

Heart Disease Risk and C-reactive Protein (CRP)

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[C-reactive protein \(CRP\)](#) is elevated in the blood when there is widespread inflammation somewhere in the body. The evidence now available indicates that inflammation and molecules such as C-reactive protein associated with inflammation may be as important as [cholesterol](#) in determining the development of [atherosclerosis](#) ("hardening of the arteries") and heart disease.

Although C-reactive protein is clearly an important [marker](#) of inflammation, it is not at all clear why inflammation should elevate C-reactive protein levels. Some researchers have suggested that a chronic infection with certain bacteria or viruses may raise the C-reactive protein.

[LDL](#) ("bad") cholesterol levels have long been known to be associated with an increased risk of [heart attack](#) (and an increased risk of death from heart disease). The same now seems true for elevated levels of C-reactive protein. People whose C-reactive protein levels are in the upper third of the population have double the risk of a heart attack than people with lower C-reactive protein levels.

Inflammation likely contributes to heart disease by teaming up with the LDL ("bad") cholesterol which is deposited in the plaques that adhere to blood vessel walls and impede blood flow. The inflammatory process may damage these plaques, allowing tiny portions of [plaque](#) to break off into the bloodstream. These small fragments of plaque can then be swept away to lodge in small blood vessels in the heart or brain, causing a heart attack or [stroke](#).

Since C-reactive protein is a gauge of inflammation, a test that measures C-reactive protein is valuable. One such test is known as the high-sensitivity CRP assay (hs-CRP). Many doctors now believe that it is important to measure hs-CRP levels along with cholesterol to determine the risk of heart disease and to evaluate disease progression and prognosis in those who already have [cardiovascular disease](#).

To be precise, hs-CRP levels under 1.0 [milligram](#) per [liter](#), or mg/L, carry a low risk of developing heart disease. Levels between 1.0 mg/L and 3.0 mg/L are associated with an average risk. And hs-CRP levels over 3.0 mg/L carry a high risk for cardiovascular disease.

Persons with inflammatory diseases such as [rheumatoid arthritis](#) or [lupus](#) can also have markedly elevated C-reactive protein levels. Other causes of high C-reactive protein include [cancer](#), [trauma](#), [burns](#), and recent major surgery. C-reactive protein can rise a thousand fold higher than normal from severe inflammation. In cases of extremely high C-reactive protein levels due to inflammatory diseases, the prognostic value of C-reactive protein as a cardiac risk factor cannot be accurately determined.

Granted that C-reactive protein is a general nonspecific marker of inflammation, the bottom line is that it is useful in helping predict the risk of heart disease and stroke.

Last Editorial Review: 12/22/2006