

# Aspartate aminotransferase (AST) for the investigation of liver injury

## 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.**

## ❌ THE ASPARTATE AMINOTRANSFERASE (AST) TESTING IS NOT INDICATED:

- for routine screening in the general population;
- for the evaluation of suspected nonalcoholic liver disease;
- for monitoring hepatic injury in individuals receiving potentially hepatotoxic medications, including statins;
- in adults (except in pregnant women; see below) presenting with acute or chronic abdominal pain.

## INDICATIONS FOR AST TESTING

AST testing **may be indicated**:

- for fibrosis assessment (e.g., FIB-4, NFS, APRI)<sup>1</sup> to estimate the risk of hepatic fibrosis, when results may impact clinical management;
- for the initial evaluation of:
  - alcohol-related liver disease;
  - pregnant women with abdominal pain (e.g., suspected preeclampsia);
  - children with suspected non-accidental trauma;
- in the context of drug toxicity (e.g., acetaminophen);
- during certain chemotherapy treatments to assess and manage potential hepatotoxicity.

1. Fibrosis scores: FIB-4 (Fibrosis-4), NFS (Non-Alcoholic Fatty Liver Disease Fibrosis Score), APRI (AST to Platelet Ratio Index).

## OTHER CONSIDERATIONS

- AST is not liver-specific. It is also found in significant amounts in skeletal, cardiac and smooth muscle. Elevated AST may therefore reflect muscle injury (e.g., myocardial infarction or myositis).
- In general, low AST levels have no clinical significance.

## RELEVANCE ISSUES

- AST testing is seldom required for the evaluation of liver injury if alanine aminotransferase (ALT) levels are normal.
- Elevated liver enzyme levels are reported in 1-4% of asymptomatic individuals, most of whom will not develop liver disease.

## INFORMATION ON THE TEST

- An AST value exceeding twice the normal upper limit is considered clinically concerning.
- A persistence of high AST levels is more significant than a single high measurement.

### Test Performance

AST thresholds vary according to age and sex (e.g., thresholds are generally lower in women and higher in children).

## EPIDEMIOLOGICAL DATA

### Prevalence of Alcohol-Related Liver Disease



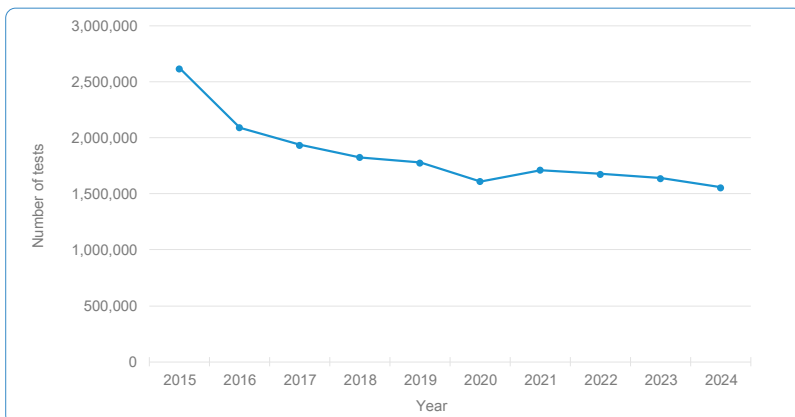
General population\*

3.5%

\* The prevalence of liver disease varies depending on the population and etiology.

## ADDITIONAL CONSIDERATIONS

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



↓ **40.5%**

Decrease in the number of tests performed between 2015 and 2024



**\$0.60 / test (2024)\***

In 2024, approximately **1,557,538** AST tests were performed in Quebec. These tests represent an estimated cost of **\$900,000** 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

Based on a life cycle assessment conducted in a Canadian context (British Columbia), the carbon footprint of a single AST test (excluding phlebotomy) is estimated at **60.5 g CO<sub>2</sub>e**. This corresponds to more than 94 metric tons of CO<sub>2</sub>e for the **1,557,538** AST tests performed in Québec in 2024, equivalent to the emissions of **1,721** gasoline-powered cars traveling from Montréal to Québec City.

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](https://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](mailto:info-outils.cliniques@insss.qc.ca).

