

METABOLISM-U BLUEPRINT SERIES 40 • NOVEMBER 2026

CORONARY ARTERY CALCIUM (CAC) SCANNING

When a simple CT scan can reveal coronary plaque

Rodney C. Curtis, MD | Metabolism-U LLC | Evidence review: November 4, 2026

Medical and educational disclaimer

This Blueprint is for general educational purposes only. It does not constitute individualized medical advice, diagnosis, screening authorization, or a recommendation to change prescription treatment. CAC findings must be interpreted alongside symptoms, medical history, medications, family history, and validated risk assessment by a qualified clinician. New or concerning chest pain, shortness of breath, fainting, or other possible cardiac symptoms require prompt medical evaluation; do not rely on a CAC scan to assess an acute problem. The author's personal experience is illustrative and is not evidence that the same approach is appropriate for other individuals.

The central message

A normal exercise stress test or echocardiogram is reassuring about what those tests measure—but neither reliably excludes coronary atherosclerosis. A coronary artery calcium (CAC) scan can reveal calcified plaque before symptoms develop and can change preventive treatment decisions. It is not a universal screening test, a test for active coronary blockage, or a guarantee of future outcomes. The right question is whether its result would meaningfully change care. [1–3]

What is a CAC scan?

A CAC scan is a brief, ECG-gated, noncontrast CT examination of the heart. It measures calcium within coronary artery plaque and reports an Agatston score. No IV contrast, treadmill exercise, or catheter is required. The scan commonly takes about 10–15 minutes including setup. Radiation exposure is generally low, but varies by equipment and protocol. [2,3]

Calcium indicates coronary atherosclerosis; it does not directly measure the degree of arterial narrowing, identify all noncalcified ("soft") plaque, or tell whether a specific plaque will rupture. CAC=0 means no detectable calcified plaque—not "no coronary disease" or "zero risk." [1–3]

Why this matters: my personal experience

For years I lived with obesity and a sedentary lifestyle. After losing substantial weight and markedly improving my cardiovascular endurance, I underwent testing that showed excellent echocardiographic and exercise-stress findings. I was told that my likelihood of a cardiac event appeared low. Yet, given my long-term risk-factor history, I requested a coronary calcium scan.

My coronary calcium scan on September 26, 2023, showed a total Agatston score of 370.7 (reported 50th–75th percentile for my age and sex), with the largest contribution from the right coronary artery (316). This identified a substantial burden of calcified coronary atherosclerosis and led to a more aggressive preventive strategy, including much lower lipid levels and close blood-pressure control. Without that additional information, my preventive management might not have been as intensive.

For me, learning that I already had a substantial coronary plaque burden made an otherwise invisible disease tangible. It reinforced that my improved fitness, weight loss, and reassuring functional tests did not eliminate my underlying atherosclerosis. More importantly, the finding gave me a concrete reason to work with my clinicians on modifiable risk factors—particularly sustained weight management, intensive lipid lowering, and maintaining healthy blood pressure. The scan did not predict that I would have a heart attack; it helped me understand why prevention deserved continued attention.

My experience illustrates an important distinction: fitness and normal functional cardiac testing do not erase plaque accumulated over previous decades. My CAC score of 370.7 documents substantial calcified plaque burden, but does not specify an individual event probability or predict when a heart attack might occur. It does NOT establish that everyone should undergo CAC screening. I am describing a personal clinical experience, not prescribing a treatment protocol.

What does the score mean?

CAC (Agatston units)	Interpretation and possible prevention implications
0	No detectable coronary calcium; usually lower near-term risk, but not zero. Consider exceptions before deferring medication.
1–9	Minimal calcified plaque; prevention discussion remains individualized.
10–99	Mild plaque burden; lipid-lowering therapy is often favored depending on overall risk and percentile.
100–299	Moderate plaque burden; generally strengthens the case for lipid-lowering therapy.
300–999	Severe plaque burden; high-risk finding that may justify intensive LDL-C lowering.
≥1,000	Extensive plaque burden; especially high-risk finding requiring careful clinical assessment.

