

About CT Calcium Scoring

The coronary artery calcium score is a measurement of the amount of calcium in the walls of the arteries that supply your heart muscle, using a special computed tomography (CT) scan of your heart. As you age, plaque can build up inside your arteries. This is often called hardening of the arteries (the medical term is atherosclerosis). Over time, calcium deposits in the plaque, hence the amount of calcium present gives doctors a guide to how much plaque is present. Calcium scoring does not measure how narrow the arteries are, rather it is a way of looking at the overall amount of cardiac plaque present, which can help predict your risk of a future cardiac event.

Calcium is reported using a measure called Agatston units. Calcium scores vary with age. The older you are the more likely you are to have some degree of calcium in your arteries. The calcium score report may give an indication of how you compare to an average person of the same age and sex and ethnic race. This is calculated using the MESA calculator (mesa-nhlbi.org). Alternatively, it may be reported as your estimated arterial age. For example, if you are a 50 year old male with a high calcium score you may be reported as having the arterial age of an 80 year old.

Your doctor will use the calcium score to decide whether you are at low, normal or high risk of a future heart attack and give you guidance on how to reduce your risk. This may be by changes to your diet, exercise, controlling blood pressure and diabetes, stopping smoking and reducing cholesterol.

This type of scan is a screening test, that is, a test that you have when you do not have any signs or symptoms of any illness. Screening tests give information about whether a healthy person may have an underlying medical illness or an increase in the chance of developing potentially serious illness. If you have symptoms, for example chest pain or breathlessness, then a [CT coronary angiogram](#) (CTCA) (a more detailed test than a CT calcium score) would be advisable.

Benefits of Calcium Scoring

The benefit is having a better understanding of the relative risk for you of having a heart attack or stroke in the future and using that information to decide which strategies you should adopt to reduce your risk if the risk is found to be high.

The calcium score is of no benefit to someone who has already had a heart attack, coronary bypass surgery or a coronary artery stent. These events indicate that you already have coronary artery plaque. The score does not change enough to be meaningful after treatment for atherosclerosis, which is hardening and narrowing of the arteries, so it does not tell you whether your treatment is working or not.

Your doctor may decide that a second calcium score scan after a few years may be helpful to compare results to the previous scan.

Coronary calcium scores are most informative in a woman between 35 and 70 years and in a man between 40 and 60 years in terms of providing information about cardiovascular risk, or the risk of a heart attack or stroke. Men over 80 years almost all have high calcium scores and therefore such a scan would not provide any useful information.

Preparation

No preparation is required for this test.

What happens during coronary artery calcium scoring?

On arrival at the practice, you will be asked to provide your personal details at reception. The radiographer (medical imaging technologist) will then show you to a change room and ask you to put on a gown.

You will then be taken to the scanner. The scanner has a round opening in the X-ray machine through which a table moves. You will lie on this table and the table moves through the opening during the scan. The scan uses a recording of the electric pulses from your heart every time it beats using an [electrocardiogram](#) (or ECG) to control the processing of the CT scan images. Four electrode patches will be put onto your skin on the front of your chest so the ECG wires can be attached. There will be no injections or drinks to take. The ECG wires will be attached to the patches and you can watch the ECG trace of your heart on the monitor. You will be asked to hold your breath, the table will move and the pictures of the heart will be taken. The radiographer will check that the scan is diagnostic, and then you can go.

The scan results will be sent to the doctor who referred you, so you can discuss the score and how it can be used to help you.

Are there any after effects of coronary artery calcium scoring?

There are no after effects. You will be able to carry on your normal day immediately after the scan.

Rarely, skin irritation from the skin patches used to connect the ECG electrical wires can occur.

How long does coronary artery calcium scoring take?

The actual CT scan is very quick but it requires you to hold your breath between 5 to 10 seconds depending on the individual scanner.

You will need to arrive in time for the radiographer to discuss the scan with you. You will need to get changed and be set up on the scanner bed. There can be a short delay while the radiographer lets your pulse rate settle if you have been hurrying to the appointment or are nervous. Afterwards there is a short time while the scan is reviewed to check it is complete and then you can leave, if the result is being sent on to your medical practitioner.

You can expect to be in the department for a total of 20-40 minutes.

Risks of Calcium Scoring

As in all X-ray scans, there is radiation used. The radiation dose is small, about one tenth of a diagnostic CT scan. These scans should not be done if you are pregnant or trying to get pregnant. If you have concerns about the radiation risk, even though it is very small, do not hesitate to discuss this with your doctor supervising the scan.

Results

The time that it takes your doctor to receive a written report on the test or procedure you have had will vary, depending on:

- the urgency with which the result is needed;
- the complexity of the examination;
- how the report is conveyed from the practice or hospital to your doctor (usually sent electronically).
- Most reports are available within 24 hours of the test being performed.

Please feel free to ask when your doctor is likely to have the written report.

It is important that you discuss the results with the doctor who referred you, either in person or on the telephone, so that they can explain what the results mean for you.