

# EDUCATIONAL REVIEW ARTICLE

## Screening for Breast Cancer: an Overview

HM Dobson

Clinical Director, West of Scotland Breast Screening Service, Stock Exchange Court, 77 Nelson Mandela Place, Glasgow G2 1QT

### Correspondence to

HM Dobson, Clinical Director, West of Scotland Breast Screening Service, Stock Exchange Court, 77 Nelson Mandela Place, Glasgow G2 1QT

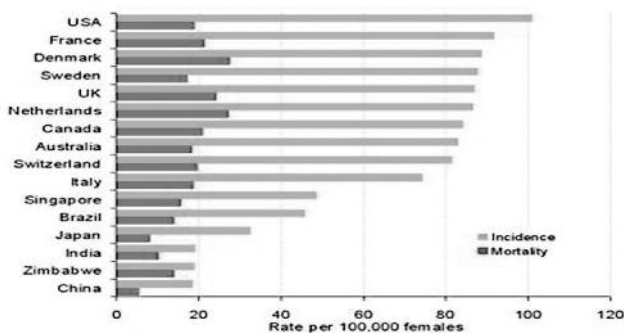
### Introduction

The subject of breast cancer is highly emotive and rarely far from public scrutiny. Historically, the disease was perceived not only by lay people but also health professionals as common, with one certain outcome, namely death. As recently as the late 1980s/early 1990s, there was a general belief that advances in treatment were few and that treatment at an early stage was "useless".<sup>1,2,3,4</sup> Improvement in overall breast cancer survival is now established<sup>5,6</sup> and most particularly, the outcome of early stage disease with 15 year survival of screen detected invasive but node negative disease, screen detected invasive disease measuring <10mm and screen detected non-invasive disease being comparable to that of the general population.<sup>7</sup> Whilst acknowledging that such changes will result from a number of factors including age cohort effect,<sup>8</sup> clinical management by specialist breast teams<sup>9</sup> and developments in treatment, the role of early detection through population screening has to be credited.

### Breast Cancer: The Facts

The United Kingdom (UK) has one of the poorest breast cancer records in the world.

**Figure 1: Age Standardised (world) Incident and Mortality Rates, Female Breast Cancer in Selected Countries, 2002 Estimates**



Source: Cancer Research UK

Statistics for the United Kingdom show that:  
(Source: Cancer Research UK)

1. The number of new cases of breast cancer diagnosed last year is 44,000;
2. The number of deaths from breast cancer in the same time period is 9,000;

3. At some time in their lives one adult woman in nine will develop breast cancer;
4. The incidence of breast cancer is rising.

The cause of breast cancer is unknown. Over the past 40 years, research into various risk factors (Table I) has failed to impact on either incidence or mortality of the disease.<sup>10</sup>

**Table I: Aetiology of Breast Cancer**

Source: Wilson R M (1995)

Factors Known To Increase Risk of Breast Cancer:	Factors Currently Under Evaluation As Possibly Increasing Risk of Breast Cancer:
<ul style="list-style-type: none"> <li>• Being female</li> <li>• Increasing age</li> <li>• Family history of breast cancer</li> <li>• Histological risk factors</li> <li>• Late childbearing (first child after 30)</li> <li>• Nulliparity</li> <li>• Early menarche</li> <li>• Late menopause</li> <li>• Obesity</li> <li>• Exposure to ionising radiation</li> </ul>	<ul style="list-style-type: none"> <li>• High fat diet</li> <li>• Prolonged use of hormone replacement therapy</li> <li>• Prolonged use of oral contraceptive in young nulliparous women</li> <li>• Alcohol</li> <li>• Caffeine</li> <li>• Stress</li> </ul>

Currently, the main areas of discussion concern family history, hormone replacement therapy (HRT)<sup>11,12</sup> and body mass index (BMI).<sup>13</sup> A small but not insignificant subgroup of breast cancers occurs following the historical practice in young women (aged less than 30 years) of supradiaphragmatic mantle radiation exposure for the treatment of Hodgkin's lymphoma.<sup>14</sup>

### Family History

After age, the next most closely associated risk factor is family history. Such potential genetic predisposition, however, is only applicable to first and/or second degree family members of pre-menopausal breast cancer patients. There is no evidence to support the notion that relatives of women with postmenopausal breast cancer are themselves at increased risk. Research is ongoing to quantify an individual's increased risk and, more importantly, identify the most efficacious surveillance strategy.<sup>15</sup> To date, there are no published data to confirm that the screening of relatives of patients with pre-menopausal breast cancer, either by examination or mammography, confers any survival benefit.

