

**Vitamin D** is the most common nutritional deficiency, and most physicians are clueless about its importance. If you can answer the majority of the following questions correctly you are doing better than the majority of physicians.

Please remember that without question the best way to optimise your vitamin D level is with regular exposure of large portions of your skin to the sun. However, with summer behind us it is time for most of us to consider switching our source of omega-3 fats from fish oil to cod liver oil (Nordic Naturals has the purest CLO in the world), as that will supply the missing vitamin D that many of us will start lacking due to diminishing sun exposure.

This series of questions was developed by Dr. John Cannell. He is one of the leaders in the vitamin D education movement and has a [very comprehensive Web site](#) dedicated to vitamin D. You can also subscribe to his [free newsletter](#) there.

**1. Vitamin D reverses inflammatory changes associated with age-related memory impairment.**

- a) True
- b) False

**True.** Researchers from Ireland were the first to demonstrate that vitamin D3 acts as an anti-inflammatory agent and turns old brains into young brains--at least as far as inflammatory cytokines are concerned. This research suggests vitamin D may prevent, or even treat, age-related cognitive decline!

[Biochem Soc Trans. 2005 Aug;33\(Pt 4\):573-7.](#)

**2. Your blood sugar is closely associated with your vitamin D level.**

- a) True
- b) False

**True.** Researchers in Australia added to the growing evidence that sun avoidance may have caused the epidemic of type 2 diabetes. The Australians' findings were straightforward and powerful. The higher your vitamin D level, the lower your blood glucose.

[Clin Endocrinol \(Oxf\). 2005 Jun;62\(6\):738-41.](#)

**3. In July, a group from Minnesota found that 100 percent of elderly patients admitted for fragility fractures were vitamin-D deficient despite the fact that half of them were taking vitamin D supplements.**

- a) True
- b) False

**True.** The authors found that women taking supplemental vitamin D had average levels of 16.4 ng/ml while women not taking supplements had levels of 11.9 ng/ml, both dangerously low. None of the 82 women got enough sun or took enough vitamin D to obtain a level of 40 ng/ml. These were fragility fractures, not fractures caused by unusual trauma. That is, their bones just sort of fell apart.

[Curr Med Res Opin. 2005 Jul;21\(7\):1069-74.](#)

**4. Women with the lowest vitamin D levels had five times higher risk for breast cancer.**

- a) True
- b) False

**True.** Women with 25(OH)-vitamin D blood levels less than 20 ng/ml were more than five times more likely to be diagnosed with breast cancer than were women with levels above 60 ng/ml. That is five, repeat five, times more likely!

[Eur J Cancer. 2005 May;41\(8\):1164-9. Epub 2005 Apr 14.](#)

**5. Avoiding the sun doubles the risk of prostate cancer.**

- a) True
- b) False

**True.** Again, the risk of avoiding the sun is clear, this time in another study with prostate cancer. However, the authors pointed out that sun exposure increases the risk of skin cancer and believed that proper vitamin D supplementation "may be the safest solution to achieve an adequate vitamin D status."

[Cancer Res. 2005 Jun 15;65\(12\):5470-9.](#)

I also believe supplementation is the only way to go for many people. Very black skinned people or those fully covered all year are simply unable to spend an adequate time in the sun. In addition, the sun ages the skin and that fact alone will keep many people out of the sun. That said, I go into the sun whenever I can. The reason is simple: it is the most conservative thing to

do. Until we know everything the sun does--and it does more than just make vitamin D--the conservative approach is to mimic our ancestors and the environment in which humans evolved, whenever we can. Therefore, it makes sense to sunbathe sensibly in the late spring, summer and early fall and take supplements or use [UVB lamps](#) the rest of the time.

**6. South Korean researchers associated vitamin D deficiency with Parkinson's disease.**

- a) True
- b) False

**True.** Actually, they showed that certain genetic malformations (VDR polymorphisms) are more likely in patients with Parkinson's disease, implying an association with vitamin D and Parkinsonism.

