

CT for coronary calcium scoring

The identification of coronary artery calcium (CAC) on a non-contrast computed tomography signifies the presence of coronary atherosclerosis and predicts major cardiac events independent of clinical risk factors. Measuring CAC score has been widely adopted to assist in the risk reclassification of coronary heart disease and to serve as an arbitrator for statin and aspirin therapy initiation. Whilst this general screening strategy brings precision to risk assessment, the most cost effective implementation algorithm has not been studied systematically. This is reflected in the variation of major global and inter-societal guidelines for CAC scoring with unknown public health and economic ramification.¹ Based on moderate quality, non-randomized evidence, the American College of Cardiology and the American Heart Association have specified the following clinical scenarios where CAC scoring is most likely to impact risk-based decision for preventive interventions²:

- o An LDL-C level ≥ 70 mg/dL (1.8 mmol/L) AND < 190 mg/dL (4.9 mmol/L)
- o Individual is an adult age 40-75
- o 10-year Atherosclerotic Cardiovascular Disease (ASCVD) risk including pooled cohort equation is between 5.0% to 19.9%
- o There is no documented coronary artery disease (CAD)
- o Individual is not currently on a statin
- o Individual is not a smoker
- o There is no history of diabetes
- o There is no family history of premature CAD
- o There has been no calcium score performed in the previous 5 years
- o There has been no prior calcium score > 0

In addition to CAC, the degree of calcification of the aortic valve has been demonstrated to correlate with the degree of aortic stenosis and prognosis. The utility of calcium scoring has been extended to the aortic valve in the setting of symptomatic, low

gradient aortic stenosis (defined as an aortic valve area of less than 1 cm² and mean gradient of less than 40 mmHg), when severe aortic stenosis is suspected.³

References:

1. Ilana S, et al. Major Global Coronary Artery Calcium Guidelines. J Am Coll Cardiol Img. 2023 Jan, 16 (1) 98–117.
2. Grundy SM, et al. 2018 AHA/ACC/AACVPR/AAPA/ABC/ACPM/ ADA/AGS/APhA/ASPC/NLA/PCNA guideline on the management of blood cholesterol: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. J Am Coll Cardiol 2019;73:e285–350.
3. Pawade T, et al. Why and How to Measure Aortic Valve Calcification in Patients With Aortic Stenosis. JACC Cardiovasc Imaging. 2019 Sep;12(9):1835-1848