Truly hereditary breast cancer is thought to constitute less than 5% of all cases. By 1995, both BRCA1 and 2 had been identified.<sup>16,17</sup> These genes are present infrequently in the population and are associated with increased risk of both breast and ovarian cancer. A variant of the BRCA1 gene, particular to the population of the west of Scotland, has also been identified. At present, testing for these genes is only available through specialist centres. Clearly more genes have yet to be identified before it can be clear that all gene abnormalities responsible for the estimated 25% of breast cancers are mapped.

### Hormone Replacement Therapy (HRT)

Evaluation of the specific contribution of HRT to overall breast cancer risk is not without its difficulties, as HRT usage and breast cancer incidence are each associated with higher socio-economic groups.

The publication in 2002<sup>11</sup> of the results of the randomised controlled trial of the use of HRT in postmenopausal women in the American Women's Health Initiative revealed conclusive evidence that the prolonged use of combined HRT preparations is associated with an increased risk of breast cancer. Li et al<sup>18</sup> attempted to refine quantifications of this risk by suggesting that the long-term use (ie of the order of 10 years) of combined oestrogen and progesterone HRT not only doubled cancer risk, but that the magnitude of this risk increased with duration of use. The UK Million Women Study (MWS)<sup>19</sup> confirmed the increase in breast cancer risk arising from the use of HRT and that risk was even greater when related to the use of combined preparations.

In contradiction to previous studies, Stallard et al<sup>20</sup> did not identify any alteration in prognosis for those screen detected cancers in patients taking HRT at the time of their diagnosis.

### Early Diagnosis of Breast Cancer

Without further knowledge of the pathogenesis of the disease, primary prevention of breast cancer is not possible. Is earlier diagnosis, therefore, an alternative method of reducing the morbidity and mortality of breast cancer? We know that:

1. The size of the primary breast cancer does correlate with the presence of metastatic disease;<sup>21, 22</sup>
2. Long-term follow-up of patients with early disease treated in the 1960s confirms that even then 30-year disease-free survival existed;<sup>23</sup>
3. Earlier diagnosis results in greater possibility of choice by both the surgeon and the patient between mastectomy and breast conservation.

### Screening for Breast Cancer

The average size of breast cancer presenting clinically is 25mm, at which stage lymph node metastases are likely to be present in 50% of cases.<sup>24</sup> Screening, as shown in Figure 2, aims to detect the disease in its preclinical state at a much earlier stage.

Figure 2: Mammographic Screening for Breast Cancer



Source: West of Scotland Breast Screening Service Primary Care Handbook

Indeed, in order to obviate the effects of both lead and length time bias, the efficacy of population interval screening is best assessed using the randomised controlled trial model.

Two such trials in the United States<sup>25</sup> and Sweden<sup>26</sup> demonstrated a 30% reduction in breast cancer deaths in populations invited for screening. The improved survival however, occurred only in women aged >50 years and in whom the disease was at an early stage, namely tumours measuring 15mm or less. In 1986, Professor Sir Patrick Forrest reported his committee's analysis of published experience of breast cancer screening worldwide. The Forrest Report<sup>27</sup> recommended that screening should:

1. Be offered to asymptomatic women aged 50 years and over, with automatic invitation up to and including 64 years and self referral (without an upper age limit) thereafter;
2. Comprise single view mammography without clinical examination;
3. Occur every three years.

The report recognised that pivotal to such a programme are training, quality assurance and audit of clinical outcome.

