



The Cardiac Society of Australia and New Zealand

## Coronary Artery Calcium Scoring – Position Statement

**Development of this position statement was coordinated by Christian Hamilton-Craig (co-chair), Gary Liew (co-chair), Jonathan Chan, Clara Chow, Michael Jelinek, Niels van Pelt and John Younger. No authors have any relevant Conflict of Interest to disclose.**

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### Executive Summary

Coronary Artery Calcium Scoring (CAC) is a non-invasive quantitation of coronary artery calcification using computed tomography (CT). It is a marker of atherosclerotic plaque burden and an independent predictor of future myocardial infarction and mortality.

CAC provides incremental risk information beyond traditional risk calculators (eg. Framingham Risk Score). Its use for risk stratification is confined to primary prevention of cardiovascular events, and can be considered as “individualized coronary risk scoring” for those not considered to be of high or low risk. Medical practitioners should carefully counsel patients prior to CAC. CAC should only be undertaken if an alteration in therapy including embarking on pharmacotherapy is being considered based on the test result.

### Patient groups to consider Coronary Calcium Scoring

1. CAC is of most value in intermediate risk patients (absolute 10-year cardiovascular risk of 10-20%) who are asymptomatic, do not have known coronary artery disease and aged 45 – 75 years, where it has the ability to reclassify patients into lower or higher risk groups.
2. It may also be considered for lower risk patients (absolute 10-year cardiovascular risk 6-10%) particularly in those where traditionally risk scores underestimate risk e.g. especially in context of family history of premature CVD and possibly in patients with diabetes aged 40 to 60 years old.

### Patient groups in whom Coronary Calcium Scoring should not be considered

CAC is not recommended for patients who are:

1. At very low risk (<5% absolute 10 year risk); or,
2. High risk (>20% absolute 10 year risk) - as testing is unlikely to alter the recommended management. This includes some patients who are automatically considered to be high risk (eg. diabetics over 60 years old or diabetics with albuminuria, chronic kidney disease (eGFR < 45 mL/min), BP > 180/110, familial hypercholesterolaemia and cholesterol > 7.5 mmol/L) and therefore should be managed aggressively with optimal medical therapy; or
3. Patients with documented coronary disease, and
4. Symptomatic patients with possible cardiac chest pain

## Interpretation of CAC

CAC = 0.	A zero score confers a very low risk of death, <1% at 10 years.
CAC = 1-100.	Low risk, <10%
CAC = 101-400.	Intermediate risk, 10-20%
CAC = 101-400 & >75th centile.	Moderately high risk, 15-20%
CAC > 400.	High risk, >20%

## Management recommendations based on CAC

Optimal diet and lifestyle measures are encouraged in all risk groups and form the basis of primary prevention strategies. Patients with moderately-high or high risk based on CAC score are recommended to receive preventative medical therapy such as aspirin and statins. The evidence for pharmacotherapy is less robust in patients at intermediate levels of CAC 100-400, with modest benefit for aspirin use; though statins may be reasonable if they are above 75th centile.

## Repeat CAC testing

In patients with a CAC of 0, a repeat CAC may be considered in 5 years but not sooner.

In patients with positive calcium score, routine re-scanning is not currently recommended. However, an annual increase in CAC of >15% or annual increase of CAC >100 units are predictive of future myocardial infarction and mortality.

## Cost effectiveness of CAC based primary prevention recommendations

There is currently no data in Australia & New Zealand that CAC is cost-effective in informing primary prevention decisions. Given the cost of testing is currently borne entirely by the patient, extensive discussions regarding the implications of CAC results should occur before CAC is recommended and undertaken.