[J Korean Med Sci. 2005 Jun;20\(3\):495-8.](#)

**7. Researchers in England discovered that patients with chronic pain have phenomenally low vitamin D levels.**

- a) True
- b) False

**True.** The authors added to the evidence that severe vitamin D deficiency is associated with chronic pain. They found that 88 percent of their patients with chronic pain had levels less than 10 ng/ml. If they treated their patients, they did not report it. However, Swiss researchers recently treated chronic pain

patients with vitamin D and reported the pain "disappeared" within one to three months in most of their patients. This is the second open study that showed adequate doses of vitamin D dramatically improved chronic pain.

[Ann Rheum Dis. 2005 Aug;64\(8\):1217-9.](#)

[BMJ. 2004 Jul 17;329\(7458\):156-7.](#)

[Spine. 2003 Jan 15;28\(2\):177-9.](#)

### **8. Severe vitamin D deficiency is common in TB patients.**

**Some English doctors don't know the difference between ideal and "normal" levels.**

**Most American doctors don't know the difference either.**

- a) All are true
- b) All are false
- c) Some are true and some are false

**All are true.** First, the authors reviewed the impressive animal evidence that vitamin D can help treat TB. Then they reported that most of their immigrant TB patients had undetectable vitamin D levels. Then they reported the normal range for their lab was between 5 to 47 ng/ml but "normal" was any level greater than 9 ng/ml. Finally, the researchers reported they treated their patients with "normal daily doses" of vitamin D, without reporting how much they gave. Apparently, they gave just enough to get patients above 9 ng/ml.

[J Infect. 2005 Jun;50\(5\):432-7.](#)

Keep in mind that different laboratory techniques result in different ranges for 25(OH)-vitamin D levels. No matter what technique is used, ideal levels can roughly be defined as any level above the median. In this case, as you will see below in Dr. Heaney's article, the doctors should have treated their patients with 4,000 units a day. They should also have watched for evidence of vitamin D hypersensitivity, which can occur when treating tuberculosis patients for vitamin D deficiency.

We can only mourn for the poor immigrants who have to suffer from both TB and vitamin D deficiency. Of course, few physicians know the difference between the Gaussian definition of "normal" (average ranges for the population tested) and the ideal definition of "normal" (levels above 32 ng/ml). Getting commercial reference labs to report ideal 25(OH)-vitamin D levels should be a priority of everyone involved in trying to end the epidemic of vitamin D deficiency.

### **9. Virtually all nephrologists give renal failure patients a vitamin D-like drug.**

**Virtually all renal failure patients are severely vitamin D deficient.**

**Some nephrologists know the difference between vitamin D and calcitriol.**

- a) All are true
- b) All are false
- c) Some are true and some are false.

**All are true.** Finally, the truth about renal failure patients: most of them are vitamin D deficient despite taking vitamin D analogs! Most nephrologists prescribe activated vitamin D (calcitriol) or vitamin D analogs but not vitamin D. Calcitriol and vitamin D analogs do nothing to prevent vitamin D deficiency. Renal failure patients need both vitamin D and a calcitriol-like drug. Moreover, 400 units a day of vitamin D will not correct their deficiencies. As you will see below, they need up to 4,000 units.

[Am J Kidney Dis. 2005 Jun;45\(6\):1026-33.](#)

P.S. If you think nephrologists know the difference between vitamin D and calcitriol, read this month's paper from some nephrologists at the University of Texas. They discuss the importance of vitamin D in preventing and treating heart disease. (I think adequate vitamin D nutrition may prevent more cardiovascular deaths than cancer deaths.) However, I read the Texas paper three times and still don't know if the authors know the difference between vitamin D and calcitriol. I hope they know the difference between cholesterol and testosterone. (Some cholesterol is metabolized into steroid hormones, vitamin D is a prehormone; testosterone is a steroid hormone, calcitriol is the most potent steroid hormone in the human body).

[Kidney Int Suppl. 2005 Jun;\(95\):S37-42.](#)

**10. Professor Robert Heaney proved, again, that he is a gentleman and a scholar.**

a) True

b) False

**True.** In the most important clinical paper published this month, Heaney gave the three best reasons why we should all maintain minimum levels of at least 32 ng/ml, the level that:

(a) Effectively suppresses PTH

(b) Maximizes calcium absorption,

(c) Maximally improves glucose tolerance

Then he goes on to show that some of us, especially very dark skinned people, will need to take 3,000 to 4,000 units every day to maintain healthy 25(OH)-vitamin D blood levels.

