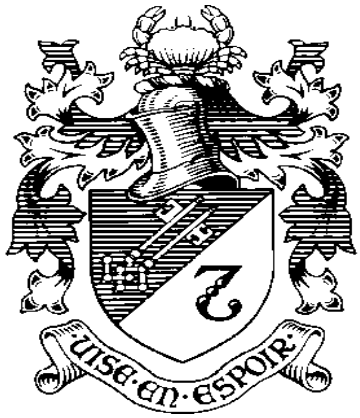


NHS
Cancer Screening Programmes

NHS BREAST SCREENING PROGRAMME

&

ASSOCIATION OF BREAST SURGERY AT BASO

AN AUDIT OF SCREEN DETECTED BREAST CANCERS FOR THE YEAR OF SCREENING APRIL 2002 TO MARCH 2003

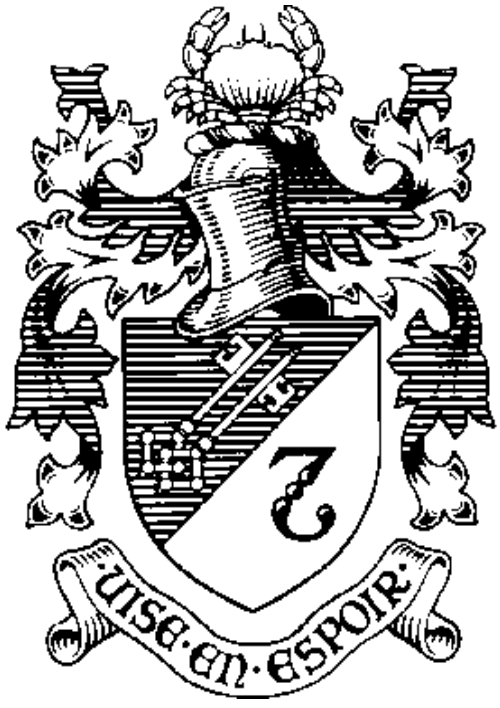
PRESENTED AT THE
ASSOCIATION OF BREAST SURGERY AT BASO MEETING

26th May 2004

EAST MIDLANDS CONFERENCE CENTRE, NOTTINGHAM

NHS

Cancer Screening Programmes



FOREWORDS

The audit of screen detected breast cancers, which is carried out with the Association of Breast Surgery at BASO, has become a major part of the quality assurance of the UK NHS Breast Screening Programme. The audit enables us to track diagnostic standards in all our breast screening units and to see what has happened to the women we have screened.

The results of the audit enable each screening programme to compare itself with the rest of the country. Each programme can see if they are keeping up with trends, or whether extra effort is needed. This has contributed to the overall quality improvement we have seen over the years in the UK NHS Breast Screening Programme, and in diagnostic and treatment standards.

This year we will be following up the audit and the annual meeting with a workshop for QA teams later in the summer. This workshop will dissect those aspects of diagnosis and treatment where special attention is needed to ensure the improvement continues.

Thanks are due, as ever, to the team at the West Midlands Cancer Intelligence Unit, who put the data together, and to all the surgeons and their teams who contribute their own figures.

Julietta Patnick
Director for the NHS Cancer Screening Programmes, April 2004

Another year, another Herculean struggle to obtain data. For some reason collecting surgical data in the BASO audit never gets any easier. I don't think this is due to the unrealistic demands of your audit group but rather the continuing difficulties in implementing effective data collection systems for the non core screening data set. I therefore appreciate the work of all those in breast screening units, QA reference centres, breast units and oncology centres who are able to return data under these difficult circumstances. You are, despite the horrendous difficulties, contributing to a world class set of data that is slowly but steadily achieving international recognition as a significant data source within breast cancer screening. I commend these data to you.

Finally I wish to thank Dr Jackie Walton for her considerable contribution to the success of this project not least through achieving 10-year survival data. On behalf of the audit group I wish her a fond farewell and every joy in her new (and more challenging!) role as a parent.

Hugh Bishop
Chairman, Breast Audit Group, Association of Breast Surgery at BASO, April 2004

ACKNOWLEDGEMENTS

The 2002/03 audit of screen detected breast cancers was designed and directed by the Breast Audit Group of the Association of Breast Surgery at the British Association of Surgical Oncology (BASO).

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Prof Paul Sauven	Association of Breast Surgery at BASO
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Dr Jackie Walton	Breast Screening QA Research and Information Manager, West Midlands QA Reference Centre
Mrs Margot Wheaton	Chair of the National Breast Screening System Users Group and Administration QA Co-ordinator, West Midlands NHSBSP

The Breast Audit Group would like to extend their thanks to the following individuals and groups for their contribution to the 2002/03 audit of screen detected breast cancer.

NHSBSP Surgical QA Co-ordinators, QA Co-ordinators and QA Directors for overseeing regional data collection and validation at the regional QA Reference Centres.

QA Data Managers, Screening Office Managers and staff within the NHSBSP for collecting, collating and validating the regional data.

Mrs Diane Edwards from the Health GIS Service at the West Midlands Cancer Intelligence Unit for producing the map of the NHSBSP. Mr Pascal Jean and Miss Helen Davis at the West Midlands QA Reference Centre for their involvement in the production of the audit booklet.

Regional cancer registry staff who co-operated with their regional QA Reference Centres to collect survival audit data. Dr Mike Quinn from National Statistics and Dr Cheryl Livings from the Research and Information Team at the West Midlands Cancer Intelligence Unit for help with calculating relative survival.

Ms Lucy Davies at the ABS at BASO office for valuable assistance and support, including the distribution of booklets.

The Breast Audit Group would also like to thank the NHSBSP national office for its financial assistance in support of the 2002/03 audit of screen detected breast cancer.

CONTENTS

INTRODUCTION

AIMS AND OBJECTIVES

The 2002/03 Association of Breast Surgery at BASO (ABS at BASO) audit of screen detected breast cancer was undertaken to examine NHS Breast Screening Programme (NHSBSP) surgical activity in the period 1st April 2002 to 31st March 2003. The audit was designed to assess surgical performance by comparison of data with as many as possible of the surgical Quality Assurance (QA) standards recommended by the UK NHS Breast Screening Programme. These include the standards set in the following publications:

- Quality Assurance Guidelines for Surgeons in Breast Cancer Screening
  NHSBSP Publication No. 20 Revised November 2003

- Guidelines for Quality Assurance Visits
  NHSBSP Publication No. 40 Revised October 2000

Reference is also made to guidelines intended for symptomatic breast cancer:

- Guidelines for Surgeons in the Management of Symptomatic Breast Disease in the United Kingdom, European Journal of Surgical Oncology 1995, updated 1998

The audit covers the main topic areas:

- the number and invasive status of screen detected breast cancers
- pre-operative diagnosis and use of diagnostic open biopsy
- treatment and size of all cancers
- lymph node status, invasive grade and NPI score
- surgical caseload
- repeat therapeutic operations
- adjuvant therapy
- survival

ORGANISATION OF THE AUDIT

Organisation of Data Collection

As in previous years, responsibility for regional data collection was devolved to Regional QA Reference Centres under the direction of Surgical QA Co-ordinators, QA Directors and QA Co-ordinators. Prior to the start of data collection an information pack was sent to all Surgical QA Co-ordinators, QA Directors, QA Co-ordinators and Directors of Regional Cancer Registries. This pack included, in both electronic and paper format:

- a timetable of events (Appendix 1)
- a main ABS at BASO breast audit questionnaire with guidance notes (Appendix 2)
- an adjuvant therapy data collection form with guidance notes (Appendix 3)
- a survival audit data collection form with guidance notes (Appendix 4)

The format of the audit was designed by the Breast Audit Group and was subject to comment from the Surgical QA Co-ordinator, QA Directors and QA Co-ordinators in an attempt to ensure that, as far as possible, ambiguities were eliminated. Guidance notes and data checks, designed to assist the collection of consistent data, were incorporated.

ABS at BASO Breast Audit Questionnaire

The ABS at BASO breast audit questionnaire was designed to enable collection of data describing surgical screening activity in the 2002/03 screening year. The cohort of women included in this period was selected to be identical to that included in the statistical KC62 reports for 2002/03, from which UK NHSBSP core screening measures are routinely calculated. Information was sought in such a way as to allow comparison of findings with current QA standards.

Screening Surgical Caseload

In order to calculate the screening caseload of every surgeon working within the UK NHSBSP, each woman was assigned the GMC code relating to her consultant surgeon to eliminate double-counting of surgeons across screening services.

Adjuvant Therapy Audit

Each screening surgeon was asked to collect information for those women with a date of first offered appointment from 1st April 2001 to 31st March 2002 inclusive. Information was sought regarding start dates for radiotherapy, chemotherapy and hormone therapy, where applicable. These data were linked to data collected in the main audit for 2001/02 to provide information on waiting times for adjuvant therapy and patterns of treatment.

Survival Audit

The survival audit utilised existing links between QA Reference Centres and Regional Cancer Registries to obtain death data for women with screen detected cancer. Details of the women with screen detected breast cancer diagnosed between 1st April 1997 and 31st March 1998 were obtained by the breast screening services and matched with databases held at regional cancer registries to identify the date of death for any woman who died on or before 31st March 2003. Death data collected in previous audits for women with screen detected breast cancer diagnosed between 1st April 1992 and 31st March 1997 were updated in order to provide relative survival probabilities for a period of up to 10 years post diagnosis. For the first time, cancer registries were asked to provide the diagnosis date of the primary tumour corresponding to the screen detected cancer so that only primary screen detected cancers were included in the survival analysis.

Responsibility for survival audit data collection rested with Regional Breast Screening QA Co-ordinators. Effective communication and collaboration with regional cancer registries was a vital element in the success of the survival audit.

RESPONSIBILITY FOR DATA COLLECTION

ABS at BASO breast audit information packs were sent to NHSBSP representatives in each NHS region in England and to Wales, Scotland and Northern Ireland. Data for the 8 English regions and data for Wales, Northern Ireland and Scotland are presented in this document. Data for the South East region have been subdivided in the audit into South East (East) and South East (West) (see the map on Page 5).

In each region the Surgical QA Co-ordinator, QA Director and QA Co-ordinator were responsible for working together to ensure that the data were collected from their breast screening services. Lead surgeons in each breast screening service were responsible for making sure that the data were available and complete. Lead surgeons in each screening service were asked to give confirmation to their QA Co-ordinator that the data for their breast screening service were a fair representation of screening activity in the audit period (to “sign off” the data). The QA Co-ordinator in each region was given the responsibility for ensuring that data were signed off before submission.

