HEALTH BASICS

C-reactive protein

C-reactive protein is a blood marker used to look for inflammation.

WHAT IT IS
A liver-made protein that rises with inflammation

WHERE IT COMES UP
Blood results during inflammation or heart-risk assessment

WHY IT MATTERS
Helps assess inflammation or refine cardiovascular risk

WHAT IT IS NOT
Not a disease or diagnosis

WHO TO ASK
The clinician who ordered the blood test

HOW IT IS CHECKED
A standard or high-sensitivity CRP blood test

Overview

C-reactive protein, usually shortened to CRP, is a protein made mainly by your liver. Its level in the blood often rises when there is inflammation somewhere in the body.

Inflammation is part of the immune system's response to infection, injury and some medical conditions. A CRP test can show that this response may be active, but it cannot show where the inflammation is or what caused it.

CRP is not a disease, diagnosis or symptom. A result must be interpreted alongside why the test was ordered, how you feel, your medical history, an examination and other test results.

There are two main ways to measure CRP:

Both tests measure the same protein. The difference is how precisely the laboratory method measures low levels.

- Standard CRP measures levels commonly seen during infection, injury or inflammatory illness
- High-sensitivity CRP , or hs-CRP, measures much smaller amounts and may help assess cardiovascular risk in selected people

How it works

Inflammation releases chemical signals into the bloodstream. One important signal, called interleukin-6, tells the liver to produce more CRP.

CRP attaches to certain damaged cells and microbes. This helps the immune system recognize and clear them. When the inflammatory response settles, CRP production usually falls.

CRP can change relatively quickly. This can make repeated results useful for following the general direction of inflammation. For example, a clinician may compare levels during treatment for an infection or an inflammatory condition.

Results are commonly reported in milligrams per litre, written as mg/L. Laboratories may use different methods and reference ranges, so compare your number with the range printed on your report. A result from one laboratory may not be directly comparable with a result reported in different units or measured by another method.

Why it matters for your health

A standard CRP test may support the assessment of an infection or inflammatory condition. It may also help clinicians follow known conditions such as rheumatoid arthritis, inflammatory bowel disease or vasculitis. These conditions can inflame joints, the digestive tract or blood vessels.

CRP is a general marker. It cannot reliably distinguish a bacterial infection from a viral infection, and it does not identify a specific autoimmune disease. Other information is needed before CRP can influence a diagnosis or treatment plan.

An hs-CRP test has a different purpose. Low-level inflammation is associated with the development of atherosclerosis, which is the buildup of fatty material in artery walls. Some cardiovascular guidelines treat an hs-CRP result of 2 mg/L or more as one possible risk-enhancing factor in selected adults when decisions about prevention remain uncertain.

This does not mean hs-CRP diagnoses heart disease or predicts exactly what will happen to you. Cardiovascular risk assessment also considers factors such as age, blood pressure, cholesterol, smoking, diabetes and family history.

An infection, recent injury or another active inflammatory problem can raise hs-CRP and make a heart-risk result difficult to interpret. A clinician may recommend waiting or repeating the test when you are otherwise well.

What can go wrong

A raised CRP can occur in many situations. These include bacterial or viral infections, autoimmune inflammatory conditions, inflammatory bowel disease, significant tissue injury and recovery after an operation. Some cancers can also cause inflammation and a higher CRP.

Smoking and excess body fat may contribute to persistent low-grade inflammation. However, CRP cannot establish why a level is raised or whether one factor is responsible.

A normal or low CRP does not rule out illness. The level may still be low early in an infection, and some inflammatory conditions do not consistently produce a large CRP rise. Reduced liver function may also affect CRP production.

Testing without a clear clinical question can create confusion. A mildly raised result may lead to repeat testing without identifying a specific problem. A single value can also be misleading if it is interpreted without the laboratory range, current symptoms or previous results.

CRP itself does not require emergency treatment. The need for care is determined by the situation behind the test and by your symptoms.

Arrange routine follow-up with the clinician who ordered the test if the result is outside the laboratory range, remains raised on repeat testing or was ordered to monitor a known condition. Ask when and how you should receive the full interpretation.

Seek prompt medical advice if you have a fever or other symptoms that are new, persistent or getting worse. Use emergency services for severe breathing difficulty, new chest pressure, sudden weakness on one side, new difficulty speaking, fainting or severe confusion. Do not wait for a CRP result when these symptoms occur.

What you can do

There is no home treatment aimed only at changing a CRP number. The useful action is to understand why the test was done and whether the result changes your care.

Keep a copy of the laboratory report. Record the date, result, units and reference range. If CRP is being monitored over time, note major events such as an infection, operation or change in treatment.

Questions you can ask include:

Do not start, stop or change prescribed medicines only to lower CRP. Medicines that treat inflammation, infection or cardiovascular risk may affect the level, but the goal is to manage the relevant health issue rather than chase a laboratory number.

If hs-CRP was used during a cardiovascular assessment, ask how it changes your overall risk

estimate. Usual heart-health measures, including avoiding tobacco, staying physically active and addressing blood pressure or cholesterol when needed, matter more than CRP alone.

- Was this a standard CRP or an hs-CRP test?
- What clinical question was the test meant to answer?
- How does the result fit with my symptoms and other tests?
- Is a repeat test useful, and when should it be done?
- Does this result change any treatment or follow-up plan?

Common questions

Does a high CRP mean I have an infection?

No. Infection is one possible cause, but injury, surgery and inflammatory conditions can also raise CRP. The result cannot identify the cause by itself.

Does a very low CRP mean I am healthy?

Not necessarily. A low result means the test did not detect much CRP at that time. It does not exclude every infection, inflammatory condition or cardiovascular risk factor.

Are CRP and hs-CRP different proteins?

No. They measure the same protein. The high-sensitivity method measures lower concentrations more precisely and is mainly used in cardiovascular risk assessment.

Is CRP the same as ESR?

No. ESR, or erythrocyte sedimentation rate, measures how quickly red blood cells settle in a tube. Both tests can reflect inflammation, but they respond at different speeds and are affected by different factors. Clinicians sometimes order both.

Do I need to fast before a CRP test?

CRP testing itself usually does not require fasting. You may receive different instructions if other blood tests are being collected at the same time.

Can I compare results from different laboratories?

Check the units and reference ranges first. Laboratory methods can differ, so trends are easiest to interpret when tests use comparable methods and units.

Sources

- MedlinePlus: C-Reactive Protein (CRP) Test , US National Library of Medicine
- Pearson TA and colleagues: Markers of inflammation and cardiovascular disease , American Heart Association and US Centers for Disease Control and Prevention, Circulation , 2003
- Arnett DK and colleagues: 2019 ACC/AHA Guideline on the Primary Prevention of Cardiovascular Disease , Circulation , 2019
- Pepys MB and Hirschfield GM: C-reactive protein-A critical update , Journal of Clinical Investigation , 2003
- Sproston NR and Ashworth JJ: Role of C-Reactive Protein at Sites of Inflammation and Infection , Frontiers in Immunology , 2018