[J Steroid Biochem Mol Biol. 2005 Jul 15.](#)

He then defends the Institute of Medicine's (IOM) recommendation that we only take one-tenth that amount, as the best science that was available in 1997. I admire Dr. Heaney for trying to cover for the IOM. The truth is that both Dr. Heaney and Dr. Holick told the IOM that 2,000 units a day was not toxic and would prevent both adequate treatment and meaningful research. The IOM then proceeded to ignore the only two vitamin D experts on the panel.

Writing two years later, Professor Reinhold Vieth came up with dozens of studies the IOM overlooked. These studies conclusively showed 2,000 units a day could not be toxic. Furthermore, Vieth found the literature published before 1997 clearly showed 10,000 units a day was unlikely to be toxic. Vitamin D toxicity probably starts around 20,000

units a day, and then only if taken for months or even years.

[Am J Clin Nutr. 1999 May;69\(5\):842-56.](#)

This month we learned how much it takes to sicken a child. Doctors at the University of Maryland School of Medicine report a case of accidental overdose of ergocalciferol - a vitamin D like drug.

[Pediatrics. 2005 Sep;116\(3\):e453-6.](#)

(Ergocalciferol is not vitamin D; it is a vitamin D analog whose patent expired years ago. Some health food companies sells it as a 'vegetarian' vitamin D. It is usually obtained by radiating fungi, a fact the health food crowd ignores. Ergocalciferol does not occur naturally in the human body, nor do its numerous metabolic by products. It was nice to see the authors refer to ergocalciferol as a vitamin D analog. Ergocalciferol is not vitamin D. Cholecalciferol is vitamin D.)

Anyway, Mum was giving her 32-lb son a liquid preparation of ergocalciferol made in Latin America. The direction stated adults should take one drop (2,500 units) per day but mom mistakenly gave junior four bottles (2,400,000 units or 60 mg) over four days. The child developed abdominal pain, mild high blood pressure, and high blood calcium but made an uneventful recovery once the correct diagnosis was made.

The authors say 21 mg/kg is the lethal dose. If the same is true in humans, a 220-lb adult would require about 200,000 pills.

However, this child got quite sick taking one-fifth that amount (4 mg/kg). His

calcium peaked at 15 mg/dl, high enough to be concerning. Vitamin D kills rats by causing high blood calcium. A 110-lb adult would have to take 200 bottles (20,000 of the 400 unit capsules) to match the child's intake.

So, don't take 200 bottles at a time; don't take 50 bottles at a time; don't take 25 bottles at a time. I would say don't take 15 bottles at a time but:

**Doctors at the University of New South Wales reported giving 50 elderly patients the equivalent of 15 bottles (600,000 units) in a single injection and concluded it was a good idea to do it every year.**

a) True

b) False

**True.** Due to sun scare, vitamin D deficiency is sunny Australia is now quite a problem, so the authors were looking for an easy, cheap way to maintain blood levels for an entire year. It worked pretty well but I wouldn't recommend it. It is not physiologic.

[Med J Aust. 2005 Jul 4;183\(1\):10-2.](#)

Remember, a 25-hydroxy-vitamin D is the blood test you should have at least twice a year - spring and Autumn.

Take enough cholecalciferol to maintain normal levels of around 50 ng/ml (125 nmol/L), year-round. It will take about 5,000 units/day from all sources (sun, supplements, and diet) to do so.

## Biotics Research™



Biotics' Bio-D-Mulsion has excellent absorption due to our unique emulsification process. Our previous research with emulsification showed that absorption of CoQ-10 was greatly increased by emulsification,

resulting in higher serum levels at improved cost-effectiveness.

Recent articles indicate that the prevalence of vitamin D deficiency is much higher than previously recognised (more than 90% in patients with chronic pain, according to a recent study published by the Mayo Clinic), and that vitamin D supplementation is much safer than previously recognised. The recent studies by Al Faraj (2003), Vieth, Chan, and MacFarlane (2001), and Heaney et al (2003) all used daily doses of 4,000 IU per day or more with no evidence of adverse effects.