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Position Statements on Oral Micronutrient Supplementation in Nutrition and Appetite Support Across the Continuum of Care

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Introduction

A Technical Working Group composed of health professionals and multispecialty healthcare experts, have come together to emphasize the crucial role of nutrition in promoting overall health and well-being. Nutrition serves as the cornerstone of optimal physical and mental functioning, and they firmly believe that a well-balanced diet should be the primary source of essential nutrients for individuals of all ages. However, they acknowledge the existence of prevalent gaps in nutrition and the potential benefits of oral micronutrient supplementation particularly those that contain iron and appetite stimulants in addressing these gaps across the entire disease spectrum.

Despite the importance of nutrition, various factors like appetite loss due to medications and illnesses contribute to gaps in dietary intake. Modern dietary patterns, often characterized by highly processed foods, excessive added sugars, unhealthy fats, and insufficient intake of fruits, vegetables, whole grains, and lean proteins, can result in nutrient deficiencies. Additionally, socio-economic factors, cultural practices, limited access to nutritious food options, and individual dietary restrictions may further contribute to these gaps. Moreover, individuals who have poor appetite and nutrient intakes with certain conditions, or those who avoid certain foods (such as strict vegetarians and vegans) might benefit from taking supplementation.

Multivitamin supplementation can play a supportive role in addressing nutritional gaps. These supplements, when used appropriately and as part of a balanced diet, can provide a convenient and reliable source of essential vitamins and minerals. Multivitamins are particularly useful in situations where dietary intake alone may not meet individual nutrient requirements due to limitations or specific health conditions. They offer an accessible option to help bridge the nutritional gaps and ensure adequate nutrient intake.

Position Statements

Statement 1: The decision on prescribing multivitamins and minerals should be aligned to the patient profile, clinical requirements, and personal preferences.

Statement 2: A multivitamin supplement may have different roles on nutrition and appetite across the continuum of care. Special populations may also benefit from multivitamin supplementation.

Statement 3: Patients who are discharged from the hospital, especially post-ICU, should be screened for malnutrition and appetite loss using validated tools.

Statement 4: Iron supplementation is recommended for adults with iron deficiency anemia. A dose of 60-120mg of elemental iron daily is recommended for patients with iron deficiency anemia. It may be given 3-6 months or more for repletion of iron stores and normalization of serum ferritin. Monitoring of serum ferritin and hemoglobin should be done when giving iron supplementation.

Statement 5: Daily vitamin B supplementation is not routinely recommended to healthy individuals unless there is suspicion of deficiency or underlying disease.

Statement 6: Appetite stimulants may increase appetite and improve the nutritional status of patients with poor nutrition.

Evidence to Support Our Position

The most cited reason for using multivitamin supplements is for overall health and wellness and to fill nutrient gaps in the diet. In a study, it was demonstrated that intakes of many nutrients were

markedly inadequate among Filipino adults, particularly iron (97–99%), vitamin C (96–98%), calcium (95–98%), riboflavin (86–91%), folate (89– 90%), thiamine (73–89%), energy (67–70%), total fat (55–67%), and vitamin A (54–56%). This "hidden hunger" is largely due to eating patterns dominated by energy-dense, but nutrient-poor, foods that are often relatively inexpensive. While the use of supplements is not routinely recommended, people who use supplements tend to have a better overall diet quality than those who don't use them, and their nutrient intake from foods mostly meets recommended intake levels. Recommendations for supplementation in specific populations will be discussed in the succeeding statements.

Healthy. In general, healthy individuals who are able to achieve recommended daily intakes through nutrition do not require multivitamin supplementation. For people who follow a healthy and balanced diet – one that includes all the main food groups in sufficient amounts – multivitamins are unlikely to have any positive health effects.

Active disease

Outpatient. For patients with controlled chronic medical conditions who consult at the primary care setting, an oral multivitamin supplement may be given to help achieve the recommended daily intakes. Some patients with active disease may benefit from multivitamin supplementation to get enough of the recommended dietary allowances. For example, patients with inflammatory bowel disease (IBD) who may need a bit of extra help preventing a nutritional deficiency may get the necessary vitamins and minerals from eating a well-balanced, nutrient-rich diet, but flares, severe symptoms, surgeries, and other complications may make it difficult for some patients with Crohn's disease or ulcerative colitis to get enough nutrients from food alone. Patients with IBD may also be prescribed sulfasalazine and methotrexate, which may interfere with the absorption of folic acid. This goes the same for patients with rheumatoid arthritis who are being treated with methotrexate. Appetite loss and ensuing weight loss are key features of severe illnesses, contributing significantly to undernutrition and subsequently, the adverse outcome of these conditions. For these patient groups, vitamin B supplementation may be instrumental in filling in nutritional gaps and preventing deficiency.

Inpatient/Hospitalized. For hospitalized patients who can eat, an oral multivitamin supplement may be incorporated into the nutrition plans to help achieve the recommended daily intakes. Some hospitalized patients such as those with heart failure, alcohol use disorder, or COVID-19 may be at risk for vitamin deficiencies. Dietary intake of micronutrients or supplementation has well-established beneficial effects on the regulation and integrity of the immune system[27] and improves mood and reduces psychological distress in acutely hospitalized patients.

