

Western Kentucky Kidney Specialists, dba

Vitamin D Deficiency

What is Vitamin D?

Vitamin D is prohormone that is important for bone health and muscle function. Furthermore, it plays an important role in immune function and protects us from cancer and cardiovascular disease. Our skin produces vitamin D after exposure to ultraviolet light from the sun. Once produced, vitamin D is activated by the liver and kidneys.

Vitamin D deficiency and its consequences for health

It is estimated that approximately **50% of elderly Australians (>65 years) have inadequate serum vitamin D levels**, with figures varying between 40-100% in different groups of people. There is increasing evidence that all age groups, including children and pregnant women, are affected by vitamin D deficiency. **Even among adolescents and preadolescents, the prevalence has been shown to be approximately 50%.**

The following diseases and conditions are associated with low vitamin D levels:

- Soft bones and bone fractures without adequate trauma (osteoporosis, rickets)
- Falls and muscle weakness
- Bone, muscle, and joint pain
- Cancer (prostate, colon, breast, etc.)
- Heart attacks, occlusion of cardiac blood vessels
- Predisposition for infections (flu-like infections, urinary tract infections)
- Diabetes type 1

Should you be tested?

The most common cause of a vitamin D deficiency is inadequate exposure to sunlight. Those who should be tested for a vitamin D deficiency include:

- **Older Adults.** Older adults are at increased risk of developing a deficiency in part because as they age, skin cannot synthesize vitamin D as efficiently, they are likely to spend more time indoors, and they may have inadequate intakes of the vitamin.
- **Individuals with limited sun exposure.** Homebound individuals, women who wear long robes and head coverings for religious reasons, and people with occupations that limit sun exposure.
- **Individuals with dark skin.** Greater amounts of pigment melanin in the epidermal layer result in darker skin and reduce the skin's ability to produce vitamin D from sunlight.
- **Individuals with fat malabsorption.** As a fat-soluble vitamin, vitamin D requires some dietary fat in the stomach for absorption.

Individuals who have a reduced ability to absorb dietary fat might require vitamin D supplements

- **Individuals who are obese.** People who are obese may need larger than usual vitamin D intakes.

Why is vitamin D deficiency problematic?

Vitamin D deficiency leads to an impaired absorption of dietary calcium and in compensation, the removal of calcium from the bones. In children, this results in rickets. The equivalent in adults is osteomalacia, which involves bone pain, increased bone fragility and bone fractures without adequate trauma. Other signs of osteomalacia are severe tooth decay and possible hearing loss due to softening of the bones in the inner ear.

Vitamin D is also essential for cell growth, maturation, and cell function. This explains its role in cancer, which is caused by an uncontrolled growth of immature or dysfunctional cells. The increased susceptibility for infectious diseases is also a consequence of a disturbed function of immune cells.

Testing and treatment

A lack of vitamin D is easily corrected once it is properly diagnosed. Diagnosis is as easy as a simple blood test. Increasing sun exposure even a few minutes each day can dramatically improve deficiency symptoms. Individuals can also adjust their diets to include more foods rich in vitamin D to compensate, such as fruits, vegetables, and dairy products. Vitamin D is also available in supplemental form and multivitamins.

Sources of Vitamin D

The Five Best Sources of Vitamin D After Sunlight

- Cod Liver Oil
- Margarine
- Egg Yolk
- Oily Fish
- Beef Liver