



**LifePulse**  
CARDIOLOGY

## **CT Coronary Angiography and Coronary Artery Calcium Scoring.**

### **CT Coronary Angiography (CTCA)**

CTCA, is a non-invasive scan that uses X-rays and contrast dye to show the coronary arteries in detail. It can help detect plaque build-up, narrowing or blockages in the coronary arteries. It can also show both calcified and non-calcified plaque.

CTCA may be recommended for patients with chest pain, breathlessness, risk factors for coronary artery disease or unclear results from other heart tests. It is particularly useful when the likelihood of significant coronary artery disease is low to intermediate, as a normal CTCA can often provide strong reassurance and may help avoid unnecessary invasive coronary angiography.

During the scan, contrast dye is injected through a vein in your arm. You may also be given medication to slow the heart rate or widen the coronary arteries so clearer pictures can be taken.

### **Coronary Artery Calcium Scoring (CAC)**

CAC scoring, is a quick CT scan that measures the amount of calcium in the walls of the coronary arteries. Calcium in the coronary arteries is a marker of coronary plaque. A higher calcium score usually means a higher future risk of heart attack or other cardiovascular events.

A calcium score of zero is reassuring, but it does not completely exclude non-calcified plaque.

CAC scoring does not require contrast dye.

### **What These Tests Can Show**

CTCA shows the coronary arteries directly. It can detect plaque, assess whether there is narrowing, and help guide whether further investigation or treatment is needed.

Published studies suggest CTCA is highly accurate for detecting significant coronary artery narrowing, with sensitivity of approximately 85–97% and specificity of approximately 95–98%.

CAC scoring does not show the coronary arteries in the same detail as CTCA. Instead, it estimates the burden of calcified plaque and helps assess future cardiovascular risk, especially when the decision about preventive treatment is uncertain.

### **What These Tests Cannot Always Show**

CAC scoring measures calcified plaque only. It does not measure the percentage of artery narrowing or detect non-calcified “soft” plaque.

CTCA shows the coronary arteries in detail, including calcified and non-calcified plaque. However, image quality may be reduced by heavy calcification, fast or irregular heart

rhythms, or movement. Further testing may occasionally be needed to clarify whether a narrowing is affecting blood flow.

### **Before the Test**

Please follow the instructions provided by the imaging clinic.

For CTCA, you may be asked to avoid caffeine before the scan. You may also need a recent kidney function blood test, especially if you have kidney disease, diabetes or take certain medications.

Please tell the imaging clinic if you have kidney problems, a previous contrast dye reaction, asthma, pregnancy, breastfeeding, diabetes, or if you take metformin or medicines for erectile dysfunction.

No special preparation is usually required for CAC scoring.

### **Risks**

Both tests use a low dose of radiation. The radiation dose is kept as low as possible, and the test is recommended only when the expected benefit outweighs the risk.

CTCA uses iodinated contrast dye. Serious allergic reactions are uncommon, but mild reactions can occur. Contrast dye can also affect kidney function in some patients, particularly those with pre-existing kidney disease.

CAC scoring does not use contrast dye and is generally very safe.