

Epidemiology

Surrogate markers of 25(OH)D don't accurately reflect serum levels

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By Victoria Stern

NEW YORK (Reuters Health) - Models that use surrogate markers for serum concentrations of 25-hydroxyvitamin D (25(OH)D) may not accurately reflect serum levels, according to a report in the American Journal of Clinical Nutrition.

"This study is very important for interpreting previous observational studies and designing new ones that examine the relationship between health outcomes, such as the risk of breast, colon, or prostate cancer, and vitamin D levels," says vitamin D researcher Dr. William Grant, who was not involved in the study.

The report, by Dr. Amy Millen of the University of Buffalo, New York, and colleagues, notes that factors such as oral consumption of vitamin D or exposure to sunlight are often used as surrogate markers for serum 25(OH)D concentrations.

Using data on 3055 postmenopausal participants in the Women's Health Initiative Calcium plus Vitamin D Clinical Trial, Dr. Millen's team investigated the relationship between serum 25(OH)D concentrations in 1995-2000 and potential predictive factors assessed either simultaneously, or at baseline (1993-1998).

Predictive factors included total vitamin D intake from foods and supplements, race and ethnicity, waist circumference, education, recreational physical activity, age, exposure to sunlight, and use of antihypertensive or osteoporosis medications.

More than half of the women (57.1%) had 25(OH)D deficiency (<50 nmol/L), with 13.5% severely deficient (<25 nmol/L) and 43.6% moderately deficient (25 to <50 nmol/L). Only 13.0% had sufficient serum concentrations (>75 nmol/L).

Dr. Millen and her associates found that the surrogate predictors explained only 21% of the observed variation in 25(OH)D concentrations. Total vitamin D intake from foods and supplements explained 7% of the variance ($p < 0.0001$), waist circumference explained 5% ($p < 0.0001$), and season of blood draw explained 3% ($p < 0.0001$). Other predictors, such as physical activity, race-ethnicity, solar radiance, and age together only accounted for an additional 4% of the variance.

The authors conclude, "Surrogate markers for 25(OH)D concentrations, although somewhat correlated, do not adequately reflect serum vitamin D measures" and should not be given as much weight in epidemiologic studies.

[Am J Clin Nutr](#) 2010.