High Sensitivity C-Reactive Protein (hsCRP)

CPT Code 86141
Sample Type EDTA Plasma or Serum

Order Code C121
Tube Type Lavender Top or Tiger Top

inflammation

Moderate hsCRP levels (1-10 mg/L) are associated with:

- Cardiovascular disease
- Periodontal disease

High hsCRP levels (>10 mg/L) are associated with:

- Acute illness (cold, flu or infection)
- Chronic illness (bronchitis or COPD)
- Autoimmune disorders (RA or SLE)

Description

The hsCRP test is a highly sensitive quantification of CRP, an acute-phase protein released into the blood by the liver during inflammation, which has been associated with the presence of heart disease.

Clinical Use

The hsCRP test may be performed on individuals at intermediate risk (10-year risk of 10-20%) of developing CHD who are metabolically stable without inflammatory or infectious conditions.

Clinical Significance

- hsCRP is a well-documented clinical marker of general and cardiac-related inflammation.
- Apparently healthy individuals with elevated hsCRP values are up to 4X as likely to have coronary heart disease[1,2].
- Elevated hsCRP is associated with the risk of future adverse cardiovascular events (heart attack, stroke and death) in apparently healthy individuals[1,3] and in individuals with stable coronary artery disease[4].
- Reductions in both hsCRP and LDL cholesterol are associated with a reduction in the rate of atherosclerosis progression[5] and improved clinical outcomes[6].
- Introduction of statin therapy in patients with elevated hsCRP, even with normal lipid levels, significantly reduces risk for heart attack, stroke and death[7].

Testing Frequency

The frequency of testing is determined by an individual's medical history, but an elevated hsCRP level should be confirmed with an additional measurement at least one month later. For levels >10 mg/L, the test should be repeated in 2-3 weeks as levels above 10 mg/L can reflect acute infection.

Sample Type

The hsCRP test should be performed on a serum or EDTA plasma sample.

Commercial Insurance or Medicare Coverage

Coverage guidelines, also known as NCD (National Coverage Determination) or LCD (Local Coverage Determination) have been established or posted by CMS (Medicare & Medicaid). Guidelines should be reviewed for coverage and limitations. Limited information has been provided by the majority of the larger carriers (Aetna, United HealthCare, Cigna, Blues).

Understanding Medical Necessity

The following ICD-9 codes for hsCRP are listed as a convenience for the ordering practitioner. The ordering practitioner should report the diagnosis code that best describes the reason for performing the test and provide the 4th and 5th ICD-9 digit as appropriate.

Diagnosis	Diagnosis Code
Pure Hypercholesterolemia	272.0
Pure Hyperglyceridemia	272.1
Mixed Hyperlipidemia	272.2
Benign Essential Hypertension	401.1
Unspecified Essential Hypertension	401.9
Coronary Atherosclerosis Unspecified Type of Vessel, Native or Graft	414.00
Coronary Atherosclerosis of Native Coronary Artery	414.01
Impaired Fasting Glucose	790.21
Family History of Ischemic Heart Disease	V17.3
Long-term (current) Use of Other Medications	V58.69

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RELATIVE RISK

hsCRP (mg/L)

<1.0 Low	1.0 - 3.0 Moderate	>3.0 High

Treatment Considerations

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

✓ **Assess presence of acute (flu, cold, etc.) or chronic (bronchitis, chronic obstructive pulmonary disease, RA) illness.**

✓ **Assess LDL-C levels.**

- If not at goal, consider lipid-lowering therapy, ideally with a statin-based regimen if not contraindicated.

✓ **Assess the presence of CAD with imaging techniques such as CIMT or coronary artery calcium scoring.**

- Consider aspirin therapy if not contraindicated.
- Consider clopidogrel if history of CAD (i.e., myocardial infarction or revascularization) and/or a history of cerebrovascular disease (i.e., TIA or stroke).
- If the presence of vascular disease is confirmed by imaging studies, consider statin-based lipid-lowering therapy unless contraindicated.

✓ **Assess dental health (periodontal disease).**

- Refer to dentist to identify gum disease.

  NOTE: Poor dental health may cause significant inflammation and is associated with the presence of atherosclerosis[8].

✓ **Assess blood pressure.**

- If not at goal, consider initiating, or titrating, anti-hypertensive therapy.

  NOTE: An elevated blood pressure may contribute to endothelial dysfunction and coronary disease formation.

✓ **Assess lifestyle habits.**

- Consider diet/exercise/weight reduction efforts if appropriate.

References

1. Ridker PM et al. Inflammation, aspirin, and the risk of cardiovascular disease in apparently healthy men. *N Engl J Med*. 1997; 336: 973-979.
2. Ridker PM et al. Comparison of C-reactive protein and low-density lipoprotein cholesterol levels in the prediction of first cardiovascular events. *N Engl J Med*. 2002; 347: 1557-1565.
3. Rost NS et al. Plasma concentration of C-reactive protein and risk of ischemic stroke and transient ischemic attack: The Framingham study. *Stroke*. 2001; 32: 2575-2579.
4. Ndrepepa G et al. N-terminal probrain natriuretic peptide and C-reactive protein in stable coronary heart disease. *Am J Med*. 2006; 119: 355.e1-355.e8.
5. Nissen SE et al. Statin therapy, LDL cholesterol, C-reactive protein, and coronary artery disease. *N Engl J Med*. 2005; 352: 29-38.
6. Ridker PM et al. C-reactive protein levels and outcomes after statin therapy. *N Engl J Med*. 2005; 352: 20-28.
7. Ridker PM et al. Rosuvastatin to prevent vascular events in men and women with elevated C-reactive protein. *N Engl J Med*. 2008; 359: 2195-2207.
8. Buhlin K et al. Periodontitis is associated with angiographically verified coronary artery disease. *J Clin Periodontol*. 2011; 38: 1007-1014.

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