

Clinical Inquiries

FROM THE FAMILY PRACTICE INQUIRIES NETWORK

Do Vitamin C Supplements Reduce Cardiovascular Disease Mortality?

Searchable Question

Do vitamin C supplements reduce mortality in patients with cardiovascular disease?

Evidence-Based Answer

Vitamin C, when taken as a dietary supplement, does not appear to reduce mortality in patients with cardiovascular disease. [Strength of recommendation: B, based on reviews of cohort studies and a single randomized controlled trial (RCT)]

Evidence Summary

It has been suggested that antioxidant nutrients, such as vitamin C, may play a role in reducing cardiovascular disease. Several cohort studies and one RCT have evaluated the effectiveness of antioxidants in reducing mortality associated with cardiovascular disease.¹⁻⁵ [References 1 through 4-Level of evidence: 1A, based on systematic review of cohort studies]

Seven large cohort studies involving more than 4,000 patients assessed various antioxidants and their effect on cardiovascular disease mortality.³ Dosages were different in the studies, and the results were inconsistent. Only two of these studies showed a relative risk reduction (RR).

The first of these two studies, the National Health and Nutrition Examination Survey (NHANES), included 11,348 patients who were taking more than 50 mg of vitamin C per day, which resulted in an RR of 48 percent (range: 31 to 61 percent) in cardiovascular disease mortality. The second of the two studies included 5,133 patients in Finland who were taking more than 90 mg of vitamin C per day, which resulted in an RR of 51 percent (range: 2 to 68 percent).

The remaining five studies included 102,735 patients taking various doses of vitamin C but showed no effect on cardiovascular disease mortality.²

The Chinese Cancer Prevention Trial⁵ (the only completed RCT of vitamin C) studied 39,584 patients who were taking more than 250 mg of vitamin C per day. This study demonstrated no effect on prevention of cardiovascular disease mortality.

Several clinical trials involving thousands of patients are currently examining major cardiovascular events (e.g., myocardial infarction) and mortality, and the use of antioxidants for

prevention of cardiovascular disease. It is hoped that the results of these trials will further elucidate the role of antioxidant supplementation in treating and preventing cardiovascular disease.²

The U.S. Preventive Services Task Force (USPSTF) conducted a systematic review of the studies on vitamin C and found the evidence inconclusive because the studies were inadequate and conflicting.¹

Recommendations from Others

According to the USPSTF, there is insufficient evidence to recommend vitamin supplements for the prevention of cardiovascular disease.¹ The American Heart Association recommends a diet rich in antioxidants but concludes that there is insufficient evidence for any specific recommendations for vitamin supplementation.⁶

Clinical Commentary

Many primary care physicians and cardiologists continue to recommend vitamin C for prevention of cardiovascular disease mortality, so you may encounter some resistance from patients if you decline to support this supplementation. In situations like this, it may be helpful to explain that while we once thought it was a good idea, newer studies have shown that it "just didn't pan out."

Clinical Inquiries provide answers to questions submitted by practicing family physicians to the Family Practice Inquiries Network (FPIN). Members of the network select questions based on their relevance to family medicine. Answers are drawn from an approved set of evidence-based resources and undergo peer review. The strength of recommendations and the level of evidence for individual studies are rated using criteria developed by the Evidence-Based Medicine Working Group (http://www.cebm.net/levels_of_evidence.asp).

This series of Clinical Inquiries is coordinated for American Family Physician by John Epling, M.D., State University of New York Upstate Medical University, Syracuse, N.Y. The complete database of evidence-based questions and answers is copyrighted by FPIN.

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