

Vitamin D:

What every woman needs to know for her bones, breasts and brain

By Steven E. Parnell • Photo by Jeff Silker

One of the unfortunate things about living this far north of the equator is how short the days are in winter. The daylight we receive is cherished and brings hope as the days lengthen that spring will come soon. For some people the lack of sunlight contributes to a seasonal sadness, even a clinical depression. But for all of us it makes getting enough vitamin D in our systems a challenge.

People living near the equator generally have very adequate levels of vitamin D due to their frequent exposure to sunlight. Solar ultraviolet B radiation penetrates the skin and converts precursor molecules to a form of vitamin D. As you move to the northern latitudes the sunlight falls off and so do levels of the important vitamin D. Studies of white preadolescent girls in the state of Maine showed clinically deficient levels in 48 percent. Thirty-two percent of health students and physicians in Boston were deficient at the end of winter despite drinking milk and taking a multivitamin supplement daily. We do get some vitamin D from foods in our diet (see table) and from nutritional supplements, however, vitamin D deficiency remains very common in both children and adults, and the consequences are quite profound.

In children low levels can cause growth deficiency and skeletal deformities. In adults deficiency can precipitate or worsen bone loss and osteoporosis, muscle weakness and the risk of fracture. More recently we have discovered that nearly every cell in the body has receptors for vitamin D. There is now great interest in the role it can play in decreasing the risk of many chronic illnesses including common cancers, autoimmune diseases, infectious diseases and heart disease.

Let's look at some specific benefits of having adequate vitamin D:

Bones

Without vitamin D only about 10-15 percent of our dietary calcium is absorbed. This increases to 30-40 percent with adequate levels. Good levels of vitamin D are directly related to our bone density. One third of women 60-70 years of age and two thirds of those over 80 years old have osteoporosis or thin bones. It is estimated that 47 percent of women and 22 percent of men over 50 years will suffer a fracture from weak bones during their remaining lifetime. Adequate levels of vitamin D with appropriate calcium supplement can reduce the risk of hip fracture by almost half.

Muscles

Vitamin D deficiency causes muscle weakness. Performance measures of both speed and strength improve when low levels are brought up to normal. Vitamin D supplements of 800 IU/day have been shown to reduce the risk of falls by 22 percent.

Most people are familiar with vitamin D's effects on calcium and bones. However there are vitamin D receptors in the brain, breast, large



intestine and immune cells that you may not be aware of. Vitamin D directly or indirectly controls more than 200 genes in our bodies. These genes are responsible for many important activities in the body.

Cancer

Vitamin D has an important role in controlling the rate of growth in both normal and malignant cells. This effect has been used to treat psoriasis, a skin condition where the skin cells reproduce too quickly. But the effects go way beyond that. Levels of vitamin D below 20 nanograms per milliliter are associated with a 30-50 percent increase in the risk of cancer of the colon, breast and prostate, and increased death rates from those cancers. In fact levels less than 12 (normal levels are over 30) show a 253 percent increase in the development of colon cancer over the next eight years. Adequate levels of vitamin D are associated with a 50 percent reduction in breast cancer and a 40 percent reduction in non-Hodgkin's lymphoma, and a reduced death rate from melanoma if it develops.

Autoimmune Disease

Living at northern latitudes carries an increased risk of multiple sclerosis, Crohn's Disease and type 1 diabetes. Among white men and women the risk of developing multiple sclerosis decreases by 41 percent for every 20 ngm/ml the vitamin D level rises above 24. Women who ingest more than 400 IU per day have a 42 percent reduced risk of developing multiple sclerosis. Similar observations have occurred for rheumatoid arthritis and osteoarthritis. Several studies suggest that vitamin D supplements in children reduce the risk of type 1 diabetes. Ten thousand children in Finland were given vitamin D in the first year of life and then followed for 31 years. They reduced their risk of developing insulin dependant ▶

