

Breast Screening in India: A UK Perspective on the Practicalities

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Abstract This paper is offered as an Editorial, providing a UK perspective on discussions about the merits of a Breast Screening programme in India, based upon the UK and European experience.

Keywords Breast screening · India

Breast cancer is a significant cause of morbidity and mortality across the world. It is primarily a disease of age, and the incidence increases significantly in the later years of life. Thus, as socio-economic conditions and life expectancy improve, so does the volume of disease that requires treatment increase, and so do the expectations of the population increase.

Unlike many cancer types, breast cancer is a curious and unpredictable disease both in response to treatment and in patterns of late recurrence, where apparent “cures” can be confounded by late relapse even decades after the initial treatment. Such indices of prognosis and outcome as we do have, including pathological factors such as tumour grade and stage; ER, PR, Her2 receptor status and nodal status; are incomplete predictors of the outcome of individual patients.

Logic dictates that earlier diagnosis and treatment should interrupt the primary-metastasis progression, and indeed there is considerable evidence that the resection of small,

impalpable, low grade, node negative tumours is associated with excellent survival. Moreover, there is considerable circumstantial evidence that invasive breast cancers have a pre-invasive form, ductal carcinoma in situ, whose surgical excision should pre-empt the development of invasive disease completely.

Conversely, the presentation of palpable, late stage disease, as is often the case in India and is still the case from time to time in the developed health economies, is associated with poor outcomes and early death.

Evidence from the Swedish Two Counties Trial and the US Health Improvement Programme studies in the 1970s and 1980s persuaded the British Government to introduce and fund the National Breast Screening Programme at the end of the 1980s on the basis of a report provided by Professor Sir Patrick Forrest [1].

This model has been taken up by many developed health economies. A detailed cost-benefit analysis indicated that the maximum life gain could be secured by triennial (every 3 years) mammographic screening for the 50–64 years of age female population within a rigorous nationwide quality assurance programme, and in the UK the upper age range has subsequently been extended to 73 years.

It is important to understand that it was always recognised that the absolute cancer detection rates would not be large. They were of the order of 100 abnormal lesions detected per 25,000 women screened, on the basis that the programme would be subject to regular review and that public uptake rates remained at 70% or more in each screening round. The absolute gains in life expectancy and the additional quality of life for women whose breast cancers were detected at an early stage would be difficult to prove, and there was always a political as well as an economic and humanitarian judgement in the allocation of funds and human resources to the programme.

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The UK Breast Screening Programme is community based, in that women who are known to be resident in each defined screening area from primary health care records are invited by posted letter to attend for mammography, most commonly in one of the mobile screening units built on articulated lorries which park at various locations around the catchment area, on a three yearly cycle. The mammograms are read at a regional hospital based screening centre, and women with suspicious lesions are recalled for further examination, imaging, cytological and histological diagnosis by core biopsy. From this group, patients with significant abnormal lesions, ductal carcinoma in situ, or proven invasive cancers proceed to definitive treatment.

Most clinicians involved with the screening programme would accept that the programme has been beneficial in increasing awareness of breast cancer and in reducing the frequency of presentation of advanced cancers. The programme, which is free to the public at the point of use, is popular with the public, although it does generate additional anxiety among women who are recalled for further investigation. Nevertheless, some 25 years after the initiation of the programme, there remains controversy as to the true benefits of the programme, and there are reasonable arguments that cannot be dismissed [2–4]. A proportion of the lesions detected prove to be complex benign lesions such as radial scars, or foci of low grade ductal and lobular carcinoma in situ, whose natural history and potential for long term harm is uncertain.

The health benefits secured in the detection of small, clinically impalpable invasive carcinomas also come at a significant financial cost in the assessment of the large, mammographically normal population. Costs which must be set against the value of gains in the time and quality of life for those patients whose tumour have been detected within the screening programme include:

- the collation and administration of the population database;
- the purchase, staffing and running costs of the community screening vehicles;

the cost of mammographic equipment and conventional silver films or digital imaging and processing equipment;

- the costs of building and running the hospital screening centres, and their staffing with clerical officers, radiographers and specialist radiologists to review the large number of mammograms so generated.

Turning to the Indian scenario, we are aware that western educated Indian clinicians who are seeking to develop a specialist breast cancer practice will feel obliged to argue for the introduction of a similarly configured screening programme for Indian women. However, the numbers of Indian women in the screenable population are huge. They

are massively so in the rural population of some 900 million people, many of whom lack access to Western standards of primary medical care, let alone the sophisticated hospital services on which the breast screening programmes are predicated.

The population demographics of rural Indian women will be very different from those for which the Western Screening Programmes were designed. This population currently has a shorter life expectancy, has more children and is exposed to diseases and conditions which are not so prevalent in Europe and the USA. These factors may substantially alter the risk and cost-benefit ratios for the universal or selective screening of Indian women, even with lower labour costs and digital mammography.

The situation is somewhat different in metropolitan India, where a growing middle class with access to Western style private medical provision, and who have the disposable income required to pay for a breast assessment service either of a defined age group (so called opportunistic screening), and/or for the investigation of breast symptoms. A programme centred around this cohort of women would allow the progressive development of the expertise and the infrastructure to allow research into the development of a robust screening programme to assess which women should be targetted. This may inform whether a programme rolled out to rural areas would be of value.

The prime purpose of any breast screening programme remains the early detection and treatment of invasive breast cancer, in order to reduce disease morbidity and mortality. Breast cancer in India generally presents at a much larger size (mean tumour size 4 cm) and later stage than in the West, and a public education programme would make a significant contribution to any future selective or universal screening programme.

To this end, much can be done to address the cultural, knowledge and awareness constraints of rural women and of rural health practitioners, many of whom are not medically qualified. The near universal penetration of television and mobile phones into Indian households provides cost-effective opportunities for imaginative health education programmes, and for the earlier presentation of patients to “call centred” health providers, as but an example.

The growing and aging Indian population, and the rapid rise in expectations which will follow from the information technology revolution, will put huge pressure upon politicians, treasuries and clinicians to fund better and earlier cancer detection programmes. Breast cancer in particular generates huge emotional pressures which can be readily exploited to secure resources for this particular patient group at the expense of allocations for other pressing health needs. We would urge that any steps and pressures towards a universal breast screening programme in India be tempered

by a realistic and staged approach, which focussed initially upon:

- a. general improvements in health education and primary care provision in the rural community, including the education of rural practitioners and “quacks” to recognise the signs of cancer and to ensure appropriate onward referral without delay.
- b. the progressive introduction of centrally monitored, privately funded specialist multidisciplinary metropolitan breast screening and treatment centres, and novel test programmes in rural areas. These will allow the expansion in the necessary professional skills and procedures with time as the economy grows and as more resources become available.

Through this approach, a cost effective and progressively more efficient breast cancer screening and treatment service should emerge with time; with the long term goal of delivering

the best possible diagnostic and therapeutic service to the largest at risk population with limited resources, for which there are many proper and competing demands.

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