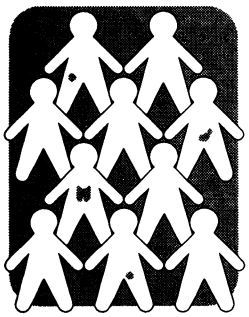
Cancer Prevention in Primary Care

Screening and self examination for breast cancer

Joan Austoker



This is the sixth in a series of articles looking at how cancer can be prevented in general practice

Breast cancer is the major form of cancer in women, with nearly 30 000 new cases and over 15 000 deaths in the United Kingdom each year. Breast screening by mammography has been shown in randomised trials to reduce mortality from breast cancer in women aged 50 and over. An NHS breast screening programme has been in operation in the United Kingdom since 1988. Its aim is to reduce mortality from breast cancer by 25% in the population of women invited to be screened. The uptake of mammography among the eligible population may be the single most important determinant if the programme is to be effective. Primary care teams have an important part to play in encouraging women to attend for screening and in providing information, advice, and reassurance at all stages of the screening process. To date, routine breast self examination has not been shown to be an effective method of screening for breast cancer and should not therefore be promoted as a primary screening procedure. There is, however, a case to be made for women to become more "breast aware."

Breast cancer: current facts

Breast cancer is the major form of cancer among women in the United Kingdom. Nearly 30 000 new cases were diagnosed in 1988. Overall, it is estimated that 1 in 12 women will develop breast cancer at some time in their life.

Breast cancer accounted for over 15 000 deaths in 1992, 19% of all deaths from cancer among women, and 5% of all deaths among women. The United Kingdom has the highest mortality rate from breast cancer in the world. Figure 1 shows the ages at which deaths from breast cancer occur. Mortality in women aged 15-44 has fallen slightly, but it has increased in all other age groups. Breast cancer is the commonest single cause of all deaths in women aged 35-54 years.

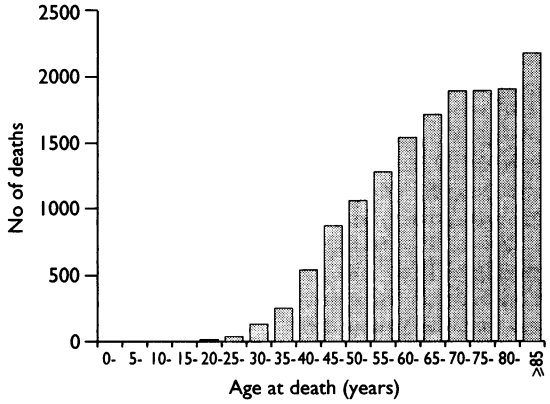


FIG 1—*Mortality from breast cancer by age in United Kingdom, 1992*

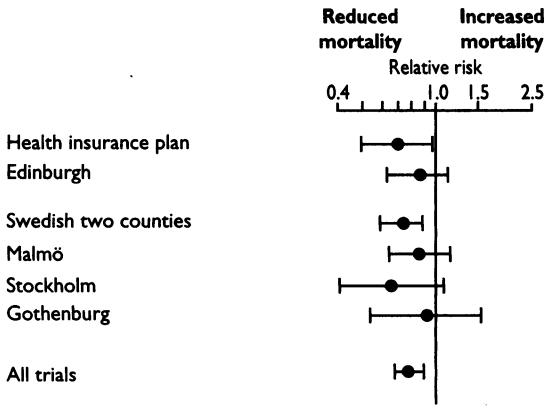


FIG 2—*Relative risk of mortality from breast cancer in women aged 50-74 invited for screening compared with controls: randomised controlled trials*[1]

Survival figures for England and Wales show that, on average, 62% of all women diagnosed as having breast cancer were alive five years later. The five year survival rate for stage I breast cancer is 84%, dropping to 18% for stage IV disease.

Why screen for breast cancer?

EARLY DIAGNOSIS

Survival after diagnosis and treatment is directly related to stage at diagnosis. The earlier the breast cancer is diagnosed the better the survival rates. There is thus considerable potential for reducing mortality from breast cancer in populations by detecting breast cancer early (although this does not necessarily mean that a reduction in mortality will occur). About 70-80% of cancer detected on screening may have a good prognosis. At the initial screen up to 20% cancers will be in situ, 20-25% will be invasive lesions under 1 cm in diameter, and 25% will be invasive lesions between 1 cm and 2 cm in diameter.

