

Overview**Useful For**

Assessment of cardiovascular risk

Follow-up studies in individuals with basic lipid measures inconsistent with risk factors or clinical presentation

Definitive studies of cardiac risk factors in individuals with significant family histories of coronary artery disease or other increased risk factors

Confirmation of suspected abetalipoproteinemia or hypobetalipoproteinemia

Method Name

Automated Turbidimetric Immunoassay

NY State Available

Yes

Specimen**Specimen Type**

Serum

Specimen Required**Collection Container/Tube:**

Preferred: Serum gel

Acceptable: Red top

Submission Container/Tube: Plastic vial

Specimen Volume: 1 mL

Collection Instructions: Centrifuge and aliquot 1 mL of serum.

Forms

If not ordering electronically, complete, print, and send a [Cardiovascular Test Request Form](#) (T724) with the specimen.

Specimen Minimum Volume

0.5 mL

Reject Due To

Gross hemolysis	Reject
Gross lipemia	OK
Gross icterus	Reject

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Serum	Refrigerated (preferred)	8 days	
	Frozen	60 days	
	Ambient	24 hours	

Clinical and Interpretive
Clinical Information

Apolipoprotein B (ApoB) is the primary protein component of low-density lipoprotein (LDL). The amount of cholesterol contained within LDL varies, but each LDL contains exactly 1 ApoB protein. Therefore, ApoB is a more reliable indicator of circulating LDL compared to LDL cholesterol (LDL-C). ApoB has been demonstrated to perform equally with LDL particles measured by nuclear magnetic resonance spectroscopy.(1)

ApoB is strongly associated with increased risk of developing cardiovascular disease (CVD) and often outperforms LDL-C at predicting risk of coronary heart disease.(2-4) Patients with acceptable non-HDL-C (or LDL-C) but elevated ApoB remain at higher risk of developing CVD; conversely, patients with acceptably low ApoB but moderate non-HDL-C or LDL-C elevations are at a reduced risk for CVD.(5,6)

Finally, in 7 different placebo-controlled randomized clinical trials, on-statin reduction of ApoB was more closely related to CVD risk reduction than non-HDL-C or LDL-C.(7)

Reference Values

Age	Apolipoprotein B (mg/dL)
<24 months	Not established
2-17 years	Acceptable: <90 Borderline high: 90-109 High: > or =110
>18 years	Desirable: <90 Above Desirable: 90-99 Borderline high: 100-119 High: 120-139 Very high: > or =140

Interpretation

Elevated ApoB confers increased risk of atherosclerotic cardiovascular disease, even in a context of acceptable LDL cholesterol.

Extremely low values of ApoB (<48 mg/dL) are related to malabsorption of food lipids and can lead to polyneuropathy.

Cautions

In very rare cases, gammopathy, in particular type IgM (Waldenstrom macroglobulinemia), may cause unreliable results.

Clinical Reference

1. Cole TG, Contois JH, Csako G, et al: Association of apolipoprotein B and nuclear magnetic resonance spectroscopy-derived LDL particle number with outcomes in 25 clinical studies: assessment by the AACC Lipoprotein and Vascular Diseases Division Working Group on best practices. *Clin Chem* 2013;59:752-770
2. Sierra-Johnson J, Fisher RM, Romero-Corral A, et al: Concentration of apolipoprotein B is comparable with the apolipoprotein B/apolipoprotein A-I ratio and better than routine clinical lipid measurements in predicting coronary heart disease mortality: findings from a multi-ethnic US population. *Eur Heart J* 2009;30(6):710-717
3. Steffen BT, Guan W, Remaley AT, et al: Use of lipoprotein particle measures for assessing coronary heart disease risk Post-American Heart Association / American College of Cardiology Guidelines: The Multi-Ethnic Study of Atherosclerosis. *Arterioscler Thromb Vasc Biol* 2015;35:448-454
4. Thompson A, Danesh J: Associations between apolipoprotein B, apolipoprotein AI, the apolipoprotein B/AI ratio and coronary heart disease: a literature-based meta-analysis of prospective studies. *J Intern Med* 2006;259:481-492
5. Mora S, Buring JE, Ridker PM: Discordance of low-density lipoprotein (LDL) cholesterol with alternative LDL-related measures and future coronary events. *Circulation* 2014;129:553-561
6. Pencina MJ, D'Agostino RB, Zdrojewski T, et al: Apolipoprotein B improves risk assessment of future coronary heart disease in the Framingham Heart Study beyond LDL-C and non-HDL-C. *Eur J Prev Cardiol* 2015; epub ahead of print
7. Thanassoulis G, Williams K, Ye K, et al: Relations of change in plasma levels of LDL-C, non-HDL-C and apoB with risk reduction from statin therapy: a meta-analysis of randomized trials. *J Am Heart Assoc* 2014;3:e000759
8. Jacobson TA, Ito MK, Maki KC, et al: National Lipid Association recommendations for patient-centered management of dyslipidemia: Part 1-executive summary. *J Clin Lipidol* 2014 Sep-Oct;8(5):473-488
9. Expert panel on integrated guidelines for cardiovascular health and risk reduction in children and adolescents: summary report. *Pediatrics* 2011 Dec;128 Suppl 5:S213-S256
10. Contois JH, McConnell JP, Sethi AA, et al: Apolipoprotein B and Cardiovascular Disease Risk: Position Statement from the AACC Lipoproteins and Vascular Diseases Division Working Group on Best Practices. *Clinical Chemistry* 2009;55:3:407-419

Performance

Method Description

Antiapolipoprotein B antibodies react with the antigen in the sample to form antigen:antibody complexes which, following agglutination, can be measured turbidimetrically. (Package Insert: Tina-quant Apolipoprotein B, Roche Diagnostics. Indianapolis, IN. 05/2019)

PDF Report

No

Day(s) and Time(s) Test Performed

Monday through Saturday; Continuously

Analytic Time

1 day

Maximum Laboratory Time

3 days

Specimen Retention Time

1 week

Performing Laboratory Location

Rochester

Fees and Codes**Fees**

- Authorized users can sign in to [Test Prices](#) for detailed fee information.
- Clients without access to Test Prices can contact [Customer Service](#) 24 hours a day, seven days a week.
- Prospective clients should contact their Regional Manager. For assistance, contact [Customer Service](#).

Test Classification

This test has been cleared, approved or is exempt by the U.S. Food and Drug Administration and is used per manufacturer's instructions. Performance characteristics were verified by Mayo Clinic in a manner consistent with CLIA requirements.

CPT Code Information

82172

LOINC® Information

Test ID	Test Order Name	Order LOINC Value
APOLB	Apolipoprotein B, S	1884-6

Result ID	Test Result Name	Result LOINC Value
APOLB	Apolipoprotein B, S	1884-6