Identifying people responsible for ensuring that data are gathered and are a true reflection of surgical work is intended to clarify ownership of the information for this audit. Ownership of the information is essential if a need for change is highlighted which must be accepted and implemented.

The ground level data collection was carried out by a range of staff, including individual surgeons, QA reference centre staff, breast screening service office staff, staff at regional cancer registries, oncology staff, some non-surgical clinicians who have an interest in QA and some dedicated surgical data collection officers. For those screening services supported by the National Breast Screening System a set of standard analytical co-writer reports was designed to allow the audit data to be retrieved from screening computer systems. These reports were created by Mrs Margot Wheaton and were available to all regions. Data were collated on a regional basis by QA Reference Centres under the direction of the Surgical QA Co-ordinators, QA Directors and QA Co-ordinators and submitted to the West Midlands QA Reference Centre for collation and evaluation.

OBTAINING COMPLETE AND VALID AUDIT DATA

Ensuring that audit data were supplied in a consistent format was essential to the validation process. The West Midlands QA Reference Centre developed specialist spreadsheets in Microsoft Excel which were used by each regional QA Reference Centre to collate regional data in a standard format. Individual screening services could either provide the data to their regional QA Reference Centre in the Excel spreadsheet or by hand on a paper copy. The spreadsheet included data validation checks. A specially designed spreadsheet was also provided for the survival audit. The collection of data at breast screening service/unit level involved detailed consideration of cases and cross checks against existing KC62 reports.

DATA EVALUATION

The West Midlands QA Reference Centre, guided by the Breast Audit Group, acted as the central collection and collation point for national data. During the collation of national data, extensive validation checks were used to ensure that the data were an accurate reflection of surgical activity in the UK NHSBSP. National data were evaluated in comparison to current QA standards where these were available. Commentary and recommendations have been made by the ABS at BASO Breast Audit Group.

PRESENTATION AND PUBLICATION OF AUDIT DATA

The ABS at BASO 2002/03 audit of screen detected breast cancers is published as a booklet with financial assistance from NHSBSP National Office and presented at the annual ABS at BASO meeting on 26th May 2004 by Dr Gill Lawrence with commentary by Professor Jan Frisell.

Following the ABS at BASO meeting, the booklet and presentation will be available to download from the following web sites.

West Midlands Cancer Intelligence Unit	www.wmpho.org.uk/wmciu/
NHS Cancer Screening Programmes	www.cancerscreening.nhs.uk

REFERENCING THIS DOCUMENT

This document, and the presentation, should be cited in the following way. “An audit of screen detected breast cancers for the year of screening April 2002 to March 2003”, NHSBSP, ABS at BASO, 26th May 2004.

USING THE AUDIT DATA TO IMPROVE PERFORMANCE

Recommended uses of the ABS at BASO breast audit data are as follows:

At National Level

- The ABS at BASO breast audit data should be considered formally at a meeting of the Regional Breast Screening QA Directors to identify recommendations for action, where performance does not meet a QA standard. This may include suggestions for training and recommendations for the management and organisation of services.

At Local/Regional Level

- The annual ABS at BASO breast audit data should be considered formally at a meeting of the Regional Breast Screening QA Team and preferably also at a regional workshop where the data for individual screening units in each region are analysed and presented.

- Where the audit identifies a screening service as an 'outlier' in a particular area, Regional QA Reference Centres and Regional QA Surgeons should encourage screening services to audit the cases involved to establish whether the results reflect a data collection or recording problem. If the data are found to represent clinical practice correctly, the reasons for the failure to follow recommended guidelines should be ascertained.

- Regional QA Reference Centres and Regional QA Surgeons should follow up any failures to meet national QA standards with individual screening services. There should be formal recording of the plans put in place to achieve each of the standards failed, and routine monitoring to ensure that action has been taken to rectify the problem.

- The annual ABS at BASO breast audit data should also be used to celebrate high quality services. Attention should not only be focused on failure to meet QA standards. Achievement of standards should also be recorded and recognition for high quality work given. It is important that audits such as this do not demoralise the dedicated professionals within the breast cancer screening and treatment teams.

YOUR COMMENTS

The ABS at BASO audit of screen detected breast cancer has developed over the years, with improvements in design and organisation resulting in improved data quality and increasingly useful audit results. To continue this development process your comments and suggestions are extremely useful. If you have any comments or suggestions about the 2002/03 audit; about this document or about the development of future ABS at BASO breast audits please put them in writing to:

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PROVISION OF DATA FOR THE 2002/03 AUDIT

The map below shows the 8 NHS regions, Wales, Scotland and Northern Ireland for the boundaries revised on 1st April 2003. Data for the South East health region are subdivided into the 2 QA Reference Centre boundaries, South East (East) and South East (West). Boundary changes affected the North West, North East, Yorkshire & Humber, East Midlands and South East (West) QA Reference Centres.

All regions submitted data for 2002/03 and adjuvant therapy data for 2001/02. 9 out of 12 QA Reference Centres supplied complete data for the 1992/98 survival audit. Scotland did not submit data for the survival audit due to cancer registry linkage problems. East of England and London only submitted 1997/98 data to the survival audit due to cancer registry linkage problems.

KEY FINDINGS AND RECOMMENDATIONS

CANCERS DETECTED BY SCREENING

1,582,269 women were screened by the UK NHSBSP in England, Wales, Northern Ireland and Scotland between 1st April 2002 and 31st March 2003. 11,593 cancers were detected in women of all ages. This equates to a cancer detection rate of 7.3 cancers per 1000 women screened. 81% of women with a screen detected breast cancer were aged between 50 and 64 when they were invited for the screening appointment leading to their diagnosis.

PRE-OPERATIVE DIAGNOSIS

In 2002/03, 91% of cancers detected in the UK NHSBSP were diagnosed pre-operatively, exceeding the 90% target for the first time. The pre-operative diagnosis rates for invasive and non-invasive cancers were 95% and 76% respectively. 55 screening units met or exceeded the pre-operative diagnosis rate target of 90%. It is very good to see that all but 4 screening units met the new 80% minimum standard. In the UK as a whole, the increase in the pre-operative diagnosis rate from 87% in 2000/01 to 91% in 2002/03 has been accompanied by a fall from 19% to 10% in the proportion of cancers diagnosed by C5 cytology alone.

For 24% of cancers with a B5a (Non-invasive) pre-operative diagnosis, invasive disease was found at surgery. This varied between 0 cases and 69% in the individual screening units with more than 15 cancers diagnosed by core biopsy. 97% of the cancers with a B5b (Invasive) pre-operative diagnosis had surgical confirmation of invasive cancer, the invasive status predicted by core biopsy. 69 cases (1%) with a B5b (Invasive) pre-operative diagnosis were found to have non-invasive or micro-invasive cancer with no associated invasive disease following surgery. 93% of cancers diagnosed by C5 cytology alone were found to be invasive after surgery.

It is possible that increases in pre-operative diagnosis have led to more anxiety, with women having to return to the assessment clinic for repeat diagnostic tests before receiving a definitive diagnosis. However, this year's audit has shown that 84% of women with screen detected breast cancer had all attempts at core biopsy and/or cytology performed at 1 assessment clinic visit. 78% of the cancers detected by the screening programme had a pre-operative diagnosis of cancer determined from a single assessment clinic visit. This value is 81% if East of England, which had difficulty providing the data, is excluded. Of the remaining regions, 5 had a pre-operative diagnosis rate below the 80% minimum standard after the first assessment clinic visit. All 5 achieved the minimum standard when repeat assessment clinic visits were included and 4 achieved the 90% target.

DIAGNOSTIC OPEN BIOPSIES

In the UK as a whole, 2,919 diagnostic open biopsies were performed in 2002/03. Of these 65% were benign and 35% were malignant. The benign open biopsy rate was 1.20 per 1000 women screened and the malignant open biopsy rate was 0.64 per 1000 women screened. The malignant open biopsy rate has fallen from 2.04 per 1000 in 1996/97 as the pre-operative diagnosis rate has increased from 63% to 91%.

Of the 445 invasive cancers diagnosed by open biopsy, 36 (8%) had no pre-operative procedure recorded. Of the 560 non-invasive cancers diagnosed by open biopsy, 17 (3%) had no pre-operative procedure recorded. Regional QA Reference Centres and Regional QA Surgeons should audit these 53 cases to establish whether they reflect a data collection problem. If the data are found to represent clinical practice correctly, the reasons for the failure to attempt pre-operative diagnosis should be ascertained. 42% of invasive cancers diagnosed by malignant open biopsy following

cytology or core biopsy performed during the assessment process had C4 cytology or B4 core biopsy indicating suspicion of malignant disease.

SURGICAL TREATMENT

Overall, 69% of non-invasive and micro-invasive cancers were treated with conservation surgery, varying from 58% in Wales and 62% in North East, Yorkshire & Humber to 76% in London and 79% in Northern Ireland. 32 screening units were able to provide grade and size data for all non-invasive cancers. In the screening units with complete data, 55% of non-invasive cancers were high grade and 47% were <15mm in diameter. 239 high grade multi-focal, large multi-focal, large high grade and potentially large high grade non-invasive cancers were treated with conservation surgery. Regional QA Reference Centres and Regional QA Surgeons should review the data recorded for these cases to ensure that they were not under-treated.

In the UK as a whole, the mastectomy rate for invasive cancers was 27%. This varied between 12% and 57% in individual screening units. 81% of 50+mm invasive cancers were treated with mastectomy compared with 19% of small (<15mm) invasive cancers. For 7 screening units, with between 7 and 67 small (<15mm) invasive cancers, the mastectomy rate was 35% or more. Only 15% of cancers with whole size <15mm were treated with mastectomy compared with 19% of cancers with invasive size <15mm. These data suggest that the presence of *in situ* disease accounts for a proportion of the mastectomies performed on tumours with invasive size <15mm. 8% of cancers treated with mastectomy were recorded as having immediate reconstruction.

LYMPH NODES AND INVASIVE GRADE

In the UK as a whole, 95% of invasive cancers had known nodal status. This varied between 86% in Northern Ireland and 99% in Wales and West Midlands. At 10 screening services nodal status was ascertained for 100% of invasive cancers. In 2 screening units diagnosing 31 and 89 invasive cancers, more than 25% of cases had unknown nodal status. For the fourth consecutive year, 25% of invasive cancers had positive nodal status, but this varied between 10% and 47% in individual screening units.

