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Point of View

The Breast Screening Controversy

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INTRODUCTION

EARLY IN September of 1995, there was a brief media frenzy following sensational headlines in *The Sunday Times* (U.K.) which suggested that I had declared "the breast test useless". *The Sunday Times* and the tabloids (including *The Guardian*) picked up on this story trying to develop the theme that on the one hand I was a misogynist and on the other hand that I was trying to put a value on a woman's life. This did little justice to a complex and sensitive issue and it was left to the columnists in *The Times*, *Telegraph* and *Independent* to try to set the matter straight. I will let others judge whether or not I am a misogynist. As far as the second slander is concerned, my wife and daughters are the most precious assets in my life and it would be a very foolish health economist who would attempt to set a value on mothers, home-builders and fifty per cent of the work force of the EC.

The serious arguments can be looked upon in two ways. First, a harm–benefit analysis for the individual woman invited for screening; does the chance of a small benefit in reducing the risk of dying of breast cancer compensate for the undoubted harms which result from false alarms and unnecessary interventions?

Secondly, the global health economic question of the Programme's cost effectiveness to the National Health Service. There are finite resources available for healthcare. No activity within the National Health Service should be protected from scrutiny, and all I was asking in my letter to the *Lancet* was whether the money spent on population screening would save more lives if these scarce resources were redirected to the more efficient care of the symptomatic women, with greater spending on research into improving treatment for women already diagnosed as suffering from breast cancer [1].

HARM–BENEFIT ANALYSIS

A woman in the age group 50–64 has a 1.8 per 1 000 risk of developing breast cancer each year. We can round this up and say that her risk of dying of breast cancer over a 10-year period is approximately half that of the incidence of the disease, in other words 1%. Taking the best case estimates for the benefits of screening, it could be argued that one in three of these deaths could be prevented. In other words, about 0.3% of women invited for screening over a decade would be saved from a premature death. Against this benefit has to be balanced the undoubted harm of the anxieties that are generated, the false alarms, the unnecessary biopsies and the diagnosis of borderline pathology [2]. This area is most problematical. Post mortem studies of women dying from unrelated causes have suggested that perhaps only one in four or one in five cases of *in situ* carcinoma would progress to invasive disease in that woman's lifetime [3]. The other women with the label "duct carcinoma *in situ*" carry the stigma of breast cancer for the rest of their lives, they have a disease where there is great uncertainty about its treatment so there is every chance she could be overtreated, and she may be denied life insurance, health insurance, or a mortgage. Furthermore, even those women diagnosed with invasive breast cancer only benefit in a minority of cases. The others will merely extend their period of observation and this has been estimated as a lead time of say 2 years. Putting it another way, some of these women will be predetermined to die in any case and others would have been cured if their disease had presented clinically. All they gain is an additional 2 years' knowledge that they have breast cancer without anything to show for it (it is arguable though that many of these women might enjoy conservative surgery rather than a mastectomy). It is often stated that if nothing else, screening offers reassurance, yet one must ask, who generated the anxiety in the first place? Surely the marketing initiative for the screening programme must carry some of that blame. Just how much reassurance does a woman get with a normal screen. In the 3 year period betwen one screen and another, six per thousand women would normally develop breast cancer. A negative screen can provide false reassurance, and, with the current interval cancer rate (i.e. the cancers that become palpable lumps between one negative screen and the next scheduled screen), we might expect approximately three per thousand women to develop breast cancer in the interval after a negative mammogram [4]. In other words, the additional reassurance that a normal mammogram provides is 0.3%. It might be that the individual woman faced with these statistics would accept the invitation to screen out of a sense

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of enlightened self interest or public spiritidness. This, indeed, is her prerogative, but should only be exercised when the choice is truly informed. Given this informed choice, it could well be a rational decision to decline the invitation to attend the screening unit. Therefore, coercing women to attend with a one-sided interpretation of the statistics, or demanding of the "non-compliant" an explanation for their "irresponsible" behaviour is an example of health fascism. Or as one lady journalist put it "I was not invited to be screened, but summoned"!

COST-EFFECTIVENESS

The cost in the U.K. of the NHS Screening Programme is £27 000 000 a year, a relatively small component of the NHS budget, but in order to calculate the cost-effectiveness, the bottom line has to be the cost of saving an individual woman's life, and then a calculation as to whether this money could be spent more efficiently to save a greater number of lives. The health economic argument is complex and confusing with estimates varying between £27 000 and £1 000 000 per life saved [1, 5, 6]. At the same time, we have become aware that women with breast cancer face a lottery dependent on which hospital they are referred to, and there is now good evidence that treatment within a super-specialist centre can be associated with a significant improvement in survival [7]. The recent report from the Select Committee of Health at the House of Commons has recommended the establishment of a network of specialist clinics throughout the country to provide optimal care for women presenting with the disease, yet this will cost money [8]. I sincerely hope that new monies will be found by the Department of Health to fund this initiative, yet I accept there are finite sums available and there has to be a curb on public spending. In this circumstance, I would think it right and just to translate the precious resources from the Breast Screening Programme to the care of the symptomatic women. If nothing else, the U.K. Breast Screening Programme has raised the standards of mammography, cytology and surgery which is already cross-fertilising the services for symptomatic women.

