

NHS Breast Screening Programme

Review 1999

Meeting new challenges



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Foreword

As the NHS Breast Screening Programme enters its eleventh year, the story of its success continues. Each year, more women are being screened and more cancers are being detected.



Yvette Cooper, Under-Secretary of State (Commons)

No screening test can be 100% successful, but the strengthened quality assurance system within the breast screening programme is already helping to improve accuracy. This is leading to an even better service for women.

We should not get complacent, however, and the NHSBSP is constantly striving to improve the service it provides. The pilots for extending the programme to 65 to 69 year-olds are well underway, and the workforce issues that I know concern staff within the programme are being seriously addressed. The programme is also keeping a close eye on technological advances which have the potential to improve the service.

In this constantly changing environment, the Government would like to thank all the staff involved with the programme for their hard work and dedication. Without them the programme would not be the success that it is. Maintaining the position of the breast screening programme at the forefront of its international field relies upon the enthusiasm and commitment of staff in order to meet the ever growing number of women eligible for screening. I am confident that the skills and commitment of staff will firmly meet the challenges of the future, and the programme will continue to be a high quality service that saves lives.

A handwritten signature in black ink, appearing to read 'Yvette Cooper'.

Yvette Cooper
Under-Secretary of State (Commons)

Another year of progress



Julietta Patnick, National Coordinator

1999 has been another year of progress for the breast screening programme with both the numbers of women screened and the standardised detection ratios rising once again. Women have continued to attend for screening, some of them for the third or even fourth time, and increasingly we see women beyond the invited screening age group of 50 to 64 requesting screening and re-attending even as they approach their 70th birthdays.

The rising demand on the programme created by the additional women coming forward for screening obviously leads to greater pressure on resources, and the screening programme was delighted to receive additional funding for new and replacement items of equipment from the National Lottery New Opportunities Fund.

However against this demonstrable confidence in the screening programme and its continuing achievements there have been critics. Constructive criticism is welcome in that it makes us question ourselves and ensures that we continually justify our service. But when it is accompanied by dramatic headlines it can cause great anxiety to the women whom we invite.

The evidence is clear. Breast screening has been proven to save lives in research trials. The NHS Breast Screening Programme now clearly matches the quality of that original research and we expect to see a reduced death rate for breast cancer in this country in the fullness of time.

However we are not complacent and research alongside the Breast Screening Programme continues.

- A major trial is currently in progress looking at the potential benefits of screening women under 50. This trial will report in the early years of the next century.
- Pilot studies into inviting women over the age of 65 continue and we look forward to the results of these studies in a much shorter time scale, possibly in 2001.
- The Million Women Study into the effects of Hormone Replacement Therapy (HRT) has been a huge success, with a 75% response rate from women attending for screening and even some women who chose not to accept our invitation still completing the questionnaire. HRT is major issue for the women in the age group that we screen and we look to this study to provide us with many of the answers to the possible links between hormone replacement therapy and breast cancer and other diseases.

The breast screening programme looks forward to the new millennium with optimism. We will continue to invite and screen over a million women a year and to carry out that screening to the highest possible quality. We look forward to the fall in breast cancer deaths continuing and to the screening programme playing a full and acknowledged part in these declining death rates. Inevitably the screening programme will evolve and in another 10 years may look very different from the way that it does now at the end of its first full decade. New developments on the equipment front are very exciting and are described in this review. Above all we will continue to focus on each woman we serve and on reducing her risk of dying from breast cancer.



Julietta Patnick
National Coordinator



Stella Moody, who has just received her third screen, is proof that the kindness approach works.

Kindness is the key

Many breast screening centres are now seeing third-time attendees and for some the fourth round of screening is underway – so what is the secret of ensuring “repeat business”? The answer from both patients and professionals seems the same – kindness.



Members of the Luton and Dunstable unit

Of the 1.2 million women (aged 50 and over) who accepted screening in 1997/98, around 27% were first-timers and the remainder subsequent attendees.

One centre working hard to keep “regulars” signed up to the programme is Luton and Dunstable, a busy unit covering all of Bedfordshire and three-quarters of Hertfordshire. It sees some 27,000 women a year, with a 75% initial take-up, and an 88% acceptance for subsequent invitations.

In a recent review of its activities the unit acknowledges that sometimes it is not easy to make screening a positive experience for women, but with thought and effort this can be achieved.

Sensitivity and skill

The report points out: “The radiographers, literally the ‘hands on’ contingent, will be, for the vast majority of women, the only point of contact with the service. Since the success of screening depends on women returning every three years it is essential that this point of contact is a good one. It takes considerable sensitivity and skill to make mammography a positive

"I've come back voluntarily because I'm over 65. I wanted to make sure everything was alright. It's no good waiting until you've got a lump. If there are problems when you have a mammogram they can detect it and do something about it before it gets untreatable. It's better to treat something

when it's small than when it gets out of control.

"The people here are absolutely marvellous – there's no doubt about that. They are so kind and gentle. I don't think you can beat them – they are really good.

"Alright it's a bit uncomfortable, but surely to goodness, two seconds of discomfort is better

than waiting until you've got something you are going to be worried to death about and from which, in extreme cases, you may end up without any breasts or die."

"I would say to any woman – don't wait until you feel a lump or something unusual, go for

your mammogram when you are sent for, and try to remember every three years after that. That would be my message. It's a good thing for women – it gives you reassurance."

Mrs Moody, 67,
from Leagrave near Luton

experience and it is a testimony to their skill and dedication that more than 85% of women do return for screening."

Consultant radiologist Dr Sue Barter and Dr Deirdre Wright, director of the unit, endorse the kindness philosophy.

Said Dr Barter: "You can't build in some automatic method to trawl them back – but it's like going to the dentist: if you have a good experience and feel in safe, caring and compassionate hands you are more likely to come back again.