These are plaque-burden categories in the 2026 ACC/AHA dyslipidemia guideline—not fixed predictions of an individual's probability of heart attack. Age, sex, CAC percentile, symptoms, diabetes, smoking, kidney disease, lipids, family history, and treatment all matter. [1]

Who should consider discussing a CAC scan?

The 2026 ACC/AHA dyslipidemia guideline supports selective CAC use in men ≥40 and women ≥45, particularly those at intermediate estimated risk or selected borderline-risk adults when preventive lipid-lowering decisions remain uncertain. CAC can also help refine the intensity of treatment in selected adults already assessed as intermediate or high risk. Clinicians should first assess conventional risk factors, often using the AHA PREVENT equations, then ask whether CAC would alter management. [1]

- An asymptomatic adult whose clinician and patient are uncertain whether to start a statin or, importantly, how intensively to lower LDL cholesterol.
- Someone with risk-enhancing factors or a substantial history of adverse metabolic health for whom conventional risk estimates may not tell the full story, as in my case.
- A patient who would act on the information—through a shared decision about lipid therapy and other risk-factor management.

CAC is generally less useful when treatment is already clearly indicated (for example, many patients with diabetes, very high LDL-C, or established ASCVD), or when a low-risk patient would not change management regardless of the result. People with chest pain or concerning symptoms need a diagnostic evaluation appropriate to their symptoms—not a screening CAC scan. [1–3]

What benefits can the test offer?

- Better risk stratification: CAC predicts future coronary events beyond standard risk factors in observational cohorts, especially among intermediate-risk adults. [1,4]
- More personalized lipid decisions: CAC >0, especially ≥100, supports lipid-lowering therapy; CAC ≥300 may support a very intensive LDL-C goal in selected patients. [1]
- A potential "de-risking" result: CAC=0 may support deferring medication temporarily in appropriately selected people—never automatically in those with major exceptions. [1]
- A concrete prevention conversation: results can clarify risk and motivate adherence, although improved motivation alone is not proof of fewer heart attacks. [2,4]

What are the limitations, risks, and possible downsides?

- Low-dose ionizing radiation; cumulative exposure matters if scans are repeated unnecessarily. [3]
- Incidental findings, anxiety, out-of-pocket costs, and follow-up tests or procedures that may not improve outcomes. [2]
- False reassurance: a zero score misses noncalcified plaque and does not rule out future events, particularly in younger adults or higher-risk patients. [1,2]
- Potential overtreatment or inappropriate interpretation: a high CAC score is not, by itself, an indication for invasive angiography or stress testing in an asymptomatic person. [1–3]
- No randomized trial has conclusively shown that a strategy of routinely screening asymptomatic adults with CAC reduces heart attacks or mortality compared with good guideline-based care without CAC. [2]

What CAC cannot detect: noncalcified plaque and heart attacks without obstructive disease

A CAC scan detects calcified coronary plaque, not noncalcified ("soft") plaque. Therefore, a CAC score of zero does not prove that the coronary arteries are free of atherosclerosis. Noncalcified plaques can be present despite CAC=0, and some can rupture or erode, triggering a clot and a heart attack. Coronary CT angiography (CCTA) can visualize both calcified and noncalcified plaque when clinically indicated, but it is a different test and is not recommended as routine screening for all asymptomatic adults. [1,6]

Importantly, some myocardial infarctions occur without significant obstruction in the major coronary arteries (often described as myocardial infarction with nonobstructive coronary arteries, or MINOCA). Potential mechanisms include disruption of a small or nonobstructive plaque, coronary artery spasm, coronary embolism, spontaneous coronary artery dissection, and microvascular dysfunction. Occasionally, the major coronary arteries may appear normal on angiography or at postmortem examination; however, that appearance alone cannot establish the exact mechanism of death or exclude transient obstruction or microscopic disease. A CAC scan cannot anticipate these mechanisms. [7]

The practical message: CAC helps estimate longer-term risk from calcified coronary atherosclerosis and can refine prevention decisions, but it cannot predict whether or when an individual will experience a heart attack. A zero score usually indicates lower near-term atherosclerotic risk—not zero risk—and a positive score identifies plaque burden rather than a certain future event. CAC should complement, never replace, assessment of symptoms, blood pressure,

lipids, diabetes, smoking, family history, and other risk factors. New chest discomfort or other possible heart-attack symptoms require prompt medical evaluation regardless of CAC score. [1,6,7]

Why do some clinicians oppose routine CAC screening?