In 1988, the National Health Service Breast Screening Programme (NHSBSP) was set up incorporating all of Forrest's recommendations. Over a period of six years, 95 units were set up incrementally as and when appropriate resources allowed and the programme in financial year 2006/07 provided screening to 1,955,825 women aged 50 to 70 years (inclusive) resulting in the diagnosis of 15,856 cancers.<sup>7</sup> Furthermore, the programme is now supported by a computerised call/recall system, the basis of which is the Community Health Index (CHI) in Scotland and the Family Practitioner List (FPL) in the rest of the UK. This system administers all invitations for screening or recall to be issued directly to women as well as the appropriate results and onward relevant referrals.

All aspects of training, quality assurance and clinical audit are coordinated through a robust national network. Indeed, The National Audit Office has recommended the NHSBSP quality assurance (QA) system as a model for other screening programmes. The results of the NHSBSP are shown in Tables II and III.

Table II: National Health Service Breast Screening Programme – Review of Prevalent (first round) Screening 1/4/05 – 31/3/06

Source: National Health Service Breast Screening Programme Annual Review 2007

	Standard (50-70)	Achieved (50-70)
Acceptance rate	≥70%	71%
Recall rate	<10%	8.3%
Benign biopsies (per 1000)	≤3.6	2.0*
In situ rate (per 1000)	≥0.4	0.2
Invasive cancer rate (per 1000)	≥2.7	5.1
Non-operative diagnosis rate for cancers	≥80%	79.4%
Total number women screened for the First time following first invitation		264,754
SDR	≥1.0	1.4

\* includes previous non-attenders

**Table III: National Health Service Breast Screening Programme – Review of Incident (subsequent round) Screening 1/4/05 – 31/3/06**

Source: National Health Service Breast Screening Programme Annual Review 2007

	<b>Standard (50-70)</b>	<b>Achieved (50-70)</b>
Acceptance rate	-	83.8%
Recall rate	<7%	3.7%
Benign biopsies (per 1000)	<2.0	1.0
In situ rate (per 1000)	≥0.5	1.6
Invasive cancer rate (per 1000)	≥1.65	6.3
Non-operative diagnosis rate for cancers	≥80%	87.5%
Total number women screened for the First time following first invitation		1,466,652
SDR	≥1.0	1.4

These results confirm that the NHSBSP continues not only to achieve but to surpass the targets set down originally by the Subcommittee of the Radiological Advisory Committee in 1989<sup>28</sup> with a higher than expected cancer detection rate associated with acceptably low benign and open biopsy rates. Review of the three most recent years' screen-detected cancer yield reveals that 95% of all cases were diagnosed preoperatively with a higher rate of 97% of all invasive cases.<sup>7</sup> Critical to this achievement, is the role of the specialist multidisciplinary teams comprising radiographers, radiologists, pathologists, breast physicians, and nurse specialists in providing a comprehensive single stage assessment of all women recalled.

### Improving Preoperative Diagnostic Rate

When reviewing the evolution of the NHSBSP, of particular note have been the technological developments from the mid 1990s<sup>29,30,31</sup> allowing the preoperative diagnostic rate to improve from 60% (1996/97) to 95% (2006/07). During financial year 2005/06, all screening units in the UK achieved the minimum target of a rate of 80% with all UK regions attaining the achievable target of 90%.<sup>7</sup> The result is that diagnostic teams using x-ray or ultrasound guidance in conjunction with a variety of needling techniques can now obtain adequate diagnostic information from these lesions allowing full preoperative discussion and treatment planning to be undertaken. Of particular note, are recent innovations in the use of large volume techniques<sup>32</sup> for impalpable areas of microcalcification which can be histologically underestimated in up to 22% cases when relying on traditional methods of biopsy. Recent work<sup>33</sup> has highlighted the contribution to improved accuracy of using image guidance when biopsying even palpable abnormalities – a technique which is now considered to be the gold standard.

### The Evolution of the Breast Screening Service

Each of Forrest's recommendations raises its own question, namely:

1. What is the efficacy of single-view mammography as opposed to conventional two-view technique?
2. What proportion of women aged >64 years will self refer?
3. What is the optimal screening interval?
4. What can be provided for women aged <50 years?

From the outset of the NHSBSP, each of these topics was the subject of multi-centre United Kingdom studies.