Calm and competence

"Kindness is something that's very much fostered here. The radiographers need an aura of calm competence and the ability for the ladies to trust them. It is undignified having your bosoms squashed between two cold plates, but if women are not seen as a production line specimen, if they feel the girls are there for them individually, rather than it being a production line, they are more likely to come back. It's not just technical skills – empathy is very important."

Dr Barter added: "It is easier to come back the second time if you've had a good experience, because you know there's nothing to be frightened of. What is impressive is the women we have to call back for assessment. You would think that frightening experience would put them off forever, even if they turn out to have nothing, but they aren't put off. They come back and they say 'I felt you took such good care of me, and left no stone unturned, I realised just how important screening is.' This a function of the team attitude towards the ladies – they do feel cherished."

Dr Wright said: "Information is very important – if something is going to be uncomfortable patients want

to know that this is a possibility, as is the overall manner of the team toward the women. We work with GPs and women's groups to spread the message – but primarily it's down to the first good experience.

"There is small drop out between initial and subsequent screens, and the question is why don't people re-attend. We have around 12% who drop out. We would hope to put very few women off. If they've come through the door once, we ought to be able to encourage them to continue to do that."

Below:
Dr Deirdre Wright, Clinical Director
Bottom:
Dr Susan Barter, Consultant Radiologist.





Multidisciplinary teams, for instance, were started in the breast screening programme.

A template for all of medicine

The purpose of the breast screening programme is to save lives by finding breast cancers sooner than they would otherwise be diagnosed – but the integral data collection and quality assurance programmes are having a wider influence across all of medicine, according to Gill Lawrence.



Dr Gill Lawrence

Combining roles

Dr Lawrence is director of quality assurance (QA) for breast screening in the West Midlands, and also director of the West Midlands Cancer Intelligence Unit, which covers cancer registration in the region. She is one of three people across the country currently wearing such dual hats – and argues strongly that there are considerable advantages from combining the two services in one organisation.

“Deaths from breast cancer are falling. You can start to look at rates by which they are falling and the time period over which they falling to see if screening could have had an effect.

“We have been looking at survival time from diagnosis. Until 1988 it is fairly flat, but in the period after 1988 to 1994 it starts to rise very rapidly. We don't know if this is entirely due to screening, but the chances are that it is having an effect.

“It's one of the advantages of the QA centres sitting in the cancer registry that we can pull out all the cancers

In terms of implementing the Calman-Hine proposals on improving cancer services, the symptomatic breast services are way ahead of other cancers, because of the influence of the screening programme. The people working in the screening programme are also working in the symptomatic services, so they are used to quality

assurance and all the other things the screening service has introduced.

"It is helping the Calman-Hine process. The models for breast screening are what are being introduced as national service frameworks for all of the cancers. Multidisciplinary teams, for instance, were started in the screening programme.

"I am absolutely sure we should not just be looking at the cancers detected by the screening programme, because its influence is much wider than that. Clinical governance is essentially quality assurance.

The breast screening programme is becoming a kind of teacher to cancer services as a whole – and there are lessons not just

for cancer but for all diseases. It's a template for all branches of medicine."

Dr Lawrence,
Director of West Midlands
Cancer Intelligence Unit

in women aged 50 to 64 and look at them, see where they were screen-detected and compare these with cancers which were not screen-detected.

"Last year, as part of the British Association of Surgical Oncologists (BASO) national audit of screen-detected breast cancer, we looked at five year survival for all the cancers detected in 1992/93. National survival at five years from screen-detected cancers was 92.5%, although in the West Midlands this was higher, at 94.5%. The overall survival in all West Midlands women aged 50 to 64, screened and unscreened, was 76.1%."

Further analysis will allow for a direct survival comparison between women with screen-detected cancer and women with symptomatic cancer. It is possible the five year survival rate for the symptomatic may be only around 50%.

Dr Lawrence believes that the difference is unlikely to be due to "lead time bias" – screened women knowing about their cancers for longer but this not affecting when they die.

"I think these data will show there is a significant survival advantage from being screened. The message

the service needs to give out is that if you have a screen-detected cancer you have a 92.5% chance of being alive five years later. If your cancer is diagnosed symptomatically, the chances are less than 76%."

Dr Lawrence points out that there's no doubt that stage at diagnosis affects survival. With a stage one cancer, the smallest which hasn't spread, five year survival rates are about 90%. By stage four, where the cancer has spread, survival rates are about 25%. Most screen detected cancers are stage one.

Early stage detection

"The data is now coming together. The screening programme is increasing the number of early stage cancers that are detected. I think we will be able to say soon that not only do women with screen-detected cancers have a very good survival, it will actually make a difference to mortality, which is after all what we are there for."

Dr Lawrence added: "Evaluating the success of screening is more than just looking at the screen-detected cancers – the screening programme has made a huge difference to breast cancer services as a whole. It has also made women more breast aware so they go to their doctor earlier now, even if they are symptomatic."





Breast cancer stage and survival

Five year survival by stage at diagnosis for women aged 50-64 years diagnosed in the West Midlands region in 1992.

