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Comments and Responses

Enough Is Enough

To the Editor: Guallar and colleagues (1) conclude that "the case is closed—supplementing the diet of well-nourished adults with (most) mineral or vitamin supplements has no clear benefit and might even be harmful." However, they ignore decades of nutrition research and diet monitoring of the U.S. population to reach this misleading conclusion.

Although a well-balanced diet is the best way to get essential nutrients (except vitamin D and, for vegans and many older adults, vitamin B_{12}), few persons in the United States follow the Dietary Guidelines for Americans. Consequently, most persons in the United States are not "well-nourished" and do not meet the Institute of Medicine's recommendations for the dietary intake of all vitamins and essential minerals.

More than 93%, 61%, and approximately 50% of adults in the United States do not get the Estimated Average Requirement of vitamins D and E, magnesium, and vitamin A and calcium, respectively, from their diet, including enriched and fortified foods (2). Further, 98% and 71% do not meet the Adequate Intake of potassium and vitamin K, respectively (2). Many of these percentages are even higher among subpopulations with increased micronutrient needs, including older adults, African Americans, and obese persons. Conversely, persons taking a daily multivitamin and mineral supplement formulated at approximately the Daily Value do fill many of these nutritional gaps effectively, safely, and at low cost: A high-quality multivitamin and mineral supplement costs as little as 3 cents per day (3), and long-term use is not associated with any adverse health effects (2, 4).

Guallar and colleagues state that "β-carotene, vitamin E, and possibly high doses of vitamin A supplements increase mortality" (1). Only approximately 0.1% of adults in the United States exceed the Tolerable Upper Intake Level of vitamin E because of high-dose supplement use, and approximately 1.1% exceed the Tolerable Upper Intake Level of vitamin A (2). It is well-known that vitamin A should not be consumed long term in amounts exceeding the Tolerable Upper Intake Level because it may cause hypervitaminosis A and birth defects and that smokers should avoid β-carotene supplements because of an increased risk for lung cancer. The meta-analysis of randomized, controlled trials (RCTs) reporting that high-dose vitamin E supplements increase mortality (1) has been refuted by several more comprehensive meta-analyses, such as that of Abner and associates (5).

The known biological functions of micronutrients are to maintain normal cell and tissue function, metabolism, growth, and development by serving as essential cofactors or structural components of thousands of enzymes and other biomolecules, among other means. For example, vitamins A and D, iron, and zinc play critical roles in innate and adaptive immunity and folate is required for normal neurologic development. A multivitamin and mineral supplement containing folic acid dramatically decreases the risk for neural tube defects and is recommended for women of childbearing age.

Multivitamin and mineral supplements also may help decrease risk for chronic disease. The largest and longest RCT of a multivitamin and mineral supplement conducted to date, the PHS II (Physicians' Health Study II), found a statistically significant 8% reduction in total cancer incidence in male physicians (12% when excluding prostate cancer) and a statistically significant 9% and 13% reduction in total and nuclear cataracts, respectively (4). These findings are consistent with those of several other RCTs and are even more impressive given that

conventional RCT designs have limited ability to reveal benefits of nutrients—in contrast to drugs—for chronic diseases (6).

Therefore, taking a daily multivitamin and mineral supplement not only helps fill known nutritional gaps in the diet of most persons in the United States (thereby ensuring normal body function and supporting good health) but also may have the added benefit of helping to reduce the risk for some chronic diseases. To call the case closed; deny the value of further research; and label multivitamin and mineral supplements useless, harmful, and a waste of money (1) is wrong, is not based on the established science for their primary indication, and misinforms the public and the medical community.

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