### Two View Mammography

In 1995, analysis of outcomes of centres using two-views at first round (prevalent) screening demonstrated a 24% increase in cancer detection rate with a significant reduction in recall rate of the order of 15%.<sup>34</sup> In 1998, the publication of the impact of two-views at subsequent (incident) screening confirmed that a further 9% of invasive cancers could be achieved although no additional in situ disease was found.<sup>35</sup> Thus, informed by these published data, additional funding was allocated to extend the programme to two-views at prevalent attendance throughout the whole of the United Kingdom in 1995 and at all rounds in England and Wales in 2003. In February 2007, it was announced that this policy would be extended to include Scotland by 2010.

### Older Women

In the face of:

- established evidence of continued mortality benefit over the age of 64 years, certainly up to and including 70 years;<sup>36</sup>
- increasing pressure on the service resulting from rising self-referral rates in the over 64s;
- political pressure of a perceived ageist invitation policy;<sup>37</sup>

several studies<sup>38,39,40</sup> were undertaken to assess both the acceptance rate to invitation and resource implications of a further extension to the age of invitation of up to and including 70 years, ie two additional screening rounds per eligible woman. These studies concluded that women who had previously attended would continue to do so in significant numbers with a low overall recall rate but a relatively high interventional rate at assessment reflecting the increasing incidence of breast cancer in this older age range.

Following a further increase in resource allocation, all regions in the United Kingdom (apart from Northern Ireland) extended their age of invitation. There remains, however, no upper age limit to self referral.

### Frequency of Screening

The results of the United Kingdom Co-Ordinating Committee on Cancer Research (UKCCCR) multi-centre, randomised, prospective trial, published in 2002<sup>41</sup> compared the efficacy of annual mammographic screening for each of three years with that of a three year interval. On the basis of estimated survival rates, using standard prognostic indices, the authors concluded that no mortality benefit would ensue from shortening the screening interval.

### Younger Women

The early screening trials<sup>25,26</sup> failed to show any mortality benefit when screening younger women aged 40 to 50 years when using single view mammography with an interval of approximately three years. Further studies<sup>42,43,44</sup> have shown that refining the screening technique to two views offered at a more frequent interval can achieve survival rates comparable to those in the older age range. Commenced in 1991, the UK randomised prospective multi-centre trial aimed to invite a

cohort of 90,000 women aged 40 and 41 years for screening in each of seven years. A matched control group was included. Interim results published in December 2006<sup>45</sup> failed to show a significant impact on breast cancer mortality after ten years of follow up. The evaluation of this study is ongoing.

### NHSBSP Current Policy:

The current NHSBSP policy can be summarised as follows:

1. Asymptomatic women aged 50 years and over are eligible to be screened;
2. Women aged 50 to 70 years will be invited to attend;\*
3. Women over the age of 70 years can self refer;
4. There is no upper age limit to self referral;
5. The screening methodology is bilateral two-view mammography at all rounds;\*\*\*
6. The screening interval is three yearly.

\* Applicable in England and Wales only, the NHS Cancer Reform Strategy,<sup>46</sup> published in December 2007, proposes further extensions to the Programme including the age of invitation to be changed to include women aged 47-73 years.

\*\* In Scotland, two-view screening at incident rounds will be implemented by 2010.

Recognition of the critical role of specialist multidisciplinary teams in the diagnosis and management of screen-detected breast cancer has, almost inevitably, resulted in a dramatic improvement in symptomatic services throughout the UK. Not only has the number of UK specialist teams risen, but also the quality of their service is enhanced by their input, epitomised by the publication, in 1994, of the second King's Fund consensus statement.<sup>47</sup> Encouraged by comprehensive audit of diagnosis and management of screen detected breast cancers, the Association of Breast Surgeons (ABS) at the British Association for Surgical Oncology (BASO) has developed a similar model for the assessment of symptomatic disease. The days of the generalist dealing with occasional cases of breast cancer are truly gone.

