

**Effective Date: July 1, 2016**

## **Subject: Vitamin D Screening and Testing**

**Overview:** Vitamin D is a prohormone that is inactive until converted (in the liver) to 25-hydroxyvitamin D (25[OH]D; 25-hydroxycholecalciferol), and then (in the kidney) to the active form of the vitamin, 1,25-dihydroxyvitamin D (1,25(OH)2D; 1,25-dihydroxycholecalciferol).

Currently, the best accepted measure for assessing vitamin D status is total serum 25(OH)D, expressed in ng/mL or nmol/L. The Institute of Medicine lists the following vitamin D value cutoffs:

- Deficiency—serum 25-hydroxyvitamin D values  $\leq 12$  ng/mL (30 nmol/L)
- Insufficiency—serum 25-hydroxyvitamin D values of 12-19 ng/mL (30-49 nmol/L)
- Sufficiency—serum 25-hydroxyvitamin D values of 20-50 ng/mL (50-125 nmol/L)

While these values are widely accepted, there is limited evidence as to what concentration of 25(OH)D is optimal for health.

## **Policy and Coverage Criteria:**

Harvard Pilgrim considers routine Vitamin D screening **medically necessary** for members under age 18.<sup>[1]</sup>

Harvard Pilgrim considers screening for Vitamin D deficiency (or excess) **medically necessary** for symptomatic or “high risk” members aged 18 to 65 years.

- Members are considered “high risk” due to certain medical conditions, including:

Biliary Cirrhosis	Liver Cirrhosis	Phosphorus metabolism disorders
Biliary Tract Disorders	Long term use of medications known to lower vitamin D levels (e.g., anticonvulsants, glucocorticoids)	Post-Bariatric Surgery
Blind Loop Syndrome	Lupus Erythematosus (any form)	Premature osteopenia
Calcium Metabolism Disorders (e.g., hyper/hypocalcemia)	Lymphoma	Pancreatic steatorrhea
Celiac Disease	Malnutrition	Primary or miliary tuberculosis
Chronic Kidney Disease	Myalgia	Psoriasis
Crohn’s Disease	Myopathy related to endocrine diseases	Rheumatoid Arthritis
Cystic Fibrosis	Myositis	Regional enteritis
Dermatomyositis	Obesity	Renal, ureteral or urinary calculus (includes nephrolithiasis)
Hyperparathyroidism or Hypoparathyroidism	Osteogenesis imperfecta	Rickets
Hypervitaminosis of Vitamin D	Osteomalacia	Sarcoidosis

<sup>[1]</sup> Vitamin D insufficiency is a common problem in pediatrics, especially those who have chronic illness, and who are malnourished, limited geographically to the amount of sun exposure, as well as those with darker skin, and on chronic medications. The accelerated rate of bone development during a child's life suggests that adequate concentrations of vitamin D are an important issue in this population.

Individuals receiving hyperalimentation	Osteopetrosis	Ulcerative Colitis
Intestinal Malabsorption	Osteoporosis	Vitamin D deficiency

NOTE: Once testing demonstrates the member is vitamin D deficient, further testing is medically necessary only to ensure adequate replacement has been accomplished. Thereafter, annual testing may be appropriate depending upon the indication and other mitigating factors.

Screening for Vitamin D deficiency (i.e., testing to determine if someone without signs or symptoms is vitamin D deficient) is **not medically necessary** in healthy adults as there is limited clinical evidence to support routine screening in this population.

- Harvard Pilgrim does not cover Vitamin D screening and testing in asymptomatic adults aged 18 to 65 years without conditions listed above.

### Exclusions:

- Vitamin D screening and testing in asymptomatic adults under 65 and for conditions not listed above.

### Supporting Information:

1. Technology Assessment: Vitamin D is a hormone, synthesized by the skin and metabolized by the kidney to an active hormone, calcitriol. An excess of vitamin D may lead to hypercalcemia. Vitamin D deficiency may lead to a variety of disorders.

