Should women 40 to 49 years of age be offered mammographic screening?

**YES**

Isabelle Trop, MD, MPH, FRCP

It is already accepted that women with an increased risk of developing breast cancer benefit from earlier annual screening. I believe that mammographic screening of all women in their 40s constitutes good practice.

Seventy percent of breast cancer is diagnosed in women without any risk factors. So when should screening begin? Many believe that women younger than 50 very rarely get breast cancer. In 2000, 19 200 new breast cancers were diagnosed in Canada; 17% were in women 40 to 49 years of age; 24% were in women 50 to 59 years of age.¹ The arbitrary cutoff age of 50 used in early studies was based on the hypothesis that menopause changed the development and mammographic detectability of breast cancer, but there is nothing magical about the age of 50.

In addition, breast cancer incidence has increased in recent decades. The number of patients diagnosed with breast cancer before age 50 increased more than threefold between 1953 through 1959 and 1993 through 1999.² In 1995, due to changing demographics, more breast cancers were diagnosed among women in their 40s than among women in their 50s.³

**Does screening result in improved survival rates?**

The answer is yes. Improvements in survival rates due to screening are increasingly evident.⁴ A study evaluating mortality from breast cancer in Sweden found a 44% decrease in deaths as a result of widespread mammographic screening.⁵ When women between the ages of 40 and 49 were evaluated separately, the decrease in deaths was even more marked at 48%.

Early mammography trials were underpowered and not designed to show a statistically significant 25% mortality reduction for screening women aged 40 to 49.⁶ In addition, researchers used data from examinations performed as early as 1963, none later than the early 1990s. Today, most of these would be considered of poor quality and unacceptable. We now have more sophisticated equipment and quality-control programs nation-wide.

In terms of sensitivity of breast tissue to radiation, it is prudent to delay screening until age 40, yet there is abundant evidence that yearly mammographic screening

**NO**

Wilber Deck, MD, MSc

Mammography for breast cancer screening, a practice refined over 50 years, has been the subject of 8 randomized trials in the United States, Sweden, the United Kingdom, and Canada. These trials have shown a reduction in mortality due to breast cancer, resulting in recommendations encouraging screening every 1 or 2 years starting at age 40 ¹² or age 50.³⁴ While there is disagreement about the age at which to begin screening, there is a consensus that screening is indicated for nearly all women aged 50 to 69 years. In recent years, systematic screening has been introduced in several countries, including Canada, where a mammogram every 2 years is offered to all women aged 50 to 69. This has created controversy between clinicians who prescribe mammograms starting at age 40 and breast cancer screening programs that offer screening to women starting at age 50.

**Evidence**

A recent reevaluation of evidence supporting mammographic screening (which I conducted on behalf of Agence d’évaluation des technologies et des modes d’intervention en santé du Québec,⁵ the Quebec government agency responsible for health services and technology assessment) concluded that the reduction in mortality is much more substantial among older women. Even though there is just 1 average-quality trial for women 50 and older, it showed a 27% reduction in mortality due to breast cancer. After adding the data from poor-quality trials, the reduction was 23%. On the other hand, for younger women, 2 average-quality trials yielded a reduction of only 2%. After factoring in poor-quality trials, the reduction was 8%, which was not statistically significant.

**Reasons behind the differences**

This is not to say that screening younger women is never justified; rather, it says that, absent other considerations, screening young women has no demonstrated effect. The most common explanations offered for these failures are the lower risk of breast cancer in younger women and the challenge of obtaining clinically useful mammograms in premenopausal women who have dense, or radiopaque, breast tissue. Effectiveness might
after age 40 does not result in increased incidence of breast cancer. Some have argued that women aged 40 to 49 years require increased x-ray energy because of higher breast density, but this increase has not been found to be statistically significant.\(^7\)

**Nothing changes abruptly at age 50**

The main “harm” cited for not recommending screening before the age of 50 is unjustified anxiety. Also cited are biopsies that lead to benign results and surgery for “pseudocancers” that might never have evolved to risk a woman’s survival. The ratio of harm to benefit changes steadily with increasing age.\(^8\) The recall rate decreases gradually from approximately 8% at age 40 to approximately 6% by age 79. The recommendation for a biopsy based on an abnormal mammogram result is the same, regardless of age, and positive predictive value and cancer detection rates increase steadily with increasing age, reflecting the prior probability of breast cancer in the screened patients.

More screening means costlier programs. If it is decided that screening before a certain age is too expensive, this should be made clear. Women and their physicians can then decide on an acceptable age threshold for screening. Suggesting that a threshold is based on science when it is not based on science is less than honest.\(^3\)

**Conclusion**

Most American groups now support mammographic screening for women aged 40 to 49. The Canadian Preventive Services Task Force upgraded its recommendation for this age group from grade D in 1994 to grade C, concluding that “current evidence … does not suggest the inclusion of [screening mammography] in, or its exclusion from, the periodic health examination of women aged 40 to 49 years at average risk of breast cancer.”\(^9\)

Is it a sound recommendation to begin patient mammography screening at the age of 40? Screening increase if the women selected were those most likely to benefit from early screening. Because risk factors for developing breast cancer are known (familial or genetic predisposition), a younger woman’s risk could be calculated and, if it corresponded to that of an older woman, she could then be offered screening. Similarly, with an early initial mammogram, say at age 40, it could be determined whether the image was clear enough to justify regular screening.

The limitations of mammographic screening in younger women, however, should not be overlooked. The National Institutes of Health summarizes these limitations as false negatives (related to test sensitivity), false positives (related to specificity), overdiagnosis (actual positives that are not clinically significant), and the risk related to radiation.\(^4\)

This situation requires the clinician’s involvement and judgment to collect the relevant clinical information, determine the benefits and inconveniences for a given patient, communicate these considerations to her, and obtain her decision and consent for the appropriate diagnostic process. This is why all Canadian provinces allow medical prescription of screening for younger women, even though most of these programs do not systematically target them.\(^6\)

**Conclusion**

A large British study\(^7\) that is currently under way should determine much more accurately the efficacy of conventional mammography offered to all women starting at age 40. New screening techniques, such as magnetic resonance imaging\(^8\) and digital mammography,\(^9\) are options for the future, but have yet to be validated or offered widely.

While there are strong arguments in favour of widespread participation in conventional screening by women aged 50 to 69 years, younger women are entitled to targeted, judicious screening, not to systematic screening.\(^\star\)

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**KEY POINTS**

- In 1995, more breast cancer cases were diagnosed among women 40 to 49 years of age than among women 50 to 59 years of age.
- A Swedish study reported a 48% decrease in mortality due to screening women in their 40s; the overall decrease was 44%.
- The “harm” done by mammography screening has been overstated.
- Public policy is partially dictated by funding; make this clear to women so they can discuss the most appropriate screening regimen with their physicians.

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**KEY POINTS**

- While there are convincing data that screening for women aged 50 to 69 years is effective, the evidence for women aged 40 to 49 years is weak and the drawbacks are very real.
- The overall benefit of screening can be evaluated based on a woman’s risk profile and the usefulness of mammography demonstrated by an initial test.
- Family physicians are well positioned to evaluate the risk of cancer and the benefits of mammographic screening on a case-by-case basis.
mammography will likely be found to reduce mortality from breast cancer significantly. Since its risks are close to nil, recommending screening to your 40- to 49-year-old patients is safer than waiting until there is “proof of efficacy.”

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**References**


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_**YES**_

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**References**