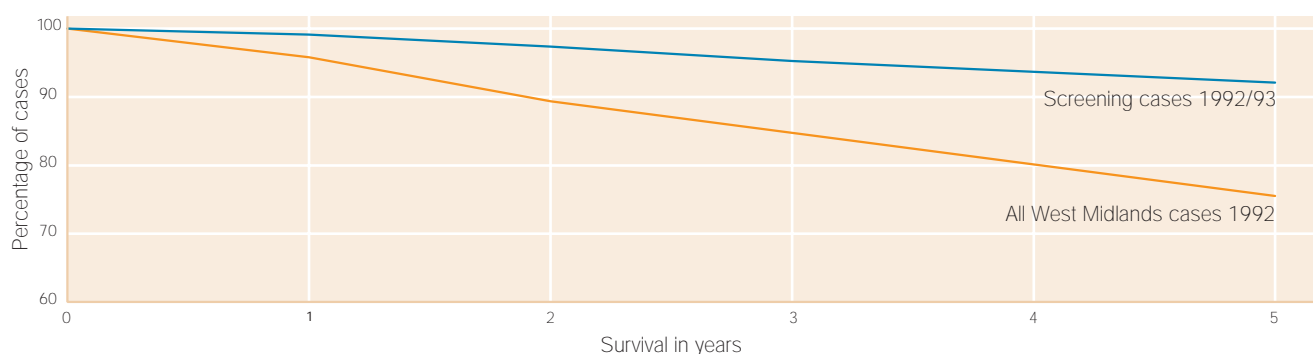
TNM stage	5 year survival (%)	Extent of disease
1	92	Tumour <20mm diameter, node negative, ie small node negative tumour
2A	77	Tumour <20mm diameter, node positive or 20-50mm diameter, node negative, ie small node positive tumour or slightly larger node negative tumour
2B	69	Tumour 20-50mm diameter, node positive or >50mm node negative, tumour not invading surrounding tissue, ie slightly larger node positive tumour or large node negative tumour
3	64	Tumour any size, node positive with tumour invading surrounding tissue
4	27	Tumour any size, metastases in distant nodes or other organs and tissues
unknown	81	

The table shows that women with stage 2B and stage 3 tumours have very similar five year survival rates. It also suggests that the unstaged tumours were most like those with stage 2A, ie small node positive tumours or slightly larger node negative tumours.

Survival of women with screen detected breast cancer compared with all women with breast cancer aged 50-64

Survival data for women with screen detected breast cancer was collected as part of the 1998 British Association of Surgical Oncologists (BASO) audit of screen detected breast cancer. All NHS breast screening programmes and quality assurance reference centres contribute to the annual BASO audit. The data submitted by each regional quality assurance reference centre is collated and analysed by the West Midlands Quality Assurance Reference Centre which is part of the West Midlands Cancer Intelligence Unit. The results of the annual audit are presented each year by the West Midlands Regional Director of Quality Assurance at the BASO Breast Speciality Group Meeting.

The graph shows survival rates for 4,864 women with screen detected breast cancer diagnosed in 1992/93 (ie between 1 April 1992 and 31st March 1993) in England, Wales and Northern Ireland compared with those for 1,215 women aged 50-64 diagnosed with breast cancer in the West Midlands region in 1992 (ie between 1 January and 31 December 1992). The five year survival for women with screen detected cancer was 92.5% compared with 76.1% in all women aged 50-64. The five year survival rate for West Midlands women with screen detected cancers diagnosed in 1992/93 was 94%.

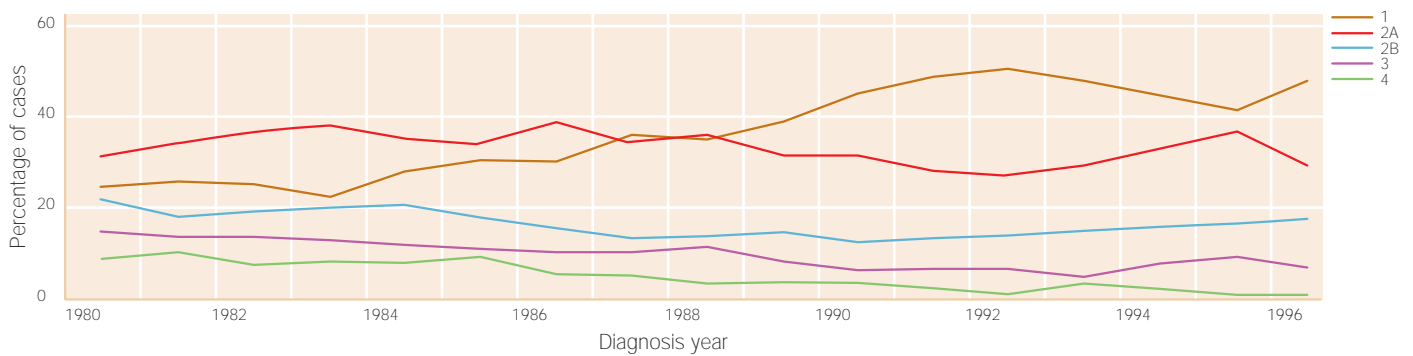


Variations in stage at presentation with time

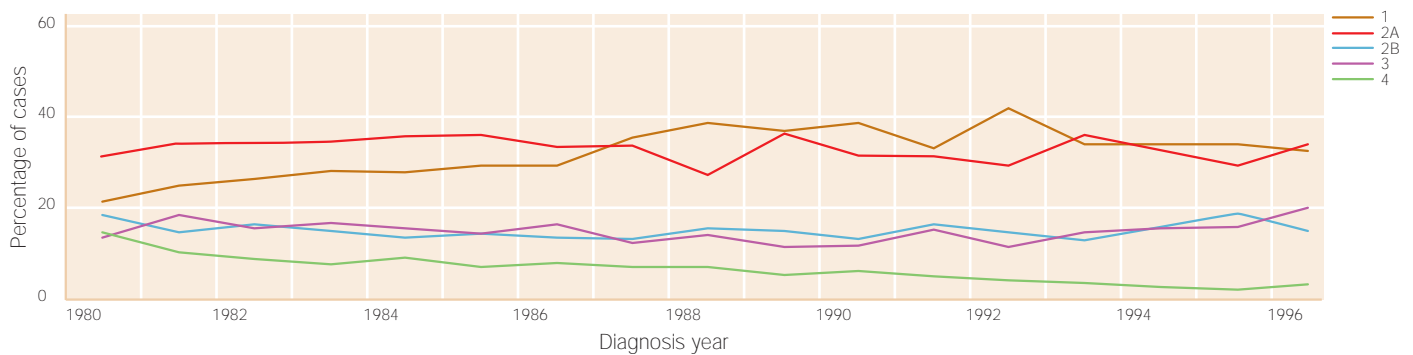
The graphs show variation in tumour stage at presentation for women aged 50-64 years and for women over 65 diagnosed with breast cancer in the West Midlands between 1980 and 1996.

