

Vitamin D/Thyroid Connection

The Vitamin D Newsletter

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[The Vitamin D Council](#)

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Yesterday's Washington Post article, [To-Good-To-Be-True](#), sums up the April 9th vitamin D symposium at UCSD in San Diego, which was nothing short of spectacular. Carole Baggerly outdid herself organizing it and explaining how she got involved. Make no mistake; Carole is both serious and energetic. She told about her efforts to introduce resolutions at upcoming meetings of various professional groups. Then she introduced the volunteers from the [San Diego Black Nurses Association](#) who made sure the conference went off without a hitch. Then Carole introduced the four speakers. The slides of each speaker are available at [Grassroots Health](#).

Before I tell you the highlights of the conference, I'd like to tell you about another conference, this one in Germany, this May 17th and 18th. It is the [Third International Symposium on Vitamin D Analogs in Cancer Prevention and Therapy](#). Readers know how I feel about giving analogs to vitamin D deficient patients instead of vitamin D but [speakers include](#) Michael Holick, Reinhold Veith, Bill Grant, Tai Chen, Heidi Cross, David Feldman, and Roger Bouillon, all of whom know the importance of the nutrient. Most of this conference is for scientists, not lay people. However, Michael Holick is the first speaker and if you have not heard his latest talk about vitamin D, it might be worth a trip to Germany.

The first San Diego speaker was Dr. William Grant. Since leaving NASA to begin a full-time career as a vitamin D researcher, Bill has published dozens of studies and has another dozen in the works. Using ecological studies (from Greek oikos, house + German -logie, study or studying your own house) of UVB irradiance and cancer, Bill reported that 15 cancers (colon, esophageal, gallbladder, gastric, pancreatic, rectal, small intestinal, bladder, kidney, prostate, breast, endometrial, ovarian, Hodgkin's lymphoma, and Non-Hodgkin's lymphoma) are associated with lower UVB light. He concluded that 257,000 cancer deaths in 2007 in the USA were accounted for by inadequate vitamin D levels. Of course the problem with ecological studies is that it is easy to be vitamin D deficient in Miami, all you have to do is listen to your doctor's advice and stay out of the sun. Recently, a group from the Arizona Cancer Center found almost 80% of Arizonians had levels below 30 ng/ml. So much for sunny spots.

[Jacobs ET, et al. Vitamin D insufficiency in southern Arizona. Am J Clin Nutr. 2008 Mar; 87\(3\):608-13.](#)

The next speaker was Professor Cedric Garland. I found myself wondering how he did it. I became convinced that vitamin D prevents cancer five years ago. Cedric and his brother Frank and his colleague Ed Gorham knew it 30 years ago! I know what it is like to tell someone that vitamin D prevents cancer and see them think, "Here we go again, another miracle vitamin." I know what it is like to try and explain and watch people die unnecessarily. But I've only had that experience for five years. Cedric has dealt with that frustration for thirty

years. Almost thirty years ago, Cedric and Frank Garland published evidence that vitamin D prevents cancer. In fact, it was Cedric's first publication. Thankfully, the paper was recently recognized as being so important that it was republished in 2006 by the International Journal of Epidemiology. You can read the entire paper for free by clicking on the second link below and then clicking on "free final text", courtesy of Oxford Journals.

[Garland CF, Garland FC. Do sunlight and vitamin D reduce the likelihood of colon cancer? Int J Epidemiol. 1980 Sep; 9\(3\):227-31.](#)

[Garland CF, Garland FC. Do sunlight and vitamin D reduce the likelihood of colon cancer? Int J Epidemiol. 2006 Apr; 35\(2\):217-20.](#)

Cedric began by showing the incidence of type-1 diabetes and multiple sclerosis by latitude. I had no idea that the latitudinal data was so strong for type 1 diabetes in children. This disease is almost nonexistent around the equator. Type-1 diabetes is but one of the three modern childhood epidemics caused by the sunlight-hating dermatologists, the other two, I think, are autism and asthma. Next he showed latitude and 25(OH)D levels, which reminded me to be suspicious of high levels, unless they use accurate methods of detecting 25(OH)D. Some methods used, even in this country, are over detecting vitamin D and telling patients their levels are above 50 ng/ml when they are, in reality, much lower. Cedric's data showed Thailand had mean levels of 70 ng/ml, which I doubt and suspect were due to inaccurate 25(OH)D tests. He then reviewed evidence of the 25(OH)D levels needed to prevent numerous cancers. The safest levels are somewhere above 50 ng/ml. Cedric spent most of his time presenting an entirely new theory of carcinogenesis, one dependent on vitamin D maintaining cellular junctions. I suspect this paper will also be reprinted in 20 years. The only disagreement I have is with his recommendation for cancer patients to start at fairly low doses. For reasons I recently explained, the risk benefit analysis indicates cancer patients should take 5,000 to 10,000 IU per day and they may have no time to lose. Why worry about the phantom of vitamin D toxicity if you may be dying of cancer? Just have your calcium checked along with frequent 25(OH)D levels. Get your levels up to 70-90 ng/ml if you have cancer.

