We are all familiar with vitamins. They are essential for our body's health. Vitamin D is a fat soluble vitamin. It protects from rickets in children, and osteomalacia and osteoporosis in adults. It is necessary for calcium balance and bone health. The symptoms of deficiency are quite vague: fatigue, aches, pain, muscle weakness, depression. Vitamin D deficiency correlates with increased risk for cardiovascular death, cognitive impairment in older adults, and possibly the advancement of existing cancer. People at higher risk for deficiency include: dark skinned people, those who live mostly indoors, those who are fully covered with clothing and/or sunscreen when out of doors, those who live more north (in the northern hemisphere), older people, and obese people.

It used to be that we all thought we got adequate vitamin intake from our food. In many instances, research is refuting this belief. The NHANES (National Health and Nutrition Examination Study) report showed the average oral intake of Vitamin D in men was 204-288 International Units (IU) daily; in women, the average intake was 144-276 IU/d. Put in context: in 2010, the Recommended Daily Allowance (RDA) was raised to 600 IU/d for people age 1-70 years; and 800 IU/d for people over the age of 70. Shortly after that, the Endocrine Society in 2011 recommended that teens and young adults take 1,000 IU/d, and all other adults take 1,500-2,000 IU/d. These agencies differ also in interpreting blood level measurements. In general, a Vitamin D-25-OH level of < 12 ng/mL is associated with deficiency; a level of 12-20 ng/mL is considered inadequate for bone health; the NIH considers a level >20 adequate for bone health. The Endocrine Society suggests that a level of 30 ng/mL should be the lower limit of normal, and most laboratories use the measurement currently. Potential for toxicity occurs in the range of 80-200 ng/mL.

Sources of Vitamin D are widely varied, occurring in sunlight, natural foods, fortified foods, and vitamin supplements. Sunlight, 5-30 min without sunscreen, several times a week, allows UV-B light to enter the body, initiating the complex chemical reaction that forms Vitamin D. SPF-8 blocks the UV-B light enough to prevent this reaction. This is also less effective in older adults, dark skinned people, at higher latitudes, and during the winter/cooler weather. Caution regarding your risk for increasing skin cancers: sunlight should not be the major source of Vitamin D.

Fresh or canned fatty fishes are good sources of Vitamin D: 3 oz of swordfish has 566 IU; 3 oz salmon has 447 IU; 3 oz canned tuna has 154 IU. Cod live oil has 1,360/Tbsp IU, however it is not recommended to swallow oils such as this due to risk of potential aspiration into the lungs. Specific brands of mushrooms are grown in UV light, and may be a good source. Egg yolks have 41 IU. 3 oz beef liver has 42 IU. Fortified milk, dairy products, and other foods have varying amounts of supplement. Checking the food labels can be helpful, as fortification varies.

Vitamin D is present in many over-the-counter supplements, in varying amounts. It may be in your vitamin pill, calcium supplement, fish oil supplement etc. Be sure to

count all significant sources of vitamin D when analyzing your personal intake. You should be meeting at least the RDA. Most older adults are likely to require a larger intake, as recommended by the Endocrine Society. Supplements are readily available in stores, without prescription. They should be taken once daily, some even weekly or monthly if prescribed in high doses by health care practitioners. They should be taken with a fatty meal, to enhance absorption.

References and Resources: www.cdc.gov/nchs/nhanes.htm
www.vitamindcouncil.org/Deficiency
www.iom.edu/
www.ods.od.nih.gov
www.endocrine.org