Vitamin D is called a "vitamin" because of its exogenous source, predominately from oily fish in the form of vitamin D2 and vitamin D3. It is really a hormone, synthesized by the skin and metabolized by the kidney to an active hormone, calcitriol, which then acts throughout the body. In the skin, 7-dehydrocholesterol is converted to vitamin D3 in response to sunlight, a process that is inhibited by sunscreen with a skin protection factor (SPF) of 8 or greater. Once in the blood, vitamin D2 and D3 from diet or skin bind with vitamin D binding protein and are carried to the liver where they are hydroxylated to yield calcidiol. Calcidiol then is converted in the kidney to calcitriol by the action of 1 $\alpha$ -hydroxylase (CYP27B1). The CYP27B1 in the kidney is regulated by nearly every hormone involved in calcium homeostasis, and its activity is stimulated by PTH, estrogen, calcitonin, prolactin, growth hormone, low calcium levels, and low phosphorus levels. Its activity is inhibited by calcitriol, thus providing the feedback loop that regulates calcitriol synthesis.

An excess of vitamin D is unusual, but may lead to hypercalcemia. Vitamin D deficiency may lead to a variety of disorders, the most infamous of which is rickets. Evaluating patients' vitamin D levels is accomplished by measuring the level of 25-hydroxyvitamin D. Measurement of other metabolites is generally not medically necessary.

2. Literature Review: Clinical studies and reviews evaluating the effectiveness of vitamin D screening and testing in the general population fail to show the clinical utility of testing. Some studies show screening may be beneficial in populations at risk for vitamin D deficiency.

In 2015, the United States Preventive Services Task Force (USPSTF) released final guidance noting there is insufficient evidence to assess the balance of benefits and harms for screening asymptomatic individuals for vitamin D deficiency. This recommendation is consistent with the 2011 guideline from The Endocrine Society. A 2015 review by the Canadian Agency for Drugs and Technologies in Health evaluated the clinical effectiveness, cost-effectiveness and evidence-based guidelines for vitamin D testing in the general population. Studies did not find direct evidence on vitamin D screening versus no screening in clinical outcomes in vitamin D deficient individuals. There is limited evidence to support the cost-effectiveness of screening in the general population. Guidelines do not recommend routine screening for vitamin D. No evidence was found to support testing led to adherence to the recommended intake or supplementation.

The Agency for Healthcare Research and Quality report on Vitamin D and Calcium: a systematic review of health outcomes (2009) found that no qualified systematic reviews have evaluated the association between vitamin D intake or serum 25(OH)D concentrations and incidence of cardiovascular disease, body weight in adults, total cancer incidence and mortality, immune function-related outcomes, and pregnancy. The report noted fair

evidence between low serum 25 (OH)D levels and rickets. However no threshold level has been determined when rickets will not occur. The association between low serum 25 (OH)D levels and the risk of falls, fractures or performance measures among postmenopausal women or elderly men is not consistent. There is also fair evidence of an association between serum 25(OH)D and bone mineral density or changes in bone mineral density at the femoral neck in postmenopausal women and elderly men. Yet, more recent studies show no significant effects of vitamin D supplementation on bone mineral density in children or adults.

### 3. Benchmarks:

United Health Care: [https://www.unitedhealthcareonline.com/ccmcontent/ProviderII/UHC/en-US/Assets/ProviderStaticFiles/ProviderStaticFilesPdf/Tools%20and%20Resources/Protocols/Vitamin\\_D\\_Testing.pdf](https://www.unitedhealthcareonline.com/ccmcontent/ProviderII/UHC/en-US/Assets/ProviderStaticFiles/ProviderStaticFilesPdf/Tools%20and%20Resources/Protocols/Vitamin_D_Testing.pdf)

BCBS MA:

[https://www.bluecrossma.com/common/en\\_US/medical\\_policies/746%20Testing%20Serum%20Vitamin%20D%20Levels%20prn.pdf](https://www.bluecrossma.com/common/en_US/medical_policies/746%20Testing%20Serum%20Vitamin%20D%20Levels%20prn.pdf)

### 4. Professional/Governmental Organizations:

Endocrine Society: Evaluation, Treatment, and Prevention of Vitamin D Deficiency: An Endocrine Society Clinical Practice Guideline

<https://www.endocrine.org/education-and-practice-management/clinical-practice-guidelines>

## Codes:

CPT:

82306 – Vitamin D; 25 hydroxy, includes fraction(s), if performed

82652 – Dihydroxyvitamin D, 1, 25 dihydroxy, includes fraction(s), if performed

[List of medically necessary ICD-9 codes](#)

[List of medically necessary ICD-10 codes](#)

## References:

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