Cochrane review on screening for breast cancer with mammography

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FROM ABSTRACT:

In 2000, we reported that there is no reliable evidence that screening for breast cancer reduces mortality.

As we discuss here, a Cochrane review has now confirmed and strengthened our previous findings.

The review also shows that breast-cancer mortality is a misleading outcome measure.

Finally, we use data supplemental to those in the Cochrane review to show that screening leads to more aggressive treatment.

THESE AUTHORs ALSO NOTE:

These authors previously assessed the results of the seven randomised trials of screening mammography, and “concluded that screening is unjustified because there is no reliable evidence that it reduces mortality.” (P.C. Gøtzsche and O. Olsen , Is screening for breast cancer with mammography justifiable?. Lancet 355 (2000), pp. 129-134).

In this Cochrane review the authors paid close attention to the standard dimensions of methodological quality of mammography screening trials, and “confirmed and strengthened our original conclusion.”

This review “provided evidence that assessment of cause of death is unreliable and biased in favour of screening,” because “uncertain causes of death were significantly more commonly ascribed to breast cancer than to other causes in the control group.”

“Treatment of early cancers by tumourectomy and radiotherapy might increase the likelihood that deaths among screen-detected breast cancer cases will be misclassified as deaths from other causes, particularly other cancers.”
The authors “noted that the two trials with medium-quality data failed to find an effect of screening on deaths ascribed to any cancer, including breast cancer.”

“The greater use of radiotherapy in screened women than in controls is expected to increase overall mortality because of cardiovascular adverse effects. These deaths were not counted as deaths related to screening in the trials we assessed.”

“The main outcome measure in the screening trials was breast-cancer mortality.”

“Howewer, we showed that the assumption that a demonstrated effect on breast-cancer mortality can be translated into a reduction in overall mortality rests on suppositions that are not correct. The only reliable mortality estimates are therefore those for overall mortality.”

Therefore, using overall mortality, the authors conclude: “The reliable evidence does not indicate any survival benefit of mass screening for breast cancer.”

“The two best trials failed to find an effect of screening on deaths ascribed to breast cancer after 13 years.”

“We have also confirmed, ... that screening leads to more aggressive treatment, increasing the number of mastectomies by about 20% and the number of mastectomies and tumourectomies by about 30%.”

“Screening identifies some slow-growing tumours that would never have developed into cancer in the women's remaining lifetimes, as well as cell changes that are histologically cancer but biologically benign.”

“Furthermore, carcinoma in situ does not always develop into invasive cancer, but since these early lesions are often diffuse, women are sometimes treated by bilateral mastectomy.”

“Therefore, the increase in surgery rates could also be an underestimate, since reoperations and operations in the contralateral breast seemed not to have been included.”

“Furthermore, ‘better’ diagnostic methods--eg, better mammograms--could lead to additional over-treatment because of detection of even more early or questionable lesions.”
Quality assurance programmes could possibly reduce the surgical activity to some degree, but the above problems cannot be avoided.

The authors note that their earlier report has been criticised, but that now “all relevant criticism has now been addressed in our review,” and they stand by their conclusions.

“We have provided detailed evidence on the mammography screening trials, and hope that women, clinicians, and policy-makers will consider these findings carefully when they decide whether or not to attend or support screening programmes.”

“Any hope or claim that screening mammography with more modern technologies than applied in these trials will reduce mortality without causing too much harm will have to be tested in large, well-conducted randomised trials with all-cause mortality as the primary outcome.”

**Screening mammography--an overview revisited:**

**Commentary**

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Richard Horton

THIS AUTHOR NOTES:

“When Peter Gøtzsche and Ole Olsen concluded last year that ‘screening for breast cancer with mammography is unjustified’, there was a storm of debate and criticism in national media and medical journals alike.”

“These investigators, working at the respected Nordic Cochrane Centre, had conducted a systematic review of randomised trials of screening mammography. Gøtzsche and Olsen found that the quality of many of these trials was poor. The best trials, they claimed, did not provide evidence of a reduction in either total or breast-cancer mortality.”