38,164 cancers are included in the study. The graphs show a marked increase in the percentage of early stage (stage 1) tumours in women of screening age from 1988 onwards. This rise is much less marked in women over 65.

Variation of stage at presentation with time (ages 50-64)



Variation of stage at presentation with time (ages 65+)





"...because you need a big population for this..."

Answers for the world

By the start of 2000, one million women will have been successfully recruited into one of the world's largest ever cohort studies, looking at the links between hormone replacement therapy and breast cancer and other diseases.



Professor Valerie Beral

Million Women Study

The study is being coordinated by a team at the Imperial Cancer Research Fund's Cancer Epidemiology Unit, at Oxford University.

Professor Valerie Beral, leader of the Million Women Study team, freely acknowledges that the research would not be possible in any other country and that it depends crucially on the support of breast screening units and the women taking part.

Preliminary results from the study will be available around 2002, but already the characteristics and lifestyle information about the women taking part has revealed important data.

The first surprise for the researchers was the sheer number of women now taking HRT. Previous estimates put this at around 10%, but the study has found that 33% of women are taking HRT, and 47% have used it at one time. More than half had used oral contraceptives and 18% were smokers.

Before they were screened, 1.4% of the women had been diagnosed with breast cancer in the past; 6%

"The centres have been fantastic in terms of their co-operation and so have the women, so it's been a very pleasant study to do. It's been very gratifying, so we have to reciprocate by producing results and making sure people know about them. The women themselves have been very

generous – some have even written in thanking us for doing this study, because we are trying to answer questions that they want answers to."

Professor Beral,
coordinator of the
Million Women Study

The Million Women Study form

had a mother with a history of breast cancer and 3.7% had a sister with a history of breast cancer.

Health, history and lifestyle

Just over 61 screening centres in England and Scotland are taking part – although Wales wanted to take part it proved impossible as their invitation machinery could not handle packaging the questionnaire.

Firstly, women fill in a detailed questionnaire on their health history and lifestyle and, after about three years, complete a second questionnaire on any developments or changes. Many participating women are just entering this second stage, as in some centres the study started in May 1996.

Aside from breast cancer, the study aims to look at possible links with other cancers such as bowel and ovarian, and with heart disease and osteoporosis. It is also examining an issue of direct concern to the service – whether changes in the breast caused by HRT can "cloud" mammograms, making them harder to read.

It is anticipated that by 2002 there will be 5,000 screen-detected cancers amongst women in the cohort and some 23,000 deaths. Of these, the majority (12,600) will be from cancer and heart disease (8,000).

Professor Beral said: "It is expected that within five years, the study will have sufficient statistical power to answer questions about the role of HRT in mortality from breast cancer and other specific conditions."

She pointed out that at the moment the majority of evidence for the relationship between HRT and cancer comes from America. However most women in America take oestrogen-only preparations, whereas in this country, most women take a combined oestrogen-progesterone preparation. The Million

Women Study will be able to give exact details about which brands are being used.

European perspective

"We are finding now that in many European countries, in women who are just post-menopausal, between a third and half will be taking HRT. The pattern is also changing over time as to how long women stay on HRT – the duration of use is increasing. Originally it was used for symptoms of the menopause, but now longer term use is becoming more common."

Professor Beral added: "It's not clear yet what HRT does. Different types might have different effects. We need a European perspective on what is happening, and to look at different preparations."

Professor Beral said that without the structure and freely given co-operation of the NHS Breast Screening Programme, the study would not have been possible.

"The breast screening programme has contributed by handing out the questionnaires for us and collecting the stuff for free and they've contributed with a great deal of good will. If we didn't have the breast screening service we couldn't do it.

"There's no other country in the world with a combination of comprehensive screening, such as in Britain, and a very large population, because you need a big population for this. One million women in the 50 to 64 age group comprises around a quarter to a fifth of the total.

"I think it will provide definitive answers to questions about HRT and cancer. For the effects on heart disease we might need trials, but for questions about cancer and general effects we are going to get a lot of answers, plus a lot of answers about lifestyle factors in women in their 50s."



Turning the spotlight on CAD

The concept of computer assisted diagnosis in reading mammograms holds much promise in theory. But does it actually work?

A working party of experts has now been put together, under the leadership of Professor Fiona Gilbert of Aberdeen University, to look at the evidence. A number of centres around the country are evaluating different aspects of technology, although not all the funding for this comes from the screening programme.



Professor Fiona Gilbert



Dr Julie Cooke

Changing technology

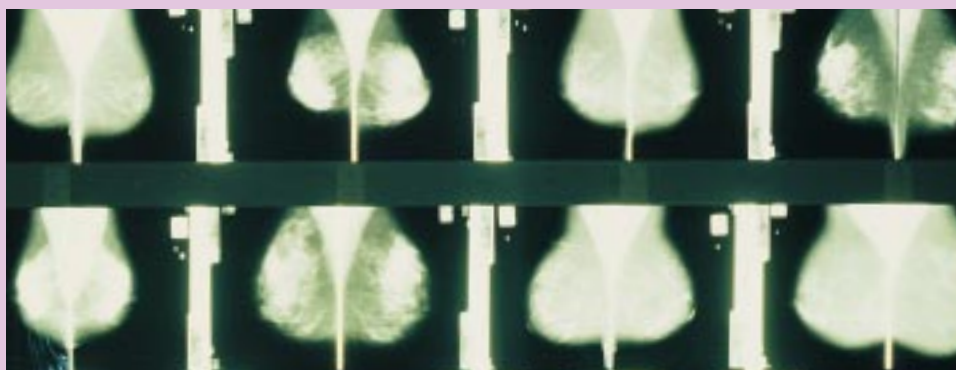
Professor Gilbert accepts that in any fast changing technology it is difficult to judge the correct time to carry out an assessment, but feels it is right to start now before market forces lead to the machines being adopted on a piecemeal basis, without sufficient proof of their benefit in the UK system.

She explained: "The aim is to see if computer aided detection (CAD) does actually help breast screening radiologists.