Overall, 8.8% of invasive cancers had unknown nodal status, or had negative nodal status determined without a sentinel procedure on the basis of fewer than 4 nodes. This varied from 4.0% in Scotland and 4.1% in West Midlands, to 17.7% in London and 14.7% in Northern Ireland. Regional QA Reference Centres and Regional QA Surgeons should audit these cases to ascertain whether the data are a true reflection of clinical practice, as these cancers may have had an insufficient diagnostic work-up.

Although nodal assessment is not usually indicated for non-invasive cancers, 26% of non-invasive cancers had known nodal status. 2% of non-invasive cancers with known nodal status had positive nodal status recorded. This is consistent with previous studies suggesting that 2% of non-invasive breast cancers have non-identified invasive disease removed during the diagnostic process. The mastectomy rate for non-invasive cancers with known nodal status was much higher than for non-invasive cancers with no nodes obtained (76% and 13% respectively in the UK as a whole). 56% of conservatively treated non-invasive cancers with known nodal status had non-invasive disease predicted by B5a core biopsy. Radiological or clinical factors may have influenced the decision to take nodes for these cases.

Overall, 32% of invasive cancers were Grade I, 47% were Grade II and 16% were Grade III. In Northern Ireland, 24% of cancers were Grade III. Grade was not assessable for 78 cases (1%) and unknown for 309 cases (3%). The proportion of Grade I cancers varied between 7% and 65% in

individual screening units, suggesting that there are local variations in the interpretation of invasive grade definitions.

Data were available to calculate the Nottingham Prognostic Index (NPI) for 92% of invasive cancers. As expected with cancers detected by screening, the majority (61%) of cancers fell into the two best prognositic groups, EPG (Excellent Prognostic Group) and GPG (Good Prognostic Group). The proportion of EPG and GPG cancers varied from 54% in Northern Ireland to 65% in Wales. The relatively low proportion of EPG and GPG cancers in Northern Ireland is due to the high proportion of Grade III cancers compared with the UK as a whole.

SURGICAL CASELOAD

There were 472 consultant breast surgeons working in the UK NHSBSP in 2002/03, a rise of 13% from 419 surgeons in 2000/01. 86% of women were seen by a surgeon with a screening caseload of at least 20 cases. Of the 174 surgeons with a screening caseload of less than 10 cases, 52 (30%) treated more than 30 symptomatic breast cancers during 2002/03. Information was unavailable to explain the low caseload of 55 surgeons. These surgeons treated a total of 164 women.

NUMBER AND SEQUENCE OF OPERATIONS

In the UK as a whole, 15% of cancers with a proven pre-operative diagnosis by C5 cytology and/or B5 core biopsy underwent more than one therapeutic operation. 14% of invasive cancers and 16% of non-invasive cancers underwent more than one therapeutic operation. Invasive cancers with B5b (Invasive) core biopsy had fewest repeat operations (12%), followed by invasive cancers diagnosed by C5 cytology only (13%).

Invasive cancers with a B5a (Non-invasive) core biopsy had the highest repeat operation rate (41%). 62% of invasive cancers with a B5b (invasive) core biopsy underwent a single therapeutic operation consisting of conservation surgery with an axillary procedure. A further 5% of cases had conservation surgery with an axillary procedure followed by conservation surgery, presumably to clear involved or close margins. Only 1% of invasive cancers with a B5b (Invasive) core biopsy had a repeat operation to obtain axillary lymph nodes, compared to 3% diagnosed by C5 cytology only and 34% with a B5a (Non-invasive) core biopsy.

5% of invasive cancers with a B5b (Invasive) core biopsy or a C5 cytology had no axillary procedure recorded. For invasive cancers with a B5a (Non-invasive) core biopsy, this was 14%. This could be a data collection problem. However, if the data do correctly reflect clinical practice, these cases should be audited by Regional QA Reference Centres and Regional QA Surgeons as they may have had insufficient diagnostic work-up.

64% of invasive cancers diagnosed by C5 cytology only underwent a single therapeutic operation consisting of conservation surgery with an axillary procedure. A further 16% these cancers underwent a single therapeutic operation consisting of a mastectomy and an axillary procedure. Presumably in these cases, the clinical and radiological signs were strongly supportive of the presence of invasive disease.

23% of invasive cancers with a B5a (Non-invasive) core biopsy underwent a single operation consisting of conservation surgery with an axillary procedure. Presumably in these cases, contrary to the core biopsy result, the clinical and radiological signs were strongly supportive of the presence of an invasive cancer. 24% of non-invasive or micro-invasive cancers with a B5a (Non-invasive) core biopsy underwent axillary surgery at the first therapeutic operation. It would be interesting to

know the reasons for undertaking surgery to the axilla at the first operation as it would appear that these women may have undergone an unnecessary axillary procedure.

ADJUVANT THERAPY

The proportion of cases with radiotherapy, chemotherapy or hormonal therapy data supplied varied from 54% in East of England to 97% in Wales and 100% in East Midlands. This shows that regions with established systems for data collection find it easier to collect these data than regions that rely on surgeons reviewing case notes to complete the ABS at BASO adjuvant audit.

For 4% of cases in the audit, ER status was not done. ER status was unknown for 17% of cases. 9% of invasive cancers had unknown or not done ER status, compared to 63% of non-invasive cancers. Given the importance of ER status in determining adjuvant therapy, Regional QA Reference Centres and Regional QA Surgeons should ascertain the reasons why ER status was not available. For the 79% of cases with known ER status, the ratio of ER positive to ER negative cases was 7:1. PgR status data were available for only 30% of all cases but 50% of ER negative cancers, suggesting that in some regions PgR status was not requested routinely but only when ER status was negative. Cerb-B2/HER-2 status data were available for only 11% of cases included in the audit.

Only 51% of cases undergoing diagnostic surgery had this surgery within 30 days of assessment. Only 60% of cases with a pre-operative diagnosis underwent therapeutic surgery within 30 days of assessment. Only 33% of cases with 1 operation received radiotherapy within 60 days of this surgery. For cases with more than 1 operation, only 7% of cases received radiotherapy within 60 days of first surgery. 86% of cases with 1 operation received chemotherapy within 60 days of this surgery. For cases with more than 1 operation, only 39% of cases received radiotherapy within 60 days of first surgery. In 2001/02, Women in London and South East (East) were experiencing the longest waiting times for treatments. Wales had particularly short waiting times for surgery, while Scotland and East Midlands had relatively short waiting times for radiotherapy. 10% of cases receiving hormonal therapy started this therapy before surgery. Given the potential thromboembolic effects of tamoxifen, Regional QA Reference Centres and Regional QA Surgeons should ascertain whether this practise has now ceased.

The most popular treatment order for screen detected breast cancers was one or more operations followed by radiotherapy alone without chemotherapy, followed by 50% of cases. The median number of days from the first assessment appointment to the start of the final therapy was 94 days, varying from 84 days in Scotland to 124 days in South East (East). The median time in days from assessment to final therapy was 33 days for women undergoing surgery alone, compared to 108 days for assessment to surgery followed by radiotherapy and 218 days for assessment to surgery followed by chemotherapy followed by radiotherapy. The median time from assessment to surgery to chemotherapy was 76 days. The good practice in East Midlands and Scotland which in 2001/02 led to the shortest intervals between assessment and final therapy should be shared throughout the UK.

89% of women with invasive cancers treated with conservation surgery received radiotherapy, compared to only 48% of women with conservatively treated non-invasive cancer. The majority of conservatively treated cancers without radiotherapy were small (<15mm diameter) 65% invasive, 58% non-invasive). 62% of conservatively treated non-invasive cancers not given radiotherapy were other (low or intermediate) grade. Regional QA Reference Centres and Regional QA Surgeons should audit larger invasive cancers and large or high grade non-invasive tumours that did not receive radiotherapy to ensure that these cancers did not have less than optimal treatment.

85% of women with ER negative, node positive invasive cancers received chemotherapy compared to 49% of ER negative, node negative invasive cancers. This implies that nodal status was taken into account when deciding whether ER negative tumours would benefit from chemotherapy. 84% of ER negative, node negative tumours given chemotherapy were Grade III. It would be interesting to examine the size of these Grade III cancers and the size and grade of the node positive cancers that did not receive chemotherapy to see if these factors also influenced the decision not to give chemotherapy.

Overall, 9% of ER positive cancers did not receive hormone therapy. 7% of ER positive invasive cancers did not receive hormone therapy (Table 123), compared to 33% of ER positive non-invasive cancers. Regional QA Reference Centres and Regional QA Surgeons should determine the reasons why hormone therapy was not given to these cancers. They should also determine why and 16% of ER negative cancers did receive hormone therapy. Although the decision to give hormone therapy appeared to depend ER status and PgR status, some cancers were given hormone therapy when ER or PgR status was not done or unknown. 67% of ER negative, PgR positive cancers did receive hormone therapy compared with only 14% of ER negative, PgR negative cancers. The number of cancers with known PgR status was, however, very small so these data should be treated with caution.

SURVIVAL

Of the 31,200 cancers with known invasive status submitted to the survival analysis for the period 1st April 1992 and 31st March 1998, 885 (3%) were excluded because they were not registered at the cancer registry. A further 919 cancers (3%) were excluded because the cancer registry could not confirm that the cancer detected by screening was the primary tumour. The survival analysis included 29,396 screen detected cancers. Of these, 23,756 were invasive cancers, 617 micro-invasive cancers and 5023 non-invasive cancers.

Data completeness has improved markedly in the 6 year period studied. The proportion of invasive cancers with unknown size has fallen from 7% in 1992/93 to 2% in 1997/98. The proportion of invasive cancers with unknown NPI score has decreased from 54% in 1992/93 to 20% in 1997/98. Cause-specific survival was not performed due to regional differences in the proportion of breast cancer deaths.

5 year relative survival for invasive cancers screen detected in 1997/98 was 95.8% (95%CI 95.0-96.5). 5 year relative survival for invasive cancers screen detected in 1997/98 was highest for small (<10mm diameter), node negative, Grade I cancers. 10 year relative survival for invasive cancers screen detected in 1992/93 was 87.8% (95%CI 86.3-89.3).

