Opposing views

Do the benefits of screening mammography outweigh the

Yes Public health adviser David Roder and Cancer Council Australia CEO Ian Olver believe the reduction in breast cancer mortality in Australia reflects both treatment and screening effects

All screening programs should be assessed for their benefits and risks, including the extent of overdiagnosis. Recently, Burton and colleagues concluded that almost 60% of the Australian decline in breast cancer mortality since 1991 could not be due to BreastScreen Australia (the free national mammographic program), attributing most of the decline to adjuvant hormonal and chemotherapy.[1]

Questions around attribution are not new. There has been no formal modelling in Australia, but modelling funded by the National Cancer Institute in the United States suggested that about half the US breast cancer mortality reduction may be due to adjuvant therapy and about half to screening.[2]

Age-standardised breast cancer mortality rates have decreased by about 29% among Australian women since the 1989–1991 period, when organised mammography screening (now known as BreastScreen) began.[3] Compared with a linear projection of mortality increases in the 1980s, the observed rate in 2007 was about 38% lower.[3] Observations on women outside the screening age range show that factors other than screening would have contributed to this decline, but there is also evidence for an important BreastScreen effect.[3]

Three evaluations of mammography screening of Australian women aged 50–69 years, including the formal BreastScreen Australia Evaluation Plan, indicated reductions in breast cancer mortality of between 30% and 47% from screening.[3] This range is broadly consistent with trial evidence where a reduction of around 35% was estimated by an expert working group of the International Agency for Research on Cancer (IARC).[4] A 25% reduction in breast cancer was estimated by Australian researchers from a meta-analysis of trial data for all ages.[5]

Collective results of 35 studies in other countries are similar to the IARC's 35% reduction estimate,[3,4] although individual study results varied from little or no benefit to reductions of up to 76%.[3] With present participation rates in Australia's BreastScreen program, a 35% reduction in breast cancer mortality in participants would correspond with an estimated 270 fewer breast cancer deaths a year in all Australian women aged 55–74 years. (Note that this allows for a time lag of 5 years in deaths.)

Breast cancer incidence rates rose in Australia following the introduction of BreastScreen.[3] The extent to which this reflected lead-time effects of screening, changes in pathology and other diagnostic practices, overdiagnosis, and real increases due to changes in underlying risk factors (eg, reproductive behaviour, body weight, alcohol consumption and use of hormone replacement therapy) is unknown. Increases in incidence were already occurring in the 1980s before BreastScreen introduction,[3] but the contributions of increased use of private mammography and changes in risk factors during that period are not known. The increase in breast cancer mortality rates in the 1980s is suggestive of real increases in underlying incidence.[3]

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There is concern that screening may result in detection of cancers that would never have caused symptoms or death in a woman's lifetime (ie, overdiagnosis).[3] There is no consensus on levels of overdiagnosis, with estimates worldwide varying from close to zero to over 30% of diagnosed cancers, irrespective of whether in-situ lesions were included.[3] The estimates vary so widely that interpretation is difficult. Research is needed to better define levels of overdiagnosis and, ideally, to develop more effective means of determining at diagnosis the potential for screen-detected and other breast cancers to progress.

In summary, it is likely that the reduction in breast cancer mortality in Australia reflects both treatment and screening effects. The relative contribution of each to the overall reduction is not clear, although there is evidence that both would be contributing substantially. Women should be informed of both the risks and the benefits of screening, including the uncertainty around overdiagnosis. However, present screening participation levels of 50–69-year-olds in BreastScreen would be consistent with a significant annual reduction in breast cancer mortality. Levels of overdiagnosis are uncertain and require better definition. Means of better predicting the likelihood of progression of untreated in-situ lesions and early invasive breast cancers to advanced disease are needed, and this need is likely to increase as more sensitive screening and diagnostic technologies are developed.

David M Roder
PhD,
Senior Public Health Advisor[1]

Ian N Olver
MD, PhD, FRACP,
Chief Executive Officer[2]

1 Cancer Australia, Sydney, NSW.
2 Cancer Council Australia, Sydney, NSW.

ian.olver@cancer.org.au

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