Molina Clinical Policy
Measurement of Carotid Intima-Media Thickness for Prediction of Clinical Vascular Events
Policy No. 235

Last Approval: 10/14/2026
Next Review Due By: October 2027

DISCLAIMER

This Molina Clinical Policy (MCP) is intended to facilitate the Utilization Management process. Policies are not a supplementation or recommendation for treatment. Providers are solely responsible for the diagnosis, treatment, and clinical recommendations for the member. It expresses Molina's determination as to whether certain services or supplies are medically necessary, experimental, investigational, or cosmetic for purposes of determining appropriateness of payment. The conclusion that a particular service or supply is medically necessary does not constitute a representation or warranty that this service or supply is covered (e.g., will be paid for by Molina) for a particular member. The member's benefit plan determines coverage – each benefit plan defines which services are covered, which are excluded, and which are subject to dollar caps or other limits. Members and their providers will need to consult the member's benefit plan to determine if there are any exclusion(s) or other benefit limitations applicable to this service or supply. If there is a discrepancy between this policy and a member's plan of benefits, the benefits plan will govern. In addition, coverage may be mandated by applicable legal requirements of a State, the Federal government or CMS for Medicare and Medicaid members. CMS's Coverage Database can be found on the CMS website. References included were accurate at the time of policy approval and publication.

OVERVIEW

Carotid intima-media thickness (CIMT) measurement is a noninvasive test that uses B-mode ultrasound to measure the thickness of the two innermost layers (the intima and the media) of the carotid arteries. The intima is the innermost layer of an artery, while the media is its middle layer. As magnetic resonance imaging (MRI) has become increasingly available, this technology now offers a novel application to obtain CIMT imaging (De Groot 2025). CIMT is utilized as a marker of subclinical atherosclerosis, and its measurement has been suggested as a tool for cardiovascular risk assessment. Routinely, carotid ultrasonography is utilized for the examination of ischemic cerebrovascular symptoms. In the context of risk stratification, including carotid ultrasonography, the intima-media thickness is assessed to detect preclinical or subclinical cardiovascular disease. The results are evaluated for any thickening or indications of anatomical alterations resulting from early atherosclerosis. Detection and monitoring of intima-medial thickening has been proposed to allow for earlier intervention and/or monitoring of disease progression. However, its clinical utility for improving patient outcomes remains unproven (Arnett et al. 2019; Degroot 2025).

COVERAGE POLICY

Ultrasonographic measurement of Carotid Intima-Media Thickness (CIMT) for prediction of clinical vascular events is considered **experimental, investigational, and unproven** due to insufficient evidence in the peer-reviewed medical literature to establish long-term safety, efficacy, and effect on net health outcomes.

DOCUMENTATION REQUIREMENTS: Molina Healthcare reserves the right to require that additional documentation be made available as part of its coverage determination; quality improvement; and fraud; waste and abuse prevention processes. Documentation required may include, but is not limited to, patient records, test results and credentials of the provider ordering or performing a drug or service. Molina Healthcare may deny reimbursement or take additional appropriate action if the documentation provided does not support the initial determination that the drugs or services were medically necessary, not investigational, or experimental, and otherwise within the scope of benefits afforded to the member, and/or the documentation demonstrates a pattern of billing or other practice that is inappropriate or excessive.

SUMMARY OF MEDICAL EVIDENCE

CIMT is associated with future cardiovascular events, however, the incremental clinical utility of CIMT measurement beyond established risk assessment has not been adequately demonstrated. Prospective studies provide inadequate clinical evidence that the use of this technology alters patient management and improves clinical outcomes, and meta-analyses show that the predictive value of CIMT is uncertain and that the predictive ability for any level of population risk cannot be determined with precision (Lorenz et al. 2010; Peters et al. 2021). There is a lack of randomized-controlled trials (RCTs) assessing the clinical utility of measuring CIMT for cardiac risk stratification, and no specific guidance on how measurements of CIMT should be incorporated into risk assessment and risk management. There is also a lack of standardization of measurement and imaging protocols and a lack of consensus regarding what constitutes expected normal limits. The literature does not show that CIMT can improve risk prediction beyond what traditional risk factors can provide, nor does it show the effect of these measurements on patient outcomes. No

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scientific literature directly evaluates the premise that CIMT measurement improves patient outcomes, nor is there guidance on how to incorporate CIMT data into risk assessment and risk management. The evidence is insufficient to assess the technology's impact on health outcomes.

