

## Mammography Screening for Breast Cancer: Recommendation of the U.S. Preventive Services Task Force

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► See related U.S. Preventive Services Task Force recommendation statement on page 672.

The November 2009 U.S. Preventive Services Task Force (USPSTF) recommendation for breast cancer screening,<sup>1</sup> while sparking much controversy, was not a radical departure from the previous 2002 recommendation.<sup>2</sup> The USPSTF approached the recommendation update with the basic questions of what ages to start and stop screening, what screening test to use, and how often to screen. The 2002 recommendation endorsing mammography encompassed the age range of 40 to 70 years, but stated that “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 . . . [It is] difficult to determine the incremental benefit of beginning screening at age 40 rather than at age 50.”<sup>2</sup> The 2002 recommendation endorsed a screening interval of every one to two years.

New evidence, including information from two randomized controlled trials involving breast cancer screening in women 40 to 49 years of age,<sup>3,4</sup> allowed the USPSTF to answer the fundamental questions with greater certainty. The National Institutes of Health’s Cancer Intervention and

Surveillance Modeling Network also provided analyses projecting the expected outcomes of different screening strategies.<sup>5</sup>

The incremental reduction of breast cancer mortality that accrues from starting screening at 40 years of age compared with 50 years of age is small, and the false-positive test rate and risk of unnecessary biopsies are highest in this age group. During these 10 years of screening, more than one half of women can expect a false-positive test result. The proportion of lesions discovered by mammography that are ductal carcinoma in situ (for which the natural history and benefits of treatment are unknown) is largest in this age group. Although the radiation exposure from a single mammography screening is not large, the cumulative effects of a lifetime of mammography examinations, particularly in the context of other medical imaging, cannot be assumed to be benign. Some cancers detected and treated would never have progressed to cause harm in a woman’s lifetime (i.e., overdiagnosis). Given these concerns, in its 2009 update, the USPSTF recommended that “the decision to start regular, biennial screening mammography before the age of 50 years should be an individual one and take patient context into account, including the patient’s values regarding specific benefits and harms.”<sup>1</sup>

So when should we stop screening? The USPSTF extended the upper age for which the evidence was sufficient to make a recommendation to 74 years of age. Although no randomized controlled trial data exist to support mammography after 70 years of age, the modeling data strongly support continued benefit, and the USPSTF believed it was prudent to extend the upper age for its recommendation. At 75 years and older, the uncertainty about net benefit or harm does not support a recommendation for or against screening.

How often should we screen? Most of the benefit of annual mammography can be achieved with a biennial interval, with a substantial reduction in the number of lifetime ►

mammography examinations and the associated risk. The USPSTF believes that the balance of benefits and harms is best served by a biennial interval.

There is more agreement than disagreement about the value of mammography for breast cancer screening.<sup>6</sup> Mammography does reduce breast cancer mortality, albeit to a lesser extent than many assume, and although imperfect, it is the best screening tool we have. Controversy about the value of mammography for women in their 40s has long existed,<sup>7</sup> and others have reached similar conclusions to those of the USPSTF.<sup>8</sup>

How can practicing family physicians incorporate this guideline into clinical practice? Discuss at 40 years of age, encourage at 50 years of age, strongly encourage at 60 years of age, and individualize at 75 years of age.

- **40 to 49 years of age.** Advise women that if we follow 1,000 women beginning at 40 years of age until death from all causes, about 30 women will ultimately die from breast cancer without mammography screening. If we screen women every other year from 50 to 75 years of age, we can reduce the number of deaths to about 23. Beginning screening at 40 years of age will decrease the number of deaths further, but by no more than one. Describe to patients the drawbacks of beginning screening in their 40s, including unnecessary testing and treatment, discomfort, the potential hazard of the cumulative exposure to radiation, and the risk of the diagnosis and treatment of cancers that would never be detected in their lifetime without screening.

- **50 to 59 years of age.** Encourage women to begin mammography screening, because the benefits outweigh the risks. The evidence suggests most of the benefit of annual mammography screening is derived by screening every two years, with fewer false-positive screening results, less radiation, and less unnecessary invasive testing.

- **60 to 74 years of age.** Many women who begin screening at 40 years of age grow

weary of screening by 60 years of age. This is unfortunate, because this is the beginning of the age range for which the benefits most clearly and significantly outweigh the risks. Strongly encourage women in this age group to undergo screening every two years.

- **75 years of age.** We have limited evidence to guide us beyond 75 years of age. Healthy women with minimal or no comorbidity may continue to benefit from mammography. By 85 years of age, limited life expectancy makes it very unlikely that mammography will reduce morbidity or mortality.

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## REFERENCES

1. U.S. Preventive Services Task Force. Screening for breast cancer: U.S. Preventive Services Task Force recommendation statement [published correction appears in *Ann Intern Med*. 2010;152(3):199-200]. *Ann Intern Med*. 2009;151(10):716-726.
2. U.S. Preventive Services Task Force. Screening for breast cancer: recommendations and rationale. *Ann Intern Med*. 2002;137(5 pt 1):344-346.
3. Moss SM, Cuckle H, Evans A, Johns L, Waller M, Bobrow L; Trial Management Group. Effect of mammographic screening from age 40 years on breast cancer mortality at 10 years' follow-up: a randomised controlled trial. *Lancet*. 2006;368(9552):2053-2060.
4. Bjurstam N, Björneld L, Warwick J, et al. The Gothenburg Breast Screening Trial. *Cancer*. 2003;97(10):2387-2396.
5. Mandelblatt JS, Cronin KA, Bailey S, et al; Breast Cancer Working Group of the Cancer Intervention and Surveillance Modeling Network. Effects of mammography screening under different screening schedules: model estimates of potential benefits and harms. *Ann Intern Med*. 2009;151(10):738-747.
6. Partridge AH, Winer EP. On mammography—more agreement than disagreement. *N Engl J Med*. 2009;361(26):2499-2501.
7. Fletcher SW. Whither scientific deliberation in health policy recommendations? Alice in the wonderland of breast-cancer screening. *N Engl J Med*. 1997;336(16):1180-1183.
8. Qaseem A, Snow V, Sherif K, Aronson M, Weiss K, Owens DK; Clinical Efficacy Assessment Subcommittee of the American College of Physicians. Screening mammography for women 40 to 49 years of age: a clinical practice guideline from the American College of Physicians. *Ann Intern Med*. 2007;146(7):511-515. ■