The 5 year relative survival rate in 1995-98 for tumours in the excellent prognostic group (EPG) was 100.9% (95% CI 100.1%-101.6%), indicating that their chance of survival was no worse than that of the general UK female population. For women with tumours in the poor prognostic group (PPG) the 5 year relative survival rate increased from 57.8% (95% CI 52.8%-62.8%) in 1992-95 to 66.7% (95% CI 62.6%-70.8%) in 1995-98.

RESULTS OF THE 2002/03 AUDIT OF SCREEN DETECTED BREAST CANCERS

Detailed tables giving full audit results are provided in Appendices 5-8 starting on p101

DATA RELATING TO BREAST CANCERS DETECTED IN WOMEN OF ALL AGES DURING THE PERIOD 1ST APRIL 2002 - 31ST MARCH 2003

1. ALL BREAST CANCERS DETECTED BY THE UK NHSBSP IN 2002/03

1.1 Number and Invasive Status of Screen Detected Breast Cancers and Total Women Screened

The 2002/03 BASO breast audit examined surgical screening activity undertaken for the 1,582,269 women screened in England, Wales, Northern Ireland and Scotland between 1st April 2002 and 31st March 2003. All 11,593 cancers detected by the UK NHSBSP in women of all ages were examined. This equates to a cancer detection rate of 7.3 cancers per 1000 women screened. Figure 1 shows the invasive status of these 11,593 breast cancers. Overall, 9,086 (78%) were invasive, 2,348 (20%) non-invasive and 114 (1%) micro-invasive. The invasive status of 45 cancers was unknown. 25 (55%) of these were in East of England.

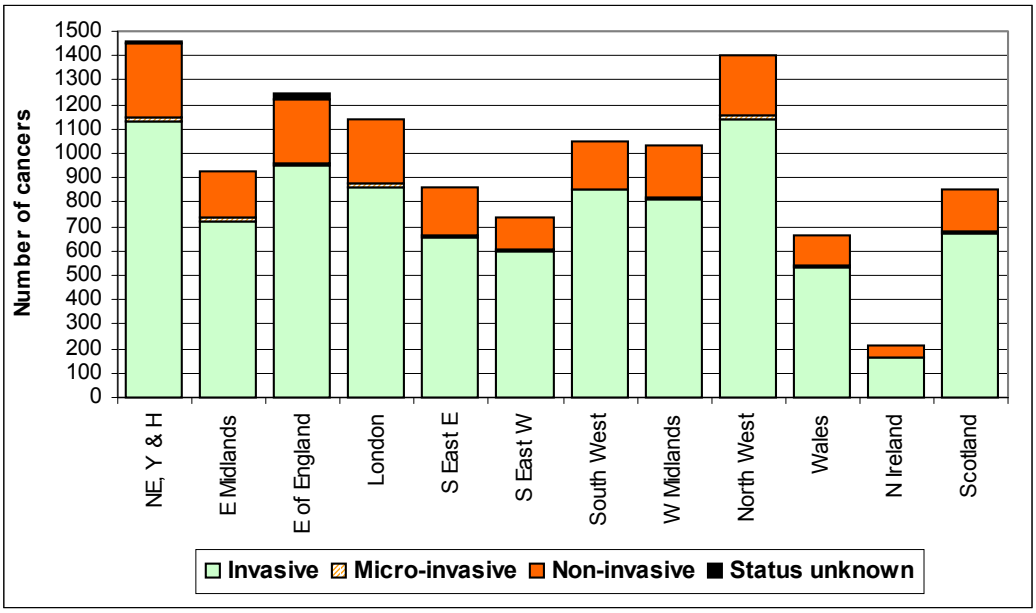

Figure 1 (Table 1): Variation in the number and invasive status of screen detected breast cancers in each region and country contributing to the 2002/03 BASO breast audit

The UK invasive cancer detection rate was 5.7 per 1000 women screened, varying between 5.1 per 1000 in Northern Ireland and 6.8 per 1000 in Wales.

The UK non-invasive cancer detection rate of 1.6 per 1000 women screened includes both non-invasive and micro-invasive cancers. This rate varied from 1.3 per 1000 women screened in South East (West) to 1.8 per 1000 in London.

Figure 2 shows the cancer detection rate in each screening unit according to invasive status. In Figure 2, as with all others depicting individual screening unit data, Scotland appears as one unit, and is not divided into 6 screening centres. The non-invasive cancer rate varied from 0.5 per 1000 women screened to 3.0 per 1000 women screened. The total cancer detection rate varied from 4.2 per 1000 women screened in a unit screening 5,688 women to 10.7 per 1000 women screened in a unit screening 11,866 women.

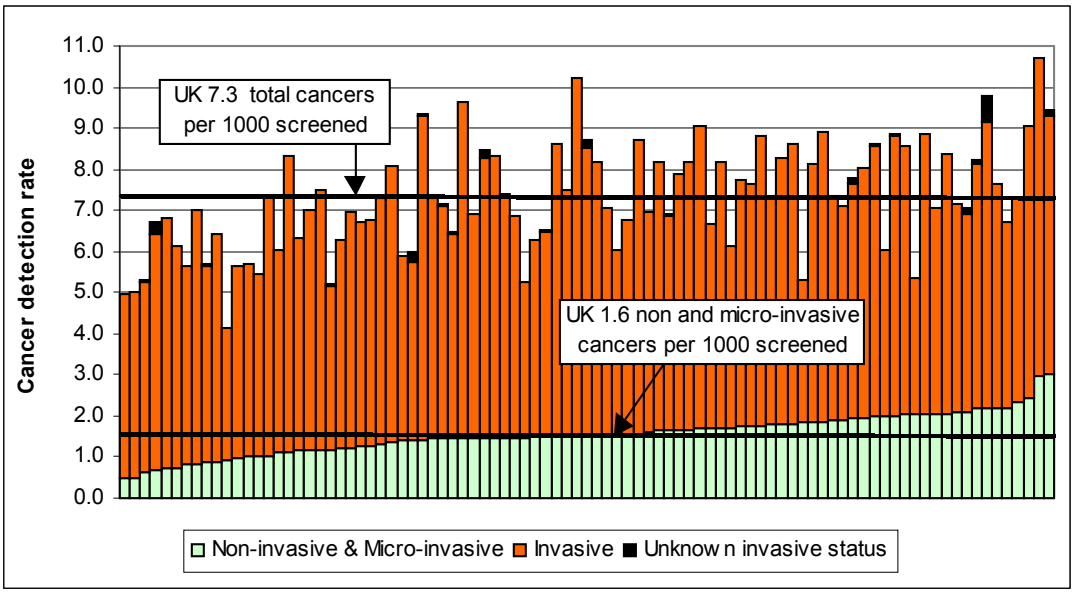

Figure 2: Variation by screening unit in the overall cancer detection rate expressed as the number of cancers detected per 1000 women screened

The following table shows that invasive and non-invasive cancer detection rates have risen steadily since 1996/97. The non-invasive cancer detection rate has risen by 40% and the invasive cancer detection rate has risen by 29% since 1996/97. The overall cancer detection rate has risen by 35% since 1996/97.

7 YEAR COMPARISON: NUMBER OF CANCERS DETECTED							
Year of data collection	*Number of invasive cancers*	*Number of non-invasive and micro-invasive cancers*	*Total cancers*	*Number of women screened*	*Cancer detection rates per 1000 women screened*		
					Invasive	*Non-invasive*	*Total*
1996/97	*5860*	*1468*	*7310*	*1,340,175*	*4.4*	*1.1*	*5.5*
1997/98	*6427*	*1726*	*8215*	*1,419,287*	*4.5*	*1.2*	*5.8*
1998/99	*6337h*	*1634*	*8028*	*1,308,751*	*4.7*	*1.2*	*6.1*
1999/00	*7675*	*2076*	*9797*	*1,550,285*	*5.0*	*1.3*	*6.3*
2000/01	*7945*	*2080*	*10079*	*1,535,019*	*5.2*	*1.4*	*6.6*
2002/03	*7911*	*2218*	*10191*	*1,507,987*	*5.2*	*1.5*	*6.8*
2002/03	*8931*	*2416*	*11593*	*1,579,165*	*5.7*	*1.6*	*7.3*

Data from Scotland are absent in 1998/99

1.2 Age Profile of Women with Screen Detected Breast Cancer

The NHSBSP is in the process of expanding the screening programme to invite women up to the age of 70. The date of birth has been collected for the first time in the 2002/03 audit so that regional QA Reference Centres can monitor the effect that the new age range has on their audit results.

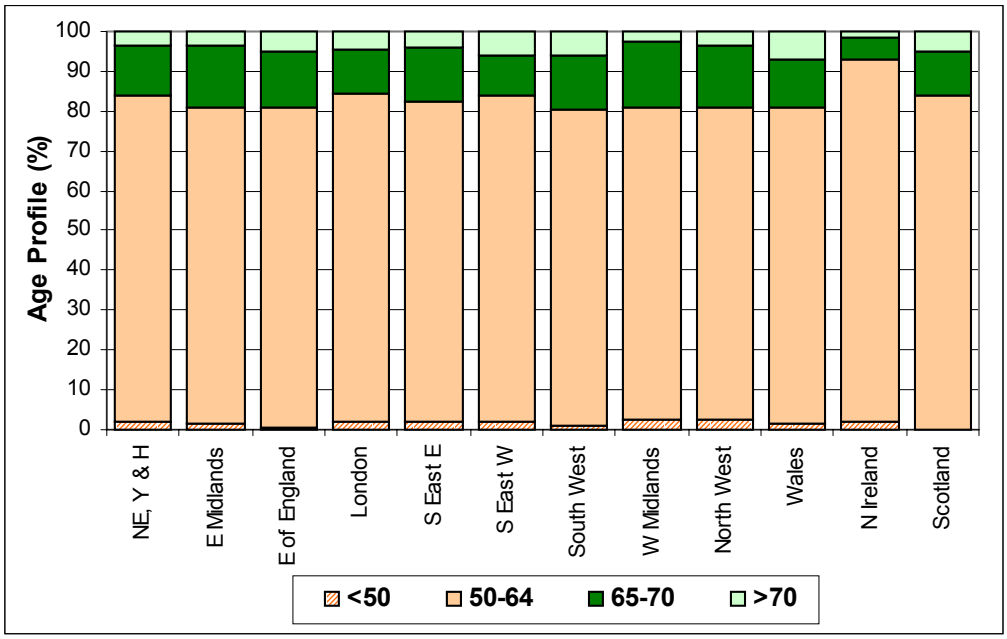

Figure 3 (Table 2): Age at screening appointment

The majority (81%) of women with a screen detected breast cancer were aged between 50 and 64 when they were invited for the screening appointment leading to their diagnosis. 13% were aged 65-70. The proportion of screen detected breast cancers in women aged 65-70 varied from 6% in Northern Ireland to 16% in East Midlands and 17% in West Midlands. In West Midlands the largest screening service, which covers over 20% of the regional population, was a pilot site for the age extension. The table below shows that, in the UK as a whole, 17% of screen detected breast cancers were detected in women aged 50-52 and 16% each in women aged 53-55, 56-58, 59-61 and 62-64. The proportion of screen detected breast cancers in women aged 65-67 was 7% and in women aged 68-70 was 6%. In 2002/03, the majority of these women self referred into the screening programme. With the expansion of the screening programme, more women in this age band will be invited for screening and the proportion of cancers detected in women in these age bands is expected to rise.

