



Differences between Carotid Duplex Exam and the Carotid Intimal-Media Thickness (CIMT) Exam:

(for physicians and other healthcare providers)

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The Carotid IMT test is significantly different yet often confused with the Carotid Duplex exam. The Carotid Duplex exam examines blood velocity in the lumen of the vessel to determine whether an increase of velocity (caused by plaque in the lumen of the artery) has narrowed the vessel enough to cause a hemodynamic disturbance which would indicate a surgical intervention by a cardiologist or vascular surgeon. The Carotid Duplex, Stress Echo's, and similar tests whose primary purpose is to look for hemodynamic anomalies and/or disturbances are necessary and critical tools for physicians contemplating a surgical procedure and traditional secondary care of patients with advanced CVD diagnosis. However, none of these tests are indicated as a screening tool^{1,2}. This is because lumen narrowing < 70% does not warrant surgical intervention, and primary care patients may confuse a diagnosis of "no surgery needed" with a perception that they have low or no-risk for heart attack and/or stroke.

Unfortunately, >86% of the cardio and cerebrovascular events occur in patients with <70% blockage³. For asymptomatic patients, a complete carotid ultrasound exam which measures the amount of inflammation in the intima-media layers or walls of the arteries (CIMT or FIMT), and interrogation of these vessels for atherosclerotic plaque which significantly increases their risk of future events, has been recommended since 2000.⁴⁻⁶ A 10-year longitudinal study of >10,000 asymptomatic patients showed that IMT correctly identified 98.6% of those who went on to experience clinical events (e.g. heart attacks and strokes) before the events occurred⁷. Other large-scale epidemiologic studies such as ARIC revealed significantly higher lifetime hazard ratios in patients with increased IMT values^{8,9}. CIMT measurement protocols are not currently taught in medical or ultrasound schools, but have been used in research for >40 years. CardioRisk Laboratories has a CME course which teaches technologists how to minimize the coefficients of variability, and to verify the efficiency of testing through double-blind, performance-based certification where the standard deviation of the method is $\leq 0.02\text{mm}$ and the arithmetic difference between different sonographers, readers, and equipment was $\leq 0.002\text{mm}$ ¹⁰. We have not found another laboratory able to consistently demonstrate this level of proficiency, especially as it relates to post-training certification of new technologists. This level of reproducibility is consistent or significantly better than other laboratory results used to monitor efficacy of treatment of atherosclerotic disease.

Since cholesterol screenings, Framingham Risk Scoring, and other testing of asymptomatic patients consistently fail to catch even 50% of the at-risk asymptomatic population¹¹⁻¹², additional screening tools are needed to identify patients in need of a therapeutic intervention.





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