Systematic Reviews and Meta-Analyses

Ling et al. (2023), published a systematic review and meta-analysis that evaluated the predictive value of carotid intima-media thickness (CIMT) for future cardiovascular disease (CVD) events, analyzing data from eighteen articles representing 14 prospective cohort studies. These studies were selected from an initial pool of 2,287 screened articles and included more than 10 distinct definitions of CIMT. These definitions included measurements from the common carotid artery (CCA-IMT), internal carotid artery (ICA-IMT), and combined segment approaches (combined-IMT), and both mean and maximum CCA-IMT values. The primary outcome was the association between a one standard deviation increase in CIMT and the incidence of stroke, myocardial infarction (MI), and CVD events. Across definitions, increased CIMT was consistently associated with elevated cardiovascular risk. Notably, combined-IMT demonstrated the strongest predictive value for stroke and overall CVD events, while maximum CCA-IMT was more effective in identifying MI risk than mean CCA-IMT. ICA-IMT was predictive of stroke and CVD events but showed weaker association with MI. The authors emphasize the need for standardized measurement protocols and additional research to validate these findings and explore underlying mechanisms.

Azcui Aparicio et al. (2021) conducted a systematic review to examine the predictive usefulness of CIMT, carotid plaque identification, and coronary artery calcium (CAC) score in diagnosing sub-clinical atherosclerosis and estimating future risk of CVD in asymptomatic, low-to-moderate risk patients. The review included 30 studies with 92,498 participants (23 prospective cohort studies, 1 retrospective cohort study, 1 case-control study, and 5 cross-sectional studies). In 11 studies, the average duration of follow-up was 10.3±4.8 years and the median duration was 6.0 years. Inclusion of CAC scores resulted in the greatest hazard ratio, ranging from 1.45 (95% CI, 1.11–1.88, p = 0.006) to 3.95 (95% CI, 2.97–5.27, p 0.001), followed by maximal CIMT (HR 1.08; 95% CI, 1.06–1.11, p 0.001 to 2.58; 95% CI, 1.83–3.62, p 0.001) and carotid plaque presence CAC had the highest net reclassification index (11.2%), followed by carotid plaque (2%) and CIMT (3%). The authors concluded that CAC scoring is superior to carotid plaque and CIMT assessments in asymptomatic, low-to-moderate risk people. This systematic review noted the variety of ultrasound indicators employed in different articles, particularly those for CIMT, as a drawback. Furthermore, this study did not address how CIMT affects patient management and improves clinical outcomes.

Willeit et al. (2020) conducted a meta-analysis of randomized clinical trials to evaluate CIMT progression as a surrogate marker for multiple types of CVD endpoints, including myocardial infarction, stroke, revascularization procedures, and fatal CVD. The analysis included 119 RCTs involving 100,667 patients who were followed for an average of 3.7 years. A total of 12,038 patients developed the combined CVD end point. Each 10 μm/y reduction in CIMT progression across all interventions led to a relative risk for CVD of 0.91 (0.87-0.94), and an additional relative risk for CVD of 0.92 (0.87-0.97) was reached independently of CIMT progression. The total estimated relative risks for interventions slowing CIMT progression by 10, 20, 30, or 40 μm/y are 0.84 (0.75-0.93), 0.76 (0.67-0.85), 0.69 (0.59-0.79), or 0.63 (0.52-0.74), respectively. Results were comparable when trials were categorized by intervention type, conduct date, time to ultrasonography follow-up, availability of participant-specific data, primary versus secondary preventive trials, type of CIMT measurement, and percentage of female patients. The analysis demonstrated a statistically significant association between treatment effects on progression of CIMT and treatment effects on CVD. Results were comparable when trials were grouped by intervention type, time of conduct, time to ultrasonography follow-up, availability of participant-specific data, primary vs. secondary preventive trials, type of CIMT measurement, and proportion of female patients. The authors found that the effects of therapies on CIMT progression and on CVD risk are related, hence validating the utility of CIMT progression as a surrogate marker in clinical trials. The study had limitations, which should be noted. The type of therapeutic intervention varied across the trials included, which may influence the CIMT surrogate value, and the individuals had varying comorbidities. Further, the study did not investigate how incorporating CIMT measurement into clinical care affects patient management and clinical outcomes.