AGE OF SCREEN DETECTED BREAST CANCERS		
Age	***No***	***%***
<50	*204*	*2*
50-52	*1922*	*17*
53-55	*1807*	*16*
56-58	*1878*	*16*
59-61	*1908*	*16*
62-64	*1828*	*16*
65-67	*843*	*7*
68-70	*688*	*6*
70+	*515*	*4*
Total	***11593***	***100***

2. DIAGNOSIS OF CANCERS

The following are mutually exclusive diagnostic categories into which all screen detected breast cancers fall:

DIAGNOSTIC CATEGORIES		
Pre-operative diagnosis by C5 cytology or malignant core biopsy (B5)	Malignant open biopsy	Clinical and/or radiological grounds only, referred direct to treatment

The UK NHSBSP definition of a non-operative diagnosis is a diagnosis by C5 cytology or B5 core biopsy. Although "non-operative" is becoming the accepted terminology in the NHSBSP, core biopsy and cytology were referred to as pre-operative procedures in the 2002/03 audit documentation (see Appendix 2) and therefore the term "pre-operative diagnosis" is used throughout this document.

Other than cancers diagnosed by diagnostic open biopsy, the only remaining diagnostic category is that of diagnosis on radiological and/or clinical grounds alone. Such cancers are rare in the UK NHSBSP. They are only included in Table 3 of this audit, which shows there were 10 such cancers in 2002/03.

2.1 Pre-operative Diagnosis

2.1.1 Pre-operative Diagnosis Rate for All Cancers

The pre-operative diagnosis standards have been revised. The minimum standard is 70% in the current version of the National Standards. The revision of the minimum standard to 80% has been agreed and will be published later in the year. The standard has already been updated in the third edition of the surgical guidelines.

Quality Objective: To ensure that the majority of breast cancers receive a non-operative tissue diagnosis of cancer

Minimum Standard: ≥70% of breast cancers should have a pre-operative diagnosis by fine needle cytology or needle histology.

Target Standard: ≥90% of breast cancers should have a pre-operative diagnosis by fine needle cytology or needle histology.

(Guidelines on Quality Assurance Visit. Sheffield, NHS Cancer Screening Programmes, 2000 (NHSBSP Publication No 40, second edition))

Quality Objective: To minimise unnecessary surgery (ie open surgical biopsies that prove to be benign)

Outcome Measure: More than 80% of breast cancers should have a pre-operative pathological diagnosis

(Quality Assurance Guidelines for Surgeons in Breast Cancer Screening, NHSBSP Publication No 20, November 2003)

In 2002/03, 91% of cancers detected in the UK NHSBSP were diagnosed pre-operatively, exceeding the 90% target for the first time. Figure 4 shows the pre-operative diagnosis rate by C5 cytology, by both C5 cytology and B5 core biopsy and by B5 core biopsy alone. All the regions

met the target of 90% except Northern Ireland and North West where the pre-operative diagnosis rates were both 89%. These 2 regions had the highest proportion of cancers diagnosed by C5 cytology only (30% and 16% respectively). The highest pre-operative diagnosis rate (94%) was recorded in East Midlands.

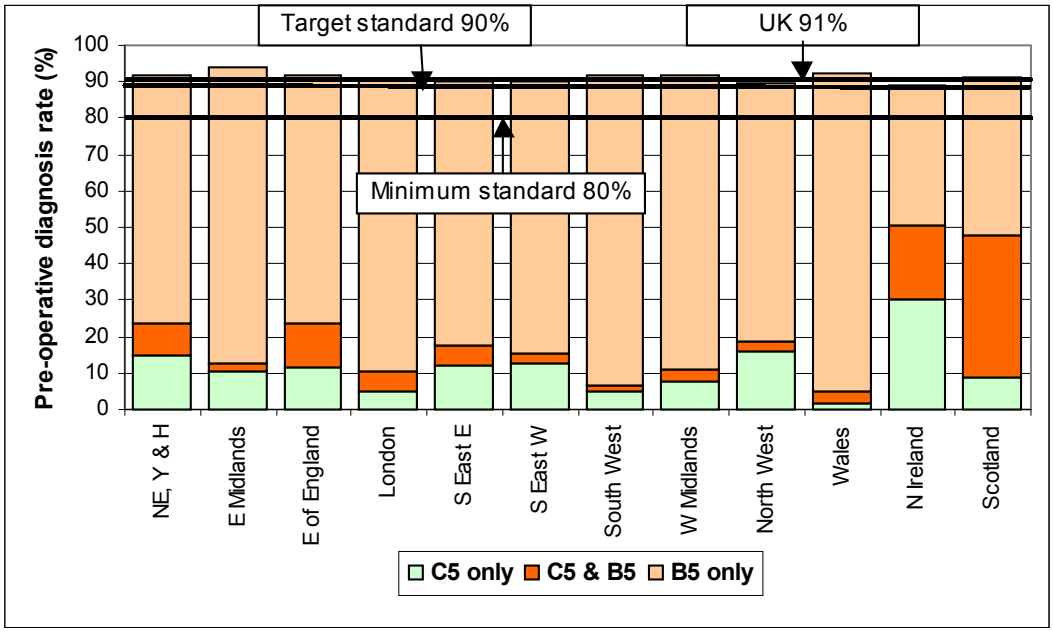

Figure 4 (Table 4): Variation in pre-operative diagnosis rate and the proportion of cancers detected by cytology alone, core biopsy alone or cytology and core biopsy, as a percentage of cancers detected

Over the last 7 years, the pre-operative diagnosis rate for the UK as a whole has risen from 63% to 91%. This rise has been accompanied by an increase from 17% to 73% in the proportion of cancers diagnosed by B5 core biopsy alone.

7 YEAR COMPARISON: PRE-OPERATIVE DIAGNOSIS RATES							
Year	*Total cancers*	*Number of cancers with C5 and/or B5*	*% with pre-operative diagnosis by*				*Pre-operative diagnosis rate (%)*
			C5 only	*C5 and B5*	*C5 (+/- B5)*	*B5 only (no C5)*	
1996/97	*7310*	*4576*	*-*	*-*	*45*	*17*	*63*
1997/98	*8215*	*5866*	*-*	*-*	*42*	*29*	*71*
1998/99	*8002*	*6449*	*-*	*-*	*36*	*44*	*81*
1999/00	*8906*	*7590*	*-*	*-*	*31*	*54*	*85*
2000/01	*10079*	*8775*	*19*	*8*	*-*	*60*	*87*
2002/03	*10191*	*9043*	*13*	*9*	*-*	*66*	*89*
2002/03	*11593*	*10575*	*10*	*8*	*-*	*73*	*91*

Data from Scotland are absent in 1998/99 and 1999/00

The following summary table shows how the pre-operative diagnosis rates in each region have changed over the last 3 years. It is clear from these data that, in the three regions with the lowest pre-operative diagnosis rates in 2000/01, increases in pre-operative diagnosis have been accompanied by large decreases in the proportion of cancers diagnosed by C5 cytology alone. Thus, in North West, as the pre-operative diagnosis rate has risen by 10% from 81% to 89%, the proportion of cancers diagnosed by cytology alone has fallen by 30%. Similarly, in Wales and Scotland where the pre-operative diagnosis rates have risen from 86% to 92% and 91% respectively, there have been 85% and 70% decreases in the proportion of cancers diagnosed by C5 cytology alone.

3 YEAR SUMMARY: PRE-OPERATIVE DIAGNOSIS RATES								
	Pre-operative diagnosis rate (%)				Cancers diagnosed by C5 only (%)			
Region	2000/01	2001/02	2002/03	3 Year 2000-03	2000/01	2001/02	2002/03	3 Year 2000-03
N East, Yorks & Humber	87	88	92	89	25	16	15	18
East Midlands	90	91	94	92	18	10	10	13
East of England	87	90	91	90	13	12	11	12
London	88	89	91	89	9	7	5	7
South East (East)	90	91	90	91	16	8	12	12
South East (West)	87	85	90	87	19	15	12	16
South West	89	90	92	90	18	12	5	11
West Midlands	88	90	92	90	19	10	8	12
North West	81	87	89	86	22	21	16	19
Wales	86	92	92	90	13	7	2	7
Northern Ireland	89	85	89	88	29	30	30	30
Scotland	86	86	91	88	30	19	9	20
United Kingdom	**87**	**89**	**91**	**89**	**19**	**13**	**10**	**14**

Data reflects boundary changes

Figure 5 shows the pre-operative diagnosis rates achieved by individual screening units, varying from 68% in a screening unit with a total of 31 cancers to 100% in a screening unit with 57 cancers. It is very good to see that all but 4 screening units met the new 80% minimum standard for pre-operative diagnosis. 55 screening units met or exceeded the pre-operative diagnosis rate target of 90%. The screening unit with the lowest pre-operative diagnosis rate in 2000/01 (63%) had a pre-operative diagnosis rate of 85% in 2002/03.