Invasive cancers detected while still small are less likely than larger tumours to have spread to local lymph nodes or metastasised to distant sites. Non-invasive or small invasive tumours are generally regarded as early stage disease.

BREAST SCREENING STUDIES: REDUCTION IN MORTALITY

Breast screening by mammography is the only cancer screening method whose value has been demonstrated in rigorous randomised trials. In all randomised trials of women aged 50 and over who have been offered screening compared with unscreened controls, mortality from breast cancer is reduced although not significantly in all cases (fig 2). The combined estimate for all randomised trials shows an overall reduction

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in mortality from breast cancer of 28%, which is significant. The design of these trials avoids the problems of bias. Results from non-randomised geographical and case-control studies, though not avoiding the problems of bias, support the concept that a significant benefit can be derived from mammographic screening in women aged 50 and over.

There is uncertainty about the effect of mammographic screening in women under 50 and the results indicate that mortality is not significantly reduced in this group (fig 3). The data shown here do not include the results from the controversial Canadian randomised study, which found an excess mortality from breast cancer of 36% in women aged 40-49 years when they were first offered screening. Overall, data on the issue of screening women under 50 are few and the results are therefore not conclusive.

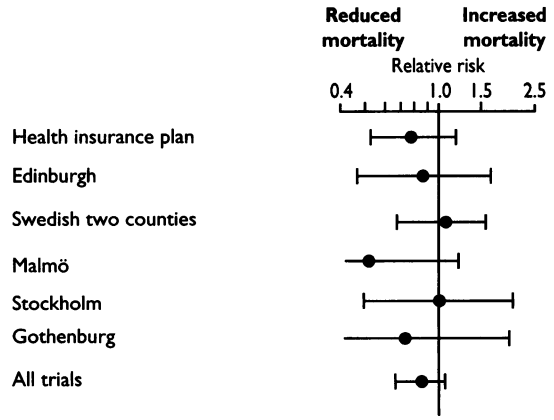

FIG 3—*Relative risk of mortality from breast cancer in women aged 40-49 invited for screening compared with controls: randomised controlled trials*[1]

Mammography detects different sorts of lesions in younger and older women, and is worse at detecting clinically important breast cancers in young women. Women under 50 are more likely to be recalled with benign rather than malignant lesions and to have malignant lesions missed. The differences are substantial: for every 20 cancers picked up at first screening in the Swedish two county trial between two and three additional cancers came to light clinically in the subsequent year in women aged 40-49, compared with 0·5 cancers on average in women aged 50-69. This result is partly because small malignant tumours are more difficult to spot in young women because of breast density and partly because they grow faster than in older women. In addition, the breast cancers picked up at the first screening in women aged 40-49 tend to be in situ carcinomas and lesions of low malignant potential—fewer than half would probably develop into frank invasive disease compared with more than 95% in women aged 50-69.

Overall, it is difficult to escape the conclusion that regular screening by mammography is effective in women over 50. A similar effectiveness has not at present been shown for women under 50. They should be made aware of the uncertainty and that the possible adverse consequences of screening might outweigh any potential benefit.

Benefits and disadvantages of breast screening

There are several concerns regarding the risks of breast screening (box 1). In general, when these have been specifically studied, they have been found to be either infrequent or relatively minor.

Compression of the breast against the *x* ray plate can be uncomfortable. Three large studies in the United Kingdom found that, overall, 81% of women experienced discomfort. This was classified as actual pain by 46% of women, which was severe in 7% of cases. For the vast majority, however, this pain was short lived. More than two thirds of women in one study ranked a dental filling, cervical smear test, and venepuncture as more uncomfortable.

There is a very small risk of inducing breast cancer by radiation exposure from mammography. This depends on the radiation dose and age at screening.

Being referred for further investigation of breast screening causes considerable anxiety and distress. Currently, nine out of 10 women who are referred for further investigation do not have cancer. One study has shown that, although recalled women showed very high levels of emotional and physical dysfunction compared with controls, this intense anxiety was not sustained in the long term.

