

Apolipoprotein B (ApoB)

Refining Cardiovascular Risk Management and LDL Treatment Decisions

Low-density lipoprotein (LDL) particles cause atherosclerotic cardiovascular disease (ASCVD).¹ Apolipoprotein B (ApoB) is the primary protein component of LDL and triglyceride-rich lipoprotein (TRL) particles.² The cholesterol content of these atherogenic lipoproteins can vary widely among patients, but each always contains one ApoB protein. Measured ApoB thus provides an accurate assessment of atherogenic particle number, whereas LDL cholesterol (LDL-C) does not.²

Although LDL-C, non-HDL-C, and ApoB are highly correlated, “discordance analyses” have demonstrated that ASCVD risk tracks with ApoB, not the cholesterol measures, when levels differ.² The most consequential clinical scenario is when ApoB is elevated more than LDL-C levels would indicate, such as encountered frequently in hypertriglyceridemic patients with obesity, metabolic syndrome, or diabetes.²⁻⁴ Such patients may be undertreated if their elevated atherogenic particle burden remains unrecognized.

Current dyslipidemia management guidelines recommend the measurement of ApoB for two purposes. The first is in primary prevention, with high ApoB ≥ 130 mg/dL in intermediate-risk patients without diabetes constituting a “risk-enhancing factor” that favors initiation of statin therapy.⁵ The second is to refine LDL-lowering therapeutic decision-making by identifying statin-treated patients with residual ASCVD risk who could benefit from additional therapy despite having achieved low target levels of LDL-C or non-HDL-C.⁶⁻⁸

Evidence that risk reduction is more strongly associated with ApoB decreases, rather than decreases in LDL-C or non-HDL-C, has come from a large meta-analysis of statin trials⁹ and two Mendelian randomization studies.^{10,11} These findings provide clinical support for the suggestion that add-on ezetimibe or PCSK9 inhibitor therapy

might benefit patients who have met cholesterol goals but not the corresponding ApoB goals² – either those recommended in guidelines⁶⁻⁸ or the lower targets based on percentile equivalence to LDL-C goals.^{3,12}

In most guidelines, the ApoB particle targets for very high-risk and high-risk patients that correspond to LDL-C < 70 and < 100 mg/dL are ApoB < 80 and < 90 mg/dL, respectively.⁶⁻⁸ Based on percentile equivalence to these LDL-C targets, ApoB targets are lower: < 60 and < 80 mg/dL for very high-risk and high-risk patients, respectively.^{3,12} One guideline recognizes an “extreme risk” category of patients and recommends goals of LDL-C < 55 mg/dL and ApoB < 70 mg/dL.⁶

LabCorp offers the following to assist clinicians with cardiovascular risk management decision-making:

Test Name	Test Number
Apolipoprotein B	167015
Reference Interval (mg/dL):	
Desirable < 90	Borderline High 90 - 99
High 100 - 130	Very High > 130
Pharmacotherapy Guide:	
ASCVD Risk Category	Therapeutic Target (mg/dL)
Very High Risk	< 80 (extreme risk < 70)
High Risk	< 90
Moderate Risk	< 90
Lipid Cascade With Reflex to Apolipoprotein B	363676

For the most current information regarding test options, including specimen requirements and CPT codes, please consult the online Test Menu at www.LabCorp.com.

References

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