

Putting Prevention into Practice

An Evidence-Based Approach

Vitamin D and Calcium Supplementation to Prevent Fractures in Adults

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► See related U.S. Preventive Services Task Force Recommendation Statement at <http://www.aafp.org/afp/2014/0601/od1.html>.

CME This clinical content conforms to AAFP criteria for continuing medical education (CME). See CME Quiz Questions on page 855.

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The case study and answers to the following questions are based on the recommendations of the U.S. Preventive Services Task Force (USPSTF), an independent panel of experts in primary care and prevention that systematically reviews the evidence of effectiveness and develops recommendations for clinical preventive services. More detailed information is available in the USPSTF Recommendation Statement and evidence report on the USPSTF website (<http://www.uspreventiveservicestaskforce.org>). The practice recommendations in this activity are available at <http://www.uspreventiveservicestaskforce.org/uspstf/uspstvd.htm>.

A collection of Putting Prevention into Practice quizzes published in *AFP* is available at <http://www.aafp.org/afp/ppip.html>.

Case Study

A 55-year-old woman presents to your office for a refill of her blood pressure medication. She is otherwise healthy and does not take other medications. She states that her older sister has been taking vitamin D and calcium supplements for several years “to keep her bones strong,” and asks whether she should take vitamin D and calcium as well.

Case Study Questions

1. According to the U.S. Preventive Services Task Force (USPSTF), which one of the following is the most appropriate response to this patient’s inquiry?

- A. Recommend that she start taking 400 IU of vitamin D₃ and 1,000 mg of calcium daily.
- B. Recommend that she start taking 800 IU of vitamin D₃ and 1,500 mg of calcium daily.
- C. Refer her for a bone mineral density assessment before making a recommendation.
- D. Recommend that she not take low doses of vitamin D and calcium because they have not been shown to prevent fractures in community-dwelling, postmenopausal women.

2. According to the USPSTF, which of the following statements about vitamin D and calcium supplementation are correct?

- A. Vitamin D and calcium supplementation is associated with an increased incidence of renal stones.
- B. In postmenopausal women, there is adequate evidence that daily supplementation with 400 IU of vitamin D₃ combined with 1,000 mg of calcium has no effect on the incidence of fractures.
- C. Vitamin D and calcium supplements are relatively inexpensive and readily available without a prescription.
- D. Recommendations on supplementation apply equally to institutionalized and noninstitutionalized (i.e., community-dwelling) women.

3. Which one of the following preventive interventions does the USPSTF recommend for maintaining good bone health?

- A. Screening for osteoporosis in women 50 years or older.
- B. Vitamin D supplementation to prevent falls in community-dwelling adults 65 years or older who are at increased risk of falls.
- C. Daily supplementation with 400 IU or less of vitamin D₃ and 1,000 mg or less of calcium for the primary prevention of fractures in premenopausal women and in men.
- D. Daily supplementation with 800 IU of vitamin D₃ and 1,500 mg of calcium for the primary prevention of fractures in noninstitutionalized, postmenopausal women.

Answers appear on the following page.

Answers

1. The correct answer is D. The USPSTF recommends against daily supplementation with 400 IU or less of vitamin D₃ and 1,000 mg or less of calcium for the primary prevention of fractures in noninstitutionalized, postmenopausal women (D recommendation). The evidence is insufficient to assess the balance of the benefits and harms of daily supplementation with greater than 400 IU of vitamin D₃ and greater than 1,000 mg of calcium for the primary prevention of fractures in noninstitutionalized, postmenopausal women (I statement). The USPSTF recommends screening for osteoporosis in women 65 years or older and in younger women whose fracture risk is equal to or greater than that of a 65-year-old white woman who has no additional risk factors (B recommendation).

2. The correct answers are A, B, and C. In the Women's Health Initiative, women taking supplemental vitamin D and calcium had a statistically increased incidence of renal stones. Adequate evidence indicates that supplementation with 400 IU or less of vitamin D₃ and 1,000 mg or less of calcium has no effect on the incidence of fractures in noninstitutionalized, postmenopausal women. Vitamin D and calcium supplements are inexpensive and readily available without a prescription. The USPSTF recommendations on vitamin D and calcium supplementation to prevent fractures apply only to noninstitutionalized (community-dwelling) men and women.

3. The correct answer is B. The USPSTF recommends vitamin D supplementation to prevent falls in community-dwelling adults 65 years or older who are at increased risk of falls because of a history of recent falls or vitamin D deficiency (B recommendation). The USPSTF recommends screening for osteoporosis in women 65 years or older and in younger women whose fracture risk is equal to or greater than that of a 65-year-old white woman who has no additional risk factors (B recommendation). In premenopausal women and in men, there is inadequate evidence to determine the effect of combined vitamin D₃ and calcium supplementation on the incidence of fractures. There is inadequate evidence regarding the effect of combined daily supplementation with greater than 400 IU of vitamin D₃ and greater than 1,000 mg of calcium on fracture incidence in noninstitutionalized, postmenopausal women.

The views expressed in this work are those of the authors, and do not reflect the official policy or position of the Uniformed Services University of the Health Sciences, the Department of Defense, or the Canadian Armed Forces.

SOURCES

U.S. Preventive Services Task Force. Vitamin D and calcium supplementation to prevent fractures in adults: U.S. Preventive Services Task Force recommendation statement. *Ann Intern Med.* 2013;158(9):691-696.

Chung M, Lee J, Terasawa T, Lau J, Trikalinos TA. Vitamin D with or without calcium supplementation for prevention of cancer and fractures: an updated meta-analysis for the U.S. Preventive Services Task Force. *Ann Intern Med.* 2011;155(12):827-838. ■