"In theory there should be less variation, but suppose the CAD system was not very good at picking up lesions which were a cancer, and only picked up 70% of them? It could be then that the radiologist got used to using CAD and only picked up the 70%. Another problem with such systems could occur if they were too sensitive

"The aim is to see if computer aided diagnosis (CAD) does actually help NHS breast screening radiologists."

Professor Gilbert,
Aberdeen University



and marked three or four lesions on every film which distracted the radiologist from marking the cancers."

Most experts believe the mathematical algorithms which drive the systems still need further work to come close to the human skills, although they are proving effective for some forms of diagnosis.

Practical problems

Practical problems are that the systems are cumbersome at the moment, because the film has to be digitised, and the image is not designed to be read directly from the computer screen – it is more of an elaborate diagram, with suspicious areas marked with a circle or cross.

Questions also exist over whether the current machines can cope with the UK workload. "Some of the machines we looked at were taking two minutes to handle one film, which meant it was four minutes per woman. That doesn't sound a lot – but it is if you are seeing 100 women a day; that's 400 minutes or an extra six hours," Professor Gilbert pointed out.

Further questions arise over how much data the machines can hold. Some can only hold 400 films, which is just two days work in some centres.

Resources

If CAD systems became reliable enough, they could be used as "sifters" to weed out the normal films, allowing human resources to concentrate on the abnormal. It would also help to solve the current radiology manpower difficulties.

There would, of course, be cost implications in the capital outlay. The machines cost around £100,000 and there would need to be at least 100 for the UK, plus the service contracts.

Plans have been drawn up for a trial of such systems, possibly needing 100,000 women, to look at both diagnostic accuracy and operational issues, although funding for this has still to be obtained.

Digital technology

Another development being looked at in connection with mammography is the added value of digital technology.

Up to now there hasn't been the technology to take a good quality digital pictures of the whole breast, although four inch spot cameras are being used on stereotactic machines which are used in clinics to take biopsies and mark suspicious areas for biopsies.

However, one American manufacturer, Lorad has now developed a full field digital machine that can image an entire breast. One arrived in this country in October to allow the first UK tests into its effectiveness.

The assessment will be carried on behalf of the breast screening programme. It is being run by Dr Julie Cooke, director of the Jarvis breast screening centre at Guildford.

Disadvantages as well as possible advantages will be examined, including cost – which may run to £200,000 per machine – and potential difficulties with archiving and retrieving images. Questions will also be asked about the quality of the digital images and time taken to read a film.

Said Dr Cooke: "At the moment the implications are that it is very much more costly and we don't know if it has the power to do screening. Can you do 70 patients a day? But if archive and retrieval was quick, and radiologist got used to looking at computer screens, it could happen."

The year in review

The statistics presented here represent the cumulative effort of the NHS Breast Screening Programme. The NHS Breast Screening Programme is very much about teamwork with all members of staff at all grades contributing to the achievement.

The collection of statistics begins with the identification of women to whom we must send an appointment and follows women as they progress through our service, with information collected at every stage. Each breast screening unit then sends its data to the regional quality assurance reference centre who check it, validate it and ultimately send it in for the English units to the Department of Health and to corresponding health departments in other parts of the United Kingdom. While the Department of Health analyses the statistics for England, the Cancer Screening Evaluation Unit at the Institute of Cancer Research in Surrey pull together the figures on a UK basis and it is these figures which are presented in this report.

In addition to this, various information gathering exercises continue in parallel looking at particular aspects of the breast screening programme. A great deal of effort is currently expended on collecting data about surgical management of women and the methods of diagnosis and treatment. Again this imposes a burden on a wide variety of people working within the programme and especially, once again, on the quality assurance reference centres. The reference centres are the backbone of the breast screening quality assurance initiative and the rest of the programme must thank them for their unstinting efforts on behalf of us all.

Thanks are also due to the staff at the Cancer Screening Evaluation Unit for their statistical analysis and also to the West Midlands Cancer Intelligence Unit for their assistance in pulling together the audit carried out on surgical aspects through the British Association of Surgical Oncology.

Footnote

The data in tables 3 and 4 refers to performance against the standards for the NHS Breast Screening Programme which were in use in 1997/98. Revised minimum standards and targets were published in 1998 and performance against these will be reported in subsequent Annual Reviews.

Table 1

Screening activity Women aged 50+

The number of women invited for screening continued to rise during 1997/98 as it has done for the last few years and is expected to do for the foreseeable future. The acceptance rate remained roughly the same although there was an increase in the number of women who referred themselves for screening. Principally these are women aged 65 and over. The number of women recalled for assessment fell slightly and the number of benign biopsies fell from over 3,000 to just over 2,000. Some of the benign biopsies are carried out to investigate an apparent abnormality, others occur where an unusual mammographic appearance has been diagnosed as benign, but the woman chooses to have it removed anyway once her anxieties have been aroused. The breast screening programme aims to minimise the

number of benign biopsies which are a consequence of the screening programme. The number of cancers detected and the rate of cancers detected per 1000 women screened both rose. The standardised detection ratio takes account of the changing age pattern of the women invited for screening. There are increasing numbers of women entering the programme and this means that the proportion of younger women we screen, who have lower rates of cancer, is rising. The rising standardised detection ratio confirms that the NHS Breast Screening Programme is performing at least as well as the original Swedish research on which the UK programme is founded. We continue to expect to see the target mortality reduction of 1,250 lives per year in due course.