For patients in critical care, it is necessary to have a comprehensive and detailed provision of nutrition. Although about 40% of critically-ill patients can eat during their ICU stay, according to the few studies published so far, critically-ill patients who were fed orally had very low intakes in terms of both energy and proteins, compared to predicted requirements and recommendations, regardless of the underlying cause.

Certain medical conditions, such as gastrointestinal disorders or malabsorption issues, may hinder the body's ability to absorb or utilize B vitamins effectively. Vitamin B6 (pyridoxine) supplementation during isoniazid (INH) therapy in patients with tuberculosis is necessary to prevent the development of peripheral neuropathy. Admission to hospital has been linked with an additional risk of malnutrition—feeding below 1500 kcal/day was frequent and has been associated with a structural additional risk of insufficient micronutrient intake to cover basal needs. The micronutrients at the highest risk are iron, zinc, thiamine, vitamin B12 and vitamin C.

Proton pump inhibitors have been associated with an increased risk of vitamin and mineral deficiencies impacting vitamin B12, vitamin C, calcium, iron and magnesium metabolism. Vitamin deficiencies are also observed in patients undergoing chemotherapy. For example, in patients undergoing intensive chemotherapy for acute myeloid leukemia, vitamin C and D supplementation were found to be feasible, safe, and helpful in optimizing supportive care. Patients with diabetes taking metformin at ≥1500 mg/day could experience vitamin B12 deficiency, but concurrent supplementation of multivitamins may potentially protect against the deficiency. In such cases, supplementation may be prescribed to address specific deficiencies and support overall health.

In patients with trauma or burn, or in the case of wound healing disorders, tailored nutritional measures or supplementation with micronutrients could be beneficial. Supplementation or repletion of some micronutrients can be administered orally, separately, or as commercial preparations of multivitamins and minerals. Unfortunately, the oral route can be associated with reduced bioavailability or competition between trace elements (such as zinc and copper).

Poor appetite may persist among patients 12 months after being discharged from the ICU. This may lead to sarcopenia and a high mortality rate. Additionally, poor appetite is associated with high severity of depression.

It is reasonable to consider a dose of 2 ordinary multivitamins daily in the elderly, specifically because of the high prevalence of suboptimal vitamin B12 and D intake. However, it might be safer to supplement 1 multivitamin with additional vitamins B12 and D, taken separately, given the possibility that increased vitamin A intake might increase the risk of hip fracture and that the iron in most multivitamins may increase the risk of hemochromatosis in some people.

Palliative and hospice. For patients in palliative and hospice care, decisions concerning whether to use oral multivitamin supplements must be made on the perceived benefits, harms, risks, and burdens of nutrition support in individual patient circumstances.

As the primary goal of treatment in palliative and hospice care is the comfort of the patient, decisions concerning whether to use oral

multivitamin supplements must be made on the perceived benefits, harms, risks, and burdens of artificial nutrition support in individual patient circumstances.

The primary objective of nutritional therapy in palliative care is to preserve oral nutrition by minimizing food- related discomfort and maximizing food enjoyment. Nutrition and hydration are more about the provision of food and fluids that are in keeping with the individual and family/caregiver preferences, to achieve comfort and the best quality of life that is possible. At this time, there are often a number of problems that may be contributing to poor oral intake, including reduced appetite, nausea and vomiting, sore mouth and throat, difficulty swallowing, dry mouth, loss of taste/smell, altered taste/smell, and pain. These problems lead to nutrition deficiencies like vitamin D (86%), vitamin B12 (32%) and folic acid (63%), as shown in one study on geriatric palliative care patients.

Special populations. Special populations may benefit from multivitamin supplementation.

While routine supplementation is not advised for healthy individuals, certain circumstances may warrant multivitamin supplementation. These are populations with high index of suspicion for certain types of micronutrient deficiency in the primary care setting:

Older adults: Appetite loss, changes in taste and smell, and dysphagia are common in older adults. Many are unable to absorb vitamin B12 from food sources. Additionally, older adults who consume little to no animal products are at an increased risk for deficiency. It is also recommended that vitamin B supplements be considered as preventive medication for patients with mild cognitive impairment or elderly adults without cognitive impairment.

Women of reproductive age: The Centers for Disease Control and Prevention urge every woman who could become pregnant and who are pregnant to get 400 micrograms (400 mcg) of folic acid every day. Folic acid helps prevent birth defects.

Special diets: Individuals following strict plant-based diets (vegetarian or vegan diets), which may limit the intake of certain B vitamins, such as vitamin B12, found predominantly in animal-based products, might benefit from targeted supplementation or careful dietary planning to ensure adequate B vitamin levels.

