

Screening for Osteoporosis in Postmenopausal Women: Recommendations and Rationale

U.S. Preventive Services Task Force*

This statement summarizes the current U.S. Preventive Services Task Force (USPSTF) recommendations on screening for osteoporosis and the supporting scientific evidence and updates the 1996 USPSTF recommendations on this topic. The complete USPSTF recommendation and rationale statement on this topic, which includes a brief review of the supporting evidence, is available through the USPSTF Web site (www.preventiveservices.ahrq.gov), the National Guideline Clearinghouse (www.guideline.gov), and in print through the Agency for Healthcare Research and Quality Publications Clearinghouse (telephone, 800-358-9295; e-mail,

ahrqpubs@ahrq.gov). The complete information on which this statement is based, including evidence tables and references, is available in the accompanying article in this issue and in the summary of the evidence and the systematic evidence review on the Web sites already mentioned.

Ann Intern Med. 2002;137:526-528.

www.annals.org

See related article on pp 529-541.

*For a list of the members of the U.S. Preventive Services Task Force, see the Appendix.

SUMMARY OF RECOMMENDATIONS

The U.S. Preventive Services Task Force (USPSTF) recommends that women 65 years of age and older be screened routinely for osteoporosis. The USPSTF recommends that routine screening begin at 60 years of age for women at increased risk for osteoporotic fractures (see Clinical Considerations for a discussion of women at increased risk). This is a **grade B recommendation**. (See **Appendix Table 1** for a description of the USPSTF classification of recommendations.)

The USPSTF found good evidence that the risk for osteoporosis and fracture increases with age and other factors, that bone density measurements accurately predict the risk for fractures in the short term, and that treating asymptomatic women with osteoporosis reduces their risk for fracture. (See **Appendix Table 2** for a description of the USPSTF classification of levels of evidence.) *The USPSTF concludes that the benefits of screening and treatment are of at least moderate magnitude for women at increased risk by virtue of age or presence of other risk factors.*

The USPSTF makes no recommendation for or against routine osteoporosis screening in postmenopausal women who are younger than 60 years of age or in women 60 to 64 years of age who are not at increased risk for osteoporotic fractures. This is a **grade C recommendation**.

The USPSTF found fair evidence that screening women at lower risk for osteoporosis or fracture can identify additional women who may be eligible for treatment for osteoporosis, but it would prevent a small number of fractures. The USPSTF concludes that the balance of benefits and harms of screening and treatment is too close to make a general recommendation for this age group.

CLINICAL CONSIDERATIONS

Modeling analysis suggests that the absolute benefits of screening for osteoporosis among women 60 to 64 years of

age who are at increased risk for osteoporosis and fracture are comparable to those of routine screening in older women. The exact risk factors that should trigger screening in this age group are difficult to specify based on evidence. Lower body weight (weight < 70 kg) is the single best predictor of low bone mineral density (1, 2). Low weight and no current use of estrogen therapy are incorporated with age into the three-item Osteoporosis Risk Assessment Instrument (1). There is less evidence to support the use of other individual risk factors (for example, smoking, weight loss, family history, decreased physical activity, alcohol or caffeine use, or low calcium and vitamin D intake) as a basis for identifying high-risk women younger than 65 years of age. At any given age, African-American women on average have higher bone mineral density than white women and are thus less likely to benefit from screening.

Among different bone measurement tests performed at various anatomic sites, bone density measured at the femoral neck by dual-energy x-ray absorptiometry is the best predictor of hip fracture and is comparable to forearm measurements for predicting fractures at other sites. Other technologies for measuring peripheral sites include quantitative ultrasonography, radiographic absorptiometry, single-energy x-ray absorptiometry, peripheral dual-energy x-ray absorptiometry, and peripheral quantitative computed tomography. Recent data suggest that peripheral bone density testing in the primary care setting can also identify postmenopausal women who have a higher risk for fracture over the short term (1 year). Further research is needed to determine the accuracy of peripheral bone density testing in comparison with dual-energy x-ray absorptiometry. The likelihood of being diagnosed with osteoporosis varies greatly depending on the site and type of bone measurement test, the number of sites tested, the brand of densitometer used, and the relevance of the reference range.