Kumar et al. (2020) performed a meta-analysis to determine the relationship between common CIMT and stroke risk. The study included 19 studies; 16 studies involving 3475 ischemic stroke cases and 11,826 controls; 6 studies with 902 large vessel disease and 548 small vessel diseases of ischemic stroke subtypes; 5 studies with 228 intracerebral hemorrhage and 1032 ischemic stroke cases. The authors reported that increased CIMT was associated with a higher risk of ischemic stroke when compared to control subjects. There was a higher risk of large vessel disease compared

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to the small vessel diseases subtype of ischemic stroke and a higher likelihood of ischemic stroke occurrence rather than intracerebral hemorrhage. The authors found that CIMT is related to the risk of stroke and may be utilized as a diagnostic marker to predict the probability of stroke occurrences; however, to validate the findings, prospective research with larger sample sizes is required.

Non-Randomized Studies, Retrospective Reviews and Other Evidence

Mitra et al. (2025) conducted a large prospective cohort study of 29,292 adults aged 40 to 69 years from the UK Biobank. who were free of cardiovascular disease at baseline (median follow-up of 4.3 years). The primary objective was to determine whether CIMT and a composite cardiometabolic-risk biomarker index (CRBI) were associated with major adverse cardiovascular events, with particular focus on coronary heart disease, heart failure, and myocardial infarction. CIMT was measured using standardized automated carotid ultrasound, and the CRBI was constructed from hemoglobin A1C, blood pressure, and total cholesterol ratio to reflect cumulative cardiometabolic burden. Higher CIMT values, especially those exceeding 800 μm, were associated with increased risk of coronary heart disease and myocardial infarction. The CRBI was strongly correlated with higher CIMT and future myocardial infarction risk, indicating that cumulative metabolic burden contributes to subclinical atherosclerosis. Conversely, CIMT did not demonstrate a meaningful association with stroke, dementia, peripheral vascular disease, or aortic aneurysm; however, relatively few events were observed for these outcomes. Limitations to this observational study were CIMT and CRBI were measured only at baseline, lifestyle factors were self-reported, short term follow up, and a lack of generalizable findings as the cohort was predominantly white and from a single country. The study did not evaluate whether incorporating CIMT or CRBI into clinical decision-making improves patient management or outcomes. As a result, while CIMT shows statistical association with coronary heart disease and myocardial infarction, the study does not demonstrate that CIMT measurement provides actionable information that changes care.

Fernandez-Alvarez et al. (2025) published a narrative review examining the role of arterial stiffness and CIMT as non-invasive markers of subclinical atherosclerosis and their potential utility in cardiovascular risk assessment. Drawing on a broad range of previously published observational studies and clinical trials, the authors synthesized evidence linking elevated arterial stiffness and CIMT values to increased risk of future stroke and coronary heart disease. The review highlights that both markers are independently associated with early vascular changes and may offer incremental predictive value beyond traditional risk factors such as age, blood pressure, and lipid profile. However, the authors note that variability in measurement techniques, lack of standardized thresholds, and limited integration into clinical guidelines currently constrain the routine use in cardiovascular risk stratification. The article supports further research to validate these tools and refine their role in preventive cardiology, particularly in asymptomatic individuals.

Seekircher et al. (2024), in a conference abstract reporting individual participant data from approximately 47,358 participants in the Proof-ATHERO consortium, found that carotid intima-media thickness measured at the common carotid artery, bifurcation, and internal carotid artery segments showed positive and similarly strong associations with incident cardiovascular disease. Adding measurements from all three segments to conventional cardiovascular risk factors resulted in a greater improvement in risk discrimination than adding measurements from any single segment alone, although the overall improvement in discrimination remained modest (C-index improvement +0.0071 versus +0.0038 to +0.0056 for individual segments).

Seekircher et al. (2023) conducted an individual participant data meta-analysis of 41,941 participants from 16 prospective cohort studies in the Proof-ATHERO consortium. Near-wall and far-wall common carotid artery intima-media thickness (CCA-IMT) were positively and approximately linearly associated with incident cardiovascular disease. Although incorporation of CCA-IMT improved cardiovascular risk discrimination, the incremental improvement was small (C-index increases of 0.0023 to 0.0046), suggesting limited added clinical utility for cardiovascular risk prediction beyond established risk factors.

