MPO is a white blood cell-derived inflammatory enzyme that measures disease activity from the luminal aspect of the arterial wall. When the artery wall is damaged, or inflamed, MPO is released by invading white blood cells where it accumulates. MPO mediates the vascular inflammation that propagates plaque formation and activates protease cascades that are linked to plaque vulnerability. White blood cell activation in the bloodstream, in response to injury of the artery wall including fissures, erosions or a degrading collagen cap, leads to MPO release in the bloodstream. This combination of detrimental effects demonstrates that MPO is actively involved in the progression of atherosclerosis. The Cleveland HeartLab MPO test measures free MPO in the bloodstream.

Clinical Use
The MPO test may be performed on individuals with multiple risk factors for cardiovascular disease, or those with established disease.

Clinical Significance
Elevated MPO levels are associated with risk of future cardiovascular events in patients presenting with an acute coronary syndrome. Individuals with elevated MPO levels are more than 2x as likely to experience cardiovascular mortality. MPO enhances cardiovascular risk prediction when used independently or alongside standard biomarker testing such as hsCRP. Circulating MPO in the blood is a specific marker of vascular inflammation and vulnerable plaque/erosions/fissures. The p-ANCA test (anti-MPO antibody test) is not the same as the MPO test performed by Cleveland HeartLab. The p-ANCA test primarily measures the number of antibodies directed against the MPO protein.

Testing Frequency
The frequency of testing is determined by an individual’s medical history, but may be monitored more frequently in diabetic, hypertensive, and those patients at moderate to high risk for metabolic syndrome and cardiovascular disease.

Sample Type
The MPO test should be performed on an EDTA plasma sample.

Commercial Insurance or Medicare Coverage
Coverage guidelines, also known as NCD (National Coverage Determination) or LCD (Local Coverage Determination) have not been established or posted by CMS (Medicare and Medicaid). We have reviewed the larger carriers (Aetna, United Healthcare, Cigna, Blues) and information has not been posted or is limited.

Myeloperoxidase (MPO)

MPO levels are associated with an increased risk for:
- Cardiovascular disease
- Myocardial infarction

MPO levels may be measured in:
- Individuals with multiple risk factors
- Individuals at risk for pre-diabetes/diabetes
- Individuals with established cardiovascular disease

CPT Code 83876
Order Code C133
Sample Type EDTA Plasma
Tube Type Lavender Top

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- Cardiovascular disease
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• Elevated MPO levels are independently associated with risk of future cardiovascular events in patients presenting with an acute coronary syndrome.
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• MPO enhances cardiovascular risk prediction when used independently or alongside standard biomarker testing such as hsCRP.
• Circulating MPO in the blood is a specific marker of vascular inflammation and vulnerable plaque/erosions/fissures.
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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, and weight reduction efforts if appropriate.

- **Assess level of exercise.**
  - MPO values may be elevated in marathon runners and extreme athletes and may identify those with increased oxidative stress and basal levels of inflammation.

- **Assess smoking habits.**
  - Smoking cessation is essential, as individuals who smoke are at increased risk of heart disease and blood clots.

- **Assess LDL-C levels.**
  - If not at an optimal level, consider lipid-lowering therapies described in the National Cholesterol Education Program/Adult Treatment Panel III (NCEP ATP III) Guidelines.

- **Assess HDL-C levels.**
  - If not at an optimal level, consider nicotinic acid or omega-3 fatty acids.

- **Assess CoQ10 levels.**
  - As CoQ10 levels evidence suggests that low ApoA1 and HDL-C levels are associated with low CoQ10 levels.

- **Assess insulin sensitivity.**
  - If not at an optimal level, consider insulin-sensitizing therapies described in the ADA guidelines for the management of pre-diabetes/diabetes.

- **Assess blood pressure.**
  - If not at an optimal level, consider initiating, or titrating, antihypertensive therapy.

- **Assess the presence of coronary artery disease (CAD) with imaging techniques such as carotid intima-media thickness testing (CIMT) or coronary artery calcium (CAC) scoring.**

- **Assess clotting risk.**
  - Consider antiplalet therapy if history of CAD (i.e., myocardial infarction or revascularization) and/or a history of cerebrovascular disease (i.e., transient ischemic attack or stroke).

- **Assess dental health (periodontal disease).**
  - Refer to dentist to identify gum disease. Poor dental health may cause significant inflammation and is associated with the presence of atherosclerosis.

- **Assess, if known to be present, the treatment of inflammatory conditions such as rheumatoid arthritis (RA) and systemic lupus erythematous (SLE).**

- **Assess the presence of vasculitis.**
  - MPO values may be elevated in individuals with vasculitis as it is characterized by increased vascular inflammation.

- **Assess the presence of bone marrow dyscrasias.**
  - MPO values may be elevated in individuals with chronic lymphocytic leukemia or other leukemias, that cause increased white blood cell destruction.

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**RELATIVE RISK**

<table>
<thead>
<tr>
<th>MPO (pmol/L)</th>
<th>Low</th>
<th>Moderate</th>
<th>High</th>
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<tbody>
<tr>
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<tr>
<td>≥540</td>
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**Treatment Considerations**

These treatment considerations are provided for informational purposes only and are not intended as medical advice. A physician’s test selection and interpretation, diagnosis, and patient management decisions should be based on his/her education, clinical expertise, and assessment of the patient.

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**References**


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