

# Breast Screening Saves Lives, But at a Cost, UK Panel Concludes

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Routine screening can lead to a 20% reduction in the relative risk for breast cancer death, although it can also lead to overdiagnosis, according to a review conducted by an independent panel in the United Kingdom and [published online](#) October 30 in the *Lancet*.

The review was initiated by Mike Richards, MD, the national cancer director for England, after a [fierce debate](#) in the United Kingdom over the benefits of breast cancer screening, leading to a leaflet inviting women for mammography to be rewritten.

These "polarized discussions are likely to have caused confusion among women about attending for breast screening," according to an [accompanying editorial](#) written by *Lancet* editors.

They say that this review should lay to rest the controversy surrounding the risks and benefits of breast cancer screening. "The panel's report, the latest and best available systematic review, shows that the UK breast screening program extends lives and that, overall, the benefits outweigh the harms," they write.

They add that this information must be disseminated in the media, through National Health Service screening programs, and from physicians to their patients. "Women need to have full and complete access to this latest evidence in order to make an informed choice about breast cancer screening," they conclude.

## "Extremely Important"

"It was extremely important to look at all the available evidence surrounding both the achievements and shortcomings of the UK breast screening programs in the wake of increasing debate over their effectiveness," said Sir Michael Marmot, MBBS, MPH, PhD, professor of epidemiology and public health and director of the Institute of Health Equity at University College in London, United Kingdom, who chaired the panel.

"The panel concluded that the screening programs have contributed to reducing deaths from breast cancer in women," Dr. Marmot said in a statement. "But they have also resulted in some overdiagnosis among women who go for screening," he added.

The review concluded that 1 cancer death can be prevented for every 235 women invited for screening. This means that 43 breast cancer deaths can be prevented for every 10,000 women 50 years of age who are invited to screening for the next 20 years.

However, the review also concluded that overdiagnosis occurs. Of the breast cancers diagnosed in screened women, 19% would not have caused any problems if they had not been diagnosed or treated (a rate of 129 per 10,000 women).

This 3-fold difference between the potential harm and benefits was highlighted in the press in the United Kingdom, with newspaper headlines proclaiming that for every woman whose life was saved, 3 others suffered from unnecessary treatment.

"It is now vital to give women information that is clear and accessible before they go for a mammogram so they can understand the potential harms and benefits of the process," Dr. Marmot said.

### **Benefit Appears to Outweigh Harms**

The panel relied primarily on data from randomized trials of breast cancer screening to estimate the benefits and harms related to screening mammography, but also reviewed evidence from observational studies. The focus of their analysis was the United Kingdom, where women 50 to 70 years of age are invited to be screened every 3 years.

They conducted a meta-analysis of 11 randomized trials, all undertaken 20 to 30 years ago. More contemporary estimates were obtained from observational studies.

Compared with control subjects, the relative risk for breast cancer mortality in screened women was 0.80 (95% confidence interval [CI], 0.73 to 0.89), which translates into a relative risk reduction of 20%.

In their analysis, the panel considered internal bias and the relevance of the trials, which were conducted decades ago. They concluded that 20% was a reasonable estimate of the relative risk reduction. The more reliable and recent observational studies generally showed a larger estimate of the benefit of screening, but bias was a factor.

Even though the data on overdiagnosis from reliable studies were limited, the panel concluded that for the roughly 307,000 women (50 to 52 years) who are invited each year to begin screening, just over 1% will have an overdiagnosed cancer in the subsequent 20 years.

Dr. Marmot explained that breast screening programs in the United Kingdom "probably prevent around 1300 breast cancer deaths every year." However, he pointed out that the data suggest that each year an estimated 4000 women are overdiagnosed as a result of screening.

In summary, the panel found a 20% reduction in mortality from breast cancer with screening, but an overdiagnosis rate of 19%. They also found that although 1307 deaths were prevented with screening (56 deaths per 10,000), 3971 women were overdiagnosed (168 overdiagnoses per 10,000). Stated another way, for every 1 death prevented with screening, 3 women were overdiagnosed.

Panel member Maggie Wilcox, who is a breast cancer survivor, emphasized the importance of having a patient be part of the review proceedings.

"Women have a right to ask questions and have them answered in way that makes sense to them," she said in a statement. "The key to the outcome of this review is to devise a way of explaining the pros and cons of breast screening to all women in a way they can understand and to arm anyone who is diagnosed with breast cancer with information that allows them to discuss treatment options with their consultant."

### **Panel Recommendations**

The panel makes recommendations for future research. They would like to see an ongoing meta-analysis of centrally collated individual patient data from all the randomized trials, randomized trials looking at risks and benefits of screening women younger than 50 years and older than 70 years, concerted attempts to provide reliable and up-to-date estimates of overdiagnosis, ways to better distinguish breast cancers that will cause harm during a woman's lifetime from those that will not, and a reassessment of the overall cost-effectiveness of breast cancer screening programs in the United Kingdom.

In a response to the review, Harpal Kumar, PhD, chief executive of Cancer Research UK, which funded the review along with the Department of Health, said that this "independent review shows that screening saves lives."

"Screening remains one of the best ways to spot the very early signs of breast cancer, at a stage when treatment is most likely to be successful," he explained. "Yet as the review shows, some cancers will be diagnosed and treated that would never have caused any harm. Clearly, everyone wants to minimize this, but because we can't yet tell which cancers are harmful and which are not, we cannot predict what will happen in an individual woman's case," he added.

"Taking all the evidence into account, Cancer Research UK recommends that women go for breast screening when invited," he said. "We hope that in the future, there will be a number of new techniques that we can use alongside the screening program to make it more sophisticated and reduce the number of women having unnecessary treatment," he noted.

"Until this is possible, we recommend that women who have had something unusual picked up through screening seek full advice and discuss all possible options with their breast cancer specialist team," he concluded.

"We urge the screening program to update the breast screening information leaflet in the light of the findings of the independent review," Dr. Kumar added, referring to the leaflet controversy.

*All panel members have disclosed no relevant financial relationships.*

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