

MEDICAL POLICY

POLICY TITLE	ULTRASONOGRAPHIC MEASUREMENT OF CAROTID INTIMAL MEDIAL THICKNESS AS AN ASSESSMENT OF SUBCLINICAL ATHEROSCLEROSIS
POLICY NUMBER	MP 5.036

Effective Date:	10/1/2023
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I. POLICY

Ultrasonographic measurement of carotid artery intimal-medial thickness (CIMT) as a technique of identifying subclinical atherosclerosis is considered **investigational** for use in the screening, diagnosis, or management of atherosclerotic disease. There is insufficient evidence to support a general conclusion concerning the health outcomes or benefits associated with this procedure.

II. PRODUCT VARIATIONS

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This policy is only applicable to certain programs and products administered by Capital Blue Cross and subject to benefit variations as discussed in Section VI. Please see additional information below.

FEP PPO - Refer to FEP Medical Policy Manual. The FEP Medical Policy manual can be found at: <https://www.fepblue.org/benefit-plans/medical-policies-and-utilization-management-guidelines/medical-policies>

III. DESCRIPTION/BACKGROUND

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Ultrasonographic measurement of carotid intimal-medial thickness (CIMT) refers to the use of B-mode ultrasound to determine the thickness of the two innermost layers of the carotid artery wall, the intima and the media. Detection and monitoring of intimal-medial thickening (atherosclerosis) may provide an opportunity to intervene earlier in the atherogenic disease and/or monitor disease progression.

CORONARY HEART DISEASE

Heart disease is the leading cause of mortality in the United States, accounting for more than half of all deaths. Coronary heart disease (CHD), also known as coronary artery disease, is the most common cause of heart disease. In a 2023 update on heart disease and stroke statistics from the American Heart Association, it was estimated that 720,000 Americans have a new coronary attack (first hospitalized myocardial infarction or CHD death) and 335,000 have a recurrent attack annually. An estimated 20.5 million Americans ≥20 years of age have CHD. The prevalence of CHD was higher for males than females in all age groups. Total CHD prevalence is 7.1% in US adults ≥20 years of age; CHD prevalence is 8.7% for males and 5.8% for females. On the basis of data from the 2018 National Health Interview Survey, CHD prevalence estimates are 5.7% among White people, 5.4% among Black people, 8.6% among American Indian/Alaska Native people, and 4.4% among Asian people ≥18 years of age.

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Established major risk factors for CHD have been identified by the National Cholesterol Education Program Expert Panel. These risk factors include elevated serum levels of low-density lipoprotein cholesterol and total cholesterol, and reduced levels of high-density lipoprotein cholesterol. Other risk factors include a history of cigarette smoking, hypertension, family history of premature CHD, and age.

Diagnosis

The third report of the NCEP Adult Treatment Panel (ATP III) establishes various treatment strategies to modify the risk of CHD, based in part on target goals of LDL cholesterol. Pathology studies have demonstrated that levels of traditional risk factors are associated with the extent and severity of atherosclerosis. ATP III recommends use of the Framingham criteria to further stratify those patients with 2 or more risk factors for more intensive lipid management. However, at every level of risk factor exposure, there is substantial variation in the amount of atherosclerosis, presumably related to genetic susceptibility and the influence of other risk factors. Therefore, there has been interest in identifying a technique that can improve the ability to diagnose those at risk for developing CHD, as well as measure disease progression, particularly for those at intermediate risk.

The carotid arteries can be well visualized by ultrasonography, and ultrasonography measurement of the carotid intimal medial thickness (IMT) has been investigated as a technique to identify and monitor subclinical atherosclerosis. B-mode ultrasound is most commonly used to measure carotid IMT. The intimal-medial thickness is measured and averaged over several sites in each carotid artery. Imaging of the far wall of each common carotid artery yields more accurate and reproducible IMT measurements than imaging of the near wall. Two echogenic lines are produced, representing the lumen-intima interface and the media-adventitia interface. The distance between these two lines constitutes the CIMT.