SHOULD WE EXTEND THE AGE GROUP FOR SCREENING?

The NHS Screening Programme decision to invite women aged 50–64 was based on a sound cost-effectiveness analysis on the available evidence by the Committee chaired by Sir Patrick Forrest in 1987. Things have moved on since then and there is now much demand to extend the age groups for screening, either downwards to start at the age of 40, or upwards to finish at the age of 70. I have strongly held views on both these suggestions which might appear contradictory.

I fully endorse the recommendations of the Select Committee on Breast Cancer Services that the Programme should be extended out to 69 [8]. The reason for this is that the overview of all the Swedish trials of screening has shown that the mortality reduction of approximately 25–30% persists in women up to the age of 70 offered screening on a population basis. Breast cancer is more common in the age group 64–70 than in the younger age groups, with a detection rate of close to 10/1000 at a prevalent round of screening compared with approximately 6/1000 in the younger age groups [9]. Furthermore, the breasts at this age are mostly replaced by fatty tissue and are therefore largely radiolucent, so the diagnosis is much easier, the specificity of the test better, and the likelihood of false alarms and unnecessary biopsies much less. Therefore, the harm–benefit equation is much more favourable.

In contrast, the case for screening the younger women is extremely difficult to sustain. As yet, none of the trials or overviews of such trials have shown a significant benefit in mortality reduction for screening the younger age groups, although a best case estimate has suggested the potential for a 20% reduction in breast cancer related mortality [10]. The current UKCCCR Trial is studying a large cohort of women aged 40–41 who are randomised to have screening or not. The power calculations for this study allow the detection of this 20% improvement, but what does that mean in term of cost–benefit analysis for the health economist or harm–benefit analysis for the individual woman? A woman of 40 has a 1/1000 risk of developing breast cancer a year, that is 1% over the decade. Once again, let us assume that half of these will die of the disease so the 20% reduction that we are looking for is in fact 20% of 0.5% which equals 0.1%. In other words, only 1/1000 women screened between the age of 40 and 50 might benefit from the intervention assuming it can be proven to work. Set against that is the difficulty of diagnosing breast cancer in the dense breasts of the premenopausal women, the increased number of false alarms, the high benign to malignant biopsy rate and the greater detection of borderline pathology [11]. I cannot believe that this makes any kind of sense and I would urge the funding bodies for this Trial to carefully scrutinise the results so far and be ready to abort the Trial without worrying too much about saving face, and redirect the large sums of money saved to more profitable lines of breast cancer research.

RESEARCH

Finally, I am dismayed by the chronic shortage of funding for breast cancer research. This is largely dependent on the cancer charities and the Medical Research Council who at the moment cannot even afford to fund alpha rated projects. Teams are currently being dismantled and talented scientists are either leaving the country or being tempted into industry. The sums currently being spent on research into improving the techniques of breast cancer screening are of the order of all other money available for clinical research in all cancers through the Department of Health research and development initiative. We have many promising new treatments on line waiting to be tested in clinical trials, yet this activity is very expensive and as such, progress in treatment is chronically impeded. If even one of these promising treatments provided the pay off of Tamoxifen in the past, then we could enjoy an equally great benefit for breast cancer mortality reduction as the Screening Programme without inconveniencing and frightening the population of well women.

In a recent letter to the *Lancet*, Valerie Beral and her colleagues described a dramatic decrease in breast cancer mortality in the United Kingdom starting in 1985 [12]. A press release from the NHSBSP was quick to claim credit in part for this fall. Clearly this could not be the case as the Screening Programme was not fully operational until 1990 and we cannot expect a pay off until the end of the millennium. Furthermore, the fall in mortality has affected all age bands, not just those invited to screening. I believe this encouraging trend dates from the first world overview of trials adjuvant therapy for early breast cancer. This demonstrated that cytotoxic chemotherapy and Tamoxifen were each capable of reducing mortality by 25% over a 10 year period of follow-up.

The widespread adoption of the results of the Research & Development Programme 1970–1985 is now saving 1500 lives a year [13].

So once again I must pose the tough rhetorical question—accepting finite resources in the real world, could more lives be saved by spending the screening funds on improving the delivery of specialist services or researching novel therapies? To pose this question does not mean you hate women or wish to place a value on their lives, but might suggest one has a deeper understanding of the global issues of breast cancer rather than the tunnel vision of a screening zealot [14].

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