

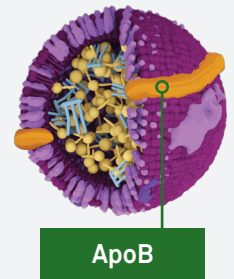
## Apolipoprotein B (apoB)



**ApoB** identifies atherogenic particles and is a marker for cardiovascular risk stratification

### Test description

Apolipoprotein B (apoB) is a major protein component of non-HDL lipoprotein particles. Each non-HDL lipoprotein particle has 1 apoB. Therefore, apoB levels represent the total number of atherogenic particles in circulation.<sup>1,2</sup> ApoB differs from the concentration of cholesterol, represented in traditional lipid values such as LDL-C and non-HDL-C, as it quantifies the number of particles delivering cholesterol. Many individuals with optimal values on a conventional lipid panel still experience cardiovascular disease (CVD) events or disease progression.<sup>2,3</sup>



ApoB

### Clinical significance

- High apoB alongside high triglycerides is the most common atherogenic dyslipoproteinemia and is frequently found in patients with obesity, metabolic syndrome, and type 2 diabetes<sup>4</sup>
- ApoB level is superior to LDL-C and non-HDL-C levels as a predictor of CVD events<sup>2,5</sup>
- ApoB level is associated with residual risk of CVD events and all-cause mortality in patients receiving statin therapy<sup>5-7</sup>
- ApoB is used to diagnose certain lipid disorders, including familial dysbetalipoproteinemia and familial combined hyperlipidemia (FCHL)<sup>8</sup>
- ApoB levels can be driven by a variety of factors including the amount of cholesterol, metabolic dysfunction, or genetic conditions. Its use has been suggested by multiple professional societies:

Professional society	Guideline recommendations
ESC & EAS <sup>9</sup>	ApoB analysis can be used as an alternative to LDL-C as the primary measurement for screening, diagnosis, and management and may be preferred over non-HDL-C in people with high triglycerides, type 2 diabetes mellitus, obesity, or very low LDL-C
AHA & ACC <sup>10,11</sup>	Elevated apoB ( $\geq 130$ mg/dL) is a risk-enhancing factor for CVD and can help guide decisions on interventions in individuals with borderline-to-intermediate risk (10-year ASCVD risk $\geq 5\%$ and $< 20\%$ )
AACE & ACE <sup>12</sup>	Elevated apoB is an additional risk factor that may be useful to assess residual risk and guide decision-making for at-risk individuals, even when target LDL-C levels are achieved <sup>a</sup>
NLA <sup>8,13</sup>	ApoB measurement is reasonable for patients receiving lipid-lowering therapy and may be reasonable for initial evaluation of CVD risk or as an optional secondary treatment target. ApoB measurement can assist diagnosis of familial dysbetalipoproteinemia and FCHL
WHF Roadmap <sup>14</sup>	Guideline recommendation: Where appropriate laboratory facilities exist, apoB should in time become the default measure of total atherogenic lipid burden, especially in conditions associated with insulin resistance

ESC, European Society of Cardiology; EAS, European Atherosclerosis Society; AHA, American Heart Association; ACC, American College of Cardiology; ASCVD, atherosclerotic cardiovascular disease; AACE, The American Association of Clinical Endocrinologists; ACE, American College of Endocrinology; NLA, National Lipids Association; WHF Roadmap, World Heart Federation Cholesterol Roadmap.

<sup>a</sup>At-risk individuals include those with triglyceride level  $\geq 150$  mg/dL, HDL-C  $< 40$  mg/dL, prior CVD event, type 2 diabetes mellitus, and/or insulin resistance syndrome.



### Elevated levels of apoB may indicate

- Risk for atherosclerotic CVD
- Residual cardiovascular risk in patients on lipid-lowering therapies

# ApoB relative risk (mg/dL)

<90 Optimal

90–129 Moderate

≥130 High

## Individuals suitable for testing

- Individuals with 1 or more risk factors for the development of CVD
- Individuals at borderline risk (5%–<7.5% 10-year ASCVD risk) or intermediate risk (≥7.5%–<20% 10-year ASCVD risk)<sup>10</sup>
- Individuals receiving lipid-lowering therapy<sup>6</sup>

## Treatment considerations<sup>b</sup>

Potential risk factor	Considerations
Lifestyle	Diet, <sup>15</sup> exercise, <sup>16</sup> and smoking cessation <sup>17</sup>
Lipids	Lipid-lowering therapies described in the AHA/ACC Guideline on the Management of Blood Cholesterol <sup>10</sup>
Insulin resistance	Insulin-sensitizing therapies described in the American Diabetes Association guidelines for the management of pre-diabetes/diabetes <sup>18</sup> Metabolic dysfunction increases apoB <sup>19</sup>

<sup>b</sup>The treatment considerations are provided for educational purposes only and are not intended as medical advice. A healthcare provider's test selection, interpretation, diagnosis, and patient management decisions should be based on their education, clinical expertise, and assessment of the patient. Specific treatment plans should be provided and reviewed by the treating provider.

Test name	Quest test code	CHL test code	CPT® code	Preferred specimen(s)
Apolipoprotein B	91726	C123	82172	Serum



**Assess apoB to identify atherogenic particles.**

For more information, contact your Cardiometabolic account executive.

## References

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