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Expert Q&A: Vitamin D and Cancer Risk [1]

Vitamin D is one of several nutrients that the body needs to stay healthy. It may also play a role in reducing the risk of cancer, and several research studies are exploring this link. Cancer.Net talked with Richard Goldberg, MD, to learn more about current research on vitamin D and what people should know.

Q: What is the role of vitamin D in the body, and what are some sources of this vitamin?

A: One role of vitamin D is to regulate the absorption of calcium by the body. Calcium is the main component of bones and is important in the function of all cells in the body, particularly the heart. People who are vitamin D deficient (don't get enough) can have weakened bones (a condition called osteoporosis in adults and rickets or osteomalacia in children). Too little calcium (called hypocalcemia) in the body can lead to irregular heartbeat and muscle spasms.

Milk, fish, eggs, and fortified cereals and orange juice are good sources of vitamin D. Milk manufactured in the United States is generally fortified with vitamin D as a way to prevent deficiencies from occurring. Supplemental vitamins are also a source.

Unlike other vitamins that the body cannot produce by itself, vitamin D can either be absorbed directly from the intestine or made from compounds in foods. The body can make vitamin D from nutrients related to cholesterol. These nutrients are then converted to vitamin D as they circulate in the blood when a person's skin is exposed to sunlight.

Too much vitamin D can also be bad for a person, leading to drowsiness, kidney stones, bone or muscle weakness, and elevated blood calcium, a condition called hypercalcemia [2] that can cause confusion and, in extreme cases, death.

Q: When getting vitamin D from sunlight, how long should a person be exposed to the sun? What are the risks of too much sun exposure?

A: While 90% of the body's vitamin D comes from exposure to sun (in the absence of vitamin D supplements), the amount of sun exposure needed to produce adequate vitamin D levels is actually quite limited. Sun exposure at the equator is far more intense than in such northern cities as Boston or London, for instance, and is more intense anywhere in summer than in winter. However, it takes only five to ten minutes of exposing the hands and face three times a week to receive adequate sun exposure in the summer in Boston. Exposure of more skin, such as when wearing a bathing suit, requires only a very short time in the sun. Use of sunblock is very important when sun exposure is longer than that to prevent skin cancer, including melanoma [3], and other sun-induced damage such as wrinkling and pigmentation changes (sunspots). Learn more about protecting your skin from the sun [4].

Q: How might vitamin D work to help lower the risk of cancer?

A: Laboratory studies have shown that vitamin D deficiency can lead to decreased communication between cells and leads them to stop sticking to one another, a condition that could cause cancer cells to spread. Compared with normal cells, cancer cells remain in an immature state, and vitamin D appears to have a role in making cells mature. Vitamin D also appears to play a role in regulating cellular reproduction, which malfunctions (doesn't work properly) in cancer. Higher levels of vitamin D lead to cellular adherence, maturation, and communication between cells, all of which may lower cancer risk.

Q: What does research show about vitamin D levels and cancer?

A: Studies in populations have shown that low vitamin D levels are a risk factor for cancer in general, and particularly for prostate [5], colorectal [6], and breast [7] cancers.

There are also data that correlate high blood levels of vitamin D with a reduced risk of breast and colorectal cancers. These levels can best be achieved by taking supplemental vitamin D. In colorectal cancer, calcium supplementation may also reduce the risk of polyps (noncancerous growths that may develop on the inner wall of the colon and rectum) and cancer. Numerous studies have tested cancer risk by giving patients supplemental vitamin D, with or without calcium supplementation. While the results are somewhat variable, substantial reduction (on the order of 50%) in the odds of breast and colon cancers with supplementation, have been noted in some studies. People with a personal history of these types of cancer and their relatives may wish to discuss supplementation with their doctors.

Q: What are some important messages for people about vitamin D and cancer risk, and what questions should people ask their doctors about vitamin D?

A: Vitamin D plus calcium supplementation can promote bone health and may reduce the risk of developing a number of cancers. However, you should talk with your doctor before taking any supplements. Anyone considering taking supplemental vitamin D should ask their doctor about the benefits and risks of doing so based on their personal and family history, and what dose is appropriate for them. The maximum recommended dose is 400 international units (IU) daily,

unless directed by a doctor to take higher doses.

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