Overdiagnosis does not appear to constitute a major problem. A big disadvantage of screening, however, results from advancing the date of diagnosis of a breast cancer whose prognosis is unaltered by screening, either because it is already metastatic or because it would anyway be curable if left until symptomatic. These women live with the knowledge of their diagnosis for a longer time than would otherwise be the case. It is not possible at present to separate women with cancer detected at screening into those who will benefit from early detection and those who will not.

These disadvantages need to be seen in the context of the main advantage of breast screening: improved prognosis for many women with cancer detected at screening. In addition, less radical treatment will be necessary for a high proportion of cases.

NHS breast screening programme

GUIDELINES

The NHS breast screening programme aims to screen women aged 50-64 every three years by single oblique view mammography. Policy may vary locally, and each of the variables of the programme is currently the subject of further research in the United Kingdom.

AGE AND SCREENING

The incidence of breast cancer rises sharply with increasing age. Eighty per cent of all new cases and 88% of all breast cancer deaths occur in women aged 50 and over. Age is the only risk factor sufficiently important to influence screening policy. No other risk factor or combination of risk factors is of great enough value to identify subgroups on whom screening could

Box 1—Benefits and disadvantages of breast screening

Benefits

- Improved prognosis for many cases detected by screening
- Less radical treatment for many early cases
- Reassurance for those with negative test results

Disadvantages

- Discomfort and pain of mammography
- Possible radiation hazard
- False reassurance for those with false negative results
- Anxiety and sometimes morbidity for those with false positive results
- Unnecessary medical intervention for those with false positive results
- Overdiagnosis of questionable abnormalities
- Longer morbidity for cases whose prognosis is unaltered

be concentrated. Accordingly, routine screening is being offered to all women aged 50 to 64. Women aged 65 and over may be screened on request, but not more than once every three years. Women under 50 are not being offered routine screening as mammography has not been shown to be beneficial in this age group.

GUIDELINES ABOUT SPECIFIC CATEGORIES OF WOMEN

Guidelines for general practitioners about screening for specific categories of women are given in box 2.

RESULTS

The quality standards for the detection of small invasive cancers are critical for the success of the programme. There must also be a significant decrease in the detection rate of cases with metastases. To achieve this, high uptake, optimal quality mammographic screening, and a high diagnostic accuracy are essential, coupled with the need to ensure prompt reporting of any symptoms occurring in the interval between screening.

With the exception of the proportion of invasive cancers <10 mm, the national breast screening programme has, to date, exceeded the short term quality standards that have been set for the programme as a whole (table I). Seventy two per cent of screening programmes achieved a response rate of greater than 70% (range between regions from 57·9% to 81·5%). This adherence to standards needs to be maintained at all times in the future. The ultimate aim of the programme is to reduce mortality from breast cancer. It will be some years before the success of the programme in meeting this aim can be determined. Current estimates suggest that by the year 2000 the screening programme can be expected to reduce death from breast cancer by about a quarter in the population of women invited for screening, provided that 70% of these women attend. This should reduce the number of deaths from breast cancer by 1250 each year in the United Kingdom. This estimate is in keeping with the *Health of the Nation* target for breast cancer—to reduce the death rate from breast cancer in the population invited for screening by at least 25% by the year 2000 (from 95·1 per 100 000 population in 1990 to no more than 71·3 per 100 000).

TABLE I—*Quality standards and results achieved in NHS breast screening programme for first screening round, 1 April 1991 to 31 March 1992*[2,3]

Criterion	Programme standard	Result achieved
Attendance rate	>70% of those invited	71·3% of those invited
Recall rate for further investigation	<10% of those screened	6·2% of those screened
Biopsy rate	<1·5% of those screened	0·89% of those screened
Cancer detection rate	>5 per 1000 screened	6·2 per 1000 screened
Ratio of malignant to benign results on biopsy	>0·5:1	2·3:1
Proportion of cases of ductal carcinoma in situ	>10% cancers detected	17·6%
Proportion of invasive cancers <10 mm	>1·5 per 1000 screened	1·4 per 1000 screened