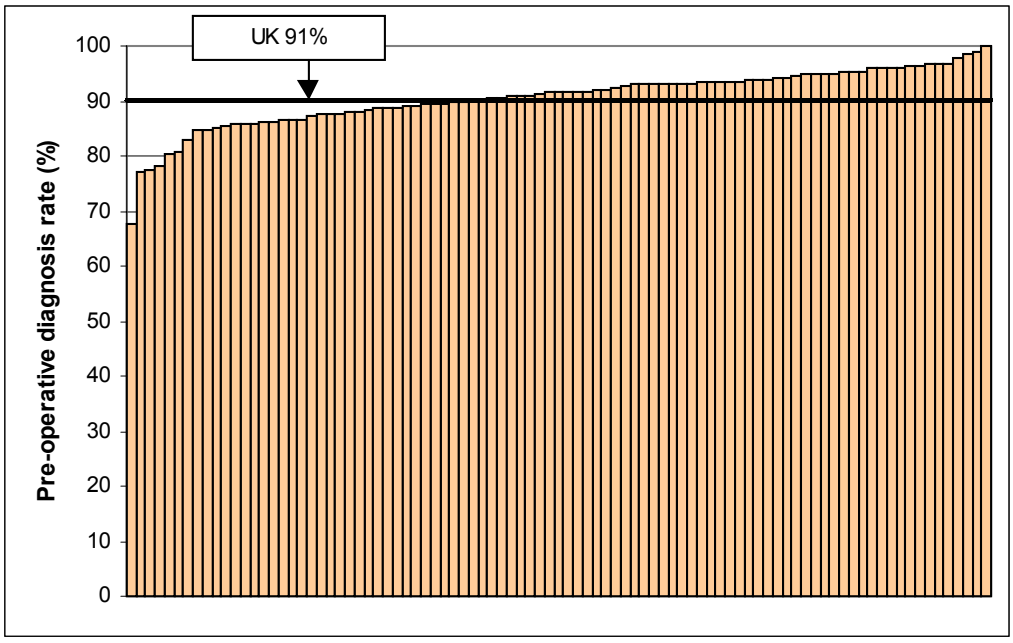

Figure 5: Variation by screening unit in pre-operative diagnosis rate, expressed as a proportion of cancers detected

2.1.2 Pre-operative Diagnosis Rate for Invasive and Non-invasive Cancers

The 90% target for pre-operative diagnosis which applies to all cancers was also achieved for invasive cancers. Overall, the pre-operative diagnosis rates for invasive and non-invasive cancers were 95% and 76% respectively. Figure 6 shows the regional variation in these pre-operative diagnosis rates. The pre-operative diagnosis rate for invasive cancers varied from 93% in South East (West) and North West to 97% in Scotland and East Midlands. The pre-operative diagnosis rate for non-invasive cancers varied from 67% in Northern Ireland to 83% in East Midlands.

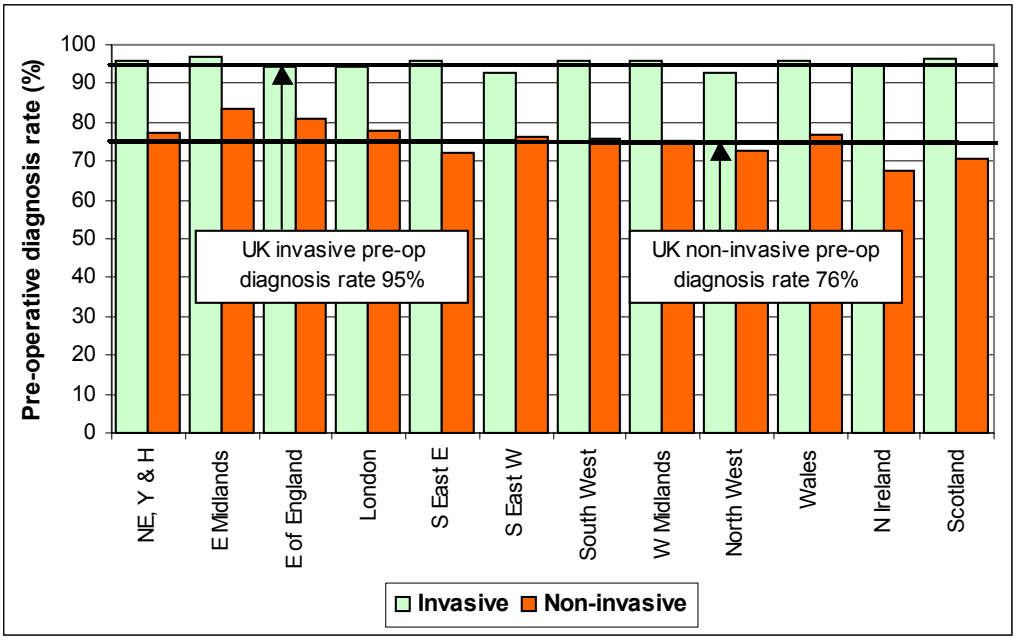

Figure 6 (Tables 5, 6): Variation by region in pre-operative diagnosis rates for invasive cancers and non-invasive cancers

COMMENT:

- In 2002/03, 91% of cancers detected in the UK NHSBSP were diagnosed pre-operatively, exceeding the 90% target for the first time. The pre-operative diagnosis rates for invasive and non-invasive cancers were 95% and 76% respectively.
- 55 screening units met or exceeded the pre-operative diagnosis rate target of 90%. It is very good to see that all but 4 screening units met the new 80% minimum standard.
- In the UK as a whole, the increase in the pre-operative diagnosis rate from 87% in 2000/01 to 91% in 2002/03 has been accompanied by a fall from 19% to 10% in the proportion of cancers diagnosed by C5 cytology alone.

2.1.3 Invasive Status at Pre-operative Core Biopsy

Screening units were asked to supply the invasive status predicted at core biopsy for those cancers with a B5 diagnosis. Of the 9,370 cancers with a B5 diagnosis, 2,274 (24%) were B5a (Non-invasive), 6,921 (74%) were B5b (Invasive) and 23 cancers had invasive status B5c (Not assessable) at core biopsy. Data on the invasive status at core biopsy were unavailable for 152 (2%) of cases with a B5 diagnosis, of which 75 (49%) were in East of England and 22 (14%) in North West.

Figure 7 shows the variation by region in the invasive status at core biopsy. Northern Ireland had the highest proportion of cancers with B5a (Non-invasive) at core biopsy (35%). This may be related to the relatively high proportion of cancers diagnosed by C5 cytology alone in Northern Ireland (30%, Table 4) and suggests that core biopsy may be used preferentially to diagnose cancers suspected to be non-invasive on the basis of imaging.

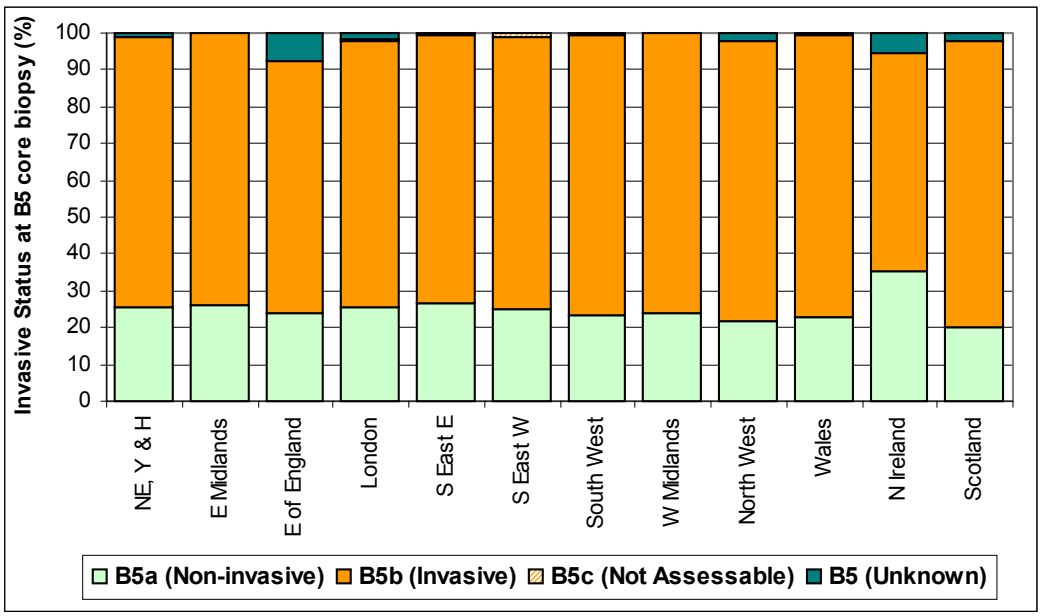

Figure 7 (Table 7): Variation in the proportion of cancers with B5a (Non-invasive), B5b (Invasive) and B5c (Not Assessable) core biopsy diagnosis, expressed as a percentage of cancers diagnosed by core biopsy

2.1.4 Invasive Status at Pre-operative Core Biopsy Compared with Invasive Status After Surgery

The majority of cancers diagnosed by core biopsy go on to have surgery, at which a definitive invasive status is determined. Figure 8 shows, for each region, the invasive status after surgery of the cases with a B5a (Non-invasive) pre-operative diagnosis. Of the 2,274 cancers with a B5a (Non-invasive) pre-operative diagnosis, 1,600 (70%) had surgical confirmation of non-invasive cancer and 87 (4%) had a diagnosis of micro-invasive cancer following surgery. A further 29 cases (1%) had no surgery so the pre-operative diagnosis of non-invasive cancer was retained. For 10 cases with B5a (Non-invasive) core biopsy the invasive status after surgery was unknown. 9 of these were in East of England.

