Calcifications are a sign of atherosclerosis and coronary artery disease. (Atherosclerosis is when the arteries harden and narrow due to plaque buildup.) The higher your Agatston score, the greater the amount of atherosclerosis.

Use this [calculator](https://www.nhlbi.nih.gov/health-topics/coronary-calcium-scan-calculator) (from the National Heart, Lung and Blood Institute, a part of the National Institutes of Health) to see whether your score is high. If it is, your doctor may prescribe medicines or order more tests.

**What Are the Risks of a Coronary Calcium Scan?**
Coronary calcium scanning has very few risks. The test isn’t invasive, which means that no surgery is done and no instruments are inserted into your body. Coronary calcium scanning doesn’t require an injection of contrast dye to make your heart or arteries visible on the X-ray images.

Because an X-ray machine is involved, you will be exposed to a small amount of radiation. Electron-beam computed tomography (EBCT) uses less radiation than multidetector computed tomography (MDCT). In either case, the amount of radiation is less than or equal to the amount of radiation you’re exposed to naturally in a single year.

Key Points

- A coronary calcium scan is a test that can help show whether you have coronary artery disease (CAD).
- Coronary calcium scanning looks for specks of calcium (called calcifications) in the walls of the coronary arteries. Calcifications are an early sign of heart disease.
- This test is most useful for people who are at moderate risk for a heart attack. You or your doctor can calculate your 10-year risk using the Risk Assessment Tool from the National Cholesterol Education Program. People at moderate risk have a 10 percent to 20 percent chance of having a heart attack within the next 10 years.
- The coronary calcium scan helps doctors decide who within the moderate risk group needs treatment.
- No special preparation is needed before a coronary calcium scan.
- Coronary calcium scans are done in a hospital or outpatient office. The X-ray machine that’s used is called a computed tomography (CT) scanner.
- A coronary calcium scan takes about five to 10 minutes. During the scan, you will lie quietly on your back, while the CT scanner takes pictures of your heart.
- You’re able to return to your normal activities after the scan is done.
- The test is negative if there are no calcifications in your coronary arteries. This means your chance of having a heart attack in the next two to five years is low.
- The test is positive if calcifications are found in your coronary arteries. Calcifications are a sign of atherosclerosis and CAD.
- After the scan, you will receive a calcium score called an Agatston score. The higher the score, the greater the amount of atherosclerosis or plaque buildup.
- Coronary calcium scanning has very few risks. The test usually isn’t invasive, which means that no surgery is done and no instruments are inserted into your body. Coronary calcium scan doesn’t require the injection of contrast dye to make your heart or arteries visible on the X-ray images. If you need medicine to slow down your heartbeat during the scan, it may be injected into a vein.
- Because an X-ray machine is involved, you will be exposed to a small amount of radiation. The amount of radiation is less than or equal to the amount of radiation you’re exposed to naturally in a single year.
Source: National Heart, Lung and Blood Institute, National Institutes of Health

Updated: July 2007