Estimates of the benefits of detecting and treating osteoporosis are based largely on studies of bisphosphonates. Some women, however, may prefer other treatment options (for example, hormone replacement therapy, selective estrogen receptor modulators, or calcitonin) based on personal preferences or risk factors. Clinicians should review with patients the relative benefits and harms of available treatment options, and uncertainties about their efficacy and safety, to facilitate an informed choice. No studies have evaluated the optimal intervals for repeated screening. Because of limitations in the precision of testing, a minimum of 2 years may be needed to reliably measure a change in bone mineral density; however, longer intervals may be adequate for repeated screening to identify new cases of osteoporosis. Yield of repeated screening will be higher in older women, those with lower bone mineral density at baseline, and those with other risk factors for fracture.

There are no data to determine the appropriate age to stop screening and few data on osteoporosis treatment in women older than 85 years of age. Patients who receive a diagnosis of osteoporosis fall outside the context of screening but may require additional testing for diagnostic purposes or to monitor response to treatment.

The brief review of the evidence and other sections that are normally included in USPSTF recommendations are available in the complete recommendation and rationale statement on the USPSTF Web site (www.preventiveservices.ahrq.gov).

RECOMMENDATIONS OF OTHERS

In 1998, the National Osteoporosis Foundation, in collaboration with other professional organizations, issued screening guidelines recommending bone density testing for all women 65 years of age or older, as well as younger postmenopausal women who have had a fracture or who have one or more risk factors for osteoporosis (3). Collaborating groups included the American Academy of Orthopaedic Surgeons, the American College of Obstetricians and Gynecologists, the American Geriatrics Society, the American College of Radiology, the American College of Rheumatology, the American Academy of Physical Medicine and Rehabilitation, the American Association of Clinical Endocrinologists, the Endocrine Society, and the American Society for Bone and Mineral Research. The American Association of Clinical Endocrinologists released revised guidelines in 2001 (4). A 2000 Consensus Development Conference sponsored by the U.S. National Institutes of Health concluded that the value of universal osteoporosis screening was not yet established (5). The conference panel recommended an individualized approach to screening, noting that bone density measurement is appropriate when it will aid the patient's decision

to institute treatment. The Canadian Task Force on Preventive Health Care is currently revising its recommendations on screening for osteoporosis.

APPENDIX

Members of the U.S. Preventive Services Task Force are Alfred O. Berg, MD, MPH, *Chair* (University of Washington, Seattle, Washington); Janet D. Allan, PhD, RN, CS, *Vice-Chair* (School of Nursing, University of Maryland, Baltimore, Baltimore, Maryland); Paul S. Frame, MD (Tri-County Family Medicine, Cohocton, and University of Rochester, Rochester, New York); Charles J. Homer, MD, MPH (National Initiative for Children's Healthcare Quality, Boston, Massachusetts); Mark S. Johnson, MD, MPH (University of Medicine and Dentistry of New Jersey—New Jersey Medical School, Newark, New Jersey); Jonathan D. Klein, MD, MPH (University of Rochester School of Medicine, Rochester, New York); Tracy A. Lieu, MD, MPH (Harvard Pilgrim Health Care and Harvard Medical School, Boston, Massachusetts); Cynthia D. Mulrow, MD, MSc (University of Texas Health Science Center, Audie L. Murphy Memorial Veterans Hospital, San Antonio, Texas); C. Tracy Orleans, PhD (The Robert Wood Johnson Foundation, Princeton, New Jersey); Jeffrey F. Peipert, MD, MPH (Women and Infants' Hospital, Providence, Rhode Island); Nola J. Pender, PhD, RN (University of Michigan, Ann Arbor, Michigan); Albert L. Siu, MD, MSPH (Mount Sinai School of Medicine, New York, New York); Steven M. Teutsch, MD, MPH (Merck & Co., Inc., West Point, Pennsylvania); Carolyn Westhoff, MD, MSc (Columbia University College of Physicians and Surgeons, New York, New York); and Steven H. Woolf, MD, MPH (Virginia Commonwealth University, Fairfax, Virginia).