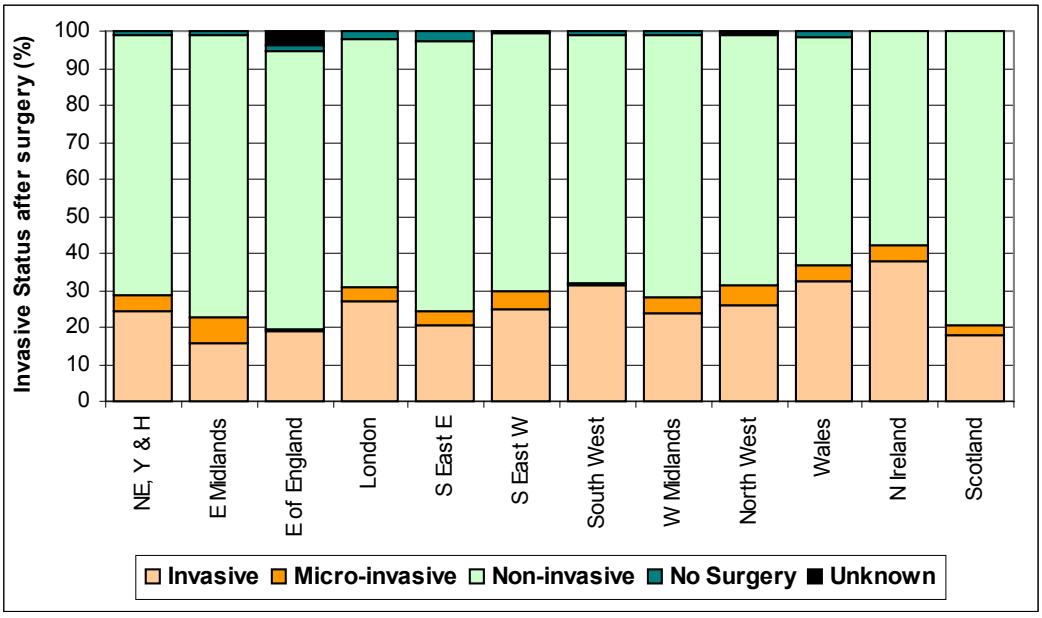

Figure 8 (Table 8): Variation in the invasive status after surgery of cases with B5a (Non-invasive), expressed as a percentage of cancers diagnosed with B5a

For 548 (24%) of the 2,274 cancers with a B5a (Non-invasive) pre-operative diagnosis, invasive disease was found at surgery. This varied from 16% in East Midlands and 18% in Scotland to 33% in Wales and 38% in Northern Ireland. The low rate of 19% in East of England could be affected by data completeness since for 4% of cases (9 in total) the status after surgery was unknown. These data illustrate the importance of taking into account radiological and clinical factors when making management decisions at multi-disciplinary meetings.

Figure 9 shows the variation by screening unit in the invasive status after surgery of cases with B5a (Non-invasive) core biopsy. The wide variation is affected by small numbers. For units which had 15 or more cancers diagnosed B5 core biopsy, the proportion of B5a (Non-invasive) cancers found to be invasive after surgery varied from 0% (0 cases) to 69% (25 cases).

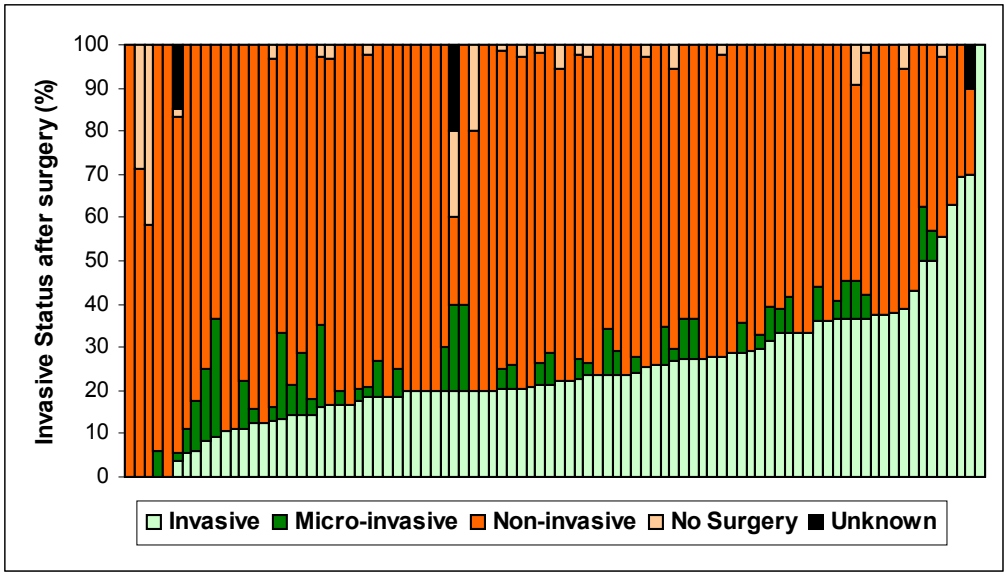

Figure 9: Variation by screening unit in the invasive status after surgery of cases with B5a (Non-invasive), expressed as a percentage of cancers diagnosed with B5a

Of the 6,921 cancers with a B5b (Invasive) pre-operative diagnosis, 6,743 (97%) had surgical confirmation of invasive cancer, the invasive status predicted by core biopsy. These data are shown for each region in Table 9. In the UK as a whole, 104 (2%) of these cases had no surgery recorded, so the invasive status of the core biopsy was retained. For 5 cases with B5a (Non-invasive) core biopsy the invasive status after surgery was unknown. 3 of these were in East of England. 69 (1%) cases with a B5b (Invasive) pre-operative diagnosis were found to have non-invasive or micro-invasive cancer with no associated invasive disease following surgery.

The proportion of cancers which have the predicted core biopsy invasive status confirmed after surgery has remained stable for the last 3 years.

3 YEAR COMPARISON: INVASIVE STATUS FOLLOWING CORE BIOPSY						
	B5a (Non-invasive)			*B5b (Invasive)*		
Year	*Total*	*Non-invasive or micro-invasive after surgery*		*Total*	*Invasive after surgery*	
		No.	*%*		*No.*	*%*
2000/01	*1660*	*1226*	*74*	*5026*	*4893*	*97*
2001/02	*1881*	*1393*	*74*	*5405*	*5287*	*98*
2002/03	*2274*	*1687*	*74*	*6743*	*6921*	*97*

2.1.5 Invasive Status of Cancers Diagnosed by C5 Cytology Only

Table 10 shows the invasive status of the 1,205 cancers diagnosed by cytology only, not including cases diagnosed by both C5 cytology and B5 core biopsy. Overall, 93% of cancers diagnosed by C5 cytology alone were invasive, varying from 80% in Wales to 99% in South East (West). In the UK as a whole, 64 (5%) cancers diagnosed by C5 cytology alone were non-invasive and 5 (0.4%) micro-invasive. The invasive status of 10 cancers (1%) was unknown.

COMMENT:

- For 24% of cancers with a B5a (Non-invasive) pre-operative diagnosis, invasive disease was found at surgery. This varied between 0 cases and 69% in the individual screening units with more than 15 cancers diagnosed by core biopsy.
- 97% of the cancers with a B5b (Invasive) pre-operative diagnosis had surgical confirmation of invasive cancer, the invasive status predicted by core biopsy. 69 cases (1%) with a B5b (Invasive) pre-operative diagnosis were found to have non-invasive or micro-invasive cancer with no associated invasive disease following surgery.
- 93% of cancers diagnosed by C5 cytology alone were found to be invasive after surgery.

2.2 Number of Visits for Core Biopsy/Cytology

It is possible that increases in pre-operative diagnosis have led to more anxiety, with women having to return to the assessment clinic for repeat diagnostic tests before receiving a definitive diagnosis. Therefore, in this audit for the first time, the number of visits for core biopsy/cytology was requested. The majority (84%) of women with screen detected breast cancer had all attempts at core biopsy and/or cytology performed at 1 assessment clinic visit. 1,357 women (12%) had 2 visits to obtain the definitive core biopsy result and 83 women (1%) had 3 or more visits. For 41 women, no attempt at core biopsy or cytology during the assessment process was recorded. These data are shown in Figure 10.

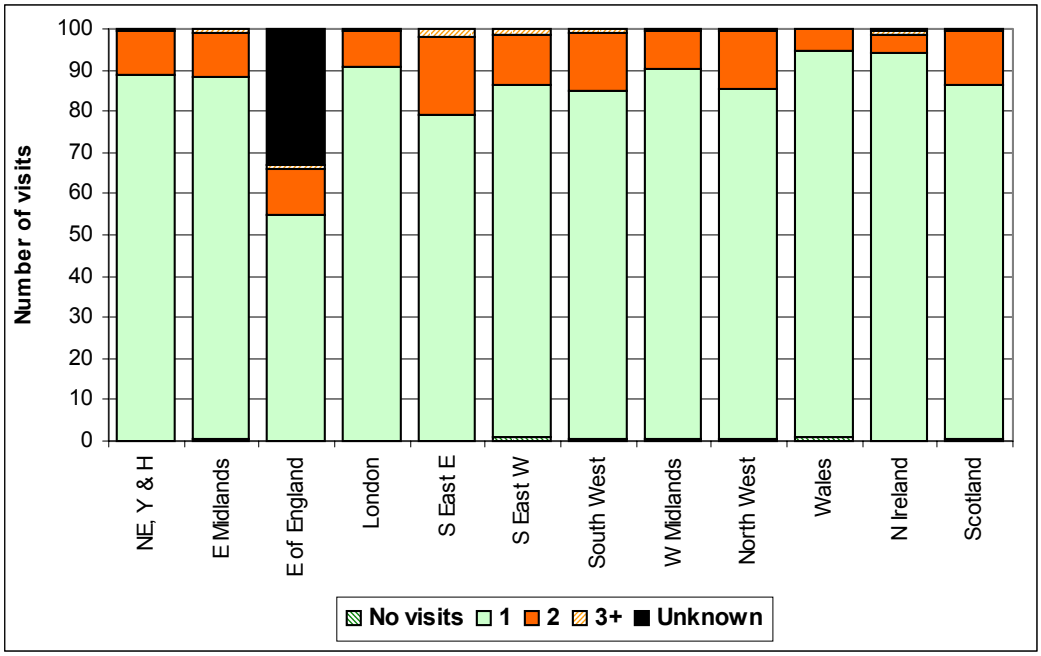

Figure 10 (Table 11): Number of visits for core biopsy/cytology

In East of England the number of visits was unknown for 33% of cancers. In South East (East) 21% of women with screen detected breast cancer had more than 1 visit for core biopsy and/or cytology

during the assessment process. The maximum number of assessment clinic visits for cytology or core biopsy was 5 for two women in South West (Table 12).

Figure 11 shows how the pre-operative diagnosis rate in each region is affected by repeat visits to an assessment clinic. In the UK as a whole, 78% of the 11,593 cancers detected by the screening programme had a pre-operative diagnosis of cancer determined from a single assessment clinic visit. This value is 81% if East of England, which had difficulty providing the data, is excluded. Of the remaining regions, 5 had a pre-operative diagnosis rate below the 80% minimum standard after the first assessment clinic visit. All 5 achieved the minimum standard when repeat assessment clinic visits were included and 4 achieved the 90% target. In South East (East) the pre-operative diagnosis rate was increased from 75% to 90% through repeat assessment clinic visits.