Regulatory Status

In 2003, SonoCalc® (SonoSite) was cleared for marketing by the U.S. Food and Drug Administration (FDA) through the 510(k) process. FDA determined that this software was substantially equivalent to existing image display products for use in the automatic measurement of the IMT of the carotid artery from images obtained from ultrasound systems. Subsequently, other devices have been cleared for marketing by FDA through the 510(k) process. FDA product code: LLZ.

IV. RATIONALE

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SUMMARY OF EVIDENCE

For individuals who are undergoing cardiac risk assessment who receive ultrasonic measurement of carotid intima-media thickness (CIMT), the evidence includes large cohort studies and systematic reviews. Relevant outcomes are test accuracy and morbid events. Some studies correlate increased CIMT with many other commonly used markers for risk of coronary heart disease (CHD) and with risk for future cardiovascular events. A 2012 meta-analysis of individual participant data by Lorenz et al found that CIMT was associated with increased cardiovascular events although CIMT progression over time was not associated with increased

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cardiovascular event risk. In a 2012 systematic review by Peters et al, the added predictive value of CIMT was modest, and the ability to reclassify patients into clinically relevant categories was not demonstrated. The results from these reviews and other studies have demonstrated the predictive value of CIMT is uncertain, and that the predictive ability for any level of population risk cannot be determined with precision. In addition, available studies do not define how use of CIMT in clinical practice improves outcomes. There is no scientific literature that directly tests the hypothesis that measurement of CIMT results in improved patient outcomes and no specific guidance on how measurements of CIMT should be incorporated into risk assessment and risk management. The objective of one study, however, was to define “normal” CIMT progression in low to moderate CV risk patients. Study results showed definite patterns related to various factors that could be used as a tool to earlier identify patients at increased CV risk, but patient outcomes were not assessed. The evidence is insufficient to determine the effects of the technology on health outcomes.

V. DEFINITIONS

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N/A

VI. BENEFIT VARIATIONS

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The existence of this medical policy does not mean that this service is a covered benefit under the member's health benefit plan. Benefit determinations should be based in all cases on the applicable health benefit plan language. Medical policies do not constitute a description of benefits. A member's health benefit plan governs which services are covered, which are excluded, which are subject to benefit limits and which require preauthorization. There are different benefit plan designs in each product administered by Capital Blue Cross. Members and providers should consult the member's health benefit plan for information or contact Capital Blue Cross for benefit information.

VII. DISCLAIMER

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Capital Blue Cross's medical policies are developed to assist in administering a member's benefits, do not constitute medical advice and are subject to change. Treating providers are solely responsible for medical advice and treatment of members. Members should discuss any medical policy related to their coverage or condition with their provider and consult their benefit information to determine if the service is covered. If there is a discrepancy between this medical policy and a member's benefit information, the benefit information will govern. If a provider or a member has a question concerning the application of this medical policy to a specific member's plan of benefits, please contact Capital Blue Cross' Provider Services or Member Services. Capital Blue Cross considers the information contained in this medical policy to be proprietary and it may only be disseminated as permitted by law.

VIII. CODING INFORMATION

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Note: This list of codes may not be all-inclusive, and codes are subject to change at any time. The identification of a code in this section does not denote coverage as coverage is determined by the terms of member benefit information. In addition, not all covered services are eligible for separate reimbursement.

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Investigational when used for ultrasonographic measurement of carotid artery intimal-medial thickness (IMT) as a technique of identifying subclinical atherosclerosis for use in the screening, diagnosis, or management of atherosclerotic disease; therefore, the following are not covered:

