

Cardiac CT for Calcium Scoring

What is Cardiac CT for Calcium Scoring?

A cardiac CT scan is a non-invasive way of obtaining information about the location and extent of calcified plaque in the coronary arteries—the vessels that supply oxygen-containing blood to the heart wall. Plaque is a build-up of fat and other substances, including calcium, which can, over time, narrow the arteries or even close off blood flow to the heart. The result may be painful angina in the chest or a heart attack.

Because calcium is a marker of coronary artery disease, the amount of calcium detected on a cardiac CT scan is a helpful diagnostic tool. The findings on cardiac CT are expressed as a calcium score. Another name for this test is coronary artery calcium scoring.

What are some common uses of the procedure?

The goal of cardiac CT for calcium scoring is to detect coronary artery disease (CAD) at an early stage when there are no symptoms and to determine its severity. It is a screening study that is recommended for patients with risk factors for CAD but no clinical symptoms. The procedure is most often suggested for men aged 45 years or older and for women who are aged 55 and above or who are postmenopausal. Some patients choose to have the test on their own even if their doctors have not recommended it, in order to detect early-stage CAD.

The major risk factors for CAD, other than age, are:

- abnormally high blood cholesterol levels
- a family history of heart disease
- diabetes
- high blood pressure
- cigarette smoking
- being overweight or obese
- being physically inactive

How should I prepare for the procedure?

No special preparation is necessary in advance of a cardiac computed tomography (CT) examination. You may continue to take your usual medications, but should avoid caffeine and smoking for four hours before the exam. If your heart rate is 65 beats a minute or higher, you may be given a drug to slow the rate in order to obtain accurate CT images.

You should wear comfortable, loose-fitting clothing to your exam. You may be given a gown to wear during the procedure.

Women should always inform their physician or technologist if there is any possibility that they are pregnant.

What does the equipment look like?

The CT scanner is typically a large machine with a hole, or tunnel, in the center. You will lie on a table which slides into and out of this tunnel. The x-ray tube and electronic x-ray detectors rotate around you. They are opposite each other in a ring, called a gantry. The computer workstation that processes the imaging information is located in a separate room.

How is the procedure performed?

The technologist begins by positioning you on the CT examination table, usually lying flat on your back or possibly on your side or on your stomach. Straps and pillows may be used to help you maintain the correct position and to hold still during the exam.

Electrodes (small metal discs) will be attached to your chest and to an electrocardiograph (ECG) machine that records the electrical activity of the heart. This makes it possible to record CT scans when the heart is not actively contracting.

When you enter the CT scanner, special lights may be used to ensure that you are properly positioned. With modern CT scanners, you will hear only slight buzzing, clicking and whirring sounds as the CT scanner revolves around you during the imaging process.

Next, the table will move quickly through the scanner to determine the correct starting position for the scans. Then, the table will move slowly through the machine as the actual CT scanning is performed.

Patients are periodically asked to hold their breath for periods of 20 to 30 seconds while images are recorded.

When the examination is completed, you will be asked to wait until the technologist determines that the images are of high enough quality for the radiologist to read.

The actual CT scanning is usually completed within 10 minutes. There will be no injections, treadmills, fasting or blood work needed.

CT exam is painless, fast and easy. With spiral CT, the amount of time that the patient needs to lie still is reduced.

Though the scanning itself causes no pain, there may be some discomfort from having to remain still for several minutes.

You will be alone in the exam room during the CT scan, however, the technologist will be able to see, hear and speak with you at all times.

After a CT exam, you can return to your normal activities.

What are the benefits?

- Cardiac computed tomography (CT) for calcium scoring is a convenient and noninvasive way of evaluating the coronary arteries.
- Cardiac CT takes little time and causes no pain.
- The exam does not require injection of contrast material and therefore avoids its possible side effects.
- The examination can suggest the presence of CAD even when the coronary arteries are less than 50 percent narrowed. Standard cardiac tests will not reliably detect this level of blockage, and more than half of all heart attacks occur with less than 50 percent narrowing.
- No radiation remains in a patient's body after a CT examination.
- X-rays used in CT scans usually have no side effects.