

# The Vitamin D Dilemma

by Margy Squires



Beyond bones to immunity, inflammatory response, cardiac and chronic disease, people are talking about vitamin D. Can one vitamin do that much for your health? And how much is enough?

In 1930, school children were given D-fortified milk to prevent rickets, a deficiency condition of vitamin D and calcium which caused poor structural bone formation. Since then, vitamin D's importance was solidly set in stone – or should we say *set in bone*? The daily recommendation was thus determined to be that which preserved bone health in a growing child.

Now some 80 years later, new “rules” are needed for this noteworthy nutrient. Since 1969, researchers have determined vitamin D operates through a vast network of vitamin D receptors (VDRs) found in all human tissue.<sup>1</sup> Besides its responsibility in bone architecture, vitamin D influences five other systems; immune, pancreas, heart, cardiovascular, muscles and the brain/nervous system. Whether you get your vitamin D naturally synthesized through the skin via sun exposure, in supplements and/or the few available food sources, it is inactive. Both the liver and kidneys must sequentially synthesize vitamin D to the active hormone that controls the VDR in the cell nucleus – which in turn control the cell. Depending on the cell system vitamin D's role could be in bone building, insulin response stimulating immune cells, decreasing auto-immune parameters, lowering inflammatory markers, protecting neurological function and so on. Acting through VDRs, vitamin D thus has a body wide effect as one researcher states “contributes to the improvement of human health.”<sup>2</sup>

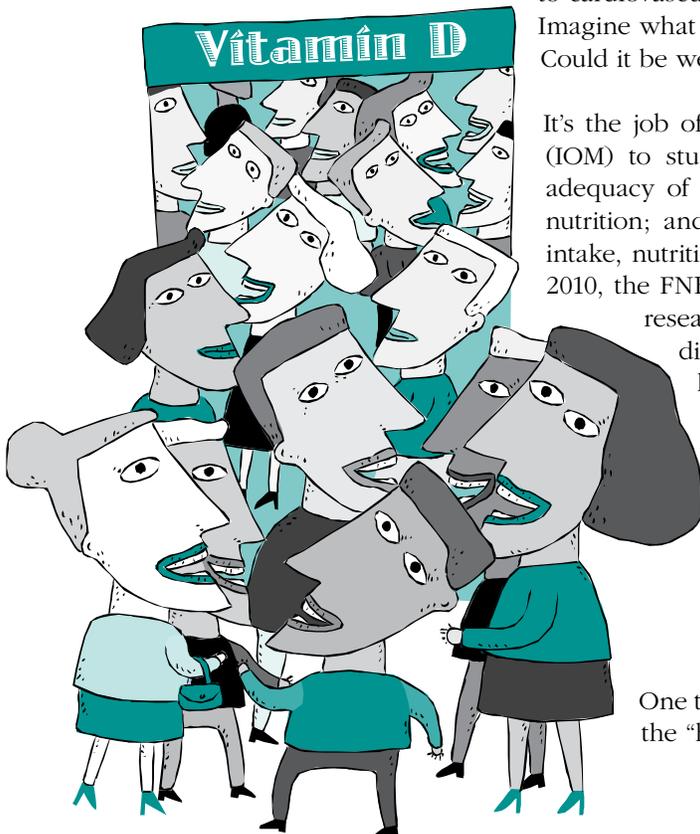
As the reports of what vitamin D can do keep adding up, other figures are in the red. An estimated one billion people are deficient in this necessary nutrient.<sup>3</sup> Given the link to cardiovascular disease alone, health care dollars reach into the billions as well.<sup>4</sup> Imagine what the total would be if you added in diseases from the other systems. Could it be we need more vitamin D than “allowed”?

It's the job of the Food and Nutrition Board (FNB) of the Institute of Medicine (IOM) to study “issues of national and global importance on the safety and adequacy of the U.S. food supply; establish principles and guidelines for good nutrition; and provide authoritative judgment on the relationships among food intake, nutrition, and health maintenance and disease prevention.”<sup>5</sup> In November 2010, the FNB issued new guidelines for vitamin D intake. In light of extensive research linking low levels with increased risk of developing certain diseases and an estimated billion people worldwide deficient,<sup>6</sup> a much higher daily value of 1,000-2,000 IU was expected. Instead, the NFB recommended doses that defied the more than the three decades of scientific evidence that suggests otherwise.

