Overview

Useful For
Cardiovascular disease (CVD) risk refinement in patients with moderate or high risk based on conventional risk factors

Method Name
Automated Turbidimetric Immunoassay

NY State Available
Yes

Specimen

Specimen Type
Serum

Specimen Required

Patient Preparation: Fasting-overnight (12-14 hours)

Collection Container/Tube:

Preferred: Serum gel

Acceptable: Red top

Submission Container/Tube: Plastic vial

Specimen Volume: 1 mL

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

<table>
<thead>
<tr>
<th>Condition</th>
<th>Acceptance</th>
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</thead>
<tbody>
<tr>
<td>Hemolysis</td>
<td>Mild OK; Gross reject</td>
</tr>
<tr>
<td>Lipemia</td>
<td>Mild OK; Gross reject</td>
</tr>
<tr>
<td>Icterus</td>
<td>Mild OK; Gross reject</td>
</tr>
<tr>
<td>Other</td>
<td>NA</td>
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</tbody>
</table>

Specimen Stability Information
Test Definition: LIPA

Lipoprotein (a), S

Specimen Type | Temperature           | Time  |
-------------|-----------------------|-------|
Serum        | Refrigerated (preferred) | 7 days |
             | Frozen                | 7 days |

Clinical and Interpretive

Clinical Information

Lipoprotein (a) (Lp[a]) consists of an LDL particle that is covalently bound to an additional protein, apolipoprotein (a) (Apo[a]). Apo(a) has high-sequence homology with the coagulation factor plasminogen and, like LDL, Lp(a) contains apolipoprotein B100 (ApoB). Thus, Lp(a) is both proatherogenic and prothrombotic. Lp(a) is an independent risk factor for coronary heart disease (CHD), ischemic stroke, and aortic valve stenosis. Lp(a) has been referred to as "the most atherogenic lipoprotein." The mechanism of increased risk is unclear but most likely involves progression of atherosclerotic stenosis via intimal deposition of cholesterol and promotion of thrombosis via homology to plasminogen.

Concentrations of Lp(a) particles in the blood can be expressed readily by 2 methods: as concentrations of Lp(a) protein or as Lp(a) cholesterol. Mayo's Cardiovascular Laboratory Medicine measures and reports Lp(a) cholesterol individually (LPAWS / Lipoprotein [a] Cholesterol, Serum) and as a part of the lipoprotein profile (LMPP / Lipoprotein Metabolism Profile). The cholesterol content of Lp(a) particles varies little, and Lp(a) can contain significant proportions of the serum cholesterol.

Unlike Lp(a) cholesterol, accurate immunochemical measurement of Lp(a)-specific protein, is complicated by the heterogeneity of Lp(a) molecular size. Due to the large number of polymorphisms in the population any given individual can have an Apo(a) protein between 240 to 800 kDa. This heterogeneity leads to inaccuracies when results are expressed in terms of mg/dL of protein. In addition, the degree of atherogenicity of the Lp(a) particle may depend on the molecular size of the Lp(a)-specific protein.

Serum concentrations of Lp(a) are related to genetic factors, and are largely unaffected by diet, exercise and lipid-lowering pharmaceuticals. However, in a patient with additional modifiable CHD risk factors, more aggressive therapy to normalize these factors may be indicated if the Lp(a) value is also increased.

Reference Values

< or =30 mg/dL

Values >30 mg/dL may suggest increased risk of coronary heart disease.

For SI unit Reference Values, see https://www.mayocliniclabs.com/order-tests/si-unit-conversion.html

Interpretation

The frequency distribution of serum lipoprotein (a) (Lp[a]) concentrations is markedly skewed toward the low end, with approximately 85% of the population having concentrations <30 mg/dL.

Lp(a) concentrations >30 mg/dL are associated with 2- to 3-fold increased risk of cardiovascular events independent of conventional risk markers.

Cautions

Epidemiologic studies have shown Lp(a) concentrations are lowest in non-Hispanic Caucasians, Chinese, and Japanese. Hispanics have slightly higher median Lp(a) concentrations and in African Americans, the median Lp(a)
serum concentration is approximately 2 times higher than in Caucasians. In most cases, the preferred test for quantifying Lp(a) is LPAWS / Lipoprotein (a) Cholesterol, Serum.

Not recommended as a screening test in the healthy population.

**Clinical Reference**


**Performance**

**Method Description**

This test uses an automated turbidimetric immunoassay method to measure lipoprotein (a) (Lp[a]) in serum. Serum is first incubated with a polymeric enhancer. Following initial incubation and measurement of specimen blank, undiluted antiserum specific to human Lp(a) is added. The specimen solution is mixed and insoluble antigen-antibody complexes begin to form. The complexes that form produce turbidity in the mixture and increase the amount of light scatter. The decrease in percent transmittance of light is measured and is proportional to the amount of Lp(a) in the specimen.(Levine DM, Sloan DJ, Donner JE, et al: Automated measurement of lipoprotein[a] by immunoturbidimetric analysis. Int J Clin Lab Res 1992;22:173-178)

**PDF Report**

No

**Day(s) and Time(s) Test Performed**

Monday through Saturday; Continuously

**Analytic Time**

Same day/1 day

**Maximum Laboratory Time**

1 day

**Specimen Retention Time**

7 days

**Performing Laboratory Location**

Rochester

**Fees and Codes**
Test Definition: LIPA
Lipoprotein (a), S

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 or approved 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
83695

LOINC® Information

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<tr>
<th>Test ID</th>
<th>Test Order Name</th>
<th>Order LOINC Value</th>
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<tbody>
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<td>LIPA</td>
<td>Lipoprotein (a), S</td>
<td>10835-7</td>
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<table>
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<tr>
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