

Apolipoprotein B in cardiovascular risk assessment

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■ Cite as: *CMAJ* 2023 August 28;195:E1124. doi: 10.1503/cmaj.230048

1 Apolipoprotein (apo) B measurement is a recommended alternative to low-density lipoprotein cholesterol (LDL-C)

The 2021 Canadian Cardiovascular Society guideline on dyslipidemia recommends that physicians may use levels of either non-high-density lipoprotein cholesterol (HDL-C) or apo B instead of LDL-C for screening and targets of treatment.¹ Non-HDL-C represents total cholesterol minus cholesterol from HDL particles; apo B represents the total number of atherogenic particles, since 1 apo B molecule is found on each LDL, very low-density lipoprotein, intermediate-density lipoprotein and lipoprotein(a) particle.²

2 Apolipoprotein B accurately predicts cardiovascular risk

Atherosclerosis is more closely associated with the number of apo B-containing lipoprotein particles than with cholesterol concentration. Clinical trials of statins, ezetimibe and inhibitors of proprotein convertase subtilisin/kexin type 9 indicate that levels of apo B more accurately predict risk of coronary heart disease than levels of LDL-C or non-HDL-C.³

3 The Canadian Cardiovascular Society provides a guideline for using the marker in clinical practice

The 2021 guideline recommends statin treatment for patients with an intermediate Framingham Risk Score (10%–19.9%) and an apo B level greater than 1.05 g/L, in addition to lifestyle modifications.¹ For patients with established cardiovascular disease, intensification of lipid-lowering therapy is indicated when thresholds are surpassed (LDL-C > 1.8 mmol/L, non-HDL-C > 2.4 mmol/L or apo B > 0.7 g/L).¹

4 Apolipoprotein B has practical advantages over other measures

Measurement of apo B is inexpensive and reimbursed across Canada, and can be performed by all laboratories. In contrast to both LDL-C and non-HDL-C, which are calculated, apo B is measured directly. Measurement of apo B does not require fasting and is accurate even when triglycerides are elevated or LDL-C is very low because of treatment.⁴

5 Some patients with apparently satisfactory levels of low-density lipoprotein cholesterol have high levels of apolipoprotein B

Levels of apo B and LDL-C are discordant in 20% of patients, including those with elevated triglycerides, type 2 diabetes or obesity. In some patients, LDL-C levels can appear satisfactory, but the true level of circulating atherogenic particles is actually high. An elevated apo B level in these patients predicts a higher risk of atherosclerotic cardiovascular disease.⁵ In such patients, treatment with a lipid-lowering drug should be considered.

References

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Competing interests: Robert Hegele reports consulting fees from Akcea-Ionis, Amgen, HLS Therapeutics, Pfizer, Novartis, Regeneron and Ultragenyx. No other competing interests were declared.

This article has been peer reviewed.

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