

# Screening for Breast Cancer: 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 breast cancer 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](http://www.preventiveservices.ahrq.gov)), the National Guideline Clearinghouse ([www.guideline.gov](http://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](mailto: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 systematic evidence review on the Web sites already mentioned.

To update its recommendations on screening for breast cancer, the USPSTF reviewed the evidence regarding the effectiveness of mammography, clinical breast examination, and breast self-examination in reducing breast cancer mortality. The USPSTF did

not review the evidence regarding genetic screening, surveillance of women with prior breast cancer, or formal evaluation of new screening modalities that have not been studied in the general population. A meta-analysis using a Bayesian random-effects model was conducted for the USPSTF to obtain a summary of relative risk estimates of the effectiveness of screening with mammography, either alone or in combination with clinical breast examination, in reducing breast cancer mortality. Clinical studies that evaluated breast self-examination were included in the review. Sources for estimates cited in this Recommendation and Rationale statement are described in the systematic evidence review on this topic, which is available on the USPSTF Web site ([www.preventiveservices.ahrq.gov](http://www.preventiveservices.ahrq.gov)).

*Ann Intern Med.* 2002;137:344-346.

[www.annals.org](http://www.annals.org)

See related article on pp 347-360 and editorial comments on pp 361-362 and pp 363-365.

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

## SUMMARY OF THE RECOMMENDATIONS

The U.S. Preventive Services Task Force (USPSTF) recommends screening mammography, with or without clinical breast examination (CBE), every 1 to 2 years for women aged 40 and older. This is a **grade B recommendation**. (See Appendix Table 1 for a description of the USPSTF classification of recommendations.)

*The USPSTF found fair evidence that mammography screening every 12 to 33 months significantly reduces mortality from breast cancer. (See Appendix Table 2 for a description of the USPSTF classification of levels of evidence.) Evidence is strongest for women aged 50 to 69, the age group generally included in screening trials. For women aged 40 to 49, the evidence that screening mammography reduces mortality from breast cancer is weaker, and the absolute benefit of mammography is smaller, than it is for older women. Most, but not all, studies indicate a mortality benefit for women undergoing mammography at ages 40 to 49, but the delay in observed benefit in women younger than 50 makes it difficult to determine the incremental benefit of beginning screening at age 40 rather than at age 50. The absolute benefit is smaller because the incidence of breast cancer is lower among women in their 40s than it is among older women.*

*The USPSTF concluded that the evidence is also generalizable to women aged 70 and older (who face a higher absolute risk of breast cancer) if their life expectancy is not compromised by comorbid disease. The absolute probability of benefits of regular mammography increases along a continuum with age, whereas the likelihood of harms from screening*

*(false-positive results and unnecessary anxiety, biopsies, and cost) diminishes from ages 40 to 70.*

*The balance of benefits and potential harms, therefore, grows more favorable as women age. The precise age at which the potential benefits of mammography justify the possible harms is a subjective choice. The USPSTF did not find sufficient evidence to specify the optimal screening interval for women aged 40 to 49 (see Clinical Considerations).*

The USPSTF concludes that the evidence is insufficient to recommend for or against routine CBE alone to screen for breast cancer. This is a **grade I recommendation**.

*No screening trial has examined the benefits of CBE alone (without accompanying mammography) compared to no screening, and design characteristics limit the generalizability of studies that have examined CBE. The USPSTF could not determine the benefits of CBE alone or the incremental benefit of adding CBE to mammography. The USPSTF therefore could not determine whether potential benefits of routine CBE outweigh the potential harms.*

The USPSTF concludes that the evidence is insufficient to recommend for or against teaching or performing routine breast self-examination (BSE). This is a **grade I recommendation**.

*The USPSTF found poor evidence to determine whether BSE reduces breast cancer mortality. The USPSTF found fair evidence that BSE is associated with an increased risk of false-*

*positive results and biopsies. Because of design limitations of published and ongoing studies of BSE, the USPSTF could not determine the balance of benefits and potential harms of BSE.*

## CLINICAL CONSIDERATIONS

The precise age at which the benefits from screening mammography justify the potential harms is a subjective judgment and should take into account patient preferences. Clinicians should inform women about the potential benefits (reduced chance of dying from breast cancer), potential harms (for example, false-positive results, unnecessary biopsies), and limitations of the test that apply to women their age. Clinicians should tell women that the balance of benefits and potential harms of mammography improves with increasing age for women between the ages of 40 and 70.

