

## 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 serum into plastic vial. Send refrigerated.

### Forms

If not ordering electronically, complete, print, and send 1 of the following with the specimen:

[-Cardiovascular Test Request Form](#) (T724)

[-General Test Request](#) (T239)

### Specimen Minimum Volume

0.5 mL

### Reject Due To

Gross	Reject
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hemolysis	
Gross lipemia	OK
Gross icterus	Reject

**Specimen Stability Information**

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

**Clinical & Interpretive**
**Clinical Information**

Apolipoprotein B (ApoB) is the primary protein component of low-density lipoprotein (LDL). LDL contains a variable amount of cholesterol, but each LDL contains exactly one 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-high-density lipoprotein cholesterol (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**

Less than 2 years: Not established

2-17 years:

Acceptable: <90 mg/dL

Borderline high: 90-109 mg/dL

High: > or =110 mg/dL

Greater than 18 years:

Desirable: <90 mg/dL

Above Desirable: 90-99 mg/dL

Borderline high: 100-119 mg/dL

High: 120-139 mg/dL

Very high: > or =140 mg/dL

**Interpretation**

Elevated apolipoprotein B (ApoB) confers increased risk of coronary artery disease. ApoB can be used as a therapeutic

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target analogous to non-HDL-C and LDL-C.

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, type IgM (Waldenstrom macroglobulinemia) in particular, 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(8):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(2):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(5):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(5):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;22(10):1321-7. doi: 10.1177/2047487315569411
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(2):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;8(5):473-488
9. Expert panel on integrated guidelines for cardiovascular health and risk reduction in children and adolescents: summary report. *Pediatrics*. 2011;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**

Anti-apolipoprotein 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; 07/2020)

**PDF Report**

No

**Day(s) Performed**

Monday through Sunday

**Report Available**

1 to 3 days

**Specimen Retention Time**

7 days

**Performing Laboratory Location**

Rochester

**Fees & 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 account representative. For assistance, contact [Customer Service](#).

**Test Classification**

This test has been cleared, approved, or is exempt by the US 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