

# The Vitamin-Mineral Supplement History

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*The prolonged use of vitamin or mineral supplements in amounts greater than their recommended dietary allowance (RDA) can lead to medical complications or interfere with the treatment of some diseases. A vitamin-mineral supplement history is necessary to determine whether patients may be contributing to a medical problem and for physicians to counsel patients about the appropriate use of vitamins and minerals. This article provides a three-phased guide for obtaining a comprehensive history of vitamin-mineral supplement use. Phase 1 determines current and past behaviors with respect to kind, dosage, frequency, duration, and constancy of supplement intake. Phase 2 considers patient beliefs about taking supplements and outcomes of supplement usage. Phase 3 outlines considerations important for patient guidance. A vitamin-mineral supplement history should be a routine component of every complete medical history.*

Vitamin and mineral supplement use is a prevalent practice in the United States. Many studies have established that from 40 to 66 percent of adults and up to 66 percent of children and adolescents currently use some form of a vitamin or mineral (hereafter called vitamin) supplement.<sup>1-5</sup> Women and the elderly have an increased frequency and duration of use.<sup>1,2</sup> In general, physicians can expect that approximately one half of their adult patients will be currently using vitamin supplements.<sup>6-8</sup>

Vitamin toxicity will be overlooked in the differential diagnosis without a proper history and an awareness of possible toxic effects (Table 1). Fat-soluble vitamin A and vitamin D toxicity has been frequently reported.<sup>10</sup> More recently, water-soluble vitamin toxicity (vitamin B<sub>6</sub>) has been described.<sup>11</sup> Toxicity occurs with either prolonged consumption of excessive amounts or acute ingestion of large doses of supplements. Unfortunately, case reports of vitamin toxicity do not report the number of times that the patient saw a physician before the diagnosis was considered. The extent of the problem of vitamin supplement toxicity is unknown because most cases are not assessed or reported by physicians, although in 1984 the American Association of Poison Control Centers reported 512 intentional "exposures" to excess vitamin intake and 174 adverse reactions in the 47 centers in their data-collection system.<sup>12</sup>

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Vitamin supplements may interact with other medications or with themselves. For example, a competitive interaction exists between zinc and copper,<sup>13</sup> and a synergistic interaction occurs between iron and ascorbic acid.<sup>14</sup> Also, vitamin supplement usage influences the results of diagnostic tests, including tests for glucosuria or stool tests for occult blood.<sup>15,16</sup> Vitamin supplementation is appropriate for treatment of nutritional consequences of specific diseases and during periods in the life cycle including infancy, pregnancy, and lactation.<sup>17</sup> Proper assessment will determine both inappropriate use and non-use of vitamin supplements.

A recent panel called on physicians to assess and document vitamin supplement use, and the Food and Drug Administration is encouraging physicians to report cases of adverse reactions to supplements.<sup>18</sup> Physicians should screen patients for excess levels of intake of vitamin supplements, as most people who take supplements do not need them<sup>2</sup> and such supplements provide no benefit in reducing mortality risk.<sup>19</sup> The general medical examination of any patient should include a nutritional assessment of which a dietary history is a part. Appropriate nutrition education following case identification can prevent untoward consequences.

## THE VITAMIN SUPPLEMENT HISTORY

The medical history alone is capable of suggesting the diagnosis for over 50 percent of medical problems.<sup>20</sup> The point during the history to inquire about vitamin usage will always remain part of the personal style of each in-



TABLE 1. SYMPTOMS REPORTED WITH VITAMIN OVERDOSAGE\*

Symptom	Vitamin Associated
Dry skin, fissures, depigmentation, and pruritis	Vitamin A
Bone tenderness	
Chronic liver disease	
Increased intracranial pressure	
Hair loss	
Renal calcinosis	Vitamin D
Hypercalcemia	
Metastatic calcification	
Hypertension	
Hemolytic anemia	Vitamin K
Neonatal jaundice	
Peripheral sensory neuropathy	Vitamin B <sub>6</sub>
Ataxia	
Hypotension	Niacin
Arrhythmias	
Pruritus	
Hepatotoxicity	
Alopecia	
Peptic ulcer	
Increased action of warfarin	Vitamin E
Oxalate stones in predisposed person	Vitamin C
Possible teratogenesis and carcinogenesis in very high doses	

\* From: Evans CDH, Lacey JH<sup>9</sup>

terviewer. Because some patients may consider their use of supplements as suspect or question the physician's nutritional knowledge, it is helpful to create a time during the history in which the patient can see the appropriateness of questions about supplements. Two places in obtaining a history where vitamin supplement usage assessment is relevant and appropriate are (1) during the inquiry about all medications used or (2) while obtaining a dietary history.

A medication history assesses both prescribed and over-the-counter medications. By taking a vitamin supplement history at this point, it will encourage the patient to think of these items as medications, not foods. Inquiry into supplement usage during a dietary history consisting of a 24-hour recall or food frequency assessment would not surprise the patient. A three-phased set of recommendations is outlined in Figure 1 for taking a comprehensive vitamin supplement history. Phase 1 assesses the current and past behaviors of the patient. Phase 2 establishes the beliefs that patients use to justify taking supplements, and phase 3 determines the need for physician guidance about supplement usage.

## Phase 1: Behaviors

Because some patients do not consume vitamin supplements, the initial step is to distinguish users from nonusers. Patients are screened by asking, "Do you currently or have you ever used vitamin or mineral supplements?" The time since the last use will determine the interviewer's decision to ask for more information about vitamin supplement consumption. The remainder of the behavioral assessment questions are for supplement users, as nonusers need only have their beliefs assessed and guidance provided.