Procedure Codes							
93895							

IX. REFERENCES

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1. Mozaffarian D, Benjamin EJ, Go AS, et al. Heart Disease and Stroke Statistics-2016 Update: A Report From the American Heart Association. *Circulation*. Jan 26 2016; 133(4): e38-360. PMID 26673558
2. Virani SS, Alonso A, Benjamin EJ, et al. Heart Disease and Stroke Statistics-2020 Update: A Report From the American Heart Association. *Circulation*. Mar 03 2020; 141(9): e139-e596. PMID 31992061
3. Pasternak RC. Report of the Adult Treatment Panel III: the 2001 National Cholesterol Education Program guidelines on the detection, evaluation and treatment of elevated cholesterol in adults. *Cardiol Clin*. Aug 2003; 21(3): 393-8. PMID 14621453
4. Mookadam F, Moustafa SE, Lester SJ, et al. Subclinical atherosclerosis: evolving role of carotid intima-media thickness. *Prev Cardiol*. 2010; 13(4): 186-97. PMID 20860643
5. Den Ruijter HM, Peters SA, Anderson TJ, et al. Common carotid intima-media thickness measurements in cardiovascular risk prediction: a meta-analysis. *JAMA*. Aug 22 2012; 308(8): 796-803. PMID 22910757
6. Lorenz MW, Polak JF, Kavousi M, et al. Carotid intima-media thickness progression to predict cardiovascular events in the general population (the PROG-IMT collaborative project): a meta-analysis of individual participant data. *Lancet*. Jun 02 2012; 379(9831): 2053-62. PMID 22541275
7. Van den Oord SC, Sijbrands EJ, ten Kate GL, et al. Carotid intima-media thickness for cardiovascular risk assessment: systematic review and meta-analysis. *Atherosclerosis*. May 2013; 228(1): 1-11. PMID 23395523
8. Plichart M, Celermajer DS, Zureik M, et al. Carotid intima-media thickness in plaque-free site, carotid plaques and coronary heart disease risk prediction in older adults. *The Three-City Study*. *Atherosclerosis*. Dec 2011; 219(2): 917-24. PMID 22005196
9. Keo HH, Baumgartner I, Hirsch AT, et al. Carotid plaque and intima-media thickness and the incidence of ischemic events in patients with atherosclerotic vascular disease. *Vasc Med*. Oct 2011; 16(5): 323-30. PMID 21908682
10. Nambi V, Chambless L, He M, et al. Common carotid artery intima-media thickness is as good as carotid intima-media thickness of all carotid artery segments in improving prediction of coronary heart disease risk in the Atherosclerosis Risk in Communities (ARIC) study. *Eur Heart J*. Jan 2012; 33(2): 183-90. PMID 21666250
11. Xie W, Liang L, Zhao L, et al. Combination of carotid intima-media thickness and plaque for better predicting risk of ischaemic cardiovascular events. *Heart*. Aug 2011; 97(16): 1326-31. PMID 21653216

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12. Peters SA, den Ruijter HM, Bots ML, et al. Improvements in risk stratification for the occurrence of cardiovascular disease by imaging subclinical atherosclerosis: a systematic review. *Heart*. Feb 2012; 98(3): 177-84. PMID 22095617
13. Dobs AS, Nieto FJ, Szklo M, et al. Risk factors for popliteal and carotid wall thicknesses in the Atherosclerosis Risk in Communities (ARIC) Study. *Am J Epidemiol*. Nov 15 1999; 150(10): 1055-67. PMID 10568620
14. Chambless LE, Heiss G, Folsom AR, et al. Association of coronary heart disease incidence with carotid arterial wall thickness and major risk factors: the Atherosclerosis Risk in Communities (ARIC) Study, 1987-1993. *Am J Epidemiol*. Sep 15 1997; 146(6): 483-94. PMID 9290509
15. van der Meer IM, Bots ML, Hofman A, et al. Predictive value of noninvasive measures of atherosclerosis for incident myocardial infarction: the Rotterdam Study. *Circulation*. Mar 09 2004; 109(9): 1089-94. PMID 14993130
16. O'Leary DH, Polak JF, Kronmal RA, et al. Carotid-artery intima and media thickness as a risk factor for myocardial infarction and stroke in older adults. *Cardiovascular Health Study Collaborative Research Group. N Engl J Med*. Jan 07 1999; 340(1): 14-22. PMID 9878640
17. Lorenz MW, Schaefer C, Steinmetz H, et al. Is carotid intima media thickness useful for individual prediction of cardiovascular risk? Ten-year results from the Carotid Atherosclerosis Progression Study (CAPS). *Eur Heart J*. Aug 2010; 31(16): 2041-8. PMID 20530503
18. Folsom AR, Kronmal RA, Detrano RC, et al. Coronary artery calcification compared with carotid intima-media thickness in the prediction of cardiovascular disease incidence: the Multi-Ethnic Study of Atherosclerosis (MESA). *Arch Intern Med*. Jun 23 2008; 168(12): 1333-9. PMID 18574091
19. Paramsothy P, Knopp RH, Bertoni AG, et al. Association of combinations of lipid parameters with carotid intima-media thickness and coronary artery calcium in the MESA (Multi-Ethnic Study of Atherosclerosis). *J Am Coll Cardiol*. Sep 21 2010; 56(13): 1034-41. PMID 20846602
20. Blaha MJ, Rivera JJ, Budoff MJ, et al. Association between obesity, high-sensitivity C-reactive protein 2 mg/L, and subclinical atherosclerosis: implications of JUPITER from the Multi-Ethnic Study of Atherosclerosis. *Arterioscler Thromb Vasc Biol*. Jun 2011; 31(6): 1430-8. PMID 21474823
21. Patel J, Al Rifai M, Blaha MJ, et al. Coronary Artery Calcium Improves Risk Assessment in Adults With a Family History of Premature Coronary Heart Disease: Results From Multiethnic Study of Atherosclerosis. *Circ Cardiovasc Imaging*. Jun 2015; 8(6): e003186. PMID 26047825
22. Camhi SM, Katzmarzyk PT, Broyles ST, et al. Subclinical atherosclerosis and metabolic risk: role of body mass index and waist circumference. *Metab Syndr Relat Disord*. Apr 2011; 9(2): 119-25. PMID 21133775
23. Green D, Foiles N, Chan C, et al. An association between clotting factor VII and carotid intima-media thickness: the CARDIA study. *Stroke*. Jul 2010; 41(7): 1417-22. PMID 20466994

