

Optimal use of laboratory tests

Erythrocyte sedimentation rate

TARGET USERS

Health professionals involved in ordering laboratory tests.

OBJECTIVE OF THE TOOL

To support health professionals in the judicious use of clinical laboratory testing.

This clinical tool is provided for informational purposes only and does not replace the clinician's judgment in the exercise of activities reserved to them by law and regulation.

✗ ERYTHROCYTE SEDIMENTATION RATE (ESR) TEST IS NOT INDICATED:

- for screening for inflammation in asymptomatic individuals;
- for general disease screening (e.g., for infection or myeloma);
- to check for the presence of inflammation in individuals with undiagnosed medical conditions;
- as part of a general workup in patients with suspected rheumatologic conditions;
- when **C-reactive protein (CRP)** levels are elevated.

INDICATIONS FOR ERYTHROCYTE SEDIMENTATION RATE

ESR **may be indicated** to support or confirm a diagnosis, or for follow-up of:

- chronic inflammatory rheumatism diseases such as polymyalgia rheumatica, rheumatoid arthritis, psoriatic arthritis, early arthritis, or acute rheumatic fever;
- vasculitis such as giant cell arteritis or Takayasu arteritis;
- rheumatic diseases that do not systematically cause changes in CRP levels (e.g., systemic lupus erythematosus), following a normal CRP result;
- infectious conditions such as bone or osteoarticular infections (e.g., osteomyelitis or prosthetic joint infection), except when the condition of patients being treated with antibiotics is improving;
- specific immune-mediated adverse effects in patients undergoing cancer treatment.

OTHER CONSIDERATIONS

- **CRP testing should be preferred for detecting systemic inflammation** when diagnosing disease.
- Once the source of inflammation is resolved, CRP levels typically normalize within about one day, whereas ESR may remain elevated for several days to weeks.
- In the pediatric population, when evaluating rheumatologic or autoinflammatory conditions, it is common to observe a normal CRP with an abnormal ESR. In such cases, combining ESR with CRP testing may be useful.
- A normal ESR does not automatically rule out an active disease.
- ESR may be considered alongside CRP to detect chronic inflammation when evaluating suspected giant cell arteritis, which is a medical emergency.
- Tocilizumab may normalize inflammatory markers such as ESR and CRP, limiting their clinical usefulness in patients receiving this therapy, particularly in cases of giant cell arteritis.

RELEVANCE ISSUES

- CRP is more sensitive (particularly to short-term changes), more precise and more accurately reflects the acute phase of inflammation than ESR.
- Discrepancies between ESR and CRP results are most often due to false-positive ESR elevations.
- ESR is affected by numerous factors, including age, sex, pregnancy, anemia, renal impairment, fibrinogen levels, and smoking status.
- Manual ESR methods are labor-intensive due to the technical time required.

INFORMATION ON THE TEST

Erythrocyte Sedimentation Rate (ESR):

- is an indirect, non-specific marker of inflammation;
- increases slowly in response to inflammation and may take several weeks to return to normal levels;
- is importantly influenced by red blood cell characteristics, including size, shape, and count.

Test Performance

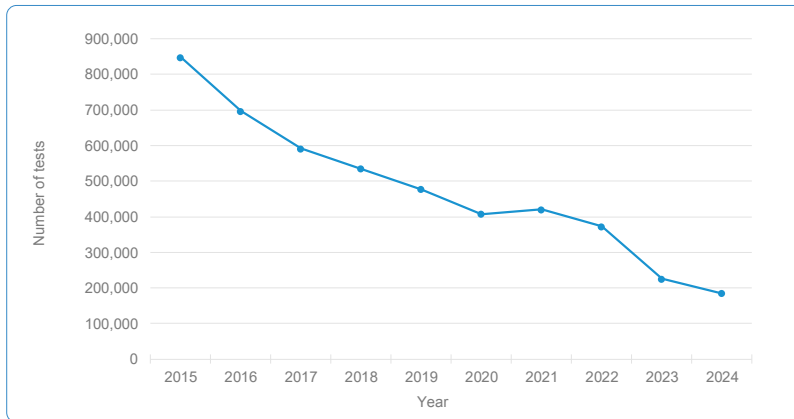
- No sensitivity and specificity data.
- Results may be imprecise.
- Interpretation varies depending on the age and condition of the individual.

EPIDEMIOLOGICAL DATA

- The incidence of giant cell arteritis, polymyalgia rheumatica and rheumatoid arthritis varies according to geographic region, biological sex, age and ethnic background.
- Giant cell arteritis and polymyalgia rheumatica are relatively uncommon conditions.
- Rheumatoid arthritis affects approximately 1% of the Canadian population.

ADDITIONAL CONSIDERATIONS

Evolution of the number of tests performed in Quebec between 2015 and 2024



↓ **78%**

Decrease in the number of tests performed between 2015 and 2024



\$3.40 / test performed with manual method (2024)*

\$3.00 / test performed with automated method (2024)*

In 2024, **184,811** ESR tests were performed in Quebec. These tests represent an estimated cost of **\$575,000** for the same period.

* The cost reflects a weighted value that accounts for the human and material resources required to perform the test. It excludes costs related to infrastructure and clinical and medical staff salaries. For more details, see the [methodology](#).

 Avoiding ordering low-value laboratory tests helps **optimize** the use of **human resources within the healthcare system**, **while also reducing the carbon footprint** by:

- Reducing the use of medical supplies
- Reducing energy consumption
- Limiting patient travel

The recommendations were developed using a systematic approach and are supported by the scientific literature as well as the knowledge and experience of Quebec clinicians from diverse specialties and areas of expertise. For more details, see insss.qc.ca.

For more details, including references, refer to the [associated report](#).

For any questions relating to clinical tools, write to info-outils.cliniques@insss.qc.ca.