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## Preventing Osteoporosis Naturally

The Role of Vitamins D3 and K2 In Improving Bone Density

by Laura Kovalcik, D.O.

Osteoporosis seems like a distant disease until you break a bone or start losing height or become stooped over. This condition, which occurs primarily after menopause in women, also can affect men. And, it can affect people with other medical conditions as a secondary disease.

We've seen the pharmaceutical ads touting the once or twice a year injections which make it "easy" to treat osteoporosis. But the best thing for any disease is prevention. Much has been written on getting enough calcium and vitamin D3 to prevent or treat osteoporosis, but confusion still exists on how much of each; what is the best source (foods or supplements) and whether or not to take the prescription medication. How early medication should be started as well as for how long reveal a variety of approaches dependent on the source. Overall research has confirmed that diet and exercise, especially weight bearing exercise and adequate vitamin D3 and vitamin K2 intake are known to help build bone in adults who do not have osteoporosis or vitamin D3 deficiency or those living in institutionalized settings.

Confounding the nutritional recommendations is a debate in the medical community as to the minimum or recommended vitamin D3 blood level. Some sources recommend that this level be 20ng/mL, others 30ng/mL and others 50ng/L or more with the upper limit 70ng/mL. Given that the US population often falls toward the lower end of the scale, a dose of at least 1000 IU of vitamin D3 is necessary daily and people can take much higher doses based on their lab values.

There are many nutrients which are important to bone health: vitamin K2, strontium, magnesium, boron, phosphorous, calcium, vitamin D3, adequate calories and eating an alkaline diet. We are unable to cover all these nutrients and micronutrients in this space. However, we



do want to cover one more vitamin which can have a significant impact on ensuring that calcium gets sent to bone and is not deposited in blood vessels, vitamin K2.

There are two forms of vitamin K: K1 (phylloquinone) and K2 (menaquinone). K1 is responsible for anticoagulant properties and K2 has a significant role to play with calcium absorption in bone and the removal of calcium deposits in arteries and veins. When vitamin K2 is activated, osteocalcin can draw calcium into the bones where it is incorporated into the bone matrix. And, when vitamin K2 is combined with vitamin D3, it reduces the resorption of bone. Resorption of bone is when the bone is broken down to take the stored nutrients, like calcium, and use them elsewhere in the body.

So here we find another confounding problem, if someone wants to prevent or treat osteoporosis and takes high doses of calcium supplements, but is deficient in vitamin K2, they may actually not build bone, but may deposit calcium in their arteries and veins, leading to narrowing of the arteries and heart disease.

There is not a blood test for Vitamin K2, however the measurement of undercarboxylated osteocalcin represents an indirect marker for vitamin K2. But since vitamin K2 deficiency is prevalent, increasing consumption of vitamin K2 rich foods or taking a supplement is recommended. Food sources of vitamin K2 are found in meats, liver, egg yolks, high-fat dairy and natto. These are different from vitamin K1 food sources which are found in green vegetables and leafy greens.

In summary, there are many considerations for preventing and treating osteoporosis. Proper food and supplement choices can help improve bone density. Vitamin D3 and vitamin K2, present challenges as to recommendations for daily intake, sources and serum test results. Working with a complimentary medicine physician to evaluate your health and prescription history, find the best natural choices and conduct initial and follow-up testing will go a long way to ensuring that your plan for osteoporosis prevention and treatment is effective.

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