

The scoop on supplements for disease prevention

Approximately 40% of Canadians regularly consume vitamin and mineral supplements, hoping to prevent disease, promote longevity, or compensate for the inadequacies of the typical Canadian diet. Epidemiologic studies suggest that diets high in nutrient-rich foods like fruits, vegetables, and fish are effective in preventing disease.¹ The traditional assumption is that simply replacing these nutrients with supplements will provide the same benefit. Unfortunately, although supplementation may change serum levels, total intake, or other surrogate markers, well-designed controlled studies on artificial supplementation have failed to show consistent reduction in fractures, heart disease, cancer, or dementia.²⁻⁶ The synergy of nutrients and related substances (e.g., phytochemicals, antioxidants, fibre) available in foods has yet to be replicated by a pill.

There are certain situations where supplementation should be considered:

- Folic acid to prevent congenital neural tube defects (strong evidence).¹
- Vitamin D in breastfed infants (strong evidence), frail elderly women (moderate evidence), and dark-skinned or homebound patients (low evidence).⁷
- Iron for those with low intake (vegetarians), regular blood loss (e.g., menorrhagia), or at risk for poor absorption (elderly on medications such as metformin, proton pump inhibitors).¹
- Vitamin B12 for vegans and those at risk for poor absorption.¹

For other supplements, including calcium, antioxidants, B vitamins,

vitamin C, omega-3s, co-enzyme Q10, and zinc, there is no evidence of benefit for disease prevention²⁻⁶ and no indication for routine screening for deficiencies.

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Although taking a daily multivitamin is considered safe, it is unnecessary for most Canadians. Some experts suggest that food-insecure Canadians or those with a very poor diet may benefit; however, this has not been proven. Many foods in Canada are already enriched to prevent widespread deficiencies.^{2,3}

Contrary to the widely held belief that vitamins and minerals are natural and therefore safe, supplements can be harmful, particularly if exceeding tolerable upper levels, but also in recommended doses. Recent studies have shown increased risk of myocardial infarction with beta-carotene, calcium, and vitamin E; increased all-cause mortality from vitamin E and beta-carotene; teratogenesis from vitamin A at high doses; and neph-

rolithiasis from zinc, vitamin C, and calcium.¹

Minerals like calcium or iron can impair absorption of levothyroxine, bisphosphonates, and fluoroquinolones, and vitamin B6 reduces absorption of medications like levodopa and antiepileptics. Vitamin A and beta-carotene can increase hepatotoxicity of medications including acetaminophen, carbamazepine, methotrexate, warfarin, and retinoids. Vitamin E can potentiate the bleeding risk of warfarin, ASA, and NSAIDs.¹ The cost of supplements can be significant.

Studies have repeatedly found examples of supplements containing contaminants, dangerous additives, and misleading or inaccurate labeling or dosage information.⁸ Unfortunately, the supplement industry has resisted stricter regulation to ensure consumer safety.⁸

Despite the consistent lack of evidence of benefit, many patients continue to take supplements. The following recommendations can help patients minimize potential harms:

- Do not exceed recommended doses.
- Discuss supplements with health care providers.
- Purchase well-known brands labeled with Health Canada natural product numbers.

As trusted sources of up-to-date, evidence-based information, physicians need to help patients interpret the overwhelming volume of often poor quality information available by providing clear guidance. Required nutrients are best obtained through a healthy diet rich in whole foods. We can't replace a poor diet with a pill. "Let food be your medicine, and medicine be your food." —Hippocrates

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This article is the opinion of the Council on Health Promotion and has not been peer reviewed by the BCMJ Editorial Board.

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colleagues, who now account for over 11% of prescriptions in BC. Dental practitioners are identifying the opportunity to reduce unnecessary perioperative prophylaxis as well as prescribing for periapical abscess and other indications. We also laud work being done at the BC Divisions of Family Practice to pilot personalized feedback on antibiotic prescribing for family physicians through an electronic health record platform.

Thanks to many BC practitioners, our province is now moving in the right direction with community antibiotic use.

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