Box 2—Guidelines for general practitioners about specific categories of women

- Women under 50—There is insufficient evidence to demonstrate that screening women under 50 is effective in reducing mortality from breast cancer. The risks may be greater than any potential benefit
- Women with a family history of breast cancer—Women under 50 with a strong family history are not included in the screening programme. General practitioners should be aware of local provision for the management of these women. Women aged 50 and over with a family history should not be offered screening more frequently than once every three years unless there are mammographic or clinical indications for doing so
- Women with symptoms between routine mammography—Women should continue to be aware of minimal symptoms and report these without delay to their general practitioners even if they have been recently screened. A woman with symptoms should be examined by her general practitioner and, if necessary, be referred for investigation to a surgeon with a special interest in breast disease working in a hospital that can provide a multidisciplinary approach to breast disease
- Women with breast cancer—Women aged 50 and over with breast cancer should remain on the call-recall system and continue to have mammography at least every three years on the other breast and, in the case of breast conservation, on the treated breast
- Women receiving hormone replacement therapy—Women aged 50 to 64 who are receiving hormone replacement therapy do not need to have more frequent screening. Women do not require a baseline mammogram before receiving hormone replacement therapy

Factors associated with uptake of breast screening

PREDICTORS OF ATTENDANCE

The uptake of mammography among the eligible population may be the single most important determinant if the programme is to be effective in its aim of reducing mortality from breast cancer in the screened population. Many studies have reported on predictors of attendance. Variables studied include demographic characteristics, medical history, and health state.

A recent prospective study concluded that the main predictors of attendance were the woman's attitude to being screened and her belief that people who were important to her wanted her to attend. Current health status and previous health behaviour both had some effect on attendance while expectations did not.

The findings to date offer hope that attendance rates can be improved, particularly by targeting the relevant attitudes and beliefs. This can be done by changing the wording in the invitation letter and accompanying leaflet, through local and national publicity campaigns, and through the advice given by general practitioners, practice nurses, and other health professionals.

PRACTICE REGISTERS

The average uptake for inner cities during 1991-2 was 59·5%. A great barrier to uptake, particularly in inner cities, is the inadequacy of population registers. An accurate and complete population register is essential to identify the target group and to ensure individual subjects can be contacted. Practice staff need to be encouraged to check the accuracy and completeness of the prior notification lists. A study of the participation of primary care teams in breast screening found that practices that were visited by representatives of the screening programme were more likely to cooperate with checking the prior notification lists than were practices that were not visited. Another study noted that support should be given to general practice staff to check addresses. Above all, it means creating a greater awareness of the importance of accurate registration data among both patients and doctors. The 1990 contract has led to a vast improvement in the accuracy of registers, but inaccuracies remain an important problem.

ROLE OF PRIMARY CARE TEAMS

The attitudes of general practitioners to breast screening may be critical in influencing women to attend screening. Doctors' attitudes will be influenced by their knowledge of the effectiveness of breast

screening. If their attitudes are negative they may be less likely to encourage attendance or provide information and advice, particularly to non-attenders.

Table II summarises the influence of general practitioners on the uptake of breast screening in 12 studies. A study in the United States showed that the most important factor predicting whether a woman attended for mammogrpahy was whether her general practitioner had discussed mammography with her. Women were four to 12 times more likely, depending on their age, to attend for screening after discussion with their family doctor. The discussions did not need to be lengthy or complex. This observation confirmed the findings of many other studies.

TABLE II—*Summary of studies in primary care concerned with acceptability and uptake of breast screening*

