



# High Sensitivity C-Reactive Protein (hs-CRP)

CPT Code **86141\***

Order Code **C121**

Specimen Type **Serum**

Tube Type **Tiger-Top (with Gel Barrier) or Red-Top (without Gel Barrier)**

LCD-CGS **L36139**

## hs-CRP levels (1-10 mg/L) are associated with:

- Cardiovascular disease (CVD)
- Periodontal disease

## hs-CRP levels (>10 mg/L) are associated with:

- Acute illness (cold, flu or infection)
- Chronic illness
- Autoimmune disorders

## Description

The hs-CRP test is a highly sensitive quantification of C-Reactive Protein (CRP), an acute-phase protein released into the blood by the liver during inflammation.<sup>1</sup> Elevations in CRP (>10 mg/L) may occur due to instances such as illness, trauma, or surgery.<sup>1</sup> Increased sensitivity allows for detection of low-level elevations of CRP (<10 mg/L), which are associated with the presence of CVD.<sup>2,3</sup>

## Clinical Use

The hs-CRP test may be performed on individuals at intermediate risk (10-year risk of 10-20%) of developing CVD, who are metabolically stable without inflammatory or infectious conditions.<sup>2</sup> Levels >3.0 mg/L can indicate high relative risk of CVD when interpreted in conjunction with other cardiovascular risk factors.<sup>3</sup>

## Clinical Significance

- hs-CRP is a well-documented clinical marker of general and cardiac-related inflammation.
- Apparently healthy individuals with elevated hs-CRP values are up to 4x as likely to have coronary heart disease (CHD).<sup>4,5</sup>
- Elevated hs-CRP is associated with the relative risk of future adverse cardiovascular events (myocardial infarction, stroke, and death) in apparently healthy individuals,<sup>4,6</sup> individuals with stable coronary artery disease,<sup>7</sup> or individuals who have previously experienced a heart attack.<sup>8</sup>

- Studies demonstrate a dose-dependent relationship between cumulative years of sustained hs-CRP elevations and an increased relative risk of CVD and myocardial infarction.<sup>9</sup>
- Reductions in both hs-CRP and low-density lipoprotein (LDL) cholesterol are associated with a reduction in the rate of atherosclerosis progression<sup>10</sup> and improved clinical outcomes.<sup>11</sup>
- In the JUPITER trial, introduction of statin therapy in patients with elevated hs-CRP, even with normal lipid levels, significantly reduced relative risk for heart attack, stroke, and death.<sup>12</sup>
- The CANTOS trial demonstrated that lowering hs-CRP, independent of lipid levels, resulted in a 15% relative risk reduction of recurrent cardiovascular events.<sup>8</sup>

## Testing Frequency

The frequency of testing is determined by an individual's medical history, but an elevated hs-CRP level should be confirmed with an additional measurement. For values >10.0 mg/L, the American Heart Association and Centers for Disease Control and Prevention recommend retesting within 2 weeks to exclude benign transient elevation secondary to infection or general inflammation.<sup>2</sup> Persistent elevations >10.0 mg/L upon retesting may be associated with noncardiovascular etiologies.<sup>2,3</sup>

## Specimen Type

The hs-CRP test should be performed on a serum specimen. Fasting is not required for this test.

## 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 limitation. Limited information has been provided by the majority of the larger carriers (Aetna, UnitedHealthcare, Cigna, Blues).

## RELATIVE RISK

hs-CRP  
(mg/L)

<1.0  
Low

1.0-3.0  
Moderate

≥3.0  
High

### Treatment Considerations<sup>†</sup>

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

**Assess presence of acute (infection, surgery, trauma, etc)<sup>1</sup> or chronic illness (chronic obstructive pulmonary disease,<sup>13</sup> rheumatoid arthritis,<sup>1</sup> cancer,<sup>1</sup> etc).**

✓ **Assess lifestyle habits.**

- Consider diet, exercise, and weight reduction efforts if appropriate.<sup>14,15</sup>

✓ **Assess LDL-C levels.**

- If not at optimal levels, consider lipid-lowering therapies described in the National Cholesterol Education Program/Adult Treatment Panel III (NCEP ATP III) Guidelines.<sup>16</sup> If not contraindicated, statin-based therapy has shown a wide range of biological effects such as reducing CRP.<sup>17,18</sup>

✓ **Assess blood pressure.**

- If not at optimal levels, consider initiating, or titrating antihypertensive therapy.<sup>19</sup>

✓ **Assess clotting risk.**

- Consider antiplatelet medication if history of coronary artery disease (ie myocardial infarction or revascularization) and/or a history of cerebrovascular disease (ie transient ischemic attack or stroke).<sup>4,20</sup>

**Assess the presence of coronary artery disease with imaging techniques such as carotid intima-media thickness (CIMT) testing<sup>21</sup> or coronary artery calcium (CAC) scoring.<sup>22</sup>**

✓ **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.<sup>23,24</sup>

\* The CPT codes provided are based on AMA guidelines and are for informational purposes only. CPT coding is the sole responsibility of the billing party. Please direct any questions regarding coding to the payer being billed.

† The 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.

### References

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