



Guideline Summary NGC-8151

Guideline Title

Vitamin D testing protocol.

Bibliographic Source(s)

Medical Services Commission. Vitamin D testing protocol. Victoria (BC): British Columbia Medical Services Commission; 2010 Oct 1. 6 p. [19 references]

Guideline Status

This is the current release of the guideline.

Scope

Disease/Condition(s)

Low vitamin D levels

Guideline Category

Diagnosis

Prevention

Screening

Treatment

Clinical Specialty

Family Practice

Internal Medicine

Nutrition

Preventive Medicine

Intended Users

Advanced Practice Nurses

Clinical Laboratory Personnel

Dietitians

Health Care Providers

Nurses

Patients

Physician Assistants

Physicians

Guideline Objective(s)

To describe the appropriate use of vitamin D testing within the general adult (≥ 19 years) population in British Columbia

Target Population

General adult (≥ 19 years) population in British Columbia

Note: Patients with malabsorption syndromes, renal failure, unexplained bone pain, unusual fractures, and other evidence of metabolic bone disorders are excluded from this protocol.

Interventions and Practices Considered

1. Sun exposure and vitamin D synthesis by skin
2. Dietary sources of vitamin D
3. Vitamin D supplementation
4. Serum calcium levels (albumin-corrected total calcium or ionized calcium) if vitamin D overuse is suspected
5. Serum vitamin D levels only if serum calcium is elevated

Note: Routine serum vitamin D testing/screening is considered, but not recommended.

Major Outcomes Considered

- Vitamin D levels
- Calcium levels
- Skin cancer incidence

Methodology

Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Evidence was obtained through a systematic review of peer-reviewed literature (up to March 2010) using the databases MEDLINE, PubMed, EBSCO, Ovid, and the Cochrane Collaboration's Database for Systematic Reviews. Clinical practice guidelines from other jurisdictions for vitamin D testing and supplementation were also reviewed (up to March 2010).

Number of Source Documents

Not stated

Methods Used to Assess the Quality and Strength of the Evidence

Not stated

Rating Scheme for the Strength of the Evidence

Not applicable

Methods Used to Analyze the Evidence

Review of Published Meta-Analyses

Systematic Review

Description of the Methods Used to Analyze the Evidence

Not stated

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

This clinical guideline for general practitioners is evidence-based with consensus statements when evidence was not available.

Rating Scheme for the Strength of the Recommendations

Not applicable

Cost Analysis

The guideline developers reviewed published cost analyses.

Method of Guideline Validation

External Peer Review

Internal Peer Review

Description of Method of Guideline Validation

The guideline was developed by the Guidelines and Protocols Advisory Committee, approved by the British Columbia

Medical Association, and adopted by the Medical Services Commission.

Recommendations

Major Recommendations

Routine Diagnostic Testing

- Routine serum vitamin D testing or screening for vitamin D deficiency is not recommended.
- Routine serum vitamin D testing during vitamin D supplementation is not recommended.

Population at Risk

The British Columbia (BC) population is at risk of low vitamin D levels from autumn to spring. There is no clinical utility in performing vitamin D tests on patients who are thought to be at risk for sub-optimal vitamin D levels and who would benefit from vitamin D supplementation.

Vitamin D Supplementation without Testing

Because vitamin D supplementation in the general adult population is safe, it is reasonable to advise supplementation without testing. Routine testing of vitamin D levels [25-hydroxyvitamin D or 25(OH)D] is not medically necessary prior to or after starting vitamin D supplementation.

Utilization and Cost of Serum Vitamin D Testing in BC

Utilization of vitamin D testing [as 25-hydroxyvitamin D] in BC has increased ten-fold in the past five years. Medical Service Plan expenditures are approximately \$3 million annually for outpatient vitamin D testing with a cost per test of \$93.63 in 2009.

Measuring serum vitamin D as 1,25-dihydroxyvitamin D [1,25-(OH)₂-D] is seldom indicated, except in selected patients with advanced renal failure, mineral and/or bone diseases. Specialist consultation should be considered for patients with malabsorption, unexplained bone pain, unusual fractures or other evidence suggesting metabolic bone disorder.

Sun Exposure and Vitamin D Synthesis by Skin

The amount of vitamin D produced by the skin is dependent on the surface area exposed, skin pigmentation, age, season, latitude and use of sun block. During winter months in Canada there is insufficient ultraviolet (UV) radiation in sunlight for adequate vitamin D production. Adequate vitamin D can be made in the body during careful exposure of the arms and legs to sunlight for 10-15 minutes per day in the summer months. However, the risk of skin cancer due to sun exposure and tanning beds must be considered.