The disagreement is legitimate. The USPSTF concluded that evidence was insufficient to determine whether adding CAC to conventional risk assessment improves hard outcomes in asymptomatic adults. Critics note that an excellent predictor is not necessarily a proven screening program: patients can incur radiation, cost, incidental findings, unnecessary testing, and anxiety. They also argue that statins, blood-pressure treatment, and lifestyle measures should already be offered when conventional risk warrants them—without needing a scan. [2]

In contrast, the 2026 ACC/AHA guideline endorses targeted use because CAC meaningfully reclassifies risk and can improve the precision of lipid-lowering decisions. These positions are not mutually exclusive: selective testing when it changes management is different from indiscriminate screening of everyone over 50. [1,2]

When should it be done—and should it be repeated?

If the first CAC score is zero

The 2026 ACC/AHA guideline states that, when lipid-lowering therapy is deferred after CAC=0 in an otherwise appropriate borderline- or intermediate-risk adult, repeating CAC in approximately 3–7 years is reasonable, tailored to baseline risk. Lower-risk individuals may wait toward the longer end; higher-risk individuals may merit earlier reassessment. This is NOT a universal “repeat every five years” instruction. In patients with diabetes, active smoking, severe hypercholesterolemia/familial hypercholesterolemia, or strong premature family history, CAC=0 should not be used to automatically withhold indicated therapy. [1]

If the first CAC score is positive

There is no guideline-supported routine rescan interval for everyone with CAC>0. When plaque is established and prevention decisions are clear, serial CAC scans usually add little to treatment decisions. Calcium can increase despite effective statin treatment as plaques become more calcified/stabilized, so score progression is not a reliable treatment-response marker. Follow LDL-C/non-HDL-C or ApoB as appropriate, blood pressure, diabetes measures, symptoms, and overall risk—not the CAC number alone. A repeat scan may occasionally be considered for a specific unresolved clinical question, but “one positive scan and never repeat” is a useful general principle, not an absolute rule. [1,5]

What should happen after a positive result?

A positive CAC result should prompt a clinician-guided assessment—not panic. The priority is intensive management of modifiable risk: smoking avoidance, physical activity, nutrition, blood pressure, diabetes when present, and lipid lowering. The 2026 guideline recommends lipid-lowering therapy for appropriate intermediate-risk and selected borderline-risk adults with CAC>0, particularly ≥100 or ≥75th percentile. For CAC≥300, an LDL-C target <55 mg/dL may be reasonable in selected patients, reflecting very high plaque burden; it is not a universal target for every positive scan. [1]

Metabolism-U recommendation

STRONGLY CONSIDER DISCUSSING CAC IN APPROPRIATE ADULTS—not “everyone should be scanned.” If you are asymptomatic, at borderline/intermediate risk, and unsure about lipid-lowering treatment, ask your clinician whether a CAC result would change your prevention plan. If the answer is no, the test may add little value. A normal stress test or strong fitness performance should not be interpreted as proof that coronary plaque is absent.

Knowing that coronary plaque is present can help some people recognize that atherosclerosis is an existing condition—not merely an abstract future possibility. That knowledge may support informed, personally meaningful decisions to reduce excess weight when appropriate, improve LDL cholesterol and other lipid measures, maintain healthy blood pressure, exercise regularly, avoid tobacco, and address diabetes or other risk factors. These steps can reduce

cardiovascular risk, although no individual action or CAC result guarantees that a heart attack will be prevented. A CAC scan is most valuable when its result adds useful information and leads to an evidence-based prevention discussion; it should not replace conventional risk assessment or be used as a stand-alone diagnosis of an impending event.

