

Optimal use of laboratory tests Vitamin B12

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.

❌ VITAMIN B12 TESTING IS NOT INDICATED:

- for routine screening for vitamin B12 deficiency in adults, adolescents, and children who are asymptomatic or at low or moderate risk*;
- in individuals receiving vitamin B12 supplementation;
- in individuals presenting with signs or symptoms consistent with vitamin B12 deficiency, when a test result suggests that a deficiency is unlikely or absent.

* **Low or moderate risk** includes pregnant women, older adults, vegetarians or vegans, individuals with inflammatory bowel disease without ileal resection, those with certain autoimmune conditions (e.g., thyroiditis, hypothyroidism or vitiligo), or individuals with gastrointestinal symptoms.

INDICATIONS FOR VITAMIN B12 TESTING

Vitamin B12 testing **may be indicated for persons with:**

- unexplained anemia or macrocytosis;
- unexplained neurological signs (e.g., paresthesia, ataxia, neurocognitive disorders¹), particularly in populations at increased risk, such as older adults, individuals with alcohol use disorder, vegetarians (or vegans), or malnourished persons;
- a malabsorption syndrome at high risk of deficiency (e.g., individuals with post-gastric or small intestine surgery, long-term high-dose metformin use) **and** who present with signs or symptoms of vitamin B12 deficiency.

🔄 **Repeating** vitamin B12 testing **may be considered**, according to clinical judgment, **when signs or symptoms raise suspicion of B12 deficiency** in individuals with a malabsorption syndrome associated with at high risk of deficiency, particularly those:

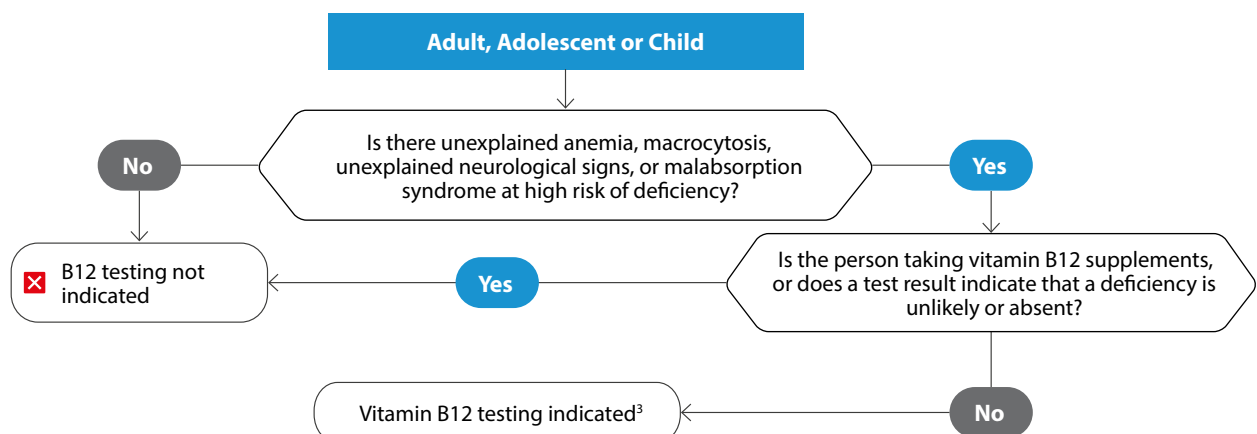
- on long-term treatment (> 4 years) or high dose (> 1,000 mg/day) metformin²;
- on long-term treatment (> 6 months) proton pump inhibitor (PPIs);
- who have undergone gastric or small intestine surgery.

*A **minimum interval of 1 year** is recommended following a previous normal result.*

1. Refer to the INESSS National Medical Protocol (no. 628013) for guidance on blood testing following the identification of signs or symptoms suggestive of mild or major neurocognitive disorder.

2. Refer to the INESSS National Medical Protocol (No. 628004) on adjustment of antidiabetic medication in type 2 diabetes.

DECISION-MAKING ALGORITHM FOR VITAMIN B12 TESTING



3. A **repeat** may be considered, depending on clinical judgment (see indications above).

OTHER CONSIDERATIONS

 This guidance sheet does not provide recommendations on vitamin B12 supplementation. Any consideration of vitamin B12 supplementation should follow established clinical practice guidelines.

In certain at-risk populations, increased clinical monitoring and supplementation **may be considered without prior vitamin B12 testing**, such as in individuals who:

- are pregnant or breastfeeding;
- follow a vegetarian diet, particularly those adhering to a strict vegan regimen;
- have inflammatory bowel disease;
- are older;
- have an autoimmune disease and are receiving folic acid supplementation in combination with methotrexate.

RELEVANCE ISSUES

- No evidence has been found to support the clinical utility of vitamin B12 testing.
- Screening asymptomatic individuals for vitamin B12 deficiency has not been shown to provide any clinical benefit.
- Vitamin B12 supplementation does not require prior testing and is not associated with toxicity risks.
- Serum vitamin B12 testing, also called serum cobalamin testing, is the first-line test for detecting deficiency.
- The test measures the concentration of serum vitamin B12, including both active and inactive forms.

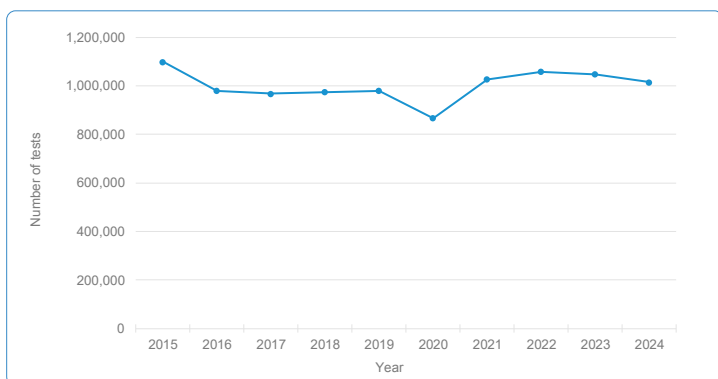
INFORMATION ON THE TEST

EPIDEMIOLOGICAL DATA

- The prevalence of vitamin B12 deficiency may vary by population and the threshold applied, but it remains low (approximately 4%) in the general population.
- Although vitamin B12 deficiency is more common in older adults, the prevalence of pernicious anemia, which is associated with vitamin B12 deficiency, remains relatively low (less than 2% among individuals aged 60 and older).

ADDITIONAL CONSIDERATIONS

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



 **7.6%**

Decrease in the number of tests performed between 2015 and 2024



\$3.10 / test (2024)*

In 2024, **1,015,396** vitamin B12 tests were performed in Quebec. These tests represent an estimated cost of **\$3.15 million** 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 [inesss.qc.ca](https://www.inesss.qc.ca).

For more details, including references, refer to the **associated report**.

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

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