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24. Bots ML, Palmer MK, Dogan S, et al. Intensive lipid lowering may reduce progression of carotid atherosclerosis within 12 months of treatment: the METEOR study. *J Intern Med.* Jun 2009; 265(6): 698-707. PMID 19298496
25. Baber U, Mehran R, Sartori S, et al. Prevalence, impact, and predictive value of detecting subclinical coronary and carotid atherosclerosis in asymptomatic adults: the Biolmage study. *J Am Coll Cardiol.* Mar 24 2015; 65(11): 1065-74. PMID 25790876
26. Geisel MH, Bauer M, Hennig F, et al. Comparison of coronary artery calcification, carotid intima-media thickness and ankle-brachial index for predicting 10-year incident cardiovascular events in the general population. *Eur Heart J.* Jun 14 2017; 38(23): 1815-1822. PMID 28379333
27. Villines TC, Hsu LL, Blackshear C, et al. Relation of Carotid Intima-Media Thickness to Cardiovascular Events in Black Americans (From the Jackson Heart Study). *Am J Cardiol.* Nov 01 2017; 120(9): 1528-1532. PMID 28844515
28. Johnson HM, Turke TL, Grossklaus M, et al. Effects of an office-based carotid ultrasound screening intervention. *J Am Soc Echocardiogr.* Jul 2011; 24(7): 738-47. PMID 21477989
29. Olmastroni E, Baragetti A, Casula M, et al. Multilevel Models to Estimate Carotid Intima-Media Thickness Curves for Individual Cardiovascular Risk Evaluation. *Stroke.* Jul 2019; 50(7): 1758-1765. PMID 31164073
30. Goff DC, Lloyd-Jones DM, Bennett G, et al. 2013 ACC/AHA guideline on the assessment of cardiovascular risk: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. *Circulation.* Jun 24 2014; 129(25 Suppl 2): S49-73. PMID 24222018
31. Greenland P, Alpert JS, Beller GA, et al. 2010 ACCF/AHA guideline for assessment of cardiovascular risk in asymptomatic adults: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. *J Am Coll Cardiol.* Dec 14 2010; 56(25): e50-103. PMID 21144964
32. Jellinger PS, Handelsman Y, Rosenblit PD, et al. AMERICAN ASSOCIATION OF CLINICAL ENDOCRINOLOGISTS AND AMERICAN COLLEGE OF ENDOCRINOLOGY GUIDELINES FOR MANAGEMENT OF DYSLIPIDEMIA AND PREVENTION OF CARDIOVASCULAR DISEASE - EXECUTIVE SUMMARY Complete Appendix to Guidelines available at journals.aace.com. *Endocr Pract.* Apr 02 2017; 23(4): 479-497. PMID 28156151
33. Stein JH, Korcarz CE, Hurst RT, et al. Use of carotid ultrasound to identify subclinical vascular disease and evaluate cardiovascular disease risk: a consensus statement from the American Society of Echocardiography Carotid Intima-Media Thickness Task Force. Endorsed by the Society for Vascular Medicine. *J Am Soc Echocardiogr.* Feb 2008; 21(2): 93-111; quiz 189-90. PMID 18261694
34. Calonge N, Petitti DB, DeWitt TG, et al. Using nontraditional risk factors in coronary heart disease risk assessment: U.S. Preventive Services Task Force recommendation statement. *Ann Intern Med.* Oct 06 2009; 151(7): 474-82. PMID 19805770
35. Curry SJ, Krist AH, Owens DK, et al. Risk Assessment for Cardiovascular Disease With Nontraditional Risk Factors: US Preventive Services Task Force Recommendation Statement. *JAMA.* Jul 17 2018; 320(3): 272-280. PMID 29998297

