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The Use of Multivitamin/Multimineral Supplements: A Modified Delphi Consensus Panel Report

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ABSTRACT

Purpose: Evidence supporting the use of dietary supplements, in particular, multivitamin/multimineral supplements (MVMS), has been mixed, complicating the ability of health care professionals to recommend their use. To clarify the role that MVMS can play in supporting human health, a series of consensus statements was developed based on expert opinion.

Methods: A panel of 14 international experts in nutritional science and health care was convened to develop consensus statements related to using MVMS in supporting optimal human health. The modified Delphi process included 2 rounds of remote voting and a final round of voting at a roundtable meeting where evidence summaries were presented and discussed. The level of agreement with each of 9 statements was rated on a 5-point Likert scale: agree strongly; agree with reservation; undecided; disagree; or disagree strongly. Consensus was predefined as ≥80% of the panel agreeing strongly or agreeing with reservation to a given statement.

Findings: Consensus was reached for all statements. The panel determined that MVMS can broadly improve micronutrient intakes when they contain at least the micronutrients that are consumed insufficiently or have limited bioavailability within a specified population. MVMS formulations may also be individualized according to age, sex, life cycle, and/or other selected characteristics. There are specific biological processes and health outcomes associated with deficient, inadequate, and adequate micronutrient levels. Adequate intake is necessary for normal biological functioning required for good health; in some instances, higher

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than recommended micronutrient intakes have the potential to provide additional health benefits. Meeting daily intakes established by dietary reference values should be an explicit public health goal for individuals and populations. Use of MVMS is one approach to ensure that adequate micronutrient needs are met in support of biological functions necessary to maintain health. Long-term use of MVMS not exceeding the upper limit of recommended intakes has been determined to be safe in healthy adults. There is insufficient evidence to indicate that MVMS are effective for the primary prevention of chronic medical conditions, including cardiovascular disease and cancer. However, for certain otherwise healthy subpopulations (eg, pregnant women, older adults) and some individuals with existing medical conditions who experience inadequacies in micronutrient intake, addressing inadequacies by using MVMS can provide health benefits.

Implications: This consensus panel has described key issues related to the use of MVMS among individuals at risk of or presenting with inadequacies in micronutrient intake or biomarker status. (*Clin Ther*. 2018;▮:▮▮▮–▮▮▮) © 2018 The Authors. Published by Elsevier HS Journals, Inc.

Key words: adverse effects, Delphi consensus, dietary supplements, health benefits, multivitamin/multimineral supplements, nutrition.

INTRODUCTION

Dietary supplements and, in particular, multivitamin/multimineral supplements (MVMS), are widely used[1]; recent data from the United States suggest that the use of MVMS is declining, however.[1,2] No guidelines currently exist for recommending the use of MVMS, and nutritional education and training among health care professionals (HCPs), including physicians, nurses, and pharmacists, are limited.[3–7] Thus, little direction is available for HCPs to guide patients in this area. Results from randomized controlled trials (RCTs) conducted with MVMS provide conflicting evidence about their potential benefits in preventing/treating chronic medical conditions (CMCs), leading some to question their value, particularly in higher income countries.[8,9] Nonetheless, there is ample evidence from national dietary intake surveys reporting deficiencies and inadequacies in micronutrient intake and/or status, and correcting these deficiencies can have health benefits.[10,11] To address this conundrum, an international panel of experts in the areas of nutritional science and health care was convened to develop consensus statements that discuss issues regarding MVMS use.

An essential component in discussing the role of dietary supplements involves defining recommended intakes for maintaining good health. Vitamin and mineral requirements are defined as the intake needed to meet a specified indicator of adequacy for each nutrient.[12] The terms commonly used to describe reference intakes are defined in Figure 1.[13] However, it is important to appreciate that dietary reference values can vary among countries or regions based on different criteria and/or approaches to reach consensus.

MATERIALS AND METHODS

An international group of 14 experts in nutritional science and health care was convened to develop a series of consensus statements that present guidelines for using MVMS. To ensure that the panel was composed of a heterogeneous group of experts in the specialty area and to provide global representation that would allow for regional variations to be accounted for in the statements, the consensus panel's co-chairs (J.B.B. and H.C.) identified a select number of participants based on their expertise and geographic location beginning in November 2016. After initially contacting the co-chairs, the sponsor (Pfizer Consumer Healthcare, Madison, New Jersey) had no involvement in conducting the consensus panel or preparing the present article.

Once participants were identified, the co-chairs developed a set of initial questions related to using MVMS. Each assigned panel member, as selected by the co-chairs, began searching the literature and identifying information sources to address these questions. Where applicable, the methods for conducting literature reviews are described in the corresponding evidence summaries. After reviewing the literature, panelists selected as Statement Leads developed initial drafts of each statement, which were shared with team members chosen by the co-chairs to assist in this effort. The initial 9 statements were then circulated to the entire panel for a first round of remote consensus voting. The voting followed a modified Delphi process,[14,15] in which the level of agreement

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