A criticism of the previous review by Gøtzsche and Olsen was that it was not a Cochrane Collaboration systematic review.

In this Cochrane review, Gøtzsche and Olsen “summarise their findings and write that they have confirmed and extended their earlier conclusions.”
“The Cochrane Collaboration has a rigorous and well-developed method for conducting systematic reviews. Cochrane reviews are of higher quality than reviews completed according to non-Cochrane protocols. It is for this reason that The Lancet is an enthusiastic partner of the Cochrane Collaboration.”

“But the process of collaboration within the Cochrane Breast Cancer Group has broken down badly in the case of the Gøtzsche and Olsen overview. The resulting tensions among colleagues indicate that even in the best organisations raw evidence alone is sometimes insufficient to influence opinion. When the Nordic investigators submitted their systematic review to the editors of the Breast Cancer Group, they found that their conclusions were unwelcome. Rather than supporting their Nordic colleagues in the publication of their research, the Cochrane Breast Cancer Group editors insisted that changes, which Gøtzsche and Olsen disagreed with, be made to the review if it was to be published in the Cochrane Library. These changes appear in the Cochrane review against the authors' wishes, but not in the version posted on The Lancet's website today. The Cochrane editors added statements in the main results section of the abstract, which lent support to arguments in favour of screening, and excluded data about the effects of screening on subsequent treatment despite the fact that inclusion of these data was envisaged in the published protocol of the review.”

“According to its ten key principles, the Cochrane Collaboration bases its scientific reputation on minimising bias and ensuring quality. But interference by Cochrane editors to insert what the authors of the overview believe to be invalid analyses erodes the academic freedom of these investigators. Editors make recommendations to authors all the time, but editors who insist on inappropriate analyses that seem to support a particular point of view hurt not only themselves and the institution they represent but also the credibility of the science they claim to value.”

“At present, there is no reliable evidence from large randomised trials to support screening mammography programmes.”

KEY POINTS FROM DAN MURPHY:

(1) There is no reliable evidence to support screening mammography in order to reduce overall mortality.

(2) Screening mammography leads to more aggressive treatment intervention, which may be unnecessary and /or actually harmful.
(3) By its very nature, earlier detection as a consequence of advances in technology will not alter the problem of more aggressive treatment intervention, which again may be unnecessary and/or actually harmful.

(4) These conclusions remain extremely controversial and contentious among experts in the field.

(5) For all of you whose life is affected by this article, you may be interested to know that an article with similar conclusions, by a different author, with more academic reasons for the finding, was published in 1995. I have included the abstract, as follows:

**Screening mammography and public health policy: the need for perspective.**

*The Lancet: 1995 Jul 1;346(8966):29-32*

Wright CJ, Mueller CB.

The early trials of screening mammography, reporting 30% relative reduction in mortality from breast cancer in women over 50 years of age, led to strong professional and public demand for screening programmes. There has been little publicity about the subsequent trials showing no significant benefit in any age group, or about the harm and costs associated with screening mammography. For women under 50, there is a reluctant consensus that screening is not beneficial, but there is increasing pressure for publicly funded programmes for older women. When analysed in terms of population benefit, the randomised controlled prospective trials showed that the numbers of women screened to achieve one less death per year ranged from 7086 (Health Insurance Plan of New York), to 63,264 (Malmo), to infinity (Canadian National Breast Screening Study). About 5% of screening mammograms are positive or suspicious, and of these 80-93% are false positives that cause much unnecessary anxiety and further procedures including surgery. False reassurance by negative mammography occurs in 10-15% of women with breast cancer that will manifest clinically within a year. Our calculations confirm others that the mean annual cost per life “saved” is around $1-2 million (558,000 pounds). In the allocation of limited resources, public health policy on a proposed mass population intervention must be based on a critical analysis of benefits, harm, and cost. Since the benefit achieved is marginal, the harm caused is substantial, and the costs incurred are enormous, we suggest that public funding for breast cancer screening in any age group is not justifiable.