#### New IOM Recommendations:

- ◆ Birth-12 Months 400 IU
- ◆ Adults Age 71 and over 800 IU
- ◆ All Others 600 IU

One thing the experts and IOM agree on – and what may ultimately decide the “how much” – is the standard test for deficiency.



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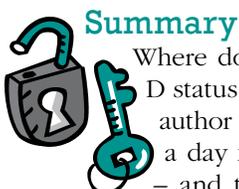
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## Tests & Optimum Results

According to the National Institutes of Health's Office of Dietary Supplement (ODS) fact sheet on vitamin D, the best way to determine your status is with a blood test, *serum 25-hydroxyvitamin D* or *25 (OH)D* [See Status box]. This test measures the amount circulating in the blood. Per the ODS, levels below 12 ng/mL are considered "too low for bone or overall health" and those above 20 ng/mL are "sufficient for most people" Using their own parameters, the fact sheet states that some Americans are deficient, almost no one too high and the majority have levels lower than 30 ng/mL.<sup>7</sup> As a side note, in one study it took 6 weeks to raise a 20 ng/mL level to 30 ng/mL level at 1000 IU dose taken daily.<sup>8</sup> Depending on how low you are, how far are you from the optimal level? It's a dilemma indeed.

## A Word on Supplements

Many published studies do not agree on whether D3 (cholecalciferol) or D2 (synthetic ergocalciferol) is the best form for supplementation. Thus researchers specifically tested the two. They concluded D3 is "approximately 87% more potent in raising and maintaining serum 25(OH)D concentrations" and exhibits a "2-3 fold greater storage" capability over D2. The authors further stated, "Given its greater potency and lower cost, D3 should be the preferred treatment option when correcting vitamin D deficiency."<sup>9</sup> Dr. John Cannell, founder of the Vitamin D Council prefers the D3 form as it is "the compound that the skin makes naturally when you're in the sun."<sup>10</sup> *Health Points* advisor Dr. Michael Smith explains that your body has to do a bit more chemistry to convert D2 and suggests D3 is the "safest, simplest and the best to take in supplement form."<sup>11</sup>



## Summary

Where does that leave the reader? First, find out your vitamin D status. If you are below the optimal level, health expert and author Mark Hyman, M.D., suggests taking 5,000 to 10,000 IU a day for three months – only under a doctor's supervision – and then rechecking. For maintenance, try a 2,000-4,000 IU daily dose. Hyman cautions some individuals may need more or less; that's why testing is critical. Many researchers consider a 1,000-2,000 IU minimum maintenance dose reasonable.

Vitamin D's role in human health has been greatly under appreciated. Little doubt exists that D has much broader benefits beyond bone building and reducing fracture risk. While this article only poses the problems that exist in determining whose daily dose we choose to take, surely if we keep talking, the right people are bound to hear and reach a more definitive answer to the "how much" dilemma.

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References available upon request to editor@e-tyh.com

More on this nutrient can be found in the article *Vitamin D for Bones & More* located in TyH's online Health Library at [www.e-tyh.com](http://www.e-tyh.com)

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## What's Your D Status?

Based on a blood 25(OH)D level of ng/mL.

Deficiency	.....	Below 15 ng/mL
Insufficiency	.....	Below 30 ng/mL
Desirable	.....	30 ng/mL or Above
Optimal	.....	50-80 ng/mL*
Too High	.....	200 ng/mL or above

Source: Office of Dietary Supplements, NIH  
Source\*: Vitamin D Council

## Who's at Risk? Low Levels of Vitamin D

### CAUSE

- ◆ Inadequate dietary intakes
- ◆ Slower skin synthesis in elderly
- ◆ Fat malabsorption disorders (Crohn's, Celiac, etc)
- ◆ Obesity (BMI > 31)
- ◆ Increased use of sunblock, sun avoidance
- ◆ Certain Medications

### EFFECT\*

- ◆ Allergies & Asthma
- ◆ Autism
- ◆ Cancers of Breast, Colon, Pancreas & Prostate
- ◆ Cardiovascular Disease, Stroke & Hypertension
- ◆ Depression & Mood
- ◆ Diabetes Type 1 & 2
- ◆ Leukemia
- ◆ Lupus
- ◆ Multiple Sclerosis
- ◆ Musculoskeletal Pain, Chronic
- ◆ Neurological Disorders
- ◆ Osteopenia, Osteoporosis
- ◆ Rheumatoid Arthritis

\*Vitamin D may play a dual role in developing a risk for but also in treating these disorders.