

## Council Report

# Vitamin Preparations as Dietary Supplements and as Therapeutic Agents

Council on Scientific Affairs

Healthy adult men and healthy adult nonpregnant, nonlactating women consuming a usual, varied diet do not need vitamin supplements. Infants may need dietary supplements at given times, as may pregnant and lactating women. Occasionally, vitamin supplements may be useful for people with unusual lifestyles or modified diets, including certain weight reduction regimens and strict vegetarian diets. Vitamins in therapeutic amounts may be indicated for the treatment of deficiency states, for pathologic conditions in which absorption and utilization of vitamins are reduced or requirements increased, and for certain nonnutritional disease processes. The decision to employ vitamin preparations in therapeutic amounts clearly rests with the physician. The importance of medical supervision when such amounts are administered is emphasized. Therapeutic vitamin mixtures should be so labeled and should not be used as dietary supplements.

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VITAMIN preparations are used extensively in the practice of medicine and are valuable when used properly. It is important that a clear distinction be made between vitamins as dietary supplements and vitamins as therapeutic agents. It is also important for the practitioner to understand the usefulness and the limitations of given vitamin preparations in given clinical situations. Vitamins are essential organic substances whose usual source is food. They are required by man in amounts ranging from micrograms to milligrams per day. There are four fat-soluble vitamins (A, D, E, and K) and nine water-soluble vitamins (thiamine, riboflavin,

niacin, pantothenic acid, folic acid, biotin, and vitamins B<sub>6</sub>, B<sub>12</sub>, and C), and all are essential for the normal growth, development, and maintenance of the human organism.

The Advisory Panel on Vitamin Preparations as Dietary Supplements and as Therapeutic Agents of the Council on Scientific Affairs has reviewed the indications for administration of vitamins, the composition and dosage of vitamin preparations, and the hazards of excessive intakes of vitamins and adopted the following statement. This statement updates one made on this subject by the Council on Foods and Nutrition in 1959.<sup>1</sup>

### DEFINITIONS Recommended Dietary Allowances (RDA)

The RDA are "the levels of intake of essential nutrients considered, in the judgment of the Committee on Dietary Allowances of the Food and Nutrition Board on the basis of available scientific knowledge, to be adequate to meet the known nutritional needs of practically all healthy persons."<sup>2</sup> (The abbreviation RDA is used for both the singular and plural of the term in accordance with

National Academy of Sciences usage.<sup>2</sup>) The RDA are not requirements for an individual, but recommendations for the daily amounts of nutrients that *populations* should consume over a period of time to protect all members of that population. With exception of the allowances for energy, RDA are estimated to exceed the requirements of most individuals to ensure that the needs of nearly all members of a population will be met. In this country, RDA are set approximately 2 SDs above the mean requirement and will therefore encompass the needs of 97% of the population. Allowances are established for a wide range of age, weight, and sex groups and for pregnancy and lactation. The 1980 RDA for vitamins are shown in Table 1.

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This report is not intended to be construed or to serve as a standard of medical care. Standards of medical care are determined on the basis of all of the facts and circumstances involved in an individual case and are subject to change as scientific knowledge and technology advance and patterns of practice evolve. This report reflects the views of the scientific literature as of November 1986.

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common being 500 mg daily, 15% took 400 IU of vitamin E daily, and 4% took 10000 IU of vitamin A daily.<sup>36</sup>

With such widespread use of vitamins by the American public, there is ample opportunity for misuse. Misuse of vitamins is considered any application of a vitamin or vitamins in a dose that is inappropriate or for a purpose that has no basis in established scientific practice. The rationales are often based on myths, or distortions of experimental studies in laboratory animals. Some vitamins, such as A, E, C, and B<sub>6</sub>, are abused more commonly than others.<sup>37</sup> Some persons have taken large doses of multivitamins in the belief that vitamins combat the chronic degenerative diseases or extend life. No objective benefits, however, have been demonstrated.

Some of the most frequently encountered examples of vitamin misuse include the following: Vitamin E has been taken in large quantities in pursuit of rejuvenation, increased libido, and improved sexual performance. Under the rubric of "orthomolecular psychiatry," large doses of niacin have been given for the treatment of a variety of mental disorders without measurable effect. Large doses of vitamin B<sub>6</sub> have been promoted for the treatment of carpal tunnel syndrome, premenstrual tension, and mental disorders, without established benefit.<sup>37</sup> **One of the most widely misused vitamins is ascorbic acid. There is no reliable evidence that large doses of ascorbic acid prevent colds or shorten their duration.**<sup>38</sup>

### Misuses of Vitamins

The FDA has estimated that 40% of the adult population uses vitamin and mineral supplements on a daily basis.<sup>35</sup> Ascorbic acid (vitamin C), either alone or in combination with other nutrients, was the most widely consumed nutrient (90.6%) of supplement users. Even among 2000 registered nurses surveyed, 38% were taking multiple vitamin supplements daily, 23% were using high dosages of ascorbic acid, the most

Public health nutrition will be served best by the insistence on a scientifically sound basis for vitamin supplementa-

tion and therapy. All health practitioners should emphasize repeatedly that properly selected diets are the primary basis for good nutrition.

#### References

38. Chalmers TC: Effects of ascorbic acid on the common cold: An evaluation of the evidence. *Am J Med* 1975;58:532-536.