

AIM-LO: Non-HDL Cholesterol: The Best Measurement For Risk?

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Introduction

Hello, I'm Eva Lonn – cardiologist and co-author of the 2021 Canadian Cardiovascular Society Dyslipidemia Guidelines. Today I'm going to address the value of non-HDL cholesterol in predicting cardiovascular disease.

In the 2021 dyslipidemia guidelines, the Canadian Cardiovascular Society promoted non-HDL-cholesterol from its status as an alternative measurement for screening to being the generally preferred measurement over LDL-cholesterol, especially in patients with elevated triglycerides.

Non-HDL Cholesterol - The preferred measurement for screening

Two key reasons support this change from the previous guidelines: first, when triglycerides are above 1.5 mmol/L, some of the cholesterol in LDL particles is replaced by triglyceride, which promotes the production of more atherogenic small dense LDL particles and makes the amount of LDL-cholesterol an unreliable measurement of LDL particle number.

Second, other particles besides LDL accumulate in the artery wall and contribute to atherogenesis whereas HDL-cholesterol does not. Thus, non-HDL-cholesterol is a more accurate predictor of Cardiovascular event risk and lipid-lowering treatment benefit compared to LDL-cholesterol.

There are also practical benefits to measuring non-HDL-cholesterol over LDL-cholesterol. In Canada, non-HDL-cholesterol is now routinely reported on laboratory reports at no additional cost, and it is more convenient and reliable since levels are not significantly changed in the post-prandial state in individuals whose triglycerides are lower than 4.5 mmol/L.

Importance of Measuring Lp(a)

Another change in the 2021 Canadian Cardiovascular Society guidelines relates to lipoprotein(a) levels. Lp(a) is an LDL-like particle that is dose-dependently associated with increased risk for coronary heart disease and ASCVD in the primary prevention setting, and of recurrent ASCVD events in secondary prevention.

Plasma concentrations of Lp(a) are determined by a single gene and generally stable throughout life. Since they are not influenced by age, sex, fasting state, inflammation, or lifestyle factors, they do not require repeat measurements.

The CCS guidelines now recommend measuring Lp(a) levels once in a person's lifetime as part of initial lipid screening. Although it is strongly predictive of recurrent ASCVD events, it is not currently considered a treatment target.

Nevertheless, since Lp(a) is available across Canada and is covered in most provinces, clinicians should obtain an Lp(a) level in their patients both for CVD risk stratification and to help inform decisions about lipid-lowering treatment intensification.