

Vitamin D, 25 OH

CPT Code 82306
Sample Type Serum

Order Code C169
Tube Typ Tiger Top



Low levels of vitamin D are associated with:

- Osteoporosis
- Metabolic syndrome
- Cardiovascular disease

Dietary sources of vitamin D include:

- Salmon
- Mushrooms (dried in sunlight)
- Fortified milk
- Cheese

Description

Vitamin D is a fat-soluble vitamin naturally present in some foods, but the main source is synthesis within the body after exposure to sunlight¹. Vitamin D has various roles within the body, but primarily regulates the absorption of calcium in the gut, maintaining adequate serum calcium and phosphate concentrations that contribute to mineralization of bone²⁻⁴.

Vitamin D is available in two forms. Vitamin D3 (cholecalciferol) is mainly made in the skin upon exposure to UV light, and is also found in fish. The main source of Vitamin D2 (ergocalciferol) is fortified foods and supplements. Although commonly considered bioequivalent, Vitamin D2 may not be as bioavailable to the body as Vitamin D3⁵. Vitamin D is metabolized in the liver to the prohormone Vitamin D, 25 OH which is the primary circulating form of Vitamin D.

Clinical Use

The Vitamin D, 25-OH test is used to determine the levels of Vitamin D in blood, particularly in individuals with bone weakness or malformation, or those with impaired calcium metabolism. The test may also be used to monitor Vitamin D levels in individuals with conditions that impair fat absorption and in individuals who have undergone gastric bypass surgery.

Clinical Significance

- Vitamin D, 25 OH is critical for the maintenance of healthy bones, and deficiency can cause osteoporosis⁶, muscle weakness, muscle wasting and even birth defects^{7,8}.
- Vitamin D, 25 OH deficiency is associated with an increased risk for CVD, particularly in individuals with hypertension⁹.

Sample Type

The Vitamin D, 25 OH test is performed on a serum sample.

Commercial Insurance or Medicare Coverage

Coverage guidelines, also known as NCD (National Coverage Determination) or LCD (Local Coverage Determination), have been established or posted by CMS (Medicare & Medicaid). Limited information has been posted by the majority of the larger Carriers (Aetna, United HealthCare, Cigna, Blues). Medical necessity and specificity of diagnosis should be provided when ordering this test.

Understanding Medical Necessity

The following ICD-9 codes for vitamin D are listed as a convenience for the ordering practitioner. The ordering practitioner should report the diagnosis code that best describes the reason for performing the test and provide the 4th and 5th ICD-9 digit as appropriate.

Diagnosis	Diagnosis Code
Hyperparathyroidism	252.0
Unspecified vitamin D deficiency (only allowed once per lifetime for Medicare patients)	268.9
Pure Hypercholesterolemia	272.0
Other and Unspecified Hyperlipidemia	272.4
Benign Essential Hypertension	401.1
Unspecified Essential Hypertension	401.9
Chronic kidney disease, stage III (moderate)	585.3
Chronic kidney disease, stage IV (severe)	585.4
Chronic kidney disease, stage V	585.5
End stage renal disease	585.6
Osteoporosis	733.00
Disorder of bone and cartilage, unspecified	733.90

REFERENCE RANGE

Vitamin D, 25 OH (ng/mL)

30.0 - 80.0 Sufficient

10.0 - 29.9 Insufficient

80.1 - 100.0 Excess

<10.0 Deficient

>100.0 Potential Toxicity

Treatment Considerations

✓ Assess dietary intake of Vitamin D.

- If not at goal, consider Vitamin D-rich foods such as cheese, Vitamin D-fortified milk, shiitake and button mushrooms (dried by sunlight), or supplementation with Vitamin D3 (cholecalciferol) or Vitamin D2 (ergocalciferol).

✓ Consider an increase in direct sun exposure to 10-15 minutes a day.

References

1. Holick MF. Resurrection of vitamin D deficiency and rickets. *J Clin Invest.* 2006; 116: 2062-2072.
2. Holick MF. Vitamin D: Photobiology, metabolism, mechanism of action, and clinical applications. In: Favus MJ, ed. *Primer on the metabolic bone diseases and disorders of mineral metabolism.* 6th ed. Washington, DC: American Society for Bone and Mineral Research, 2006: 129-137.
3. Bouillon R. Vitamin D: From photosynthesis, metabolism, and action to clinical applications. In: DeGroot LJ, Jameson JL, eds. *Endocrinology.* Philadelphia: W.B. Saunders, 2001: 1009-1028.
4. Dusso AS et al. Vitamin D. *Am J Physiol Renal Physiol.* 2005; 289: F8-F28.
5. Houghton LA and Vieth R. The cases against ergocalciferol (vitamin D2) as a vitamin supplement. *Am J Clin Nutr.* 2006; 84: 694-697.
6. Holick MF and Chen TC. Vitamin D deficiency: A worldwide problem with health consequences. *Am J Clin Nutr.* 2008; 87 (suppl): 1080S-1086S.
7. Bischoff-Ferrari HA et al. Higher 25-hydroxyvitamin D concentrations are associated with better lower extremity function in both active and inactive persons aged > or = 60 y. *Am J Clin Nutr.* 2004; 80: 752-758.
8. Visser M et al. Low vitamin D and high parathyroid hormone levels as determinants of loss of muscle strength and muscle mass (sarcopenia): The Longitudinal Aging Study Amsterdam. *J Clin Endocrinol Metab.* 2003; 88: 5766-5772.
9. Wang TJ et al. Vitamin D deficiency and risk of cardiovascular disease. *Circulation.* 2008; 117: 503-511.