Reference (year)	Country	Comment
French *et al* (1982)[4]	United Kingdom	Attenders influenced by general practitioner's interest in screening
Maclean *et al* (1984)[5]	United Kingdom	Relationship with general practitioner important in attenders
Kruse and Phillips (1987)[6]	United States	Greatest doctor effect in women from lower socioeconomic groups
Cockburn *et al* (1989)[7]	Australia	Poor knowledge base of general practitioners
Rimer *et al* (1989)[8]	United States	General practitioner's belief in mammography predicted compliance
Austoker and Humphreys (1990)[9]	United Kingdom	Little thought given to non-attenders
Fallowfield *et al* (1990)[10]	United Kingdom	Low rate of discussion of screening by general practitioner
Fox *et al* (1991)[11]	United States	Increased attendance after discussion with general practitioner
MacHardy and Rae (1991)[12]	United Kingdom	Little thought given to non-attenders
Clover *et al* (1992)[13]	Australia	Simple recommendations from general practitioner as effective as intensive health education intervention
Kee (1992)[14]	United Kingdom	55% Of general practitioners routinely took opportunistic opportunities to counsel women about mammography, but less than 20% contacted non-attenders
Sharp *et al* (personal communication)	United Kingdom	Health education intervention with non-attenders better than simple visit from nurse but similar to letter from general practitioner to non-attenders

General practitioners and practice nurses have various opportunities to influence directly the uptake of screening in eligible women. Some evidence suggests that such opportunities are not being effectively used. A study in south east London noted that only 7% of women attending for breast screening had discussed their invitation with their general practitioner, although 63% of them had seen their doctor within the previous month.

If a woman does not attend for mammography her general practitioner will be informed. This information should be recorded in her notes, preferably with an external marker for easy identification. General practitioners and practice nurses are in an ideal position to discuss breast screening with non-attenders, either when the woman next consults or directly by contacting non-attenders to offer further information and advice. If the woman has fears and anxieties these need to be carefully explored. Remember that ultimately women have the right to choose not to participate in the screening programme. They should have access to accurate information to enable them to arrive at an informed decision. It is important not to create feelings of guilt or inadequacy by this process.

Other aspects of the role of primary care teams

The influence of primary care teams can be far wider than the impact their intervention might make on uptake rates (boxes 3 and 4). General practitioners and practice nurses have an important role in providing information, advice, and reassurance to women at all stages of the screening process.

Screening can give rise to considerable anxiety and distress. The extent and type of this distress can affect future attendance. Box 5 gives some ways of minimising anxiety. Recent studies have indicated that recall for further investigation significantly affects the emotional and physical wellbeing of women. General practitioners may need to advise and reassure women during this time. Women placed on early recall—that is, those who are required to be screened more frequently than every three years—may also require support from their doctor.

Box 3—Contribution of primary care team to breast screening

- Quality
  - Improve acceptability of the programme
  - Make appropriate referral arrangements
  - Evaluate primary care involvement
- Uptake
  - Check prior notification lists
  - Encourage attendance
  - Provide practical advice
  - Allay fears
  - Discuss screening with non-attenders
- Information and counselling
  - Answer general inquiries
  - Advise ineligible women
  - Discuss the implications of recall for further investigation
  - Discuss the implications of biopsy
  - Discuss treatment options
  - Discuss screening with non-attenders

To perform their role optimally primary care teams need access to the relevant information. The provision of information to all primary teams should be supplemented by visits to all practices by members of the local screening team. Issues such as how to answer general inquiries, how to advise ineligible women, the implications of recall for further investigation, the implications of biopsy, and referral arrangements for treatment could be clarified at such a visit. Moreover, continued communication between the screening programme and practices whose women are being screened should be maintained.

Breast screening: conclusion

Breast screening by mammography in women aged 50 and over is the only method of screening for cancer that has been shown to reduce mortality in randomised trials. A national breast screening programme has been operating in the United Kingdom since 1988.

The acceptability of breast screening is fundamentally important. The success of the programme is inherently dependent on women's continued acceptance and uptake of the service. Key issues linked to this are ensuring satisfaction with the service and trying to

Box 4—Key issues for primary care teams in breast screening

- Be well informed about the programme and visit the local unit
- Be able to:
  - Identify the eligible population
  - Explain the programme—for example, policy for women under 50, pain and discomfort, screening interval, recall procedures
  - Maintain contact with the screening unit during the time women from the practice are being screened
  - Help patients cope with anxiety raised by the breast screening programme
  - Provide information for women on issues after screening
  - Provide advice and reassurance to recalled women who may experience particular problems
  - Have strategies to cope with those not attending when invited
- Raise mammography in registration checks