Three useful questions: (1) What is my estimated cardiovascular risk, including risk-enhancing factors? (2) Would CAC=0 versus CAC≥100 change the treatment decision? (3) If the result is positive, what specific changes would we make to lipid, blood-pressure, and other risk management?

CAC scanning: potential benefits versus limitations

The value of CAC screening is not simply learning a number. It is whether the result meaningfully improves a person's understanding of risk and supports an appropriate prevention decision.

Potential advantages	Limitations and possible disadvantages
Detects established calcified coronary atherosclerosis that may be present despite good exercise capacity or normal functional testing.	Does not detect noncalcified plaque or reliably identify a vulnerable lesion; CAC=0 does not mean zero risk.
Can reclassify estimated cardiovascular risk and clarify decisions about lipid-lowering treatment when uncertainty remains.	Often adds little when preventive treatment is already clearly indicated or when the result would not change management. However, in some cases, may result in more intense treatment.
Seeing objective evidence of plaque may make risk more tangible and motivate some people to improve medication adherence, diet, activity, weight, and blood-pressure control.	Behavior change is not guaranteed. Studies suggest possible improvements in risk-factor management, but direct proof that CAC-guided screening itself prevents heart attacks remains insufficient.
Quick, noninvasive CT without intravenous contrast; usually requires no special preparation.	Exposes patients to a small amount of ionizing radiation; costs and insurance coverage vary.
A zero score can help selected lower-risk patients and clinicians discuss whether medication can reasonably be deferred.	A zero score is less reassuring in some higher-risk groups, including certain smokers and people with diabetes or strong family histories.
May support a shared, personalized prevention plan and improve understanding of lifelong risk.	Incidental findings, anxiety, downstream testing, expense, and overtreatment are possible; it is not a diagnostic test for chest pain.

Metabolism-U perspective: A CAC result may be a useful wake-up call, but its strongest established role is risk stratification—not predicting an individual heart attack or guaranteeing improved adherence. Discuss whether knowing the result would actually change your prevention plan. [1, 2, 4, 5]

Selected scientific references and current recommendations

[1] 2026 ACC/AHA multisociety guideline on the management of dyslipidemia. Circulation. DOI: 10.1161/CIR.0000000000001423. https://doi.org/10.1161/CIR.0000000000001423

[2] US Preventive Services Task Force. Cardiovascular disease: risk assessment with nontraditional risk factors. JAMA. 2018;320:272–280. https://www.uspreventiveservicestaskforce.org/uspstf/recommendation/cardiovascular-disease-screening-using-nontraditional-risk-assessment (update in progress as of November 2026).

[3] American Heart Association. Coronary Artery Calcium Test. Reviewed June 5, 2026. https://www.heart.org/en/health-topics/heart-attack/diagnosing-a-heart-attack/cac-test

[4] Guideline-Directed Application of Coronary Artery Calcium Scores for Primary Prevention of ASCVD. JACC Cardiovasc Imaging. 2025;18:465–475. https://doi.org/10.1016/j.jcmg.2024.12.008

[5] National Lipid Association scientific statement on CAC scoring to guide preventive strategies. J Clin Lipidol. 2021. https://pubmed.ncbi.nlm.nih.gov/33419719/

[6] 2026 ACC/AHA multisociety dyslipidemia guideline. Discussion of noncalcified plaque on CCTA in individuals with CAC=0. Circulation. DOI: 10.1161/CIR.0000000000001423. https://doi.org/10.1161/CIR.0000000000001423

[7] Tamis-Holland JE, et al. Contemporary Diagnosis and Management of Patients With Myocardial Infarction in the Absence of Obstructive Coronary Artery Disease: A Scientific Statement From the American Heart Association. Circulation. 2019;139:e891–e908. doi:10.1161/CIR.0000000000000670. https://pubmed.ncbi.nlm.nih.gov/30913893/