



Screening for breast cancer — finding a place between common sense and the evidence base

A recent analysis of 28 breast cancer websites by the Nordic Cochrane Group found considerable bias towards screening, without the sites giving cautionary information on the harms of overdiagnosis and overtreatment.¹ The Cochrane Group has also recently questioned the validity of the Swedish screening trials, suggesting that their methodology was flawed, and survival benefit not shown.² Their fighting-talk statement concluded that screening was not warranted 'because there is no reliable evidence that it reduces mortality'. Thus the Cochrane cat has twice disturbed the screening pigeons. Just what is the evidence that breast cancer screening is a life saver?

There is incontrovertible logic to screening for breast cancer in well women. It would seem patently obvious that the smaller a cancer is at discovery (and treatment), the better the prognosis. It would therefore follow that breast self-examination (BSE) should be taught and encouraged. It should also follow that regular clinical examination by the patient's practitioner should yield early tumours, and better prognosis. Further, and even better, surely the optimal prognosis would be obtained by detecting impalpable, subclinical tumours using mammography? All of this would translate smoothly and easily into less drastic surgery, less radiotherapy and chemotherapy, and improved survival.

It is now nearly 40 years since the idea of screening was proposed, and the proposal tested by a randomised trial.³ Much has followed and hundreds of thousands of women have been screened using one modality or another. Trials have been analysed, re-analysed and meta-analysed. It should be expected that by now there would be consensus on the most useful methods of screening, and their outcome. This is not the case. Controversy continues to dog all types of screening. It might be useful to summarise the evidence base in simple and practical terms, and evaluate it, before forming an opinion on the subject.

Breast awareness, and regular BSE, should yield smaller tumours and better prognosis. To this end campaigns have been launched, women taught the techniques, and pamphlets and videos distributed. The results have been conflicting at best, and a failure at worst. It would appear that few women carry out BSE, even after training. For example, only 28% of Irish women did so,⁴ as did 21% of American female physicians.⁵ The reasons for their lack of compliance are various, but a major psychological deterrent must be the unwillingness to seek that which they do not wish to find. There have been only two 'pure' clinical trials testing BSE against a control group without BSE, using the development of breast cancer and death as the endpoints for comparison. Both trials had robust numbers: the St Petersburg/World Health

Organisation (WHO) trial involved over 50 000 women in each investigative arm,⁶ and the Shanghai trial over 130 000.⁷ Neither trial demonstrated survival benefit. Perhaps the women of Shanghai and St Petersburg had the same problem as their sisters in Ireland, or the female physicians in America? They simply did not wish to find cancer? Whatever the reasons, and despite the 'feel-good' and 'right-thing-to-do' aspects, there would appear to be no evidence that BSE helps at all.

It would seem to be an obvious and good thing if general practitioners and primary health care workers examined their patients' breasts regularly. There have been no scientific trials comparing cancer detection in women so examined with women who were not, nor will there ever be such trials. The closest one is able to get to evidence is by deduction from the US National breast and cervical cancer early detection programme where 752 081 women underwent both breast examination and mammography.⁸ Of every 1 000 women with normal mammograms, 7.4 had abnormal clinical findings requiring further investigation. It is not clear how many of these women were found to have cancer, but the overall number of cancers detected was very small. It can therefore be deduced that in certain cases clinical examination is superior to mammography, and useful, but whether this would translate into survival is unknown.

Five groups of prospective randomised trials have tested screening mammography, are regarded as robust and mature, and have been the subject of numerous analyses and meta-analyses. These are the American Health Insurance Plan, the five Swedish trials, the Edinburgh trial, the two Canadian trials and the Finnish trial. In essence, all but one trial (Canada 2, under 50 years) demonstrated survival benefit for screening mammography. There has been much criticism of these trials both with regard to their science, and also the manner in which they have been interpreted and reported by advocacy groups and the lay press. The most recent criticism has been in the form of an analysis of the Swedish trials by the Cochrane group, principally in the domains of trial design, structure, methods of randomisation and exclusions.² These criticisms have been hotly refuted by the Swedish screeners, who claimed progressive reduction in breast cancer deaths in their country, and attributed this — correctly or incorrectly — to their screening.⁹ It must be conceded that both sides have a point. It would be expected that trials planned in the late 1970s and 1980s would have methodology that would not withstand the rigour of trial inspection several decades later. Nonetheless, it must also be regarded as incontrovertibly evident that mammographic screening saved women's lives. All but one trial show reduction in breast cancer death, and the meta-analyses robustly support this.



The questions that remain relate to the magnitude of the benefit, and its cost. A frequent statistic used is '30% reduction in breast cancer with screening mammography'. This statistic has been derived from the Swedish trials, and has been dissected at length.¹⁰ Were 10 000 women to be screened, 1 500 (5 - 10%) would be recalled, and 137 (1.37%) would be found to have breast cancer. There would be 11 (0.11%) deaths from the disease in the screened group. In the unscreened control group (using the Swedish data) there would be 15 deaths. Thus, 4 women of the 10 000 would have benefited, hence the '30% reduction'. The cost and harms are significant — the cost of each life saved, in terms of the overall cost of screening all these women, is estimated to be in the region of \$1.2 million.¹⁰ The harms arise from false-positive results and the unnecessary investigations and anxiety that follow. In fact, the majority of women recalled for further mammographic views or biopsy will not harbour cancer, thereby engendering considerable unnecessary additional radiology, biopsies, surgery and pathology.

Thus, common sense would tell us that BSE and regular checkups by a medical practitioner are good things to do, but the evidence base tells us that doing these good things will not reduce cancer deaths. Nonetheless, we should certainly not abandon these activities as they probably elevate the elusive and not measurable 'breast awareness', bringing a woman to her doctor at an earlier stage when she notices an abnormality. Mammography is probably also a good thing to do, although it is expensive, and the cancer death reduction is extremely small.

The current recommendation in the UK is for 3-yearly screening over the age of 50 years. Practitioners who recommend more frequent screening and starting at an earlier age (other than in women with a positive family history) are probably, as the Editor of the *British Medical Journal*, Richard Smith calls them, members of the 'screening industry'.¹¹

D M Dent

E Panieri

*Department of Surgery
Groote Schuur Hospital and University of Cape Town*

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