Dietary Sources of Vitamin D

Vitamin D can be obtained from dietary sources (e.g., salmon, mackerel, tuna, egg yolk), fortified foods (e.g., cow, soy or rice milk), and supplements. There are no plant sources that provide a significant amount of vitamin D naturally. (Refer to the Patient Guide in the original guideline document; see also "Patient Resources" field)

Vitamin D Supplementation

During the Canadian autumn, winter and spring, the adult population is unlikely to achieve adequate vitamin D levels through diet and sunlight only. Consideration should be given to supplementation during those seasons. The two major forms of vitamin D supplements are available as D₂ (ergocalciferol) or D₃ (cholecalciferol). Vitamin D₃ has been shown to be three times more effective than vitamin D₂ at increasing serum 25-hydroxyvitamin D levels and maintaining these levels over a longer period of time. As a result, D₂ dosage must be tripled to achieve the same benefit.

Osteoporosis Canada recommends supplementing with vitamin D₃ over vitamin D₂. Most over the counter supplements available in Canada contain vitamin D₃ whereas high-dose vitamin D₂ is available only by prescription. There is good evidence that supplementation with at least 800 international units (IU) of vitamin D₃ per day, combined with calcium, is required to reduce the risk of fragility fractures, therefore 800-1000 IU daily is recommended (although the optimum daily requirement of vitamin D₃ is not known). Weekly dosing (one week's adult dose of vitamin D₃ taken as a single weekly dose, i.e., 7000 IU) or monthly dosing (one month's adult dose of vitamin D₃ taken once a month, i.e., 30,000 IU) may be more convenient for some patients and has been shown to be safe. At this time, high doses of vitamin D₃ once a year is not recommended as recent evidence has shown possible increased fracture risk.

Vitamin D Toxicity

Vitamin D toxicity is uncommon. Daily doses of up to 10,000 IU of vitamin D₃ for up to five months has not been shown to cause harm in adults. Any harm that would occur from excessive vitamin D ingestion is mediated by hypercalcemia. Therefore, if there is a strong clinical suspicion of vitamin over-use (e.g., patients with eating disorders), then the recommended test is serum calcium (albumin-corrected total calcium* or ionized calcium). Only if the calcium level is elevated would a serum vitamin D measurement be indicated.

*Corrected calcium (Ca) = Ca.measured + (40-alb) X 0.02, [Ca in mmol/L; albumin in g/L]

Clinical Algorithm(s)

None provided

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of supporting evidence is not specifically stated for each recommendation.

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

- Appropriate use of vitamin D testing
- Adequate vitamin D levels

Potential Harms

Not stated

Qualifying Statements

Qualifying Statements

The Clinical Practice Guidelines (the "Guidelines") have been developed by the Guidelines and Protocols Advisory Committee on behalf of the Medical Services Commission. The Guidelines are intended to give an understanding of a clinical problem, and outline one or more preferred approaches to the investigation and management of the problem. The Guidelines are not intended as a substitute for the advice or professional judgment of a health care professional, nor are they intended to be the only approach to the management of clinical problems.

Implementation of the Guideline

Description of Implementation Strategy

An implementation strategy was not provided.

Implementation Tools

Patient Resources

Quick Reference Guides/Physician Guides

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Staying Healthy

IOM Domain

Effectiveness

Identifying Information and Availability

Bibliographic Source(s)

Medical Services Commission. Vitamin D testing protocol. Victoria (BC): British Columbia Medical Services Commission; 2010 Oct 1. 6 p. [19 references]

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2010 Oct 1

Guideline Developer(s)

Medical Services Commission, British Columbia - State/Local Government Agency [Non-U.S.]

Source(s) of Funding

Medical Services Commission, British Columbia

Guideline Committee

Guidelines and Protocols Advisory Committee

Composition of Group That Authored the Guideline

Not stated

Financial Disclosures/Conflicts of Interest

Not stated

Guideline Status

This is the current release of the guideline.

Guideline Availability

Electronic copies: Available in Portable Document Format (PDF) from the [British Columbia Ministry of Health Web site](#).

Availability of Companion Documents

The following is available:

- Vitamin D testing protocol. Summary of guideline. Victoria (BC): British Columbia Medical Services Commission; 2010 Oct. 2 p. Electronic copies: Available in Portable Document Format (PDF) from the [British Columbia Ministry of Health Web site](#).

Patient Resources

The following is available:

- Vitamin D. A patient guide for adults. Victoria (BC): British Columbia Medical Services Commission; 2010 Oct. 2 p. Electronic copies: Available in Portable Document Format (PDF) from the [British Columbia Ministry of Health Web site](#).

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

NGC Status

This NGC summary was completed by ECRI Institute on March 30, 2011. The information was verified by the guideline developer on May 12, 2011.

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