

Optimal use of laboratory tests 25-hydroxy (25-OH) Vitamin D

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.

❌ 25-HYDROXY (25-OH) VITAMIN D TESTING IS NOT INDICATED IN:

- children (including infants), adolescents, and adults (including pregnant women and the elderly) who are asymptomatic and without risk factors or only at low to moderate risk* of vitamin D deficiency;
- asymptomatic individuals taking vitamin D supplements, without a specific medical indication.

* **Low or moderate risk:** includes limited sun exposure (e.g., during winter months at higher latitudes, in vulnerable individuals living in institutional settings), highly pigmented skin, obesity, bariatric surgery with little or no impact on absorption (e.g., gastric banding), low dietary intake, and chronic autoimmune diseases (e.g., multiple sclerosis, rheumatoid arthritis).

INDICATIONS FOR 25-OH VITAMIN D TESTING

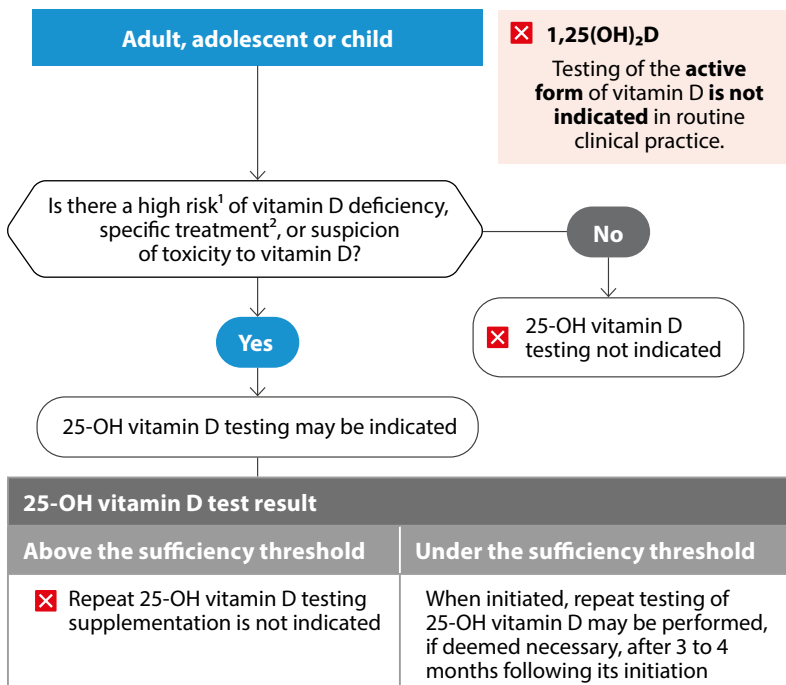
25-OH vitamin D testing **may be indicated:**

- in individuals at high risk¹ of vitamin D deficiency;
- when initiating specific treatment² in individuals with osteoporosis, osteomalacia, or rickets, after adequate vitamin D supplementation lasting for 3 to 4 months;
- in individuals receiving high-dose vitamin D supplementation with evidence of toxicity (e.g., hypercalcemia, hyperphosphatemia, hypercalciuria).

1. **High risk:** chronic kidney or liver disease, symptoms suggestive of osteoporosis (or a history of fragility fracture), osteomalacia or rickets, malabsorption syndromes, including malabsorptive bariatric surgery, hypo- or hypercalcemia, hypo- or hyperparathyroidism, hypo- or hyperphosphatemia, use of medications affecting vitamin D absorption and metabolism (e.g., cyproterone acetate, carbamazepine, nifedipine, orlistat, phenobarbital, phenytoin, rifampicin and valproate), or unexplained elevation of alkaline phosphatase.

2. Some treatment protocols may require 25-OH vitamin D testing (e.g., denosumab, zoledronic acid).

DECISION-MAKING ALGORITHM FOR 25-OH VITAMIN D TESTING



OTHER CONSIDERATIONS

❗ This guidance sheet does not provide recommendations regarding vitamin D supplementation. For consideration of vitamin D supplementation, it is recommended to consult relevant supplementation guidelines.

- 25-OH vitamin D testing should not be repeated if the sufficiency threshold has been reached in individuals receiving supplementation. If needed, when the sufficiency threshold has not been achieved, repeat testing may be considered to adjust supplementation.
- 25-OH vitamin D testing is not necessary prior to initiating vitamin D supplementation in individuals at low or moderate risk of deficiency.

RELEVANCE ISSUES

- The current evidence is insufficient to demonstrate the clinical utility of screening for vitamin D deficiency in asymptomatic individuals.
- 25-OH vitamin D testing is not relevant for initiating vitamin D supplementation.
- There is no consensus on sufficient or optimal serum vitamin D levels in adults or children.
- Up to 75% of 25-OH vitamin D tests could be unnecessary.

INFORMATION ON THE TEST

- 25-OH vitamin D is the main circulating form of vitamin D and is the recommended marker for the diagnosis of vitamin D deficiency.
- There is substantial variability between different methods used to measure 25-OH vitamin D.
- An individual's vitamin D level may fluctuate considerably due to several factors, including sun exposure, duration of sunlight, and dietary habits.

Analytical Performance and Thresholds

- No international consensus on optimal values exists.
- No data on sensitivity or specificity.
- Thresholds indicating deficiency and optimal vitamin D levels may vary depending on the analytical platform used.

EPIDEMIOLOGICAL DATA

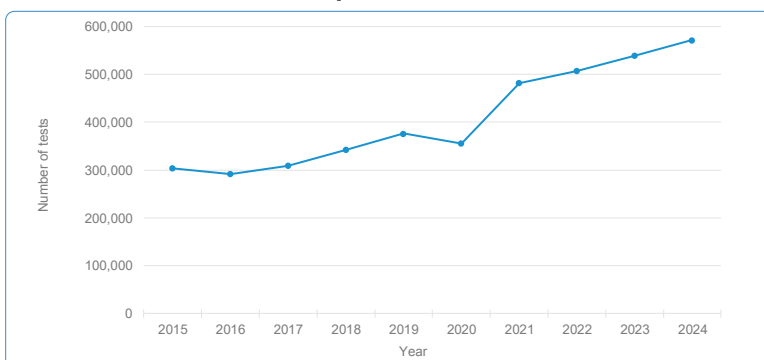
- The prevalence of vitamin D deficiency varies according to population, as well as ethnic and geographic factors.
- Clinically significant deficiency leading to rickets or osteomalacia is rare, except in cases of very low sun exposure, low dietary vitamin D intake, or malabsorption.

Prevalence of suboptimal vitamin D levels in the Canadian population

 **General population**
2.3–8.0% (depending on the threshold used)

ADDITIONAL CONSIDERATIONS

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



 **88.1%**

Increase in the number of tests performed between 2015 and 2024



\$6.80 / test (2024)*

In 2024, **571,616** 25-OH vitamin D tests were performed in Quebec. This represents an estimated cost of **\$3.9 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 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.