

Coronary Artery Calcium Scoring

Consumer Information

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What is Coronary Artery 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. It shows the amount of hardening of the artery wall (a disease called atherosclerosis) that you have. It tells you about your risk of a heart attack or stroke (brain attack) in the next five to ten years.

The walls of the arteries in our bodies (and particularly the arteries to the heart muscle) can have fat and inflammation cells deposited in their inner layers. These areas can narrow the size of the artery and produce pain in the chest, neck, and upper arm when you exercise (called angina) or they can suddenly rupture releasing a mixture of material that will block the arteries, killing the heart muscle beyond (called myocardial infarction).

Over time, the inflamed deposits in the artery wall accumulate calcium (this is called "becoming calcified"). This calcium is a reliable indicator of the overall load of atherosclerosis in a person's arteries, and it is this calcium that the Coronary Artery Calcium Score scan measures.

The more calcium (and therefore the more atherosclerosis) you have, the higher the risk that you may have a heart attack or stroke.

A high Calcium Score does not mean that you will have a heart attack, only that you are much more likely to have one than someone with a low score. Even a person with a score of zero could have a heart attack.

Heart disease and stroke is the cause of death of about half of all Australians who die each year. Many people have no warning signs of the disease when their first attack happens.

Your doctor will use the Calcium Score to decide whether you are at low, normal or high risk and guide you to reduce your risk. This may be by changes in diet, exercise, controlling blood pressure and diabetes, stopping smoking and reducing cholesterol in the blood.

This type of scan is a "screening" test, that is, a test 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 a medical illness or an increase in the chance of developing potentially serious illness. Other examples of screening tests are screening mammography (which looks for early breast cancer) and screening for bowel cancer (by testing the bowel motions for traces of blood).

How do I prepare for Coronary Artery Calcium Scoring?

On the day of the CT scan of your heart that will measure your Calcium Score, we ask you to not smoke or drink coffee, tea, cola drinks, herbal teas or other caffeine-containing drinks. No other preparation is needed.

What happens during Coronary Artery Calcium Scoring?

On arrival at the hospital radiology department or private radiology 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 may be asked about your medical history and any medicines you take.

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. About 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.

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 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 a success, 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 3 and 30 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.

If you are to receive the result at the time of the scan, there will be a time to process the information in the CT scan computer. Ask the department about this at the time of your booking.

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

What are the risks of Coronary Artery 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 or the radiologist supervising the scan. See the item on [Radiation Risk in Medical Imaging for Adults and Children](#) for further information.

A high Calcium Score does not mean that you are at risk of having a heart attack, only that you are much more likely to have one than someone with a low score. Even with a zero Calcium Score you could still have a heart attack.

What are the benefits of Coronary Artery 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 are at high risk. The score does not change enough to be meaningful after treatment for atherosclerosis, 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.

Who does the Coronary Artery Calcium Scoring?

The CT scan is performed by a medical imaging technologist trained to use the CT scan machine and process the images to measure the amount of calcium in your coronary arteries.

A **radiologist** (specialist doctor) will look at the result to see if the quality of the scan is adequate and will also review your other medical history, and then write a report for your doctor to use in your management of heart and atherosclerosis risks.

Where is Coronary Artery Calcium Scoring done?

Most new CT scanners can do the scans required for Coronary Artery Calcium Scoring, but they must have special equipment and computer software to be able to scan the heart. There are many centres with such scanners and your doctor will refer you to a hospital or private radiology practice that provides this service.

When can I expect the results of my Coronary Artery Calcium Scoring?

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
- whether more information is needed from your doctor before the examination can be interpreted by the radiologist
- whether you have had previous X-rays or other medical imaging that needs to be compared with this new test or procedure (this is commonly the case if you have a disease or condition that is being followed to assess your progress)
- how the report is conveyed from the practice or hospital to your doctor (in other words, email, fax or mail)

Please feel free to ask the private practice, clinic, or hospital where you are having your test or procedure 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.

Useful websites about Coronary Artery Calcium Scoring

- American College of Radiology Information Site
http://www.radiologyinfo.org/en/info.cfm?PG=ct_calscoring

Please note:

This information is of a general nature only and is not intended as a substitute for medical advice. It is designed to support, not replace, the relationship that exists between a patient and his/her doctor. It is recommended that any specific questions regarding your procedure be discussed with your family doctor or medical specialist

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