### Evaluation of a National Breast Screening Programme

From its inception, the NHSBSP has had one clinical outcome, namely, to impact on breast cancer mortality. Day et al<sup>48</sup> predicted the factors to confound such an analysis including age cohort effects and improvements in treatment. Data published in 1995<sup>49</sup> showed that the hitherto increasing breast cancer mortality rate appeared to level off and then fall, coincident with the introduction of the NHSBSP in 1988. Tabar<sup>26</sup> demonstrated, however, that the impact on mortality should not be expected for at least seven years following the introduction of a population screening programme: clearly other factors are influencing breast cancer survival.

Day discusses the use of other parameters, derived from in-depth analysis of the Swedish data which can be collated annually as a measure of programme performance. These so-called "surrogate markers" include the identification of the percentage of small (ie <15mm), "early" (ie node negative) invasive cancers and in particular the rate of detection of small grade three invasive tumours in the programme's overall cancer yield. It is the diagnosis and treatment (ie the alteration of their natural history) of these latter lesions that will dictate the overall success of individual screening programmes.

### Conclusions

The challenge is clear: breast cancer accounts for significant morbidity and mortality of women in their prime. Without identification of its aetiology, prevention is not an option. Early diagnosis, however, does make sense and is now possible. Since its inception in 1988, the NHSBSP<sup>50</sup> has:

- undertaken 18 million mammograms;
- detected 100,000 cancers;
- at a rate of 100 cancers/week;
- been estimated to have saved 1,400 lives annually.

Clearly, further long-term follow-up is required to assess the true impact of population screening.

In the 30 years since Louise Page<sup>51</sup> wrote in her play entitled *Tissue*, "one never knows with breast cancer, if the battle's over or if there's just a long cease-fire", undoubted advances have been achieved in this ongoing conflict.

### References

1. Skrabanek P. The debate over mass mammography in Britain. *Br Med J* 1988; 297: 970-971.
2. Roberts M. Breast screening: time for a rethink? *BMJ* 1989; 299: 1153-1155
3. Baum M. Statement - Sunday Times September 3rd 1995
4. Wright CJ, Mueller CB. Screening mammography and public health policy: the need for perspective. *Lancet* 1995; 346: 29-32
5. Cancer Research UK. UK Breast Cancer Incidence and Mortality Statistics. July 2007.
6. Editorial. Reduction in mortality from breast cancer. *Br Med J* 2005; 330: 205-206
7. West Midlands Cancer Intelligence Unit. ABS at BASO Breast Screening Audit 2006-2007 presented at BASO meeting, June 2008. NHS Cancer Screening Programmes
8. Joensuu H, Tolkkanew S. Comparison of breast carcinomas diagnosed in the 1980s with those diagnosed in the 1940s to 1960s. *Br Med J* 1991; 303: 155-158
9. Gillis CR, Hole D. Survival outcome of cancer by specialist surgeons in breast cancer – a study of 3786 patients in the west of Scotland. *Br Med J* 1996; 312: 145-148
10. Miller WR, Ellis IO, Sainsbury JRC, et al. ABC of breast diseases – prognostic factors. *Br Med J* 1994; 309: 1573-1576