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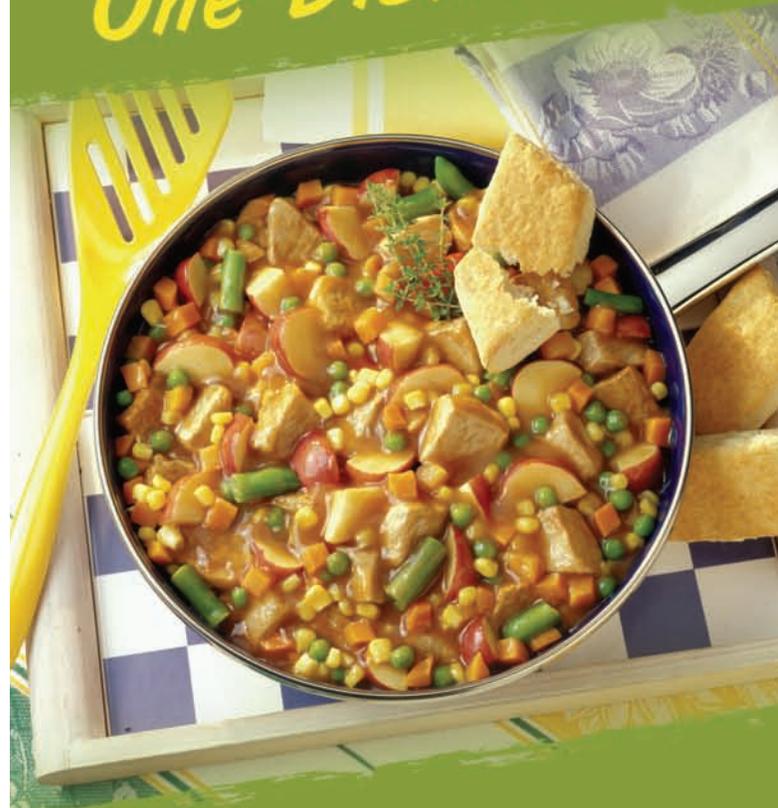
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One-Dish Meal



Country Pork Skillet

4 boneless pork chops, diced
1 12-oz jar pork gravy
2 tablespoons ketchup
8 small red potatoes, diced
2 cups frozen mixed vegetables

Cooking Directions: In large skillet, brown pork; stir in gravy, ketchup and potatoes; cover and simmer for 10 minutes. Stir in vegetables; cook for 10-15 minutes longer, until vegetables are tender. Serves 4.

Serving Idea: For a change try using barbecue or enchilada sauce to give the dish a bit of a kick.

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diabetes by 80 percent in those 31 years. Deficiency in vitamin D also contributes to the risk of developing type 2 diabetes. Studies show a woman taking 1200 mg of calcium and 800 IU of vitamin D will decrease their risk of the adult onset diabetes by 33 percent.

Cardiovascular Disease

Living at high latitudes also increases the risk of high blood pressure and heart disease. Increased levels of vitamin D reduce both systolic and diastolic blood pressure. The deficiency of vitamin D is associated with an increased risk of heart failure and increased levels of inflammatory markers in the blood associated with a high risk of heart attacks. Even lung function in asthmatics improves with higher levels of vitamin D.

Brain

Vitamin D deficiency has been linked to an increased incidence of depression and schizophrenia. Normal levels are important for maintaining normal brain development and functioning.

Infection

White blood cells exposed to bacteria will increase the number of vitamin D receptors on the cells surface. When vitamin D binds to the receptors it causes the cell to make proteins that kill the bacteria. Low levels of vitamin D prevent this from happening. Vitamin D is a potent modulator of immune function in our bodies.

Have I convinced you yet of the tremendous importance of vitamin D for optimal health?

Vitamin D deficiency has been reported in approximately 36 percent of otherwise healthy young adults and up to 57 percent of hospitalized patients in the United States. Causes of low vitamin D come in part from reduced synthesis of vitamin D in our skin when we don't get sufficient sunlight on our skin. Insufficient levels in our food and inadequate supplements contribute as well. Some people have inherited disorders that result in low levels.

Sensible sun exposure can provide adequate levels even in the elderly. Exposing the arms and legs for 30 minutes between the hours of 10 a.m. and 3 p.m. is usually sufficient, but difficult to do around here in the winter. People who tan well have higher levels even at the end of winter, as excess vitamin D is stored in the fat tissue.

The Institute of Medicine suggests 200 IU supplement in children and adults to age 50. Those 51 to 70 are advised to take 400 IU and adults over seventy 600 IU. However experts agree that with inadequate sun exposure children and adults require 800-1000 IU per day. Deficiency states are treated with as much as 50,000 IU per week.

Vitamin D content of certain foods in International Units per 100 grams (about 3 oz.)

Sardine, canned	500
Salmon	350
Tuna	250
Shrimp	150
Butter	90
Sunflower Seeds	90
Eggs	50
Milk, fortified	40
Mushrooms	40
Cheese, natural	30

The full name for vitamin D is calciferol. It is easily measured with a simple blood test and normal levels for the 25-hydroxyl vitamin D, which is the proper test to order, are over 30 nanograms per milliliter. I have been surprised at how many of my patients are very low. As you can see this puts them at risk for a number of serious health problems. Make sure you are protecting your health and those of your loved ones by getting adequate vitamin D. Just don't get frostbite in the winter! *W*