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# Vitamin D and Health

Vitamin D is important for good health. People sometimes call it the “sunshine vitamin.” This is because our bodies make it after we’ve been in the sun. Sunlight is the best source of vitamin D. Certain foods and vitamin pills are other sources. But most people do not get enough vitamin D.<sup>1</sup> Those people are said to be vitamin D deficient.

## Who is at risk for vitamin D deficiency?

These people are at risk<sup>1</sup>:

- People who do not get enough sunlight
- People with dark skin
- Breastfed infants
- Older adults
- Obese people
- People who have had gastric bypass surgery
- People who have trouble absorbing fat from the food they eat

We can control some of these risk factors. For example, we can spend about 10 minutes each day out in the sun with no sunscreen on. We can control our weight. Pregnant women and new mothers can get enough vitamin D so they can pass on enough to their babies when breastfeeding.

## How much vitamin D do I need?

This depends on your age and other things. People with some risk factors need to get more vitamin D to achieve healthy levels.<sup>3</sup> For example, obese people may need more than nonobese people. This is because vitamin D is stored in fat and is not as available for the body to use.

It’s hard to measure the amount of vitamin D we get from the sun. So recommendations are usually made just for the vitamin D we get from food or supplements. Two recommendations are shown in the table.

| Life-stage Group          | Institute of Medicine (IU/day) <sup>2</sup> | Endocrine Society (IU/day) <sup>3</sup> |
|---------------------------|---|---|
| 0-12 months               | 400   | 400-1000                                |
| 1-18 years                | 600   | 600-1000                                |
| 19-70 years               | 600   | 1500-2000                               |
| > 70 years                | 800   | 1500-2000                               |
| Pregnant or nursing women |   |   |
| 14-18 years               | 600   | 600-1000                                |
| 19-50 years               | 600   | 1500-2000                               |



## What happens if you don’t get enough vitamin D?

Children who don’t get enough vitamin D might get a bone disease called rickets. The bones are too soft and may become bowed. Adults might get osteomalacia or osteoporosis. These cause bone pain and broken (fractured) bones. People who don’t get enough vitamin D might also have<sup>1</sup>:

- Certain types of cancer
- Diabetes
- Heart disease
- Autoimmune diseases such as multiple sclerosis

## What are good sources of vitamin D?

Sunshine is the best source, but some foods naturally have vitamin D in them. Others have vitamin D added to them. Foods with added vitamin D are called fortified foods. The amount of vitamin D found in some foods is shown below.<sup>1</sup>

| Food                                       | Serving Size | IU per Serving |
|--|--------------|----------------|
| <b>Foods that have vitamin D naturally</b> |              |                |
| Cod liver oil                              | 1 tablespoon | 1360           |
| Swordfish, cooked                          | 3 oz         | 566            |
| Sockeye salmon, cooked                     | 3 oz         | 447            |
| Tuna fish, canned in water, drained        | 3 oz         | 154            |
| Egg yolk                                   | 1 large      | 41             |
| <b>Fortified foods</b>                     |              |                |
| Orange juice                               | 1 cup        | 137            |
| Milk                                       | 1 cup        | 115-124        |
| Yogurt                                     | 6 oz         | 80             |
| Ready-to-eat cereal                        | 0.75-1 cup   | 40             |

## How do I know if I have enough vitamin D?

To find out if you have enough vitamin D in your body, your doctor might order a blood test. This test is called 25-hydroxyvitamin D or 25(OH)D for short. One way to measure 25(OH)D is with an immunoassay. But sometimes this method is not accurate.<sup>4</sup> Another way is called liquid chromatography-tandem mass spectrometry (LC/MS/MS). LC/MS/MS is the method used by the Centers for Disease Control and Prevention and by the National Institute of Standards and Technology. It is highly sensitive and accurate. It doesn't have problems that some of the immunoassays have.

## What you can do

To make sure you get enough vitamin D, you can:

- Spend time in the sun.
- Eat foods rich in vitamin D or fortified with vitamin D.
- Ask your doctor if you are at increased risk for vitamin D deficiency.
- If you are at risk, ask your doctor if you should have an LC/MS/MS vitamin D test.

## References

1. Office of Dietary Supplements. National Institutes of Health. Dietary supplement fact sheet: vitamin D. <http://ods.od.nih.gov/factsheets/VitaminD-HealthProfessional/>. Accessed August 29, 2013.
2. Institute of Medicine, Food, and Nutrition Board. Dietary Intakes for Calcium and Vitamin D. Washington, DC: National Academy Press, 2010.
3. Holick MF, Binkley NC, Bischoff-Ferrari HA, et al. Evaluation, Treatment, and Prevention of Vitamin D Deficiency: an Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab.* 2011;96:1911–1930.
4. Binkley N, Krueger D, Cogwill CS, et al. Assay variation confounds the diagnosis of hypovitaminosis D: a call for standardization. *J Clin Endocrinol Metab.* 2004;89:3152-3157.