*Appendix Table 1. U.S. Preventive Services Task Force Grades and Recommendations**

Grade	Recommendation
A	The USPSTF strongly recommends that clinicians routinely provide [the service] to eligible patients. <i>The USPSTF found good evidence that [the service] improves important health outcomes and concludes that benefits substantially outweigh harms.</i>
B	The USPSTF recommends that clinicians routinely provide [the service] to eligible patients. <i>The USPSTF found at least fair evidence that [the service] improves important health outcomes and concludes that benefits outweigh harms.</i>
C	The USPSTF makes no recommendation for or against routine provision of [the service]. <i>The USPSTF found at least fair evidence that [the service] can improve health outcomes but concludes that the balance of benefits and harms is too close to justify a general recommendation.</i>
D	The USPSTF recommends against routinely providing [the service] to asymptomatic patients. <i>The USPSTF found at least fair evidence that [the service] is ineffective or that harms outweigh benefits.</i>
I	The USPSTF concludes that the evidence is insufficient to recommend for or against routinely providing [the service]. <i>Evidence that the [service] is effective is lacking, of poor quality, or conflicting, and the balance of benefits and harms cannot be determined.</i>

* The U.S. Preventive Services Task Force (USPSTF) grades its recommendations according to one of five classifications (A, B, C, D, I) reflecting the strength of evidence and magnitude of net benefit (benefits minus harms).

Appendix Table 2. U.S. Preventive Services Task Force Grades for Strength of Overall Evidence*

Grade	Definition
Good	Evidence includes consistent results from well-designed, well-conducted studies in representative populations that directly assess effects on health outcomes
Fair	Evidence is sufficient to determine effects on health outcomes, but the strength of the evidence is limited by the number, quality, or consistency of the individual studies; generalizability to routine practice; or indirect nature of the evidence on health outcomes
Poor	Evidence is insufficient to assess the effects on health outcomes because of limited number or power of studies, important flaws in their design or conduct, gaps in the chain of evidence, or lack of information on important health outcomes

* The U.S. Preventive Services Task Force (USPSTF) grades the quality of the overall evidence for a service on a three-point scale (good, fair, poor).

From the U.S. Preventive Services Task Force, Agency for Healthcare Research and Quality, Rockville, Maryland.

Requests for Single Reprints: Reprints are available from the USPSTF Web site (www.preventiveservices.ahrq.gov) and in print through the

Agency for Healthcare Research and Quality Publications Clearinghouse (800-358-9295).

References

1. Cadarette SM, Jaglal SB, Kreiger N, McIsaac WJ, Darlington GA, Tu JV. Development and validation of the Osteoporosis Risk Assessment Instrument to facilitate selection of women for bone densitometry. *CMAJ*. 2000;162:1289-94. [PMID: 10813010]
2. Cadarette SM, Jaglal SB, Murray TM, McIsaac WJ, Joseph L, Brown JP, et al. Evaluation of decision rules for referring women for bone densitometry by dual-energy x-ray absorptiometry. *JAMA*. 2001;286:57-63. [PMID: 11434827]
3. Physician's Guide to Prevention and Treatment of Osteoporosis. National Osteoporosis Foundation. Washington, DC: National Osteoporosis Foundation; 1999. Accessed at www.nof.org/physguide on 29 July 2002.
4. American Association of Clinical Endocrinologists. 2001 Medical Guidelines for Clinical Practice for the Prevention and Management of Postmenopausal Osteoporosis. Accessed at www.aace.com/clin/guidelines/osteoporosis2001.pdf on 27 February 2002.
5. Osteoporosis prevention, diagnosis, and therapy. NIH Consensus Statement. 2000;17:1-45. [PMID: 11525451] Accessed at http://odp.od.nih.gov/consensus/cons/111/111_statement.htm on 27 February 2002.