Highly restrictive diets: Randomized controlled trials suggest that the weight loss associated with intermittent fasting is due to a reduced energy intake due to time restriction. Ketogenic diet is a high fat, low carbohydrate and adequate protein diet. Ketogenic diet does not contain all vitamins and minerals that are available in the balanced diet. The patients should be advised to take vitamin and mineral supplements while on ketogenic diet. Because of restricted diets that provide limited vitamin intake from food, many patients with renal disease can benefit from a tablet that adds an amount equal to one recommended daily allowance of water-soluble vitamins, but larger amounts are not appropriate or beneficial.

Fitness enthusiasts: Regular physical activity can accelerate the usage of vitamins and minerals in the body. Calcium, iron, zinc, magnesium, B vitamins, vitamin D, and antioxidants are essential for individuals engaged in fitness activities to perform at higher levels of intensity. High-protein diets are not recommended because they restrict healthful foods that provide essential nutrients and do not provide the variety of foods needed to adequately meet nutritional needs. Individuals who follow these diets are therefore at risk for compromised vitamin and mineral intake, as well as potential cardiac, renal, bone, and liver abnormalities overall.

Patients with eating disorders: Disordered eating, such as anorexia nervosa and bulimia nervosa, is a challenging health concern. The Academy of Nutrition and Dietetics noted in their Revised 2020 Standards of Practice for the Professional Practice of the Registered Dietitian that dietary supplements, ranging from multivitamins, botanicals, protein supplements, calorie-protein supplements, and more are standards of care for those being treated for an eating disorder. For some patients with a long history of anorexia nervosa, the best option may be to maintain a weight safe enough to allow some quality of life and prevent hospital admission. Particular attention should be given to energy, protein, calcium, iron, zinc, vitamin B12 and vitamin D.

Patients trying to manage weight: Patients with cardiometabolic disease who are trying to lose weight as part of their management, like patients with cardiometabolic conditions, may be at risk for nutrient and electrolyte deficiency if they are not consuming adequate water or nutrient-dense foods. They may benefit from targeted supplementation or careful dietary planning to ensure adequate vitamin levels. Vitamin B supplementation has also shown some improvement in metabolic control in patients living with diabetes.

Harmful or dependent alcohol drinkers: Thiamine is recommended by the National Institute for Health and Care Excellence (NICE) guidelines for alcohol-use disorders (harmful drinking and alcohol dependence) in adults and young people aged 10 to 17 years. However, vitamin B complex is not routinely recommended for this population.

People leading busy lives: People with hectic lifestyles frequently depend on "eating on the run" and are associated with poor dietary intake, including a higher intake of fast foods and soft drinks and a lower intake of vegetables. Inconsistent meal patterns, particularly skipping breakfast, are associated with poorer diet quality and contribute to barriers to good nutrition. These patients who are not able to maintain a well-balanced diet may also benefit from supplementation, as multivitamins help fill nutritional gaps and protect against the risks of chronic diseases.

Long-haulers: Long-haulers like security guards, call-center agents, and drivers often experience fatigue. Fatigue that is due to iron-deficiency anemia usually improves after iron supplementation. Iron deficiency in the absence of anemia can also cause fatigue because iron plays a role in various biochemical processes involved in energy production.

Depressed: The most common nutritional deficiencies seen in patients with mental disorders are omega–3 fatty acids, B vitamins, minerals, and amino acids that are precursors to neurotransmitters. Randomized, controlled trials that involve folate and vitamin B12 suggest that patients treated with 0.8 mg of folic acid/day or 0.4 mg of vitamin B12/day will exhibit decreased depression symptoms. According to a study, supplementation of vitamins including vitamin B2 and B6 for 1-year improved mood in both men and women.

People living in certain geographic locations. Dietary intake can be influenced by geographic location. For example, widespread vitamin D deficiency and insufficiency has been reported in many different areas of Asian countries. Considering limited food sources for vitamin D such as fatty fish, solar exposure can be one of the major factors contributing to vitamin D status in these populations. Environmental factors can also affect vitamin C intake and status; these include geographic region, season, and climate, as well as pollution. Therefore, taking supplements in addition to dietary intake can help to maintain optimal vitamin C status.

Patients who are immunocompromised. Supplementation with vitamins, omega 3 fatty acids and zinc appears to be a safe and low-cost way to support optimal function of the immune system, with the potential to reduce the risk and consequences of infection, including viral respiratory infections.

Conclusion and Recommendation

Health professionals and experts must stress the importance of prioritizing nutrition as the primary source of essential nutrients. However, the presence of nutritional gaps that may necessitate the use of multivitamin supplementation should also be recognized. Even when a diet is well planned, it can be challenging for most people to consistently consume foods that provide the recommended quantities of all essential micronutrients. Chronic deficiencies in even small amounts of these nutrients can lead to health issues. While multivitamins can offer support in meeting nutrient needs, it is crucial to approach supplementation with caution and consult healthcare professionals.

Further research and the establishment of evidence-based guidelines to guide individuals in making informed decisions regarding multivitamin supplementation should also be made as these will empower individuals with accurate information to enable them to optimize their nutrition and enhance their overall health and well-being.