

# **Volunteer Leader Training Guide**

## **Vitamin D and Your Health**

Rosemary Rodibaugh, Ph.D., R.D., L.D., Professor - Nutrition

### **Introduction**

Nutrition scientists have known for a long time that vitamin D is necessary for strong bones. But new research suggests it may also help protect against several chronic diseases such as certain types of cancer, type 1 diabetes, rheumatoid arthritis, multiple sclerosis and other autoimmune diseases.

Vitamin D is the only vitamin that does not have to be consumed in food or supplements because our bodies are able to make it when our skin is exposed to direct sunlight. Not all sunlight is the same, though. Many factors affect how much we absorb and how much vitamin D is made. The season, time of day, geography, latitude, level of air pollution, color of your skin and your age all affect your skin's ability to produce vitamin D.

Vitamin D is not found naturally in very many foods. Good sources are fortified foods (such as milk, yogurt, margarine and cereals), sardines, wild salmon, tuna and egg yolks. It is hard to get much vitamin D from your diet unless you eat dairy foods and fatty fish. Many nutrition and health experts recommend that most people take vitamin D<sub>3</sub> supplements in addition to food sources and safe sun exposure.

### **Target Audience**

- EHC leaders
- Adult audiences

### **Objectives**

Participants will:

- Be able to list two functions of vitamin D.
- Be able to list three diseases associated with low vitamin D status.
- Be able to state how much vitamin D is recommended daily.
- Ask their physicians if they should be taking vitamin D supplements.

### **Main Teaching Points**

- Vitamin D is a vitamin with many functions.
- Vitamin D is needed for strong bones and to protect against many diseases.
- Vitamin D is found in only a few foods.
- Our bodies can make vitamin D when our skin is exposed to sunlight.
- Most Americans have low blood serum levels of vitamin D.
- Supplements might be needed to get enough vitamin D.

## Handouts

- Handout 1: Vitamin D and Your Health
- Pre-survey and Post-survey

## Suggestions for Teaching

- Review the teaching guide and handout.
- Obtain copies of the handout and pre- and post-surveys.
- Optional activity: Ask participants to bring milk, yogurt and cereal package labels and any labels from vitamin/mineral supplements they take. Have participants look at labels and state whether there is any vitamin D present and, if so, how much. Talk about how difficult it might be to get 3,000-4,000 IU of vitamin D a day from food.

*Give each participant the pre-survey and ask them to complete it. Tell participants you will be discussing the important nutrient vitamin D today. Tell them they will receive a handout with more information at the end of the discussion.*

*Discuss the following:*

- Vitamin D is a fat-soluble vitamin essential for health that is not found in very many foods. Vitamin D naturally occurs in oily fish such as wild salmon, tuna and mackerel. Small amounts are found in beef liver, cheese and egg yolk. Foods fortified with vitamin D provide most of the vitamin D in the American diet. Foods fortified with vitamin D include milk, some yogurt, some ready-to-eat cereal and some orange juice.

*Ask participants if they eat any of the above foods and how often. Do they think they are getting enough vitamin D?*

*Ask participants if they know why we need vitamin D. Let several people respond.*

*Discuss the following:*

- Scientists have known for a long time that vitamin D helps the body absorb calcium, maintain bone density and prevent osteoporosis. Vitamin D acts like a hormone to control calcium absorption and help the body build strong bones and teeth, and it helps maintain muscle strength. When a person's body doesn't have enough calcium and vitamin D, it can't build strong bones. Vitamin D deficiency disease is known as rickets in children and osteomalacia in adults.
- New research suggests that in addition to the hormonal role, vitamin D has other functions that help protect against several diseases – certain types of cancer, cardiovascular disease, hypertension and autoimmune diseases such as rheumatoid arthritis, lupus, multiple sclerosis and type 1 diabetes.
- It is believed that adequate vitamin D allows the immune system to work at its optimal capacity. When there isn't enough vitamin D, the immune system can't do its job effectively.

- Research has shown that people with low vitamin D status are at increased risk for infection from communicable diseases such as tuberculosis and influenza. Vitamin D supplements enable the body to better fight off these illnesses. Supplementing with vitamin D also reduces falls and osteoporosis fracture risks in older adults and risks for developing type 1 diabetes when given to infants.

*Ask participants if they know what their vitamin D level is or if their doctor has told them their vitamin D level is low. Mention that doctors are starting to routinely measure vitamin D levels and suggest they ask their doctor to check their blood levels if they haven't done so and if their insurance covers the cost. Share the following information:*

- Analysis of data from a recent large nutrition and health survey showed that the average blood serum level of Americans is considerably below 30 nanograms per milliliter (ng/mL), which is considered to be the low end of a healthy range.
- Vitamin D experts believe we need blood serum levels of 30-40 ng/mL for overall health and to prevent diseases such as diabetes and certain cancers. Levels of around 60 ng/mL may be closer to the levels our bodies were meant to have.
- To achieve optimal blood levels, research shows we need 3,000-4,000 IU of vitamin D per day. This is much higher than the 200-600 IU Adequate Intakes (AI) set by the Institute of Medicine in 1997. Much has been learned through many research studies since then, and vitamin D experts recommend increasing the AI for vitamin D. Many studies support the higher recommended intake.

*Ask participants to look at the food and/or supplement labels they brought and report how much vitamin D is in the food or supplement. Ask participants to discuss how they think they can get enough vitamin D. Let several participants respond. Then provide the following information:*

- Twenty minutes of midday sun exposure is equivalent to 10,000 to 25,000 IU of vitamin D<sub>3</sub>. Experts recommend leaving some part of your body – neck, arms or back – exposed for 15-20 minutes without sunscreen twice a week. Midday sun is the best. Then put sunscreen on the exposed area. Alternate the areas you expose so no one area gets too much sun at one time.
- Eat oily fish (wild salmon, tuna or mackerel) a couple of times a week, drink fortified lowfat milk and fortified orange juice daily, eat fortified cereal daily or take a vitamin D<sub>3</sub> supplement containing 1,000-2,000 IUs daily. Always talk to your doctor about the need for a dietary supplement before you start to take one.
- Vitamin D metabolism can be altered by certain drugs, including corticosteroid medications such as prednisone. The weight-loss medication orlistat (XENICAL® and alli™) and the cholesterol-lowering drug cholestyramine (Questran®, LoCholest® and Prevalite®) can reduce the absorption of vitamin D. Anti-seizure medications phenobarbital and phenytoin (Dilantin®) increase the metabolism of vitamin D in the liver. If you take any of these medications, talk to your doctor about the need for vitamin D supplements.

We are learning more about vitamin D every day. There has been a lot of research in the past 10 years that may result in an increase in the recommended daily intake for vitamin D. In the meantime, the best way to ensure you get enough is to eat foods that are naturally rich in vitamin D, such as wild salmon, tuna and mackerel, and foods fortified with vitamin D, such as milk, some yogurt, orange juice and cereal; expose a small patch of bare skin to midday sunlight for 15 to 20 minutes twice a week; and take a vitamin D<sub>3</sub> supplement in an amount recommended by your doctor.

*Ask participants if they have any questions or comments. Give each participant a copy of the handout for more information on vitamin D.*

*Give each participant the post-survey and ask them to complete it.*