



The Vitamin D Debate

This month's column is in response to many questions received on the seasonal topic of vitamin D supplementation: Can I get enough vitamin D from diet and sunlight, especially during Wisconsin winters? How much is enough? Does my baby get enough vitamin D through breastmilk or should I be giving her a supplement?

Most people know vitamin D as the sunshine and milk vitamin. Sunlight and fortified milk are indeed the most common routes for obtaining the vitamin in the US. So, what happens when most of us in this day and age no longer get enough sun exposure to stimulate adequate quantities of the vitamin? What about those of us who don't or can't drink milk?

Already in 2002, a Boston University researcher declared in the American Journal of Clinical Nutrition that the data "provide irrefutable evidence that vitamin D deficiency is a major unrecognized epidemic in adult women of childbearing age." The chief concern arose from a small but increased number of reported cases of rickets among infants in the US.

Vitamin D deficiency rickets has long been recognized as a preventable disease characterized by soft or weak bones, poor bone development, and malformed legs. Threat of rickets was the reason my mother and maybe yours were made to drink cod liver oil every day as a child. The disease also gave impetus to early child labor laws preventing children from literally wasting away during 12-hour, sunless factory shifts. The adult form of vitamin D deficiency is called osteomalacia and is characterized by weakened muscles, as well as weak leg bones, hip bones, and spines.

For the past 5 years, research has linked health roles to vitamin D far beyond rickets prevention. Mounting reports show ample vitamin D fights certain cancers, diabetes, and gum disease, is the pivotal feedstock for a hormone that protects muscle, and inhibits autoimmune disorders such as multiple sclerosis, lupus, and inflammatory bowel disease. What does "ample vitamin D" mean? Current US RDI for vitamin D is as follows: 200 International Units (IU) from infancy to age 50; 400 IU for ages 51 to 70 and for pregnancy/lactation; and 600 IU for ages over 70. However, the growing consensus in the scientific community calls for revision of the RDI to at least 1000 IU daily. A current National Institutes of Health study administers 2000 IU a day to pregnant women and will look at fetal vitamin D stores in relation to levels in nursing infants, as well as childhood health effects.

Our skin evolved to create vitamin D when exposed to the sun's UV rays. The darker the skin, the lower is the production of vitamin D. The lighter the skin, the higher is the production of D. At a time when most humans lived in or near equatorial regions, humans made 10,000 to 20,000 IU every day. As humans migrated to high latitudes, where solar UV exposure during half the year may be inadequate to stimulate sufficient vitamin D, evolution compensated by selecting for increasingly lighter skin. In these areas of the world, prolonged summer sunlight exposure and dietary sources of vitamin D, such as cod liver oil and other oily fish, whole milk and butter from pastured animals, egg yolks, and liver became cultural centerpieces, especially for pregnant/lactating women and young children. (It brings new light to why my Swedish relatives relish eel and celebrate the solstice!)

Today, modern diets, modern transportation, urban high-risers, atmospheric pollution, and the predominance of indoor activity in home, work, and play – and official health recommendations for

UV-blocking sunscreen when we do go outside – make a sure recipe for vitamin D deficiency! Deficiency is compounded by obesity. “The mechanism? That, no one really understands,” said a researcher in the *Journal of Nutrition* last February, “...body fat appears to act like a sponge,” sequestering vitamin D and making it unavailable to the body. Darkly pigmented persons are especially vulnerable to vitamin D deficiency due to more efficient filtering of UV rays. Moreover, many African Americans and Asians experience lactose intolerance and ingest minimal or no fortified dairy products; the US mandate to fortify milk with vitamin D did little to protect this population, or for that matter vegans.

I believe we must consider where we fall in the above risk profiles, in order to make sense of and personally apply the recommendations for pregnancy, lactation, and infancy.

In 2003, the American Academy of Pediatrics (AAP) recommended that all exclusively breastfed infants be supplemented daily with 200 International Units (IU) of vitamin D, beginning during the first two months of life. However, some sources criticize this approach for ignoring widely varying needs specific to geographical location, skin color, maternal diet, and maternal and infant sun exposure. Nor does the AAP address the causal context for deficiency problems, such as environmental crises, socioeconomic inequities, an obesity epidemic, and under-prioritized nutritional needs of pregnant and breastfeeding mothers.

The World Health Organization has issued individualized recommendations. New Zealand, Australia, and England advise regular sun exposure without sunscreen based on infant skin color: about 30 minutes per week (diaper only) or 2 hours per week (fully clothed without a hat) for exclusively breastfed Caucasian infants; about 20% longer exposures for darker skinned infants. Northern Europe, on the other hand, has universal supplementation in place, but even in high latitudes complex compensations seem to be at work. Icelandic women who include daily cod liver oil in their diets show unusually high levels of vitamin D even in winter. In Tampere, Finland, (where winters, says my husband – who was born in Tampere – are longer and darker than in Wisconsin), fetal vitamin D stores are depleted by 8 weeks of age in exclusively breastfed, winter-born infants. Nevertheless, no unsupplemented infant in the Finnish study had biochemical or active rickets.

Few dispute that from a public health perspective, Americans need more vitamin D. No one disputes that increasing vitamin D in our own bodies, whether by sunlight, supplement, or diet, ensures increased vitamin D in our fetuses and nursing babies. One Wisconsin company, Natural Ovens Bakery, is getting national attention for offering bread and chocolate that are superfortified with vitamin D. Each slice of the whole grain bread contains 1600 IU of vitamin D, and each piece of dark chocolate 2000 IU. While this may not make 12-hour work shifts or fear of the sun healthy for humans, it will help solve the vitamin D deficiency.

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This text was originally published in the Willy Street Co-op Reader in the **Ask the Midwife** column, where Ingrid Andersson of Community Midwives, LLC in Madison, answers questions on pregnancy, childbirth and related topics. More of these articles can be found at Ingrid's website: www.gentlehomebirth.org