

Patient preferences for breast cancer screening: a systematic review update to inform recommendations by the Canadian Task Force on Preventive Health Care

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What was the purpose of this review?

When developing recommendations, the task force needs to examine evidence from research studies on the impacts of screening on outcomes that will benefit individuals and on the harms of screening. Examples of benefits are reductions in overall and breast-cancer specific death, and reduced burden of cancer by being diagnosed at an earlier stage when treatment has less severe side effects. Examples of harms from screening are the need for additional testing to confirm no cancer exists, or a diagnosis of a cancer that would never have caused symptoms or illness in an individual's lifetime ("overdiagnosis"), both of which may lead to physical and psychological consequences and burden from the time and/or costs of further medical visits.

Once all the data on these outcomes is known, there is the need to "weigh" the size of the benefits and harms to determine whether, overall, screening is beneficial. To assist with this assessment, it is very useful to get information on how patients view the importance of the outcomes. For example, the prevention of one late-stage cancer (because of a cure from identifying this cancer at an early stage) may have a similar or a much different importance as the harm from one patient having an overdiagnosed cancer.

The task force can use feedback from patients and other clinicians (about what they've heard from patients) to help gather this information. They also look to research studies that have examined these views. That is what was done in this review. The same review team completed a similar review in 2017 for the previous recommendations, but this was updated to include more studies and look at preferences across more outcomes.

How was this review conducted?

The review team tried to locate all studies looking at how important the possible outcomes from screening are to patients. Three main types of information were used, from studies:

- i) examining the impact ("disutility") on one's quality of life (physical and mental health) for patients who have experienced one of the outcomes (e.g., need for additional testing, getting a diagnosis of cancer, undergoing treatment for late versus early stage cancer),
- ii) explaining specific outcomes from screening to people and asking them to rate their importance or to make trade-offs, for example about the highest number of people who could be overdiagnosed to prevent one other person's death from breast cancer,
- iii) providing people with estimates of the benefits and harms from screening (even if the information may over or underestimate the effects compared with how the task force evaluates the effects), using for example decision aids or other educational materials, and asking people whether screening would, overall, be acceptable.

After locating studies, the team collected data reported, assessed how well the studies were conducted, then made conclusions about the findings (by age group) including an assessment of how confident (e.g., low versus moderate "certainty") they were in the conclusions based on the relevant studies' quality and size, the consistency across studies, and the applicability of the data.

What were the key findings of the review?

82 studies were included. Overall, the review found that all of the examined outcomes related to screening are likely important for most patients of any age. Further, patients value receiving information on the likelihood that the outcomes will occur before making decisions about screening. There may be differences between people in whether they think the

benefits outweigh the harms from screening, that is, whether they think screening is beneficial overall. This is particularly the case for women 40 to 50 years of age for whom the effects may be relatively small compared with those aged 50 or older because of the lower occurrence of breast cancer in the younger women. Key findings for each type of studies mentioned above included:

- i) all of the possible outcomes from screening had an important impact on a patient's quality of life (disutility ≥ 0.04 on scale 0-1). Diagnosis and treatment of cancer (of any stage and including an overdiagnosed cancer) may (low certainty) be much more important than being recalled for more testing, especially when considering the shorter timeframe, the recall would likely impact one's life. Findings suggested that the impacts from treatment of an advanced versus early stage cancer (for example whether chemotherapy was needed) may be similar
- ii) from studies asking people to make trade-offs between specific outcomes, for patients ≥ 40 years, at least a majority ($>50\%$) and possibly a large majority ($>75\%$) probably (moderate certainty) accept up to six cases of overdiagnoses to prevent one death from breast cancer. Low certainty was found that **a)** among 50 to 69 year-olds (studies did not include people in their 40s), a large majority may think that reducing breast-cancer mortality is beneficial even if there is no impact on all-cause mortality, **b)** for patients ≥ 40 years, there may be considerable variation in preferences though a majority may accept that a few hundred among 1000 people experience a recall for more testing to prevent one death from breast cancer over 10 years, and **c)** for patients ≥ 40 years, a large majority may accept that at least 25 people experience a recall for more testing to prevent one advanced stage breast cancer
- iii) after providing participants with varying estimates of the benefits and harms from screening, across all age groups but most evident for women in their 40s, acceptability of screening went down as the overall benefits decreased in magnitude. When the overall benefit was estimated to be relatively low (i.e., 0.5 breast-cancer deaths prevented, 239-330 additional tests, and 2 to 10 overdiagnoses per 1000 screened), a majority of patients in their 40s may not weigh the benefits as greater than the harms from screening (low certainty evidence); that is, up to half may not choose to screen. For women in their 50s, a large majority think that screening is effective though the certainty about this was lower when studies presented effects at the lower end of screening effectiveness for this age group (e.g., 1 to 2 fewer breast-cancer deaths per 1000 screened). A large majority of patients aged 70-71 years who have recently screened probably think the benefits outweigh the harms for continuing to screen. A majority of women in their mid-70s to early 80s may prefer to continue screening, though the role of one's life expectancy on this preference was unclear.

What are the limitations of the findings?

Few studies included participants with diverse ethnicities or reported whether results would differ based on ethnicity or between those at lower versus higher risk for breast cancer. None of the studies reported on the difference in impact on quality of life for those able to receive partial mastectomy without any radiation or chemotherapy (for early stage cancer) compared with those requiring mastectomy together with one or more of these therapies (for later stage cancer that has not spread). Very few studies were conducted in Canada. For several of the findings, there was only low certainty evidence which indicates that further research could strengthen, or possibly change, the conclusions to some degree.

What was not examined in this review?

This review did not examine evidence or other sources of data (e.g., social media) about the general views of patients or the public about breast cancer screening when it was unclear whether and what information they were using to base their opinions. This review did not look at preferences about different types of screening (e.g., only using mammography or adding ultrasound or MRI) or timing of screening (e.g., every year versus every other year). It also did not examine barriers or facilitators to screening (e.g., accessibility issues), acceptability of screening to healthcare providers or other decision makers, equity or other considerations about which specific populations may have different outcomes from screening, or costs or other factors such as resource use from making any changes to current screening recommendations. These are important issues that the task force considers by using other information while deciding on their recommendations.

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