Women who are at increased risk for breast cancer (for example, those with a family history of breast cancer in a mother or sister, a previous breast biopsy revealing atypical hyperplasia, or first childbirth after age 30) are more likely to benefit from regular mammography than women at lower risk. The recommendation for women to begin routine screening in their 40s is strengthened by a family history of breast cancer having been diagnosed before menopause.

The USPSTF did not examine whether women should be screened for genetic mutations (*BRCA1* and *BRCA2*) that increase the risk of developing breast cancer, or whether women with genetic mutations might benefit from earlier or more frequent screening for breast cancer.

In the trials that demonstrated the effectiveness of mammography in lowering breast cancer mortality, screening was performed every 12 to 33 months. For women aged 50 and older, there is little evidence to suggest that annual mammography is more effective than mammography done every other year. For women aged 40 to 49, available trials also have not reported a clear advantage of annual mammography over biennial mammography. Nevertheless, some experts recommend annual mammography based on the lower sensitivity of the test and on evidence that tumors grow more rapidly in this age group.

The precise age at which to discontinue screening mammography is uncertain. Only two randomized, controlled trials enrolled women older than 69, and no trials enrolled women older than 74. Older women face a higher probability of developing and dying of breast cancer but also have a greater chance of dying of other causes. Women with comorbid conditions that limit their life expectancy are unlikely to benefit from screening.

Clinicians should refer patients to mammography screening centers with proper accreditation and quality assurance standards to ensure accurate imaging and radio-

graphic interpretation. Clinicians should adopt office systems to ensure timely and adequate follow-up of abnormal results. A listing of accredited facilities is available at [www.fda.gov/cdrh/mammography/certified.html](http://www.fda.gov/cdrh/mammography/certified.html).

Clinicians who advise women to perform BSE or who perform routine CBE to screen for breast cancer should understand that there is currently insufficient evidence to determine whether these practices affect breast cancer mortality and that they are likely to increase the incidence of clinical assessments and biopsies.

The brief review of the evidence that is normally included in USPSTF recommendations is available in the complete recommendation and rationale statement on the USPSTF Web site ([www.preventiveservices.ahrq.gov](http://www.preventiveservices.ahrq.gov)).

## RECOMMENDATIONS OF OTHERS

Nearly all North American organizations support mammography screening, although groups vary in the recommended age to begin screening, the interval for screening, and the role of CBE. The American Medical Association (AMA) (1), the American College of Radiology (ACR) (2), and the American Cancer Society (ACS) (3) all support screening with mammography and CBE beginning at age 40. The American College of Obstetricians and Gynecologists (ACOG) (4) supports screening with mammography beginning at age 40 and CBE beginning at age 19. The Canadian Task Force on Preventive Health Care (CTFPHC) (5), the American Academy of Family Physicians (AAFP) (6), and the American College of Preventive Medicine (ACPM) (7) recommend beginning mammography for average-risk women at age 50. The AAFP and ACPM recommend that mammography in high-risk women begin at age 40, and the AAFP recommends that all women aged 40 to 49 be counseled about the risks and benefits of mammography before making decisions about screening (6, 7). A 1997 Consensus Development Panel convened by the U.S. National Institutes of Health concluded that the evidence was insufficient to determine the benefits of mammography among women aged 40 to 49. This panel recommended that women aged 40 to 49 should be counseled about potential benefits and harms before making decisions about mammography (8). In 2001, the CTFPHC concluded there was insufficient evidence to recommend for or against mammography in women 40 to 49 (9).

Organizations differ on their recommendations for the appropriate interval for mammography. Annual mammography is recommended by the AMA, ACR, and ACS (1–3). Mammography every 1 to 2 years is recommended by the CTFPHC, AAFP, and ACPM (5–7). The ACOG recommends mammography every 1 to 2 years for women aged 40 to 49 and annually for women aged 50 and older (4).

In its 2001 report, the CTFPHC recommends against

teaching BSE to women aged 40 to 69 (10). The AMA, ACS, ACOG, and AAFP support teaching BSE (1, 3, 4, 6).

**APPENDIX**

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**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).

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**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).