11. Writing Group for the Women's Health Initiative Investigators. Risks and benefits of estrogen plus progestin in healthy post menopausal women: principal results from the women's health initiative randomized controlled trial. *JAMA* 2002; 288: 321-333
12. Coombs N, Taylor R, Wilcken N et al. Hormone replacement therapy and breast cancer: impact on population risk and incidence. *Eur J Cancer* 2003; 41: 1775-1781
13. Ahn J, Schatzkin A, Lacey JV et al. Adiposity, adult weight change and post menopausal breast cancer risk. *Arch Intern Med* 2007; 167: 2091-2102
14. Hancock SL, Tucker MA, Hoppe RT. Breast cancer after treatment of Hodgkin's disease. *J Natl Can Inst* 1993; 85: 25-31
15. The challenge of evaluating annual mammography screening for young women with a family history of breast cancer. The FHO1 Management Committee, Steering Committee, Collaborators. *J Med Screen* 2006; 13: 177-182
16. Miki Y, Swensen J, Shattuck-Eidens E et al. A strong candidate for the breast and ovarian cancer susceptibility gene BRCA1. *Science* 1994; 266: 66-71
17. Wooster R, Bignall G, Lancaster J et al. Identification of the breast cancer susceptibility gene BRCA2. *Nature* 1995; 378: 789-792
18. Li CI, Malone KE, Porter PL et al. Relationship between long duration and different regimens of hormone therapy and risk of breast cancer. *JAMA* 2003; 289: 3254-3263
19. Reeves G, Beral V, Green J et al. On behalf of the million women study collaboratives. Hormone therapy for menopause and breast cancer risk by histological type: a cohort study and meta-analysis. *Lancet Oncology* 2006; 9: 910-918
20. Stallard S, Litherland JC, Cordiner C et al. Hormone replacement therapy does not influence pathological stage of breast cancer: a population based cross sectional study. *Eur J Surg Onc* 1996; 23: 586-589
21. Carter GL, Allen C, Henson DE. Relation of tumour size, lymph node status and survival in 24,741 breast cancer cases. *Cancer* 1989; 63: 181-187
22. Miller AB, Bulbrook RD. UICC multidisciplinary project on breast cancer: the epidemiology, etiology and prevention of breast cancer. *Int J Cancer* 1986; 37: 173-177
23. Richards MA, Smith IE, Dixon JM. ABC of breast diseases – role of systemic treatment for primary operable breast cancer. *Br Med J* 1994; 309: 1363-1366
24. Bundred NJ, Morgan DAL, Dixon JM. ABC of breast diseases – management of regional nodes in breast cancer. *Br Med J* 1994; 309: 1222-1225
25. Shapiro S, Venet W, Strax P et al. Ten to fourteen year effect of screening on breast cancer mortality. *J Natl Cancer Inst* 1982; 69: 349-355
26. Tabár L, Fagerberg CJG, Gad A et al. Reduction in mortality from breast cancer after mass screening with mammography; randomised trial from the breast cancer screening working group of the Swedish National Board of Health and Welfare. *Lancet* 1985; 1: 829-832
27. Forrest P. Breast Cancer Screening. A report to the Health Ministers of England, Scotland and Northern Ireland, London: HMSO, 1986.
28. Subcommittee of the Radiological Advisory Committee of the Chief Medical Officer. Report of the Subcommittee of the Radiological Advisory Committee of the Chief Medical Officer: Quality Assurance Guidelines for Mammography (Pritchard Report). London: NHSBSP Publications, 1989
29. Parker SH, Lovin JD, Jobe WE et al. Stereotactic breast biopsy with a biopsy gun. *Radiology* 1990; 76: 741-747
30. Parker SH, Lovin JD, Jobe WE et al. Non palpable breast lesions: stereotactic automated large core biopsies. *Radiology* 1991; 180: 403-407
31. Parker SH, Burbank F, Jackman RJ et al. Percutaneous large core breast biopsy: a multidisciplinary study. *Radiology* 1994; 193: 350-364
32. Parker SH. Percutaneous large core breast biopsy. *Cancer* 1994; 74: (1 suppl) 256-262
33. Houssami N, Ciatto S, Ambrogetti D et al. Florence – Sydney Breast Biopsy Study: sensitivity of ultrasound guided versus freehand fine needle biopsy of palpable breast cancer. *Breast Cancer Res Treat* 2005; 89: 55-59
34. Wald NJ, Murphy P, Major P et al. UKCCCR multicentre randomised controlled trials of one and two view mammography in breast cancer screening. *BMJ* 1995; 311: 1189-1193
35. Blanks RG, Given-Wilson RM, Moss SM. Efficiency of cancer detection during routine repeat (incident) mammographic screening: two versus one view mammography. *J Med Screen* 1998; 5: 141-145
36. Chen HH, Tabár L, Fagerberg G et al. Effect of breast cancer screening after the age 65. *J Med Screen* 1995; 2: 10-14

