Summary of Recommendations and Evidence
The U.S. Preventive Services Task Force (USPSTF) concludes that the current evidence is insufficient to assess the balance of the benefits and harms of combined vitamin D and calcium supplementation for the primary prevention of fractures in premenopausal women or in men (Table 1). I statement.

The USPSTF concludes that the current evidence is insufficient to assess the balance of the benefits and harms of daily supplementation with greater than 400 IU of vitamin D, and greater than 1,000 mg of calcium for the primary prevention...
of fractures in noninstitutionalized postmenopausal women. I statement.

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.

Go to the Clinical Considerations section for suggestions regarding the I statements.

Rationale

IMPORTANCE

Fractures, particularly hip fractures, are associated with chronic pain and disability, loss of independence, decreased quality of life, and increased mortality.¹ One-half of all postmenopausal women will have an osteoporosis-related fracture during their lifetime.

Appropriate intake of vitamin D and calcium is essential to overall health. The Institute of Medicine has published recommended dietary allowances (Table 2).²,³ However, the benefits and harms of daily supplementation with greater than 400 IU of vitamin D₃ and greater than 1,000 mg of calcium to prevent fractures are not clearly understood.

BENEFITS OF PREVENTIVE MEDICATION

In premenopausal women and in men, there is inadequate evidence to determine the effect of combined vitamin D and calcium supplementation on the incidence of fractures. 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. However, there is inadequate evidence about the effect of higher doses of combined vitamin D and calcium supplementation on fracture incidence in noninstitutionalized postmenopausal women.

HARMS OF PREVENTIVE MEDICATION

Adequate evidence indicates that supplementation with 400 IU or less of vitamin D₃ and 1,000 mg or less of calcium increases the incidence of renal stones. The USPSTF assessed the magnitude of this harm as small.

USPSTF ASSESSMENT

Noninstitutionalized, Community-Dwelling Postmenopausal Women. The USPSTF concludes that evidence is lacking about the benefit 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, and the balance of benefits and harms cannot be determined.

The USPSTF concludes with moderate certainty that daily supplementation with 400 IU or less of vitamin D₃ and 1,000 mg or less of calcium has no net benefit for the primary prevention of fractures.

Men and Premenopausal Women. The USPSTF concludes that evidence is lacking about the benefit of vitamin D supplementation with or without calcium for the primary prevention of fractures, and the balance of benefits and harms cannot be determined.

Clinical Considerations

PATIENT POPULATION

This recommendation applies to noninstitutionalized or community-dwelling asymptomatic adults without a history of fractures. Community-dwelling is defined as not residing in an assisted living facility, nursing home, or other institutional care setting. This recommendation does not apply to persons with osteoporosis or vitamin D deficiency.

CONSIDERATIONS FOR PRACTICE REGARDING THE I STATEMENTS

Potential Preventable Burden. The health burden of fractures is substantial in the older adult population.

Potential Harms. In the Women’s Health Initiative, a statistically increased incidence of renal stones occurred in women taking supplemental vitamin D and calcium. One woman was diagnosed with a urinary tract stone for every 273 women who received supplementation over a seven-year follow-up period.

Table 2. Institute of Medicine 2011 Recommended Dietary Allowances for Vitamin D and Calcium

<table>
<thead>
<tr>
<th>Population (age)</th>
<th>Vitamin D (IU)</th>
<th>Calcium (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19 to 50 years</td>
<td>600</td>
<td>1,000</td>
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<tr>
<td>51 to 70 years</td>
<td>600</td>
<td>1,200</td>
</tr>
<tr>
<td>&gt; 70 years</td>
<td>800</td>
<td>1,200</td>
</tr>
<tr>
<td>Pregnant women</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ 18 years</td>
<td>600</td>
<td>1,300</td>
</tr>
<tr>
<td>&gt; 18 years</td>
<td>600</td>
<td>1,000</td>
</tr>
<tr>
<td>Breastfeeding women</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ 18 years</td>
<td>600</td>
<td>1,300</td>
</tr>
<tr>
<td>&gt; 18 years</td>
<td>600</td>
<td>1,000</td>
</tr>
<tr>
<td>Men</td>
<td></td>
<td></td>
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<tr>
<td>19 to 50 years</td>
<td>600</td>
<td>1,000</td>
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<tr>
<td>51 to 70 years</td>
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<tr>
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<td>800</td>
<td>1,200</td>
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</tbody>
</table>

Information from references 2 and 3.
Costs. Vitamin D and calcium supplements are inexpensive and readily available without a prescription.

Current Practice. Vitamin D and calcium supplementation is often recommended for women, especially postmenopausal women, to prevent fractures. Surveys estimate that 56% of women 60 years and older take supplemental vitamin D, and 60% take a supplement containing calcium. The exact dosage is not known.4

OTHER APPROACHES TO PREVENTION

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. This recommendation statement is available on the USPSTF website (http://www.uspreventiveservicestaskforce.org).

The USPSTF recommends vitamin D supplementation (the median dose of vitamin D in available studies was 800 IU) 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). This recommendation statement is available on the USPSTF website (http://www.uspreventiveservicestaskforce.org).

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The “Other Considerations,” “Discussion,” and “Recommendations of Others” sections of this recommendation statement are available at http://www.uspreventiveservicestaskforce.org/uspsvtd.htm.

The U.S. Preventive Services Task Force recommendations are independent of the U.S. government. They do not represent the views of the Agency for Healthcare Research and Quality, the U.S. Department of Health and Human Services, or the U.S. Public Health Service.

REFERENCES