Gepner et al. (2015) completed a large prospective cohort study analyzing the comparative predictive value of coronary artery calcium (CAC) presence, carotid plaque presence, and high CIMT for predicting CVD among 6,779 adults involved in the Multi-Ethnic Study of Atherosclerosis. All participants were free of clinical CVD at baseline and were followed for a mean of 9.5 years. Carotid ultrasound was used to assess plaque and CIMT, and computed tomography was used to determine the CAC presence. High CIMT was defined as mean common CIMT at or above the 75th percentile for age, sex, and race. During follow-up, 538 CVD events, 388 coronary heart disease (CHD) events, and 196 stroke/TIA events occurred. Among the measures evaluated, CAC presence demonstrated the strongest

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association with future CVD and CHD events. Carotid plaque presence also predicted events but with weaker associations than CAC. Elevated CIMT ≥75th percentile alone did not independently predict CVD of CHD events. Addition of CAC presence to traditional risk factors produced the largest improvements in c-statistics for CVD and CHD prediction. Carotid plaque presence provided modest incremental improvement, while high CIMT offered no meaningful improvement of discrimination. For stroke/TIA, carotid plaque presence showed a modest association, but neither CAC nor high CIMT substantially improved discrimination beyond traditional risk factors. The authors concluded that CAC improves prediction of CVD and CHD more than carotid plaque presence or high CIMT.

National and Specialty Organizations

The **American College of Cardiology (ACC)** and **American Heart Association (AHA)** (2019) issued an update to the 2017 guideline on the primary prevention of CVD. This guideline does not include CIMT as a routine measurement in clinical practice for cardiovascular risk assessment or primary prevention decision making (Arnett et al. 2019).

The **ACC / AHA** published the *Guideline on the Assessment of Cardiovascular Risk* (Goff et al. 2014) that states CIMT is not recommended for routine measurement in clinical practice for risk assessment for first atherosclerotic cardiovascular disease (ASCVD) event. [Grade N: No Recommendation for or against; Level of Evidence B: Limited populations evaluated; data derived from a single randomized trial or nonrandomized studies; ACC/AHA Class III (No benefit – procedure/test not helpful].

The **American Society of Echocardiography (ASE)** published the guideline *Recommendations for the Assessment of Carotid Arterial Plaque by Ultrasound for the Characterization of Atherosclerosis and Evaluation of Cardiovascular Risk* (Johri et al. 2020) endorsed the recommendations stated in the 2008 consensus statement. Authors of the 2020 guidelines informed that "Since the largest portion of CIMT (approximately 99% in healthy individuals and approximately 80% when diseased) consists of the medial layer, CIMT has not been shown to consistently add to CVD risk prediction". The guideline further emphasizes carotid plaque assessment over CIMT for cardiovascular risk stratification and recommends against serial CIMT measurements in asymptomatic individuals.

CODING & BILLING INFORMATION

CPT (Current Procedural Terminology)

Code	Description
93895	Quantitative carotid intima media thickness and carotid atheroma evaluation, bilateral

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APPROVAL HISTORY

10/14/2026	Policy reviewed. No changes to coverage criteria. IRO Peer Review on October 5, 2026, by a practicing, board-certified physician in Cardiovascular Disease and Interventional Cardiology
10/08/2025	Policy reviewed. No changes to coverage criteria.
10/09/2024	Policy reviewed. No changes to coverage criteria.
10/12/2023	Policy reviewed. No changes to coverage criteria.
10/12/2022	Policy revised. IRO Peer Review September 2022, by a practicing, board-certified physician in Interventional Cardiology.
10/13/2021	Policy reviewed. No changes to coverage criteria.
09/16/2020	Policy reviewed. No changes to coverage criteria.
09/18/2019	Policy reviewed. No changes to coverage criteria.
07/10/2018	Policy reviewed. No changes to coverage criteria. IRO Peer Review. March 27, 2018, by a practicing, board-certified physician in Interventional Cardiology.
06/22/2017	Policy reviewed. No changes to coverage criteria.
09/15/2016	Policy reviewed. No changes to coverage criteria.
02/02/2015	New policy.

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