Box 5—Minimising anxiety aroused by breast screening

- Women should be prepared in advance for the possibility of receiving an invitation—use posters and leaflets in the practice in the six months before the practice is screened
- Breast screening should be presented in the context of other preventive checks and health related behaviours
- The routine nature of the programme should be emphasised
- Women should be sent comprehensive information about the service from the screening programme with their invitation letter
- Waiting times should be short at the screening unit
- Effective communication with women at each stage should be a priority
- Women should know when to expect their results and how they will receive them
- Women should be aware of the meaning of a positive result
- Women should be prepared in advance about a possible recall
- Letters of recall should be comprehensive, giving a reason for the recall and offering as much reassurance as possible
- Time between notification of results and the recall appointment should be minimal
- Communication and support both by the general practitioner and breast care nurse at the centre will be required at this time for women who are recalled
- Non-attenders are a special group—general practitioners can send them further advice about breast screening and offer to discuss it with them
- Care should be taken to reduce false reassurance and ensure women understand the objective of breast screening—that is, detection not prevention

minimise anxiety at all stages of the programme. It is essential to determine the factors influencing attendance and non-attendance, to assess experiences of screening, and to consider the roles of relevant health professionals. Primary care teams have an important part to play if the target is to be met of reducing mortality from breast cancer by about a quarter in the population of women invited for screening.

Self examination for breast cancer

The role of routine self examination of the breasts according to a set technique remains controversial. To date routine self examination has not been shown to be an effective method of screening, although studies are still in progress that may alter this conclusion. At least 15 retrospective studies have been completed. These studies related the self reported practice of regular breast self examination before the development of breast cancer, or the discovery of breast cancer by self examination rather than fortuitously, with stage of the disease at diagnosis. Eight of these studies showed somewhat more favourably staged tumours at diagnosis in women who claimed to have performed self examination compared with those who did not. Three studies showed a survival advantage in women who performed self examination. None of these studies was randomised, and the results are therefore subject to one or more biases. The increase in survival seen, for example, may possibly reflect only advancement of diagnosis. Also, it is by no means easy to define retrospectively what constitutes breast self examination.

The 10 year update of the prospective trial of early detection of breast cancer in the United Kingdom showed no overall reduction in mortality from breast cancer in the combined districts where the women were invited to be taught self examination compared with the comparison districts. The uptake for breast self examination classes was low. Two randomised studies of breast self examination are in progress in China and Russia, but are still in relatively early stages. The Russian study has shown no difference at five years in the cancer detection rate between women who were taught to examine their breasts and controls (table III, box 6). The full results of this trial comparing mortality from breast cancer in the breast self examination and control groups will become available in 1999.

TABLE III—*Results at five years from Russian Federation/World Health Organisation randomised study of breast self examination*[15]

	Breast self examination group	Control group
No of women aged 40-64	60 211	60 098
Type of instruction	Person to person	None
No of cancers detected at 5 years	190	192
Detection rate	3·15/1000	3·19/1000

Risks associated with breast self examination

The overall sensitivity of breast self examination using data from the breast cancer detection demonstration project was estimated to be 26%—that is, the percentage of false negative results was high. This is poor compared with an estimated sensitivity of between 80% and 90% for mammography and carries with it the potential risk of false reassurance.

The positive predictive value of self examination, particularly in younger women, is also poor. Positive predictive values of 4% to 6% have been reported from some studies. Thus among women with positive findings from self examination, the overwhelming majority do not have cancer. When analysed by age, breast self examination leads to more lumps being detected in younger women than in older women. This is not surprising as breast lumps are more common in younger women, whose breasts are subject to the fluctuating hormone levels of the menstrual cycle. Only a few of these lumps in younger women, however, are malignant. In postmenopausal women the likelihood of a lump being malignant is much higher. A study in the United States showed that 48% of lumps detected in a group of women aged over 55 were malignant compared with 3% in women under 44. Therefore younger women practising breast self examination may have a less favourable balance of potential risks versus benefits.