[Vitamin D Newsletter, Does vitamin D treat cancer?](#)

The next speaker was Professor Bruce Hollis. He reviewed basic physiology of vitamin D and emphasized that the entire system is designed to deal with an excess not with an insufficiency of vitamin D. Numerous mechanisms are available in your body to prevent vitamin D toxicity but few are available to deal with insufficiency. Then he briefly mentioned one of the most important discoveries about vitamin D in the last few years, one where Professor Neil Binkley of the University of Wisconsin was senior author. (In the last four years, Professor Binkley has become a prolific vitamin D expert and I hope Carol Baggerly is able to get him to speak at some of the upcoming conferences she hopes to sponsor.) As I have pointed out before, Hollis and Binkley's crucial discovery was that the body doesn't start storing the parent compound, cholecalciferol, until 25(OH)D levels reach about 50 ng/ml. They showed, using basic steroid pharmacology, that 50 ng/ml should be considered the lower limit of adequate 25(OH)D levels.

[Hollis BW, Wagner CL, Drezner MK, Binkley NC. Circulating vitamin D3 and 25-hydroxyvitamin D in humans: An important tool to define adequate nutritional vitamin D status. J Steroid Biochem Mol Biol. 2007 Mar; 103\(3-5\):631-4.](#)

Bruce kept the audience enthralled with a review of all the disease states that

indicate 25(OH)D levels need to be much higher than they are now, that is, the multiple biomarkers that suggest the lower limit of 25(OH)D levels should be above 40 ng/ml and closer to 50 ng/ml. Then Professor Hollis spoke of his ongoing study in pregnant women and how he got approval to use 4,000 IU of vitamin D per day back in 2003, quite an accomplishment. He also reviewed another one of his research projects, one that answered an age old question, why is breast milk a poor source of vitamin D? How were prehistoric infants supposed to get their vitamin D, by lying out in the sun where saber tooth tigers would eat them? No, they were hidden in caves and had to have another source or the human race would have died out long ago because rickets destroys a woman's and infant's chance to live through childbirth due to rachitic deformations of the mother's pelvis. Carol Wagner and Bruce Hollis, together with their colleagues, answered that age old question, human breast milk is a poor vitamin D source because virtually all modern mothers are vitamin D deficient. That is, when pregnant women keep their levels where we think prehistoric human levels were, about 50 ng/ml, breast milk becomes a rich source of vitamin D. First Carol and Bruce gave 2,000 IU per day, then 4,000 IU per day and finally 6400 IU of D3 per day to lactating women. Only at 6400 IU/day did the women maintain both their own 25(OH)D levels and the levels of their breast feeding babies above 50 ng/ml. On 6400 IU/day, the vitamin D activity of the breast milk went from about 80 to 800 IU/L. Quite a discovery, and another reason for all of us to keep our levels above 50 ng/ml.

[Wagner CL, Hulsey TC, Fanning D, Ebeling M, Hollis BW. High-dose vitamin D3 supplementation in a cohort of breastfeeding mothers and their infants: a 6-month follow-up pilot study. Breastfeed Med. 2006 Summer;1\(2\):59-70.](#)

Professor Robert Heaney went last, discussing 74 slides. So much of what we know about vitamin D today is due to Robert's unceasing dedication to vitamin D, the most recent example being his and Joanne Lappe's randomized controlled trial showing that increasing baseline levels from 29 to 38 ng/ml reduced the risk of getting cancer by around 70%. He again pointed out that the body does not begin to consistently store much vitamin D until your levels get to around 50 ng/ml. He also went through multiple biomarkers of vitamin D. That is, what level or intakes do you have to have to reduce the incidence of multiple diseases? He covered calcium absorption, osteoporosis, risk of falling, muscle function, death and disability of the aged, TB, influenza, cardiovascular disease, hypertension, diabetes, cancer, multiple sclerosis, and gum disease. How can one vitamin be involved in so many diseases? Simple said Dr. Heaney, "vitamin D is the key that unlocks the DNA library." He then reviewed toxicity and concluded there is no evidence that it occurs at levels below 200 ng/ml or with intakes (total) below 30,000 IU per day. Of course, we have no reason to think anyone needs 30,000 IU per day or levels of 200 ng/ml, which would be irresponsible. But someone with a serious cancer should consider getting their level up to 70-90 ng/ml and that may take 10,000 IU per day or even more in some people. As a rule of thumb, 1,000 IU will raise 25(OH)D levels by about 10 ng/ml.

Then Professor Heaney addressed a public health question. How much would we have to give all Americans to get 98% of people above 32 ng/ml without causing toxicity in anybody? The answer: 2,000 IU per day. Of course 32 ng/ml is not adequate but it would be a great first step. Furthermore, of the people left out, a high percentage would be African Americans. In fact, Dr. Talwar recently reported that 40% of African American women fail to achieve a level of 30 ng/ml even after taking 2,000 IU/day for a year.