	1997/8	1996/7
Number of women invited	1,668,476	1,558,995
Acceptance rate (% of invited)	75.1	75.2
Number of women screened (invited)	1,252,324	1,248,377
Number of women screened (self/GP referrals)	97,780	91,795
Total number of women screened	1,350,104	1,340,172
Number of women recalled for assessment	71,255	66,333
% of women recalled for assessment	5.3	4.9
Number of benign biopsies	2,212	3,268
Number of cancers detected	7,932	7,141
Cancers detected per 1000 women screened	5.9	5.6
Number of in situ cancers detected	1,718*	1,431*
Number of invasive cancers less than 15mm	3,381*	3,156*
Standardised detection ratio	1.05	1.01

* all ages

Table 2

Acceptance by type of screen

The pattern of acceptance amongst the different groups of women invited for screening maintains the usual pattern. Higher attendance is seen in younger women than older women. Over 86% of women accepted an invitation to re-attend for screening, having previously been screened at least once. Re-attendance rates are showing a slight drop from previous years but this is consistent with the pattern in all breast screening trials. Re-attendance in

women invited for an early recall screen continues to be high, but the numbers of women in this category have dropped from 9,318 last year to 7,592 this year. As anxiety is very high in these women it is not surprising that there is such a high re-attendance rate, but leaving women in this category of early recall rather than an immediate diagnosis or return to normal screening is something which the screening programme is working hard to minimise.

	50-54	55-59	60-64	65+	Total 50-64
Acceptance following first invitation (%) (numbers)	75.3 (377,936)	43.9 (15,152)	39.9 (12,513)	51.3 (1,183)	73.0 (405,601)
First screen previous non attenders (%) (numbers)	34.0 (58,114)	22.0 (80,177)	15.6 (72,397)	19.1 (5,426)	23.1 (210,688)
Acceptance following second or subsequent invitations (%) (numbers)	88.1 (215,353)	86.8 (413,579)	85.5 (382,379)	84.1 (25,771)	86.6 (1,011,311)
Acceptance following early recall (%) (numbers)	98.0 (4,190)	96.6 (1,838)	95.0 (1,564)	95.0 (904)	97.0 (7,592)
Total (%) (numbers)	76.0 (655,933)	75.4 (510,746)	73.5 (468,853)	72.6 (33,284)	75.1 (1,635,192)

Table 3

Screening quality: First screen (50-64)

Acceptance was slightly higher than last year amongst women invited for screening for the first time. The recall for assessment rate was also slightly higher but still within the standard set. The benign biopsy rate met the acceptable standard for the first time, being 3.3 per 1,000 rather than 5.1 per 1,000 last year. The invasive cancer rate was slightly higher

than last year at 5.0 per 1,000 compared with a previous rate of 4.8 per 1,000, but the in situ cancer rate has also risen and remains outside the expected level. The proportion of invasive cancers which were smaller than 15mm had fallen slightly to just under 50% although the standardised detection ratio had risen again.

	Standard	Achieved
Acceptance rate at first invitation (%)	≥ 70.0	73.0
Recall rate (%)	< 7.0	7.8
Benign biopsies per 1000 women screened	< 3.6	3.3
Invasive cancer detection rate per 1000 women screened	> 3.6	5.0*
In situ rate (%)	10-20	23.9*
Invasive cancers less than 15mm (%)	50.0	48.9*
Standardised detection ratio	≥ 1.0	1.22
Total number of women screened for the first time	-	344,919

Table 4

Screening quality: Subsequent screen (50-64)

The majority of women coming for screening are now attending for the their second, third or even, in some locations, fourth appointment. The acceptance rate of invitations for the repeat screen was slightly lower and the recall for assessment rate slightly higher than previously. The benign biopsy rate continues to decline and is now only 0.8 per 1000. The invasive cancer rate has risen marginally compared with last year but had still not reached the target of 4.0

invasive cancers per 1,000 women screened. The in situ rate has risen amongst this group of women as it has for women coming for the first attendance and is now just outside the expected range. The small invasive cancer rate has declined slightly but remains above target. The standardised detection ratio has increased again and at 0.98 is now only just below the Swedish Two Counties level.

	Standard	Achieved
Acceptance rate at subsequent screen (%)	-	86.6
Recall rate (%)	< 7.0	3.8
Benign biopsies per 1000 women screened	< 4.0	0.8
Invasive cancer detection rate per 1000 women screened	> 4.0	3.8*
In situ rate (%)	10-20	20.9*
Invasive cancers less than 15mm (%)	50.0	55.2*
Standardised detection ratio	≥ 1.0	0.98
Total number of women screened for a second or subsequent time	-	875,867

* all ages

Table 5

Screening outcome: (50 to 64 year olds)

The different groups of women attending for screening have demonstrated different patterns as they progress through the screening programme. The very high rate of women invited for an early recall appointment who are recalled for assessment, reflects the fact that most of these women are recalled to allow the screening programme to investigate further an unresolved diagnostic difficulty at their previous attendance. These women have a

very high benign biopsy rate and a very high cancer detection rate which reflects the fact that their presentation poses a degree of difficulty. While they are at high risk of having a cancer, they also run the risk of an open biopsy before a diagnosis of normality can be made. Nevertheless 71% of the cancers found in these women are smaller than 15mm which is a much higher proportion than is found in any other group of women screened.

	First screen (invited)	Subsequent screen (invited)	Self/GP referral	Early recall
Number of women screened	344,919	875,867	35,737	7,369
% women recalled for assessment	7.8	3.8	6.4	81.3
Benign biopsies per 1000 women screened	3.3	0.8	2.4	19.8
Overall cancer rate per 1000 women screened	6.5	4.8	6.3	33.3
In situ cancers per 1000 women screened*	1.6	1.0	1.4	10.3
Invasive cancers per 1000 women screened*	5.0	3.8	4.9	22.9
% invasive cancers less than 15mm*	48.9	55.2	44.8	71.0

* all ages

Table 6

Screening outcome: First screen by age group (invited women only)

The vast majority of women attending for their first screen are aged 50 to 54. However, there are still small numbers of women in their 60s who are attending for the first time. As might be expected

the cancer detection rate rises, and indeed almost doubles, between women coming for their first screen in their early 50s and women coming for the first time in their early 60s.

