



DRAFT: C-Reactive Protein and Erythrocyte Sedimentation Rate Testing

DRAFT FOR EXTERNAL REVIEW: The online questionnaire is available at <https://survey.health.gov.bc.ca/crpandesr>

Scope

This guideline applies to the clinical use of c-reactive protein (CRP) and erythrocyte sedimentation rate (ESR) as investigative tests in adults aged 19 years and over.

Key Recommendations

- In BC the ESR will only be performed if a written indication is provided on the requisition. If both CRP and ESR are ordered, only CRP is payable.¹
- The only indication for CRP assessment in **asymptomatic** individuals is in the stratification of cardiovascular risk.
- CRP may be used to evaluate patients with unexplained symptoms or a deterioration of health status when:
 - an inflammatory or infectious disease is suspected; **and**
 - a specific diagnosis is not made effectively by other means
- CRP may be used to monitor the activity of temporal (giant cell) arteritis²⁻⁴, polymyalgia rheumatica^{5,6}, inflammatory arthritis (e.g. rheumatoid arthritis^{7,8} and systemic lupus erythematosus (SLE)^{9,10}) and inflammatory bowel disease.¹¹
- High sensitivity (hs) CRP may be used in patients at intermediate cardiovascular risk to help decide whether a statin should be started.
- In the appropriate clinical context, if CRP is normal**, ESR may provide useful information when:
 - Used in combination with other biomarkers in monitoring SLE or other rheumatic conditions where patients do not mount a CRP response.^{9,10,12}
 - Used in combination with other clinical tests when considering the possibility of low-grade bone and joint infections (e.g. osteomyelitis¹³ and early prosthetic joint infections¹²).

Tests

CRP and ESR in British Columbia

MSP Cost of Tests¹

ESR	(fee item 90515)	\$10.61
CRP/hsCRP	(fee item 91300)	\$10.31

Current to January 1st, 2018

In BC the ESR will only be performed if a written indication is provided on the requisition. If both CRP and ESR are ordered, only CRP is payable.¹

► C-Reactive Protein (CRP)

CRP is produced in the liver as part of the acute-phase response. It is directly measurable and responsive to changes in the inflammatory process, increasing rapidly during inflammation and decreasing quickly when the inflammation subsides.¹⁴

CRP is ordered:

- a) During the diagnosis and monitoring of disease.
- b) To review a therapeutic approach in primary prevention of cardiovascular disease in patients assessed at intermediate risk. This is the only indication for CRP assessment in **asymptomatic** individuals.

Elevated CRP values are found in a variety of pathological states and need to be considered along with other clinical findings.¹⁵ If the clinical history and physical findings are suggestive of specific disease processes, other investigations are usually more appropriate.

All CRP assays measure the same protein. High sensitivity (hs) CRP is a designation given to laboratory assays able to measure CRP levels below 5 mg/L. Laboratories reporting CRP values less than 5 mg/L are using an hsCRP assay. CRP and hsCRP perform equally well for the diagnosis and monitoring of infectious and other inflammatory conditions. CRP assays measuring below 5 mg/L (hsCRP) can be used to stratify patients for cardiovascular disease risk.

Inflammation and Infection

Within the appropriate clinical context, CRP levels above 5 mg/L can help support the diagnosis of an inflammatory or infectious process. However, CRP levels less than 5 mg/L do not rule out an inflammatory or infectious process.

CRP may be used to evaluate patients with unexplained symptoms or a deterioration of health status when:

- a) an inflammatory or infectious disease is suspected; **and**
- b) a specific diagnosis is not made effectively by other means

CRP may be used to monitor the activity of temporal (giant cell) arteritis²⁻⁴, polymyalgia rheumatica^{5,6}, inflammatory arthritis (e.g. rheumatoid arthritis^{7,8} and SLE^{9,10}) and inflammatory bowel disease.¹¹ For the vast majority of infections, repeat CRP is not indicated and assessment should be made on clinical grounds (e.g. cellulitis¹⁶). Monitoring CRP levels may be useful in infections which require long term antibiotics (e.g. osteomyelitis¹⁷).

hsCRP and Cardiovascular Disease (CVD)

When a patient without clinical cardiovascular disease is found to be at intermediate risk for CVD based on their Framingham Risk Score, hsCRP can be used as one of the secondary assessments to raise or lower their estimated cardiovascular risk (see the associated BC guideline resource [Cardiovascular Disease – Primary Prevention: Resource Guide for Physicians](#)). Patients at moderate cardiovascular risk who have an hsCRP >2mg/L (and typically < 5 mg/L) may benefit from statin therapy.^{18,19}

► Erythrocyte Sedimentation Rate (ESR)

CRP, rather than ESR, should be ordered to support the diagnosis of infectious or inflammatory conditions. There is no indication for ordering ESR when CRP is elevated.

In the appropriate clinical context, if CRP is normal, ESR may provide useful information when:

- a) Used in combination with other biomarkers in monitoring SLE or other rheumatic conditions where patients do not mount a CRP response.^{9,10,12}
- b) Used in combination with other clinical tests when considering the possibility of low-grade bone and joint infections (e.g. osteomyelitis¹³ and early prosthetic joint infections¹²).

Resources

▶ Patient and Caregiver Resources

- HealthLinkBC.ca: [C-reactive protein](#) and [high sensitivity C-reactive protein](#)

▶ References

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Abbreviations

- CRP** C-Reactive Protein
ESR Erythrocyte Sedimentation Rate
hsCRP High sensitivity C-Reactive Protein
SLE Systemic lupus erythematosus

This guideline is based on scientific evidence current as of the effective date.

The guideline was developed by the Guidelines and Protocols Advisory Committee, approved by Doctors of BC and adopted by the Medical Services Commission.

THE GUIDELINES AND PROTOCOLS ADVISORY COMMITTEE

The principles of the Guidelines and Protocols Advisory Committee are to:

- encourage appropriate responses to common medical situations
- recommend actions that are sufficient and efficient, neither excessive nor deficient
- permit exceptions when justified by clinical circumstances

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