[Talwar SA, Aloia JF, Pollack S, Yeh JK. Dose response to vitamin D](#)

[supplementation among postmenopausal African American women. Am J Clin Nutr. 2007 Dec;86\(6\):1657-62.](#)

He also discussed his recent study giving healthy adults 100,000 IU as a single dose. If you start with a baseline level of 28 ng/ml and take 100,000 IU as a single dose, mean levels will remain above 32 ng/ml for two months. If you rely on such stoss doses, but you start with a lower level, or want your levels above 50 ng/ml, how often do you need to take 100,000 IU? We don't know the answer to the last question but we know that Grey *et al* gave 50,000 IU per week for four weeks then 50,000 per month for a year to 21 patients with hyperparathyroidism. Blood levels rose from a mean of 11 ng/ml at baseline to 30 ng/ml at one year and levels did not continue to rise after six months. Remember, that means half the patients had levels lower than 30 ng/ml at the end of the year. Also remember that the metabolic clearance (how quickly you use it up) might be higher in certain disease states.

[Grey A, et al. Vitamin D repletion in patients with primary hyperparathyroidism and coexistent vitamin D insufficiency. J Clin Endocrinol Metab. 2005 Apr;90\(4\):2122-6.](#)

That last point, metabolic clearance, is only one of a number of reasons that patients vary in their response to vitamin D. Remember, a surprising number of patients will tell their physician they are taking vitamin D when they are not, some will be taking preparations that have less in it than the label says, some will not absorb it, and some people weigh more than others. As Dr. Heaney points out, even if you know patients took 100,000 IU, great variability exists in individual response. At the end of two months some will have shown a minimal response and other much more. This is a field where little is known. Do different disease states use up vitamin D quickly? The answer is probably yes. Furthermore, variability also exists in how one metabolizes and catabolizes (breaks down) vitamin D. Also, what is the interactive effect of drugs that use the same liver enzymes for catabolism? We just don't know and that is why vitamin D blood testing is crucial. Remember, the only test to have is a 25-hydroxy-vitamin D. Do not let anyone get a 1,25-dihydroxy-vitamin D; it will not tell you if you are vitamin D deficient and is usually only indicated in evaluating high blood calcium.

As far as 25(OH)D levels go, many of you have written complaining about the high cost of a 25(OH)D levels at some labs. I've got some good news. For the next month, Life Extension Foundation is having a sale on their 25(OH)D blood tests, only \$32.25, including the fee for drawing the blood. (No, we don't get funding from Life Extension, I wish we did.) Life Extension uses LabCorp, which, in turn, uses an accurate method to determine 25(OH)D levels, the [DiaSorin Liaison](#) method. The only problem is that DiaSorin, LabCorp, and Life Extension all say that 30 ng/ml is acceptable. It is not. Take enough vitamin D or get enough UVB radiation to get your levels above 50 ng/ml. To order the test, call Life Extension at 800 208-3444. Unfortunately, this offer is not available in New York, New Jersey or Rhode Island.

Also, [Dr. James Dowd](#) has written a fine book about vitamin D, [The Vitamin D Cure](#). Get this, he is board certified in internal medicine, adult rheumatology, and pediatric rheumatology, an associate professor at Michigan State University, and runs his own Arthritis Institute and the Michigan Arthritis Research Center. He gives a formula for how much vitamin D you need but stresses the importance of testing to know for sure. He uses the formula of 2000 IU for every 100 pounds of body weight, which is as accurate an estimation as one can make without knowing baseline levels. Of course it

depends on so many things, as Dr. Dowd points out, such as percentage body fat, latitude, skin type, sun exposure and age. He gives case after case examples of how vitamin D not just prevents disease, but seems to have a treatment effect. He also stresses three other things I've written about before, [acid base balance](#), [magnesium and potassium](#). If you can't get eat enough fruits and green leafy vegetables to obtain your potassium and magnesium and to get rid of low-grade chronic metabolic acidosis, then you should consider magnesium supplements and potassium bicarbonate supplements.

With these four experts and with this month's vitamin D news articles about [breast cancer](#), [brain function](#), [artery blockage in the legs](#), [soft skulls in babies](#), [peripheral neuropathy in diabetics](#), [childhood type-1 diabetes](#), [colon cancer](#), and [stress fractures](#) and with the increasing number of scientists around the world jumping on the vitamin D express, why doesn't the government do something? What will it take? Like Carole says it will take a grassroots effort. The first thing to do is tell your family and friends about vitamin D. Tell your doctor. Get your family's 25(OH)D tested, including your children. Once people begin to see it works, they will get their family and friends to take it. They will feel better and then the word will spread. All the government can do is make vitamin D illegal or limit the amount in each pill. The first is unlikely but not the second. With 5,000 IU capsules widely available, many people give no thought to taking one a day. But if the government limits the sale of anything over 400 IU and people had to take 12 of the 400 IU tablets, instead of one of the 5,000 IU, they might balk at so many pills. Before our officials in Washington take such a step, let's hope they read the [Washington Post](#).

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