	50-54	55-59	60-64	65+	Total 50-64
Number of women screened	304,369	24,259	16,291	1,642	344,919
% women recalled for assessment	7.9	7.4	7.3	6.5	7.8
Benign biopsies per 1000 women screened	3.3	2.9	2.5	2.4	3.3
Cancers detected per 1000 women screened	6.1	8.7	11.4	16.4	6.5

Table 7

Screening outcome: Subsequent screen by age group (invited women only)

Amongst women coming for their second, third or fourth screen, the differences in age are levelled out when it comes to recall for assessment or benign biopsies. However, the increase in the cancer

detection rate is again seen as the age of women rises, which reflects the increase in incidence amongst older women.

	50-54	55-59	60-64	65+	Total 50-64
Number of women screened	189,811	359,033	327,023	21,670	875,867
% women recalled for assessment	3.9	3.8	3.6	3.7	3.8
Benign biopsies per 1000 women screened	0.9	0.9	0.8	0.9	0.8
Cancers detected per 1000 women screened	3.6	4.7	5.6	7.9	4.8

Table 8

Screening outcome: Self/GP referrals by age group

Women who self refer between the ages of 50 and 64 are generally those who have missed out on a routine appointment due to changes of address, or those who had previously declined an appointment but later changed their minds. Women over 65 are not routinely invited but are encouraged to self refer and whilst self-referrals have increased amongst women of all ages, the most remarkable increase

(over 25%) has been seen in women aged 65 and over. The cancer detection rate has declined amongst all age groups of women referring themselves for screening.

	50-54	55-59	60-64	65+	Total 50-64
Number of women screened	13,669	10,816	11,252	62,043	35,737
% women recalled for assessment	7.6	5.8	4.9	5.1	6.2
Benign biopsies per 1000 women screened	3.1	1.6	2.2	1.5	2.4
Cancers detected per 1000 women screened	6.1	7.4	6.5	11.0	6.6

Table 9

Screening of women aged 65 and over

The number of women aged 65 and over who have been screened has risen from 66,889 in 1996/96 to 86,214 in 1997/98. The vast majority of this increase is seen amongst women who have previously been screened by the NHS breast screening programme and are returning now for further screening. The

cancer detection rates are much higher in this age group, reflecting increased risk, although the overall cancer detection rate has fallen slightly and the benign biopsy rate has fallen dramatically from 12.7 per 1,000 last year to 1.5 per 1,000 this year.

	First screen (invited)	Subsequent screen (invited)	First screen (self/GP referral)	Subsequent screen (self/GP referral)	Early recall	Total 50-64
Number of women screened	1,642	21,670	10,544	51,499	859	86,214
% women recalled for assessment	6.5	3.7	8.2	4.6	63.8	5.4
Benign biopsies per 1000 women screened	2.4	0.9	2.7	1.3	9.3	1.5
Cancers detected per 1000 women screened	16.4	7.9	17.4	9.6	52.4	10.7

Table 10

Total screening activity all ages

For administrative reasons the screening programme sees a number of women under 50 each year, although this year the number has declined slightly.

Both the percentage of women recalled for assessment and the cancer detection rate has risen in both age groups.

	Under 50	Over 50	Total
Number of women screened	67,572	1,350,104	1,417,676
% women recalled for assessment	6.4	5.4	5.5
Cancers detected per 1000 women screened	3.8	5.9	5.8

Table 11

Non-operative diagnosis

Non-operative diagnosis has been a particular focus of activity for the screening programme in recent years. A minimum standard of 70% of cancers being diagnosed without an operative procedure was set from 1996 and has been achieved this year for the first time. In the first years of the screening programme emphasis was placed upon screening units learning to become expert in the technique of fine needle aspiration diagnosis, whereby a few cells from the area of suspected abnormality were drawn off using a needle and interpreted. Lately, however, a new

technique of core needle biopsy has been developed and its use encouraged. This largely explains the increasing rate of non-operative diagnosis. Use of this technique also avoids the need for women to have an open biopsy under general anaesthetic in order for their suspicious area to be either diagnosed as cancerous or confirmed as normal. As few as 0.2% of cancers are diagnosed on radiological or clinical grounds only which is a tremendous achievement and is unlikely to be further reduced.

	1997/8	1996/7
% cancers diagnosed as "definitely malignant" by cytology or histology	71.0	62.0
% cancers diagnosed on radiological or clinical grounds only	0.2	1.0

Table 12

Lymph node status

The percentage of invasive cancers with nodal status recorded rose in 1997/98 to 87%. In 12% of cancers the lymph nodes were not sampled and in a further 1% the nodes were sampled but the nodal

status was not recorded. Three quarters of the cancers where the nodal status was ascertained proved to be node negative which gives a much better outlook for the woman.

	1997/8	1996/7
% invasive cancers with nodal status recorded	87	82
% node positive	22	22
% node negative	65	60
% status unknown	13	19

Table 13

Distribution of cancers detected in women 50+

This table shows the distribution of cancers detected in the breast screening programme. Most cancers

are detected in women invited for a second or subsequent screen.

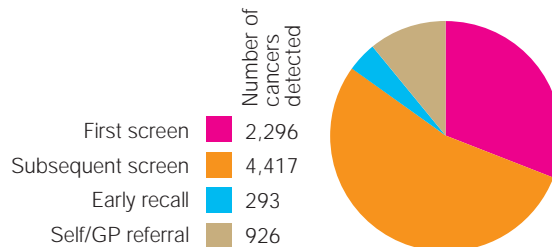


Table 14

Women 65 and over screened

The number of women aged 65 and over attending for screening in 1997/98 rose by almost 30% compared with 1996/97. This reflects the increasing awareness of their continuing risk amongst older women, who have perhaps been for screening once

or twice when they were younger. The Breast Screening Programme encourages older women to continue to be breast aware and to attend for screening every three years.

