E5. Discussion topics in breast cancer screening

Cristopher J.M. de Wolf[a], Antonio Ponti[b], A. Robin M. Wilson[c,*]

[a] Medical director of the breast screening programme in canton Fribourg. Consultant Public Health – ADSAN: Agence pour le développement et évaluation des politiques de santé, Switzerland
[b] CPO Piemonte, Torino, Italy
[c] King's College Hospital, Denmark Hill, London, United Kingdom

Overview of European breast cancer screening results (Chris de Wolf)

The Ministers of Health of the European Union at their Council meeting in December 2003 unanimously adopted a recommendation on cancer screening and recommended among other interventions the implementation of breast cancer screening programmes in accordance with the European Guidelines for Quality Assurance in Mammography Screening (fourth edition).[1,2] Furthermore, the Council invited the European Commission to report on the implementation of the breast cancer screening programmes in 2007.

Many western European countries have meanwhile established nationally or regionally organised breast cancer screening programmes, reaching more than 75% of the target group overall. Most programmes focus on screening women aged 50–69. All programmes invite women in this age group to have a mammography every second year, with the exception of the UK (invitation every third year). The proportion of eligible women being effectively screened in organised breast cancer screening programmes varies. Most programmes have intermediate to high participation rates (50% to more than 80%). In a majority of countries the costs of the screening are totally covered by health insurance, with no extra funding needed and no co-payment by women.

There is cumulating evidence of the impact of long-standing breast cancer screening programmes (Denmark, Finland, the Netherlands, Sweden and the United Kingdom) on breast cancer mortality. The decrease observed is similar to the reduction measured in the randomised controlled trials. Its magnitude depends on the evaluation design; the length of the intervention; participation rates achieved; and, estimated contribution of adjuvant therapy to prolonged survival. This, however, does not yet represent the maximum cumulative effect that occurs 25 years after onset of a screening programme.

Overtreatment: can it be avoided? (Antonio Ponti)

Despite population screening for breast screening being available in most developed countries for more than 20 years, there remain a number of unresolved issues. There is clear evidence that the mortality from breast cancer has fallen by around 30% over the past 20 years.[3] This has been achieved through a combination of earlier diagnosis and better treatment. The use of Tamoxifen has probably been a major contributor but quantifiying the influence of mammographic screening remains controversial.

A particular issue in screening is the phenomenon of over-diagnosis – defined as the detection (and treatment) of breast cancer that would not have become clinically apparent in the lifetime of the patient had she not attended for screening.[4] These breast cancers are important because they inevitably lead to over-treatment and other morbidity are associated with falsely high calculations of the mortality benefit of screening and incur potentially avoidable increased health care costs. This has been a subject of considerable debate over recent years and is an issue on which there are widely differing views on its extent and importance.[4–8] There is no doubt that some over-diagnosis does occur in breast screening but there is no agreement on how many screen-detected cancers are in this category. The estimates range from 4 to 25% of screen detected breast cancers. Low-grade ductal carcinoma *in situ* (DCIS) and some special type invasive breast cancers are likely to account for most over-diagnosis, particularly if these cancers are diagnosed in older women (above the age of 70 years). The data in the recent review of the Malmo screening trial suggests that for each life saved through early detection by screening, two women will be over-diagnosed to have breast cancer.

Can anything be done to minimise over-diagnosis and over-treatment? Careful thought must be given to offering screening to older women and ensuring that they are aware of the downsides of screening and that they are more likely to experience over-diagnosis and as a result possible unnecessary treatment. In the future it is likely that cellular biology assessment techniques will allow for differentiation between those early breast cancers that

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are the obligate precursors of life threatening disease and those that are not. Furthermore, the monitoring of diagnosis and treatment of screen detected breast cancer [2,9–10] and the establishment of specialist breast units applying best practice and multidisciplinary care [11] are instrumental for minimising over-treatment like benign open biopsies, unnecessary radical surgery on the breast or excessive use of axillary operations.

There remain significant issues in breast cancer screening but current data suggests that the benefits are significantly greater than the harmful effects. With continuing improvements in breast cancer prevention and treatment, the time will come when this may no longer be the case.

Conflict of interest statement

None declared.

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