

## Vitamin D – what's all the fuss?

### Description

Traditionally “Rickets” comes to mind when people think of vitamin D deficiency. Recently, however there has been a lot of focus in the medical field regarding other important roles that vitamin D plays in the body.

In the 19th century, vitamin D deficiency was recognized as the cause of Rickets, which is a bone abnormality in children. This resulted in fortification of various foods with vitamin D. We now know that vitamin D deficiency affects people of all ages. In addition to the important role in skeletal development , vitamin D is involved with many other physiologic functions.

There are two sources of vitamin D, that which is obtained from food, (many of which have been fortified) such as cereal, milk, orange juice, eggs, and fish. Humans however, typically obtain 90% of vitamin D from sunlight. Risk factors for vitamin D deficiency include age greater than 65, dark skin , insufficient sun exposure, obesity, sedentary lifestyle , and medications which alter vitamin D metabolism such as anti-seizure medication.

Vitamin D is a fat-soluble vitamin and levels up to 2000 international units per day are safe. However many medical regimens to replace vitamin D deficiency include doses much higher than that, such as 50,000 international units per week. Signs of vitamin D toxicity can include headache, metallic taste, pancreatitis, and nausea and vomiting.

Clinical manifestations of vitamin D deficiency may include bone discomfort or pain, increased risk of falls and impaired physical function, muscle aches, muscle weakness, and low back pain in women.

Research suggests that vitamin D deficiency may be associated with an increased risk of cardiovascular disease, possibly up to 62% higher risk of stroke or heart attack. There is a possibility that low vitamin D levels may be associated with a higher risk of colon cancer also. Some studies have linked vitamin D deficiency to depression and memory problems.

With regard to falls, one study of the 184 nursing home residence demonstrated that by supplementing patients with vitamin D, the number of falls declined significantly. A second study involving 445 women over the age of 65 that were supplemented with vitamin D and calcium had significantly lower fall rates. Further meta-analysis of studies focusing on vitamin D supplementation and fall reduction in institutionalized older individuals concluded that with vitamin D supplementation (800 IU daily was required), fall rates decreased by more than 20%. This is extremely important due to the statistics showing that 50% of nursing home residents fall at least once each year, and fall history remains one of the strongest predictors of future falls.

Vitamin D deficiency is now known to be associated with muscle weakness. This has significant implications regarding the ability to perform activities of daily living, fatigability, difficulty rising from a chair and walking up stairs. Again all these things will increase chance of falling. Unfortunately, although early supplementation may preserve muscle strength, it is not clear whether or not supplementing these individuals with vitamin D will improve

their strength.

It is common knowledge that vitamin D and calcium are instrumental in bone development, and supplementation with vitamin D has been shown to reduce fractures. This is especially beneficial in those individuals who've already exhibited bone loss and are also taking medications such as calcitonin or bisphosphonates to improve bone density.

In summary, early recognition and treatment of vitamin D deficiency will have a positive impact on health, including preservation of muscle strength, reduction of falls and fractures, and perhaps reduction of cardiovascular events.

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