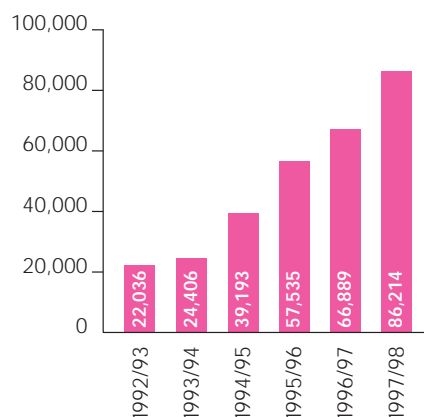
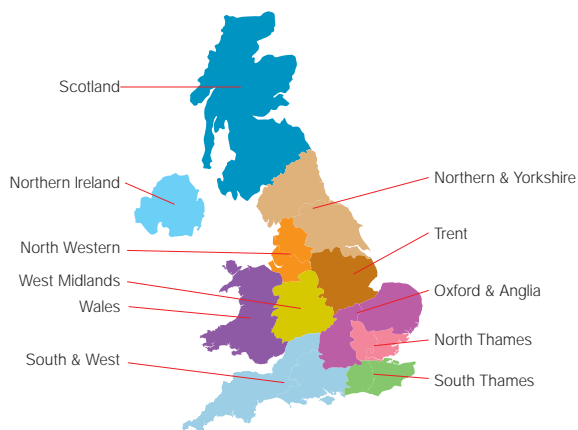


Table 15

Outcome of first screening by region (50 to 64)

Tables 15 and 16 present the outcome of screening for each region corresponding to each NHS Executive regional office in 1997/98. Some patterns continue from one year to the next. A particular example of this is the high recall for assessment rate in Scotland. However, one noticeable change this year is the increase in the cancer detection rate in Northern

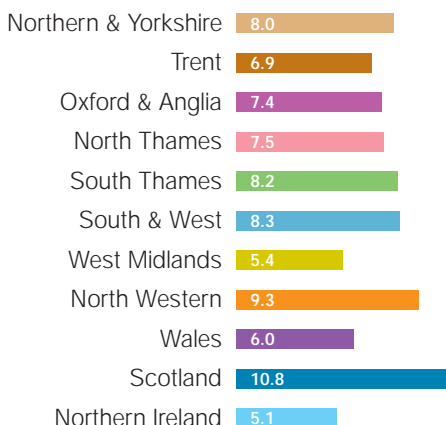
Ireland compared with previous years. This is obviously a trend which will be watched with interest. Northern Ireland have, however, retained their low recall for assessment rate. Acceptance of screening remains disappointing in the Thames regions, a pattern which is seen in other disease prevention activities.



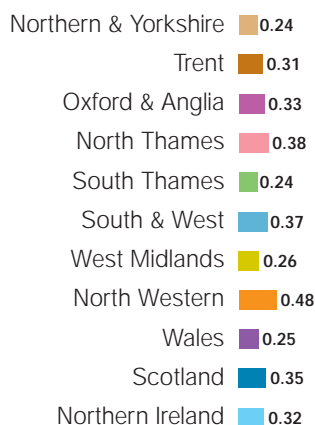
Acceptance rate %



Recall for assessment rate %



Benign biopsy rate %



Cancer detection rate per 1000 women screened

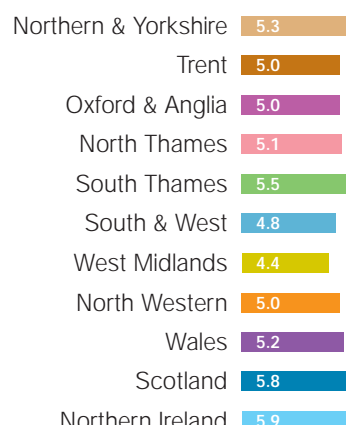
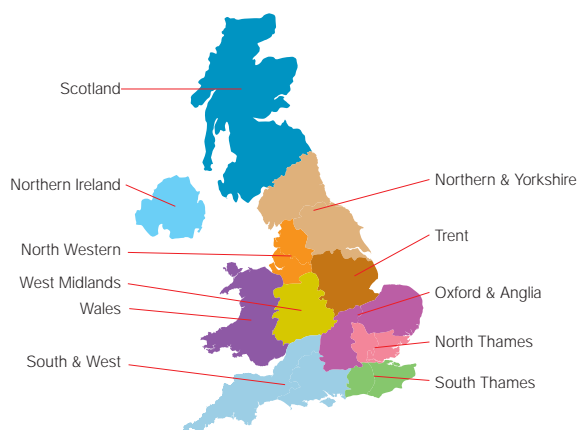


Table 16

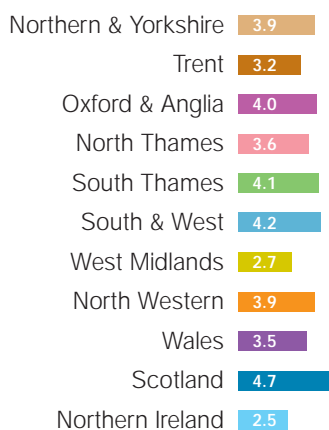
Outcome of subsequent screening by region (50 to 64)



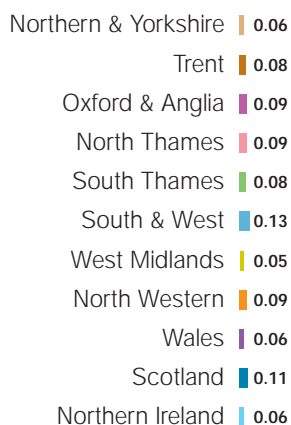
Acceptance rate %



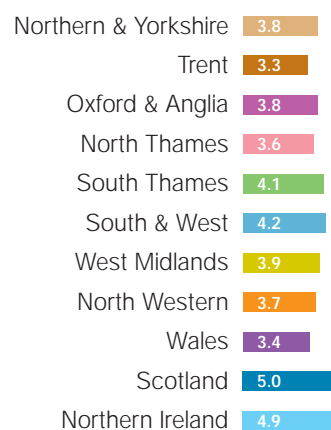
Recall for assessment rate %



Benign biopsy rate %



Cancer detection rate per 1000 women screened





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