It has been argued that women who find asymptomatic benign breast lesions by breast self examination

Box 6—Randomised trial of breast self examination[15]

Observations at five years

- No difference in cancer detection rate
- No difference in tumour characteristics (size, nodal involvement)
- Significantly higher frequency of visits to specialists with complaints about pathology of the breast in breast self examination group
- Significantly higher rate of referral for further investigation in specialised institutions in breast self examination group
- Significantly more excision biopsy specimens of benign lesions in breast self examination group

Box 7—Disadvantages of breast self examination

- Many false positive results (may be an age specific effect)
- Many women are investigated for benign lesions
- May give rise to unnecessary anxiety
- Worry about finding lumps that may or may not be cancer
- Guilt about not doing it at all
- Guilt about not doing it properly
- Poor rewards: reward for excellent breast self examination is disease and it can also be perceived as providing false reassurance; both are negative
- Breast self examination as currently practised leads to women being aware of lumps but without having sufficient knowledge of the other signs and symptoms to watch out for

are exposed to unnecessary anxiety and unnecessary medical investigations. In some cases, women with breast symptoms will require detailed medical assessment to determine whether any detected lesions are benign or malignant. Thus some of the women who do not have breast cancer will undergo such assessment, as well as experiencing the associated inconvenience, discomfort, and anxiety, without experiencing any benefits. There is also the risk that women who have experienced one or more benign diagnoses may delay presentation of a further (possibly malignant) lump on the basis of their past experience.

Box 8—Breast awareness

- Know what is normal for you
- Look and feel
- Know what changes to look out for
- Report changes without delay
- Attend for breast screening if aged 50 and over

Why do the majority of women not practise self examination?

Box 7 shows some of the reasons why most women do not practise breast self examination. Regular practice of this technique can in itself cause considerable anxiety in some women because of the possibility that they will eventually find something suspicious. This may be one of the many reasons why most women fail to examine their breasts regularly, despite high levels of awareness of breast self examination in the population. To further the state of uncertainty about the benefits of breast self examination, there is no consensus on what constitutes a competent self examination or how frequently it should be carried out. Most authorities have suggested that monthly examination is appropriate, but there is no evidence about the advantages of this arbitrarily chosen frequency, which was based on the menstrual cycle despite the fact that most women who develop breast cancer are postmenopausal.

There is considerable variation and inconsistency in suggested techniques of doing self examination. This only serves to confuse women. Some women are reluctant to practise breast self examination because they perceive the technique to be complicated and have little confidence in their ability to do it correctly. The more numerous, the more complex, and the more unpleasant the manoeuvres required the less likely women are to remember or perform them.

The effect on women of different types of training in breast self examination is also not known. Evidence about the effectiveness of different aproaches to instruction is inadequate and conflicting.

Breast self examination: conclusion

There is at the present time no compelling evidence that breast self examination is effective in reducing morbidity and mortality from breast cancer. There is currently no evidence to support the view that it should be regarded as a primary screening technique or that it should be conducted routinely following a set technique that needs to be formally taught. There is also concern about the anxiety it can provoke and its inadequacy as a screening procedure. Most breast lumps identified are benign, particularly in young women, and many cancers are missed. Effective breast self examination probably has to be taught, which entails using scarce NHS resources.

Despite the advent of the NHS breast screening programme, cancers will develop in the interval between screening. The needs of women who do not attend for mammography (about 30% of women aged 50-64 and most women over 64) and of those under 50 should also be considered.

Most breast cancers (>90%) are found by women themselves. There is a need therefore to optimise the chances of women finding a cancer and the prompt reporting of any changes from normal.

Some people believe that breast self examination could be made more acceptable to women if the concept of self examination was changed from that of a regular, ritualistic exercise following a set technique to one in which breast examination was built into women's life experience. Women could be encouraged to take convenient opportunities to observe and feel their breasts, such as while washing or dressing, so as to become familiar with the texture of their normal breast tissue and how it changes at different times of the month and with age. They should become aware of any changes from this normal state. This concept has become known as breast awareness. Breast awareness does not exclude the possibility that an individual woman can be shown how to examine her breasts if this is what she wishes. The prime objective, however, is to reach as many women as possible with the concept of breast awareness who would otherwise have done little or nothing in terms of formal breast self examination as previously promoted. Box 8 gives a useful code for general practitioners and practice nurses to use when advising women about breast awareness, and box 9 details changes to look out for. Women must be encouraged to report such changes promptly to their general practitioner. General practitioners in turn will need to know which signs and symptoms in women warrant referral to a surgeon with a special interest in breast disease and which can be managed safely by a general practitioner.

