

“Missing the Mark for Preventive Health” - Institute of Medicine New Recommendations on Calcium and Vitamin D Intake Fall Short

By Jannet Huang, MD, FRCPC, FACE, ABIHM, NCMP, CCD. December 2010

On November 30, 2010, the Institute of Medicine (IOM) established new recommendations for calcium and vitamin D intake. The report “Dietary Reference Intakes for Calcium and Vitamin D” marks the first time the Committee has evaluated the current science to update the nutritional reference values set in 1997. The IOM stated that 700 milligrams calcium per day meets the needs of almost all children ages 1 through 3, and 1,000 milligrams daily is appropriate for almost all children ages 4 through 8. Adolescents aged 9 through 18 require no more than 1,300 milligrams per day. For practically all adults ages 19 through 50 and for men until age 71, 1,000 milligrams covers daily calcium needs. Women starting at age 51 and both men and women age 71 and older need no more than 1,200 milligrams per day. As for vitamin D, 600 IUs daily meets the needs of almost everyone in the United States and Canada, although people 71 and older may require as much as 800 IUs per day because of potential physical and behavioral changes related to aging.

The IOM also concluded from reviewing national surveys of blood levels that majority of Americans and Canadians are getting enough vitamin D and calcium. Some adolescent girls may not get quite enough calcium, and there is a greater chance that elderly individuals may fall short of the necessary amounts of calcium and vitamin D. These individuals should increase their intake of foods containing these nutrients and possibly take a supplement.

The Council for Responsible Nutrition (CRN), the dietary supplement industry's leading trade association, called the National Academy of Sciences Institute of Medicine's (IOM) newly released report on the Dietary Reference Intake (DRI) levels for vitamin D "a modest step in the right direction that fell short of truly capturing the extensive and positive research that has consistently supported the need for people to significantly raise their vitamin D levels."

World renowned vitamin D researcher **Dr. Robert P. Heaney, MD.** made the following comment: "It is important to stress that there is no disagreement in the scientific community about the importance of vitamin D for total body health. Where there is disagreement it is about how much is needed to insure that the bulk of the American population achieves vitamin D's full benefits. There is an impressive body of scientific evidence supporting levels higher than the IOM panel is currently recommending, and for reasons that are not entirely clear, the panel has discounted that evidence. The public needs to know that that evidence exists so that they can make up their own minds. It's helpful in making those decisions, to know that intakes higher than the IOM recommends are safe. For me, that makes the decision easy. Even if the evidence for a higher intake were uncertain (and I don't believe it is), intakes 2-5 times the IOM recommendations would carry a good chance for benefit at essentially no cost and no risk. Finally, I believe that the presumption of adequacy should rest with vitamin D intakes needed to achieve the serum 25(OH)D (25-hydroxy-vitamin D) values (ie. 40–60 ng/mL) that prevailed

during the evolution of human physiology. Correspondingly, the burden of proof should fall on those maintaining that there is no preventable disease or dysfunction at lower levels. The IOM has not met that standard."

Dr. William B. Grant, Ph.D. of the Sunlight, Nutrition, and Health Research Center (SUNARC) commented that the type of studies IOM selected for their review led them to their erroneous conclusions. The IOM excluded ecological studies comparing latitude of residence or amount of sun exposure between populations to see if more sun exposure lessened risk of disease, as well as case-control studies with serum 25(OH)D levels measured at time of diagnosis of the condition studied. Dr. Grant further stated "these excluded study types are the very types of studies which often show a significantly favorable effect of sunlight and/or vitamin D on human health! In contrast, the FDA approves pharmaceutical drugs based on only one good randomized controlled trial!

The health benefits of vitamin D extend to at least 100 types of disease, with the strongest evidence for many types of cancer (breast, colon, ovarian, pancreatic, prostate, and rectal), cardiovascular disease, diabetes types 1 and 2, respiratory infections such as type A influenza and pneumonia, other infections such as sepsis, and autoimmune diseases such as multiple sclerosis.

The level of 25(OH)D in the blood should be at least 40-60ng/ml for optimal health. White Americans on average have 26ng/ml, while African-Americans have 16ng/ml, their darker skin allowing for less vitamin D production from sun exposure.

