Description
Oxidized low-density lipoprotein (OxLDL) measures protein damage due to the oxidative modification of the apolipoprotein B (ApoB) subunit on LDL cholesterol. The oxidation of LDL cholesterol is one of the first steps in the development of atherosclerosis. Briefly, LDL enters the artery wall where it becomes oxidized. OxLDL is then recognized by scavenger receptors on the macrophages which engulf OxLDL, resulting in foam cell formation, vascular inflammation and the initiation of atherosclerosis.

Clinical Use
The OxLDL test may be performed on individuals at risk of metabolic syndrome.

Clinical Significance
- Individuals with high levels of OxLDL are 3.5X more likely to develop metabolic syndrome in the next 5 years.
- Increased OxLDL levels are associated with the presence of coronary artery disease (CAD).
- OxLDL inhibits production of endothelial nitric oxide, which can also lead to cell death and increased endothelial dysfunction, plaque formation, and platelet aggregation.
- In healthy middle-aged men, high OxLDL levels are associated with a 4X greater risk of developing coronary heart disease (CHD).
- Levels of OxLDL increase in a step-wise fashion as the severity of CAD increases.
- OxLDL levels may be elevated in patients with kidney disease and polycystic ovary syndrome. OxLDL levels should also be interpreted with caution in patients with known autoimmune disorders and those with diseases associated with oxidative stress, such as Alzheimer’s disease.

Testing Frequency
OxLDL testing is determined by an individual’s medical history, but may be performed semi-annually or annually as necessary. If the initial test result is abnormal, then follow-up testing may be performed within 3-6 months following treatment.

Sample Type
The OxLDL test should be performed on a serum or EDTA plasma sample.

Commercial Insurance or Medicare Coverage
Coverage guidelines have not been established or posted by CMS (Medicare & Medicaid). We have reviewed the larger carriers (Aetna, United Healthcare, Cigna, Blues) and information is limited or has not been posted.

Understanding Medical Necessity
The following ICD-10 codes for OxLDL listed below, and in the Cleveland HeartLab Practitioner Guide, are provided as a convenience for the ordering physician. Additional diagnostic codes can be referenced on the CMS website or guidelines specified by insurance carriers. The ordering physician should report the diagnosis code that best describes the reason for performing the test.

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Diagnosis Code</th>
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<tbody>
<tr>
<td>Type 2 Diabetes Mellitus with Hyperglycemia</td>
<td>E11.65</td>
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<tr>
<td>Type 2 Diabetes Mellitus without Complications</td>
<td>E11.9</td>
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<tr>
<td>Other Specified Diabetes Mellitus without Complications</td>
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<tr>
<td>Pure Hypercholesterolemia, Unspecified</td>
<td>E78.00</td>
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<tr>
<td>Familial Hypercholesterolemia</td>
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<tr>
<td>Pure Hyperglyceridemia</td>
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<td>Mixed Hyperlipidemia</td>
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<tr>
<td>Hyperlipidemia, Unspecified</td>
<td>E78.5</td>
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<tr>
<td>Metabolic Syndrome</td>
<td>E88.81</td>
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<tr>
<td>Essential (primary) Hypertension</td>
<td>I10</td>
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<tr>
<td>Atherosclerotic Heart Disease of Native Coronary Artery without Angina Pectoris</td>
<td>I25.10</td>
</tr>
</tbody>
</table>
RELATIVE RISK

OxLDL (U/L)

<60 Low

60-69 Moderate

≥70 High

Treatment Considerations

These treatment considerations are for educational purposes only. Specific treatment plans should be provided and reviewed by the treating practitioner.

✓ Assess lifestyle habits.
  • Consider diet/exercise/weight reduction efforts if appropriate.
✓ Assess LDL-C levels.
  • If not at goal, consider lipid-lowering therapies described in the National Cholesterol Education Program/Adult Treatment Panel III (NCEP ATP III) guidelines.
✓ Assess insulin sensitivity.
  • Consider an oral glucose tolerance test (OGTT) since metabolic syndrome is associated with an insulin-insensitive state. This is especially prudent if other markers such as high-sensitivity C-reactive protein (hsCRP), lipoprotein-associated phospholipase A2 (Lp-PLA2) and/or myeloperoxidase (MPO) are elevated.

References