

Abstract

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NIH State-of-the-Science Conference Statement on Multivitamin/Mineral Supplements and Chronic Disease Prevention.

National Institutes of Health, Office of the Director, Bethesda, MD 20892, USA.

OBJECTIVE: To provide health care providers, patients, and the general public with a responsible assessment of currently available data on Multivitamin/Mineral Supplements and Chronic Disease Prevention.

PARTICIPANTS: A non-DHHS, non-advocate 13-member panel included experts in the fields of food science and human nutrition, biostatistics, biochemistry, toxicology, geriatric medicine, family medicine, pediatrics and pediatric endocrinology, cancer prevention, epidemiology, disease prevention and health promotion, and consumer protection. In addition, 19 experts from pertinent fields presented data to the panel and conference audience.

EVIDENCE: Presentations by experts and a systematic review of the literature prepared by The Johns Hopkins University Evidence-based Practice Center, through the Agency for Healthcare Research and Quality. Scientific evidence was given precedence over anecdotal experience.

CONFERENCE PROCESS: The panel drafted its statement based on scientific evidence presented in open forum and on published scientific literature. The draft statement was presented on the final day of the conference and circulated to the audience for comment. The panel released a revised statement later that day at <http://consensus.nih.gov>. This statement is an independent report of the panel and is not a policy statement of the NIH or the Federal Government.

CONCLUSIONS: Use of multivitamins/minerals (MVMs) has grown rapidly over the past several decades, and dietary supplements are now used by more than half of the adult population in the United States. In general, MVMs are used by individuals who practice healthier lifestyles, thus making observational studies of the overall relationship between MVM use and general health outcomes difficult to interpret. Despite the widespread use of MVMs, we still have insufficient knowledge about the actual amount of total nutrients that Americans consume from diet and supplements. This is at least in part due to the fortification of foods with these nutrients, which adds to the effects of MVMs or single-vitamin or single-mineral supplements. Historically, fortification of foods has led to the remediation of vitamin and mineral deficits, but the cumulative effects of supplementation and fortification have also raised safety concerns about exceeding upper levels. Thus, there is a national need to improve the methods of obtaining accurate and current data on the public's total intake of these nutrients in foods and dietary supplements. In systematically evaluating the effectiveness and safety of MVMs in relation to chronic disease prevention, we found few rigorous studies on which to base clear conclusions and recommendations. Most of the studies we examined do not provide strong evidence for beneficial health-related effects of supplements taken singly, in pairs, or in combinations of three or more. Within some studies or subgroups of the study populations, there is encouraging evidence of health benefits, such as increased bone mineral density and decreased fractures in postmenopausal women who use calcium and vitamin D supplements. However, several other studies also provide disturbing evidence of risk, such as increased lung cancer risk with beta-carotene use among smokers. The current level of public assurance of the safety and quality of MVMs is inadequate, given the fact that manufacturers of these products are not required to report adverse events and the FDA has no regulatory authority to require labeling changes or to help inform the public of these issues and concerns. It is important that the FDA's purview over these products be authorized and implemented. Finally, the present evidence is insufficient to recommend either for or against the use of MVMs by the American public to prevent chronic disease. The resolution of this important issue will require advances in research and improved communication and collaboration among scientists, health care providers, patients, the pharmaceutical and supplement industries, and the public.

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