37. Editorial. Will you still need me, will you still screen me, when I'm past 64? *Br Med J* 1997; 315: 1032-1033
38. Henry P J, Entwistle C. Effect of issuing an invitation for breast cancer screening to women aged 65 to 69. *J Med Screen* 1996; 3: 88-89
39. Van Der Pot M, Cairns J. Predicting attendance for breast screening using routinely collected data. *Health Care Management Science* 2004; 6: 229-236
40. Scottish Breast Screening Programme Development Task Group. Report on Extending Age Range for Invitation to Breast Screening. SBSP Publications, 2001.
41. The Breast Screening Frequency Trial Group. The frequency of breast cancer screening: results from the UKCCCR randomised trial. *Eur J Cancer* 2002; 38: 1458-1464
42. Thurfell EL, Lindgren JAA. Breast cancer survival rates with mammographic screening: similar favourable survival rates for women younger and those older than 50 years. *Radiology* 1996; 201: 421-426
43. Smart CR, Hendrick RE, Rutledge JH et al. Benefit of mammography screening in women ages 40-50 years. *Cancer* 1995; 75: 1619-1626
44. The Organising Committee and Collaborators (Falun Consensus Conference). Breast cancer screening with mammography in women aged 40-49 years. *Int J Cancer* 1996; 58: 693-699
45. Moss SM, Cuckle H, Evans A et al (on behalf of the Trial Management Group). Effect of mammographic screening from age 49 years on breast cancer mortality at 10 years follow-up. A randomised controlled trial. *Lancet* 2006; 368: 2053-2060
46. Department of Health: Cancer Reform Strategy. London: DOH, 2007
47. McEwen J. Consensus statement. Education Department of Marie Curie Cancer Care, Scotland.
48. Day NE, Williams DRR, Khaw KT. Development of a monitoring and evaluation system. *Br J Cancer* 1989; 59: 954-958
49. Quinn M, Allen E on behalf of the United Kingdom Association of Cancer Registries. Changes in incident of and mortality from breast cancer in England and Wales since introduction of screening. *Br Med J* 1995; 311: 1391-1395
50. Editorial. Number of deaths from cancers falls after 20 years of screening. *Br Med J* 2008; 336: 527
51. Page L. Performed by the Pyramid Theatre Company (Bryntiron, Pennyngros Road, Caerbryn, Ammanford, Dyfed, SA18 3DQ)

## EDUCATIONAL REVIEW QUESTIONS

### 1. *The National Health Service Breast Screening Programme has as its policy:*

- screening is available to all women over 50 years
- screening is available to women aged 40-50 years at high risk as a result of family history of breast cancer
- women over 70 years are denied screening
- the screening method is by mammography and clinical examination
- the screening interval is 3 years

### 2. *The following statements are true:*

- the incidence of breast cancer is rising
- the mortality from breast cancer is rising
- there is a clearly defined cause of breast cancer
- breast cancers arising in patients who have undergone long-term hormone replacement therapy (HRT) use are of poorer prognosis
- the impact on population breast cancer mortality arising from a national screening programme will not be evidenced within the first 7 years of its implementation

### 3. *In order to be efficacious, the cancer yield from a national screening programme should aim to detect:*

- 50% of all invasive cancers measuring 15mm in diameter or less
- no more than 25% of all invasive cancers should be of lobular origin
- 70% of all invasive cancers should be node negative
- 36% of all grade 3s should measure less than 15mm in diameter
- ductal carcinoma in situ (DCIS) should comprise at least 40% of all malignancies

### Please answer true or false

#### 4. *Based on existing published evidence, the National Health Service Breast Screening Programme should:*

- extend the age of invitation to include women aged 40-50 years
- shorten the screening interval to 2 years
- have as its methodology 2 views at all screening rounds
- should offer more frequent screening (18 monthly) in women with a history of hormone replacement therapy (HRT) usage for over 10 years

### Please answer true or false

#### 5.

- 35% of breast cancers are considered to be hereditary in nature
- hereditary/familial breast cancer is considered in all cases of premenopausal breast cancer
- there is an identifiable gene mutation specific to the population of the West of Scotland
- FHO1 is a multi-centre UK trial assessing the efficacy of mammographic screening strategy in women considered to be at high risk as a result of family history of breast cancer

### ANSWERS ON PAGE 53