Obtaining the exact name of the products used is vital, because the 1985 *Physicians' Desk Reference* (PDR) lists 127 different prescription vitamin preparations<sup>21</sup> and the nonprescription PDR includes 105.<sup>22</sup> Many preparations contain nutrients with dosages several times greater than their recommended dietary allowance (RDA).

Asking about the different kinds of supplements taken by a patient will distinguish multivitamin-multimineral supplement users from those who use single-nutrient supplements. Single-supplement users are at greater risk of untoward effects of their supplement consumption because most single-nutrient supplements far exceed their current RDA. Inquiring about the dosage is useful because a discussion of dosage further stresses to the patient the concept that vitamin supplements can act as medications. The frequency of taking supplements helps distinguish ritualistic users from occasional users.

The duration of time supplements are used affects the risk of toxicity and the approach used to modify patient behavior. The length of use before the development of toxicity symptoms (except in acute overdoses) ranges from months to years.<sup>10-12</sup> Many patients have been daily users for more than five years.<sup>3</sup> The constancy of supplement use will also determine whether patients use them as a habitual activity, take them as self-prescribed therapy, or are merely intermittent consumers. A substantial minority of the population varies in their vitamin supplement consumption over time. Knowing the source of influence indicates why the patient began taking supplements and provides information for long-term guidance.

## Phase 2: Beliefs

Beliefs form the justification for continued vitamin supplement use for many patients. Daily users frequently cite protection from disease or prevention of illness as their justification.<sup>3</sup> In contrast, some patients use vitamins and minerals for self-therapy of specific medical problems outside the demonstrated therapeutic benefit of the supplement (eg, B-complex vitamins for lack of energy, vitamin C for treatment of upper respiratory tract infections, vitamin C for prevention of viral infections, etc). If, how-



**Phase 1: Patient Behaviors**

1. Do you currently use any vitamin or mineral supplements?
2. Have you used any vitamin or mineral supplements?  
(How long ago did you use them?)  
If no, then proceed to phase 2.  
If yes, then ask:  
What do (have) you use(d)?  
What dosage do (have) you use(d)?  
How frequently do (did) you take them?  
How long have you been (were you) using them?  
How consistent are (were) you in taking them?  
What or who influenced you to take them?

**Phase 2: Patient Beliefs**

## For Users Ask:

1. Why do (did) you take them?
2. Do (did) they work for you?
3. Should the average person your age take vitamin supplements?
4. Are you willing to change your current vitamin supplement use?

## For Nonusers Ask:

1. Has anyone recommended that you take them?  
—What did they recommend?  
—Why did they recommend them?
2. Should the average person your age take vitamin supplements?
3. Do you plan on starting to use vitamin supplements?
4. Is there a risk of deficiency?

**Phase 3: Physician Guidance**

5. Are any vitamins or minerals taken in a dose over ten times the RDA?
6. Is there a risk of toxicity?
7. Is there a risk of deficiency?

**Figure 1. Vitamin-mineral supplement history questionnaire**

ever, a patient's expectation is being met despite the lack of scientific validity, it may be quite difficult to persuade that patient to modify his or her behavior.

Whether patients believe that the average person their age should take supplements provides insight into their rationale for vitamin consumption. It also determines whether patients feel they are unique in their need for vitamins and minerals, which may make them less willing to change supplement intake. In asking patients whether they are willing to change their behavior, an entree is provided for guidance about supplement usage. Patients must understand that the physician wants to establish a dialogue about their usage of supplements.

Assessing the beliefs of nonusers centers on whether they have been advised to use supplements and how important supplements are for normal individuals their age. If a supplement was recommended, the source of the recommendation, the reason, and the specific supplement suggested should be assessed. If a nonuser begins to take supplements, a discussion of supplements and guidance about their usage can occur.

**Phase 3: Physician Guidance**

The dosage of any supplement ultimately determines the need for guidance about a patient's intake. Megadoses are

defined as dosages ten times the RDA. One in five vitamin users takes megadoses of vitamin E and C, and 4 percent of vitamin A users take five times the RDA, a potentially dangerous dose.<sup>4</sup> If a patient is taking a megadose and at risk of toxicity, there is a need for guidance. Patients who are taking a megadose and are at no risk of toxicity should be followed periodically and advised that no evidence exists for a benefit of a megadose of any vitamin or mineral. Physicians can discourage short-term use of excessive dosages. Megadosing frequently involves taking an excessive dose of a single vitamin or mineral, which can lead to a nutrient deficiency, and such patients should be followed regularly.<sup>13</sup>

The physician is the major influence for many patients' usage of vitamin or mineral supplements.<sup>3,4,6</sup> Advertisements, publications, family, and friends are less important. Physicians who take an interest in their patients' vitamin supplement consumption will be better able to guide the intake of supplements.

**CONCLUSIONS**

The use of vitamin supplements is currently quite common. In medical patients a prevalence of 50 percent is not unusual.<sup>6-8</sup> While certain factors are associated with



increased usage, such as being female or older, patients who use or abuse supplements are not identifiable by any unique characteristic.

Comprehensive, continuous care warrants a complete and systematic history of vitamin supplement use in all patients. This article presents a systematic approach to obtaining all of the pertinent information (Figure 1). This history involves the assessment of behavior and beliefs of each patient and a determination of the need for guidance.

The systematic vitamin supplement history should be a component of all complete medical histories, as is the occupational<sup>23</sup> and sexual history.<sup>24</sup> Supplement-use information needs to be recorded in the medical record where it is easily reviewed. Vitamin supplement use, like chronic medication, must be updated regularly to add, delete, or modify the kind and dosage. Finally, the physician's role in nutrition education of patients is one that patients appreciate, and the assessment of vitamin supplement consumption provides an excellent opportunity for the physician to discuss other aspects of nutrition.

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