

VITAMIN D TESTING

Testing Provides the Answers

Assessing Vitamin D Sufficiency in Your Patients

For many years, clinicians have been aware that vitamin D sufficiency plays a critical role in bone remodeling; however, volumes of recent studies have shown that vitamin D also plays a key role in maintaining other aspects of overall health. Research confirms that adequate vitamin D is critical for normal cellular functions in other organ systems.

The Emerging Link Between Vitamin D Sufficiency and General Health or Disease Incidence

A Closer Look at the Mounting Research

Studies have also revealed that higher levels of vitamin D are associated with reduced risk of certain malignancies, including¹⁻⁴:

- Prostate cancer
- Endometrial cancer
- Skin cancer
- Pancreatic cancer
- Colorectal cancer

Vitamin D deficiency has been linked to increased risk of developing^{3,5}:

- Autoimmune diseases
- Multiple sclerosis
- Type 1 diabetes

Deficiency has also been associated with^{3,6,7}:

- Hypertension
- Cardiovascular disease

Vitamin D deficiency in pregnancy is associated with⁸:

- Increased odds of primary cesarean delivery

The Historic Link Between Vitamin D Sufficiency and Healthy Bone Structure

Vitamin D Classic Physiology

Providers have known that vitamin D sufficiency is important to calcium homeostasis and in the maintenance of healthy bone. Vitamin D stimulates the absorption of calcium and may also serve to increase calcium and phosphate resorption. Deficiency of vitamin D leads to the mobilization of calcium from bone, which can lead to osteoporosis, osteomalacia, and rickets.^{3,9}

It is estimated that up to 50% of apparently healthy children and young adults are vitamin D deficient.⁷ The prevalence of vitamin D deficiency in the US has been reported at 25% to 57% in adults.⁷

What risk factors contribute to vitamin D deficiency?^{3,9}

- Age: older adults are at increased risk
- Inadequate sun exposure
- Insufficient dietary intake of vitamin D
- Living at higher latitudes
- A dark complexion (increased skin pigmentation/high-melanin levels)
- Malabsorption syndromes, liver diseases and kidney disease

Which Patients are Vitamin D Sufficient, Insufficient, or Deficient?

Assessing Vitamin D Levels

LabCorp offers DiaSorin's Vitamin D immunochemiluminometric (ICMA) assay for the assessment of vitamin D. The cleared DiaSorin Vitamin D assays have been used in major clinical studies where vitamin D is measured.¹⁰ The majority of seminal epidemiological studies, including the Centers for Disease Control (CDC) National Health and Nutrition Examination Survey (NHANES) data base, the Women's Health Initiative (WHI) studies, and the Harvard-based Health Professionals Studies, employed DiaSorin reagents. The automated test measures both vitamin D₂ and D₃ together and reports a total 25-hydroxy vitamin D.

Maintaining Vitamin D Sufficiency

There are two sources of vitamin D: diet and exposure to sunlight. Energy from the sun converts a precursor in the skin to vitamin D₃.^{3,9} Vitamin D levels can be increased by spending some time in the sun. The normal diet is very low in vitamin D. Most foods, with the exception of fatty fish oils, contain little vitamin D. Some recent studies have shown that vitamin D supplementation with D₃ may be more effective than supplementation with D₂.¹¹ Vitamin D is available without prescription.

DiaSorin Classification of 25-OH Vitamin D Status¹⁰

Deficiency	less than 10 ng/mL
Insufficiency	10-30 ng/mL
Sufficiency	30-100 ng/mL

Test Name	Test No.
Vitamin D, 25-Hydroxy	081950

Visit the online Test Menu at www.LabCorp.com for full test information, including CPT codes and specimen collection requirements.

Note: LabCorp also offers the Vitamin D, 25-OH, Fractionated (Total, D₂, D₃) by HPLC/MS-MS assay. This test provides clinicians with the levels of vitamin D₂ and vitamin D₃, as well as the total and is available through our Endocrine Sciences laboratory in Calabasas, Calif. For ordering information, please contact your local representative.

References

1. Schwartz GG, Skinner HG. Vitamin D status and cancer: New insights. *Curr Opin Clin Nutr Metab Care*. 2007 Jan; 10(1):6-11.
2. Lappe JM, Travers-Gustafson D, Davies KM, Recker RR, Heaney RP. Vitamin D and calcium supplementation reduces cancer risk: Results of a randomized trial. *Am J Clin Nutr*. 2007 Jun; 85(6):1586-1591.
3. Holick MF. Vitamin D deficiency. *N Engl J Med*. 2007 Jul 19; 357(3):266-281.
4. Holick MF, Jenkins M. *The UV Advantage: The Medical Breakthrough that Shows How to Harness the Power of the Sun for Your Health*. New York, NY: iBooks; 2003.
5. Munger KL, Levin LI, Hollis BW, Howard NS, Ascherio A. Serum 25-hydroxyvitamin D levels and risk of multiple sclerosis. *JAMA*. 2006 Dec 20; 296(23):2832-2838.
6. Krause R, Bühring M, Hopfenmüller W, Holick MF, Sharma AM. Ultraviolet B and blood pressure. *Lancet*. 1998 Aug 29; 352(9129):709-710.
7. Lee JH, O'Keefe JH, Bell D, Hensrud DD, Holick MF. Vitamin D deficiency: An important, common, and easily treatable cardiovascular risk factor? *J Am Coll Cardiol*. 2008 Dec 9; 52(24):1949-1956.
8. Merewood A, Mehta SD, Chen TC, Baucher H, Holick MF. Association between vitamin D deficiency and primary cesarean section. *J Clin Endocrinol Metab*. Dec 2008.
9. Zittermann A. Vitamin D in preventive medicine: Are we ignoring the evidence? *Br J Nutr*. 2003 May; 89(5):552-572.
10. DiaSorin Package Insert. LIAISON® 25 OH Vitamin D Total Assay (310600). October 2007.
11. Armas LA, Hollis BW, Heaney RP. Vitamin D₂ is much less effective than vitamin D₃ in humans. *J Clin Endocrinol Metab*. 2004 Nov; 89(11):5387-5391.



www.LabCorp.com