VITAMIN D DOES NOT PREVENT CANCER OR CARDIOVASCULAR DISEASE: THE VITAL TRIAL

Manson JE, Cook NR, Lee IM, Christen W, Bassuk SS, Mora S, Gibson H, Gordon D, Copeland T, D'Agostino D, Friedenberg G, Ridge C, Bubes V, Giovannucci EL, Willett WC, Buring JE (2019) Vitamin D Supplements and Prevention of Cancer and Cardiovascular Disease. *N Engl J Med* 380 (1):33–44

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QUALITY OF EVIDENCE: MODERATE ⊕ ⊕ ⊕ ○

THE BOTTOM LINE

Coronary artery calcium scoring can help to better risk stratify patients at high calculated risk for ASCVD. Because patients with CAC scores of 0 had event rates significantly lower than predicted by ASCVD scoring alone, it may be possible to use CAC scoring to limit overtreatment with statin medications. However, the net benefit of excluding this population from statin therapy should be evaluated in a randomized controlled trial prior to widespread adoption.

THE BOTTOM LINE

Taking 2000 IU of vitamin D daily does not reduce the risk of cancer or cardiovascular events over 5 years in men over the ages of 50 years or women over the ages of 55 years.

WHY IS THIS IMPORTANT?

Vitamin D is one of the most commonly used vitamin supplements because of its role in maintaining bone health. Observational studies suggest that it may prevent cancer, cardiovascular disease, infections, and autoimmune disease.^{1–4}

FACTS

Primary results. The VITAL trial⁵ randomized almost 26,000 men and women without evidence of cancer or heart

disease to 2000 IU of vitamin D₃ or placebo and followed them for more than 5 years. The average age of the participants was 67 years, 51% were female, and 20% were black. The study found no reduction in the primary outcomes (see Fig. 1) of invasive cancer (HR 0.96, 95% CI 0.88–1.06) or major cardiovascular events (HR 0.97, 95% CI 0.85–1.12). There was no reduction in all-cause mortality (HR 0.99, 95% CI 0.87–1.12).]

Subgroups of interest. The findings were similar (no significant benefit) in subgroups defined by baseline 25-hydroxyvitamin D level (< 20 mg/ml versus ≥ 20 mg/dl) and race (non-Hispanic white, black, other).

Adverse events. There were no significant increases in adverse events. However, the incidence of kidney stones was 12% higher in the vitamin D group ($p = 0.08$).

Fracture outcomes. The trial collected outcome data on fractures, but those results have not yet been reported.

STUDY QUALITY AND APPLICATION TO PATIENTS

The study quality is good. Study groups were similar at baseline and through follow-up. The study had minimal loss to follow-up, lack of measurement bias, and an appropriate intention-to-treat analysis. The study had few exclusion criteria,

so it should be generalizable to healthy men over 50 years and women over 55 years of age in the USA.

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Figure 1 Primary Outcomes of the VITAL Trial at 5 Years

TIPS FOR DISCUSSION WITH PATIENTS

- A large study in the USA found that 2000 IU of vitamin D₃, which is more than twice the recommended daily allowance, did not decrease the risk for heart disease, stroke, cancer, or death. It is unlikely that future studies will change this conclusion. Furthermore, there were no benefits for patients who started the study with low levels of vitamin D.
- The study did not report whether vitamin D supplementation had any effect on fractures.

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