Box 9—Changes in the breast that may be indicative of cancer

- Change in the outline, shape, or size of the breast
- Puckering or dimpling of the skin
- Any new discrete lump
- Asymmetrical nodularity present early in menstrual cycle, persistent
- Unusual pain or discomfort that is different from normal, particularly if new, persistent, and localised
- Discharge from the nipple that is new, serous, or bloody
- Persistent single duct discharge
- Nipple retraction or distortion

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A complete list of references is available from the author.

ANY QUESTIONS

Is there a recommended period after treatment with retinoids for a skin disease, such as acne, before a woman should become pregnant?

Retinol (vitamin A_1) is oxidised to retinoic acid. In most tissues tretinoin (all-*trans*-retinoic acid) is the active metabolic, but it has appreciable toxicity in overdosage and during embryogenesis. Tretinoin is metabolised in small amounts to a less toxic isomer, isotretinoin (13-*cis*-retinoic acid). Isotretinoin is an effective treatment for acne and is available commercially. Its half life is 10-12 hours, and as there is no appreciable accumulation in tissue it is undetectable in plasma some two to four weeks after ingestion ceases.

Etretinate is a synthetic retinoid used for treating psoriasis and other disorders of epidermal proliferation. It accumulates in subcutaneous fat and from this reservoir can be released into the circulation long after treatment has ceased. Acitretin is a metabolite of etretinate with a half life of 50 hours and has recently been introduced as a substitute for etretinate. Unfortunately, in some people acitretin may be metabolised to etretinate and therefore accumulates in subcutaneous fat.

Teratogenic and embryotoxic effects of vitamin A and its metabolites have been identified in many animal studies. Manufacturers have made strenuous attempts to prevent administration of retinoids to pregnant women, anticipating a risk. Isotretinoin, because of its use in acne, is the drug most likely to be prescribed to women of childbearing years; unfortunately, it has been prescribed to patients who were unknowingly in early pregnancy and to patients who have taken inadequate contraceptive precautions, and some pregnant patients have self administered it after borrowing it from friends. Because of such inadvertent use there now exists a substantial body of information on the effects of isotreninoin in pregnancy. Spontaneous abortion is common, but when pregnancy proceeds some 18-20% of the resulting children have been found to have some form of congenital abnormality. The congenital malformations are often craniofacial, central nervous system, and cardiac abnormalities. The basis of these abnormalities is uncertain, but vitamin A may interfere with neural crest cell migration. It is clear from these accumulated data that in early pregnancy there is no safe dose of isotretinoin: abnormalities have been recorded after as little as one day's treatment.[1]

Data on the effects of etretinate are sparse. Although there are reports of congenital malformations in six births and seven malformations identified in therapeutic abortions after administration of etretinate during pregnancy, the total number of pregnancies exposed is unknown and at present it is far from certain whether the rate of abnormalities recorded is higher than the normal background rate.[2]

The manufacturers recommend that pregnancy should be avoided for one month after treatment with isotretinoin and for two years after etretinate and acitretin. These recommendations are based on pharmacodynamic data. A study of the outcome of 80 pregnancies after isotretinoin treatment has been published. Although some 64% of the conceptions occurred within one month of the end of treatment, there was no significant increase in the rate of congenital abnormalities.[3] Thirty two pregnancies that occurred within two years of the end of treatment with etretinate have been prospectively identified. The sole abnormality was of an inguinal hernia in a premature infant, a malformation unlikely to be associated with the administration of the retinoids.[2]

Obviously, further data must accumulate before the matter can be deemed to be fully resolved, but at present the manufacturers' recommendations for both isotretinoin and acitretin seem prudent and reasonable.

Finally, it has been mooted that systemic absorption may occur when tretinoin is used topically in treating acne or photodamaged skin. A recent study has examined the outcome of 215 pregnancies in which topical tretinoin has been used in the first trimester. It was concluded that such usage was not associated with an increased risk of major congenital disorders.[4]—R D ALDRIDGE, *consultant dermatologist, Edinburgh*

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