Should we screen for osteoporosis using calcaneal ultrasound?

Evidence-Based Answer
Calcaneal ultrasound should not be used to screen for osteoporosis because of the wide variation in sensitivity and specificity. Further research is needed to determine the correlation between dual energy X-ray absorptiometry (DEXA) scan and calcaneal ultrasound for osteoporosis screening or diagnosis (SOR: B, systematic review of cohort trials).

A 2011 systematic review including 6 cohort trials evaluated quantitative calcaneal ultrasound (QUS) for diagnosing individuals with osteoporosis, using DEXA scan of the femoral head and lumbar spine as the gold standard. The review included 12,250 men and women 20–85 years old, who were not taking medications that altered bone density and did not have comorbidities that could alter bone quality.

These studies found sensitivities ranging from 49% to 95% and specificities ranging from 30% to 90% when compared with the gold standard. The authors concluded that QUS cannot be used to diagnose osteoporosis because of the high variability of the sensitivities and specificities.

A 2011 prospective cohort study of 43 women aged 62–87 years evaluated DEXA, QUS, and quantitative computed tomography for the diagnosis of osteoporosis. Osteoporosis was defined as a T-score of –2.5 or less, based on femoral neck DEXA as the gold standard.

Compared with the gold standard, QUS showed a sensitivity of 100% and a specificity of 66% for diagnosing osteoporosis (negative likelihood ratio of 0; positive likelihood ratio of 2.9). The authors concluded that QUS can accurately rule out osteoporosis, but may produce a higher false-positive rate than femoral neck DEXA and lacks generally accepted T-score thresholds for the diagnosis of osteoporosis.

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Does cranberry juice or cranberry extract reduce the frequency of recurrent urinary tract infections in women?

Evidence-Based Answer
In general, cranberry products do not appear to prevent recurrent urinary tract infections (UTIs) in women (SOR: B, Cochrane review and consistent RCTs with methodological flaws). However, there may be a small benefit for women older than 50 years (SOR: C, subgroup analysis in small RCT).

A 2012 Cochrane systematic review of 8 RCTs (N=1,223) evaluated the effectiveness of varying doses of cranberry juice (240–600 mL daily) as well as cranberry capsules (400, 500, and 1,000 mg/d) against several comparators for the prevention of UTIs. Studies included adult, nonpregnant women 18–80 years old with a history of at least 2 symptomatic UTIs in the previous year.

With follow-up at 3 to 12 months, cranberry therapy had no greater effect on recurrent UTI incidence than placebo (4 trials, N=594; 19% vs 30%; risk ratio [RR] 0.74; 95% CI, 0.42–1.3). Also, no difference was noted in recurrent UTIs in the cranberry group compared with the antibiotic prophylaxis group at 12 months (2 trials, N=344; 51% vs 40%; RR 1.3; 95% CI, 0.85–2.0). One RCT (N=99) showed cranberry products were more effective at preventing UTIs than probiotics (RR 0.41; 95% CI, 0.20–0.85). There was no difference in adverse gastrointestinal effects (2 trials, N=344; RR 0.78; 95% CI, 0.42–1.4) or skin reactions (1 trial, N=207; RR 0.54; 95% CI, 0.25–1.2) between women taking cranberry products compared with antibiotics. There was no difference in effectiveness between twice-daily and once-daily dosing (2 trials, N=83; RR 1.1; 95% CI, 0.75–1.7). The Cochrane review concluded cranberry products do not appear to have a significant benefit in preventing UTIs.

Potential weaknesses of the studies included small sample size in most studies as well as attrition bias related to high dropout rates. Many studies did not explicitly state the concentration of active ingredients. Also, many participants in the studies were not included in the statistical analysis.

A subsequent RCT of 213 adult Japanese women with a mean age 57 and more than 1 UTI during the preceding year compared the effectiveness of
125 mL (containing >40 mg proanthocyanidins, an active ingredient) of daily cranberry juice versus placebo beverage for preventing recurrent UTI at 24 months’ follow-up.2

Overall, no statistically significant difference was noted between the cranberry and placebo groups (30% vs 36%; P=.42). Subanalysis by age showed that cranberry use in women older than 50 years reduced the incidence of recurrent UTI (29% vs 49%; P=.045), an effect not seen in women younger than 50 years. An adverse event of throat discomfort was reported in 1 participant in the treatment group. Limitations of the study included a small number of younger, premenopausal women with low UTI recurrence rates.2

A 2012 double-blind RCT of 176 adult women aged 18–45 with a history of 1 or more clinician-diagnosed UTIs in the past 12 months at 2 centers examined the effectiveness of cranberry juice compared with placebo for preventing UTI.3 At 6 months, the Kaplan-Meier curve showed no statistically significant difference in time to first symptomatic UTI (P=.41) or number of patients with UTI episode (29% vs 37%; adjusted HR 0.68; 95% CI, 0.33–1.4).

No significant adverse effects were reported in the study, and reported adherence to the intervention was high. The study was underpowered to find a small difference. An additional limitation was the inability to measure adherence to interventions other than per report.3

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Are there any long-term detrimental effects from soy formula?

Evidence-Based Answer
Soy formula feeding has no effect on growth (SOR: A, systematic review of RCTs and cohort studies with consistent results). Soy formula has been associated with extremely premature thelarche (prior to age 2) and increased duration and discomfort of menses in adulthood (SOR: C, case-control and cohort studies with multiple comparisons). But the American Academy of Pediatrics states that there is no convincing evidence that soy formulas affect human development, reproduction, or endocrine function (SOR: C, expert opinion).

A 2011 systematic review of 26 RCTs, cohort studies, and case-control studies (N=22,013) commissioned by the National Toxicology Program’s Center for the Evaluation of Risks to Human Reproduction evaluated the developmental effects of feeding soy formula to infants.1 Ten mostly small RCTs and cohort studies (N=2,146) compared infants fed soy formula, breast milk, and cow-milk formula in relation to various growth parameters such as weight, length, and head circumference. No consistent differences in growth were seen among the infant groups at 1 year of age.

One retrospective case-control study in the review evaluated girls with premature thelarche (N=130) compared with age-matched controls. Thelarche prior to age 2 was associated with soy formula feeding (OR 2.7; 95% CI, 1.1–6.8). Alternatively, when onset of premature thelarche was not restricted to younger than age 2, there was no association between soy formula feeding and premature thelarche.1

A retrospective cohort study in the review of 811 adult women fed either soy formula or cow-milk formula as infants evaluated more than 30 outcomes in adults. Compared with women fed cow-milk formula, women fed soy formula as infants reported slightly longer duration of menses (adjusted mean difference, 0.37 days; 95% CI, 0.06–0.68 days), with no change in severity of menstrual flow. Women fed soy formula as infants also reported greater menstrual discomfort (unadjusted relative risk for extreme discomfort vs no or mild pain, 1.7; 95% CI, 1.0–3.0). After adjustment for multiple comparisons of the numerous endpoints, the authors reported these findings were no longer significant.1

Evidence-Based Practice learning objectives

1. To become knowledgeable about evidence-based solutions to commonly encountered clinical problems.
2. To understand how groundbreaking research is changing the practice of family medicine.
3. To become conversant with balanced appraisals of drugs that are marketed to physicians and consumers.