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36. Tschiderer L, Klingenschmid G, Seekircher L, et al. Carotid intima-media thickness predicts carotid plaque development: Meta-analysis of seven studies involving 9341 participants. *Eur J Clin Invest.* Apr 2020; 50(4): e13217. PMID 32112400
37. Johri AM, Nambi V, Naqvi TZ, et al. Recommendations for the Assessment of Carotid Arterial Plaque by Ultrasound for the Characterization of Atherosclerosis and Evaluation of Cardiovascular Risk: From the American Society of Echocardiography. *J Am Soc Echocardiogr.* Aug 2020; 33(8): 917-933. PMID 32600741
38. de Groot, E., & Duivenvoorden, R. (2022, February 28). Carotid intima-media thickness. UpToDate.
39. Blue Cross Blue Shield Association Medical Policy Reference Manual. 2.02.16, Ultrasonographic Measurement of Carotid Intima-Medial Thickness as an Assessment of Subclinical Atherosclerosis. June 2023.

X. POLICY HISTORY

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MP 5.036	CAC 01/27/2004
	CAC 05/31/2005
	CAC 06/27/2006
	CAC 07/31/2007
	CAC 07/29/2008
	CAC 07/28/2009
	CAC 05/25/2010 Adopted BCBSA Criteria
	CAC 04/26/2011 Consensus
	CAC 06/26/2012 Consensus. No change to policy statement.
	07/30/2013 Admin coding review completed
	CAC 09/24/2013 Consensus. No change to policy statement. Added rationale section. Updated references. Changed FEP variation to reference the policy manual.
	07/24/2014 Administrative update. Added LCD L34711 Non-invasive Cerebrovascular Arterial Studies to reference list.
	CAC 09/30/2014. Consensus. No change to policy statements. Reference and rationale sections updated.
	01/2015 New 2015 CPT codes added to policy.
	11/02/2015 Administrative change. LCD number changed from L32641 and L31686 to L35084 and L35094 due to Novitas update to ICD-10.
	CAC 09/29/2015 Consensus review. No change to the policy statement. Reference and rationale update. Coding Reviewed
	CAC 09/27/2016 Consensus review. No change to the policy statement. Reference and rationale update. Coding Reviewed. Variation reformatting.
CAC 11/28/2017 Consensus. No change to policy statements. References and rationale updated. Coding reviewed.	
10/16/2018 Consensus review. No change to policy statements. References updated. Rationale condensed.	

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07/15/2019 Consensus review. No change to policy statements. References updated.
06/26/2020 Consensus Review. No change to policy statements.
11/24/2020 Administrative update. CPT 0126T removed from policy as a deleted code.
06/23/2021 Consensus review. No change to policy statement. No coding changes. Description/Background updated. Product Variation statement updated. References reviewed and updated.
07/08/2022 Consensus review. No change to policy statement. FEP language updated. Coding table format updated. References reviewed.
6/22/2023 Consensus review. No change in policy statement. Background, rationale, references updated. No coding changes.

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