Raising serum vitamin 25(OH)D levels to 40ng/ml could reduce mortality rates by 15% in the United States, corresponding to a 2-year increase in life expectancy.

Amazingly, a government-sponsored panel could not bring itself to recommend the 1000-2000 IU/day, or more, of vitamin D required by most people to raise the amount of vitamin D in their blood to healthy levels, in spite of all the past decades' research reporting beneficial effects of receiving more than 1,000 IU per day of vitamin D.

However, three high-profile public health organizations – the Canadian Cancer Society, the Canadian Pediatrics Society and Osteoporosis Canada – are sticking to their recommendations, even though the doses they suggest exceed – sometimes by substantial margins – the amounts deemed needed in a report by a blue-ribbon US-Canadian panel."

Dr. Huang's thoughts on IOM's Vitamin D recommendations:

Put mildly, the IOM November 2010 report updating recommended daily intakes for vitamin D was "disappointing". It is a sad state of affairs when a prestigious organization such as the IOM, on which policymakers and the public rely on for advice, threatens to undo the efforts of many scientists and preventive health practitioners in promoting the awareness of vitamin D impact on human health.

The IOM conclusion that most Americans and Canadians get enough calcium and vitamin D contradict the large body of epidemiologic data including the National Health and Nutritional Examination Surveys (NHANES) which found large segments of the population to

have inadequate vitamin D status. The central flaw of the IOM statement was their definition of adequate Vitamin D level at 20ng/ml. In 2005, an international panel of vitamin D experts published their consensus recommendation on the minimum desirable 25(OH)D as 28-32ng/ml for bone health. In the last several years, a plethora of studies have indicated various non-skeletal benefits of Vitamin D at blood levels higher than required for bone health. For example, 25OHD level higher than 50ng/ml is associated with reduced breast cancer risk. A higher blood 25OHD level has been associated with lower risks of a wide range of health conditions such as cancer (breast, colon, prostate), cardiovascular diseases including hypertension, insulin resistance & type 2 diabetes, autoimmune diseases (eg. Type 1 diabetes, multiple sclerosis, etc), infections (eg. Influenza), Parkinson's disease and dementia. A study published in May 2010 found 4000IU vitamin D daily supplementation in pregnant women reduced their risk of pregnancy-related complications including preeclampsia and preterm birth. Another study utilizing 4000-40,000IU daily of vitamin D supplementation for 3 months reduced progression in multiple sclerosis, without inducing toxicity!

The IOM committee based their recommendations primarily on bone health since majority of randomized controlled trials to date have evaluated the effects of calcium and vitamin D on the skeleton. Unfortunately, most intervention studies have utilized an inadequate dose (such as 400IU) of Vitamin D which would have failed to show the benefits of vitamin D supplementation used to optimize blood 25OHD levels.

Once again, the take home message I give to my patients about the IOM report is based on the same "truth" I see about human health: there should not be a "one size fits all" blanket recommendation for everyone. The amount of vitamin D supplementation I recommend for each patient is based on their own individual factors (health status, family history, weight, skin color and blood level, etc) and the dose is adjusted according to their response to supplementation, with the aim to bring their blood levels to optimal range for health promotion and chronic disease prevention. It is therefore prudent for individuals to be proactive in discussing vitamin D testing and supplementation with their personal physicians. In the absence of specific physician guidance, I recommend 1000IU Vitamin D3 daily for children and 2000IU daily for adults, provided there is no clear contraindication to vitamin D supplementation (such as medical conditions including high blood calcium level, kidney stones, sarcoidosis, etc for which medical supervision would be crucial before embarking on supplementation).

For more information, please see the following websites:

- Vitamin D Institute <http://www.grassrootshealth.net/>
- The Vitamin D Society <http://www.vitamindsociety.org/>
- Vitamin D Council <http://www.vitamindcouncil.org/>
- "Calcium supplements increase heart attack risk?! Making Sense of the Confusing Data..." http://www.thecenterforoptimalhealth.org/services/endocrinology/Calcium_Heart_Attack.pdf