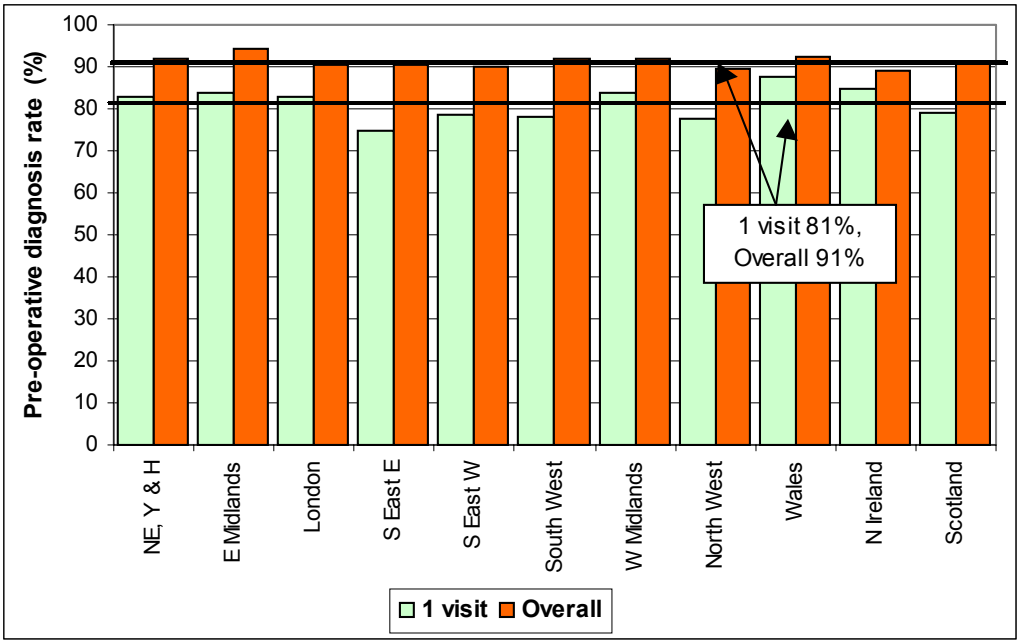

Figure 11 (Table 13): Variation in the proportion of cancers diagnosed by C5 and/or B5 in 1 visit, as a proportion of all screen detected cancers, compared to the overall pre-operative diagnosis rate

COMMENT:

- 84% of women with screen detected breast cancer had all attempts at core biopsy and/or cytology performed at 1 assessment clinic visit.
- 78% of the cancers detected by the screening programme had a pre-operative diagnosis of cancer determined from a single assessment clinic visit. This value is 81% if East of England, which had difficulty providing the data, is excluded.
- Of the remaining regions, 5 had a pre-operative diagnosis rate below the 80% minimum standard after the first assessment clinic visit. All 5 achieved the minimum standard when repeat assessment clinic visits were included and 4 achieved the 90% target.

2.3 Diagnostic Open Biopsies

2.3.1 Status of Diagnostic Open Biopsies

Quality Objective: To minimise unnecessary surgery, ie open surgical biopsies that prove to be benign

Outcome Measure: Benign open diagnostic biopsies should be:
<15 per 10,000 prevalent screen
<10 per 10,000 incident screen

(Quality Assurance Guidelines for Surgeons in Breast Cancer Screening, NHSBSP Publication 20, November 2003)

Figure 12 shows the regional variation in benign and malignant diagnostic open biopsy rates. In the UK as a whole, 2,919 diagnostic open biopsies were performed, compared to 3,166 in 2001/02. Of these, 1,901 (65%) were benign and 1,018 (35%) were malignant.

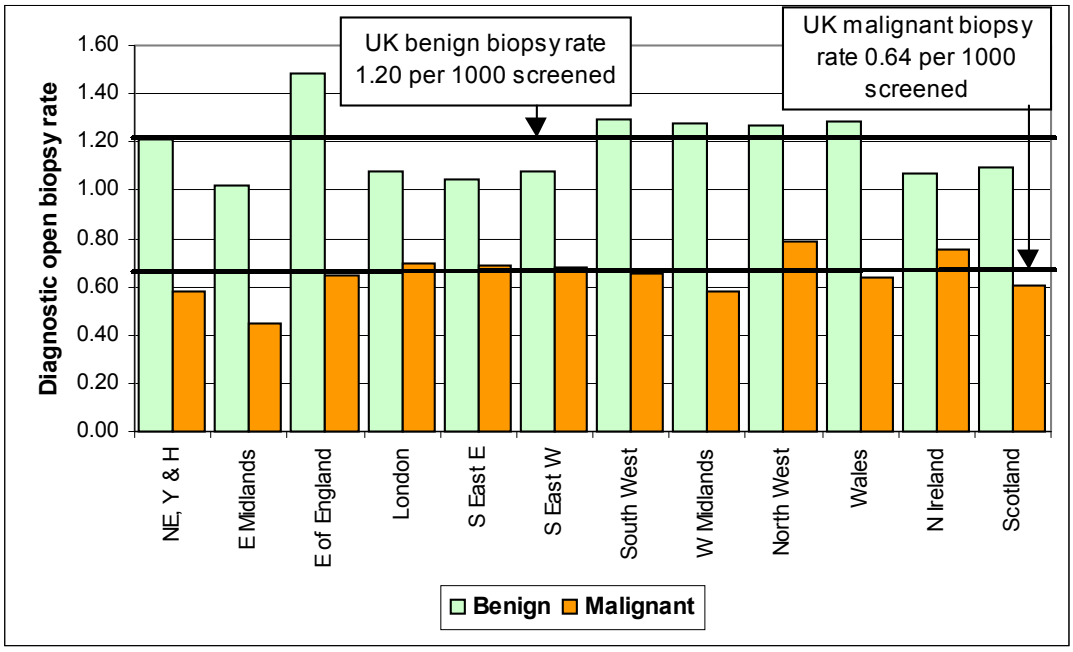

Figure 12 (Table 14): Variation in benign and malignant diagnostic open biopsy rates expressed as the number of diagnostic open biopsies undertaken per 1000 women screened

The benign open biopsy rate was 1.20 per 1000 women screened, varying from 1.02 per 1000 in East Midlands to 1.49 per 1000 in East of England. Overall, the malignant open biopsy rate was 0.64 per 1000 women screened, varying from 0.44 per 1000 in East Midlands to 0.79 per 1000 in North West.

The following summary table shows that the benign open biopsy rate has fallen over 7 years from 1.50 per 1000 women screened to 1.20 per 1000 women screened. Over the same period, the malignant open biopsy rate has fallen from 2.04 per 1000 to 0.64 per 1000 as the pre-operative diagnosis rate has increased from 63% to 91%.

7 YEAR COMPARISON: BENIGN AND MALIGNANT DIAGNOSTIC OPEN BIOPSY RATES					
Year of data collection	Number of women screened	Number of benign open biopsies	Number of malignant open biopsies	Benign open biopsy rate per 1000 women screened	Malignant open biopsy rate per 1000 women screened
1996/97	1,340,175	2015	2734	1.50	2.04
1997/98	1,419,287	2251	2349	1.59	1.66
1998/99	1,308,751	1830	1553	1.40	1.19
1999/00	1,429,905	1838	1316	1.29	0.92
2000/01	1,535,019	2042	1304	1.33	0.85
2001/02	1,507,987	2018	1148	1.34	0.76
2002/03	1,582,269	1901	1018	1.20	0.64

Data from Scotland are absent in 1998/99 and 1999/00
1996/97 data revised since previous publication to include malignant open biopsies with pre-operative C4 cytology.

2.3.2 Pre-operative Histories for Cancers Diagnosed by Diagnostic Open Biopsy

Due to the rising pre-operative diagnosis rate, only 1,018 cancers were diagnosed by open biopsy in 2002/03. Of these, 445 (44%) were invasive, 12 (1%) micro-invasive and 560 (55%) non-invasive. Invasive status was unknown for 1 case. These data are shown by region in Table 15.

Tables 16 and 17 describe the pre-operative history of cancers diagnosed by open biopsy according to whether the women had no pre-operative cell or tissue sample, cytology only, core biopsy only or both cytology and core biopsy. For 55% of invasive cancers diagnosed by open biopsy there had been unsuccessful attempts to obtain a pre-operative core diagnosis using core biopsy alone (Table 16). For non-invasive cancers the proportion of cases where pre-operative diagnosis had been attempted with core biopsy alone was higher at 80% (Table 17).

Table 16 also shows that, of the 445 invasive cancers diagnosed by open biopsy, 36 (8%) had no pre-operative procedure recorded. Of the 560 non-invasive cancers diagnosed by open biopsy, 17 (3%) had no pre-operative procedure recorded. Regional QA Reference Centres and Regional QA Surgeons should audit these 53 cases to establish whether they reflect a data collection problem. If the data are found to represent clinical practice correctly, the reasons for the failure to attempt pre-operative diagnosis should be ascertained.

Since 2000/01, the proportion of cancers which underwent cytology as the only procedure prior to diagnostic open biopsy has decreased from 31% to 16%, while the proportion undergoing core biopsy alone has risen from 36% to 55%.

3 YEAR COMPARISON : PRE-OPERATIVE HISTORY OF INVASIVE CANCERS DIAGNOSED BY OPEN BIOPSY										
Year	Total invasive cancers	Diagnosed by open biopsy	No pre-operative procedure		Cytology only		Core biopsy only		Both cytology and core biopsy	
			No	%	No	%	No	%	No	%
2000/01	7945	691	68	10	212	31	248	36	163	24
2001/02	7911	558	50	9	129	23	240	43	139	25
2002/03	9086	445	36	8	71	16	244	55	94	21

Figure 13 shows the highest pre-operative diagnosis result for cancers ultimately determined to be invasive. Overall, 15% of invasive cancers diagnosed by open biopsy had an inadequate (C1) cytology sample or a normal (B1) core biopsy sample, varying from 4% in Scotland to 30% in West Midlands. 12% had a benign (C2/B2) result, 22% were suspicious of benign disease (C3/B3) and

42% were suspicious of malignant disease (C4/B4). In London, 50% of the 48 cancers diagnosed by open biopsy received a B4 core biopsy or C4 cytology result indicating suspicion of malignancy prior to diagnostic surgery. In Wales, 32% of the 22 cancers diagnosed by open biopsy were determined to be benign (C2 or B2) prior to diagnostic surgery.

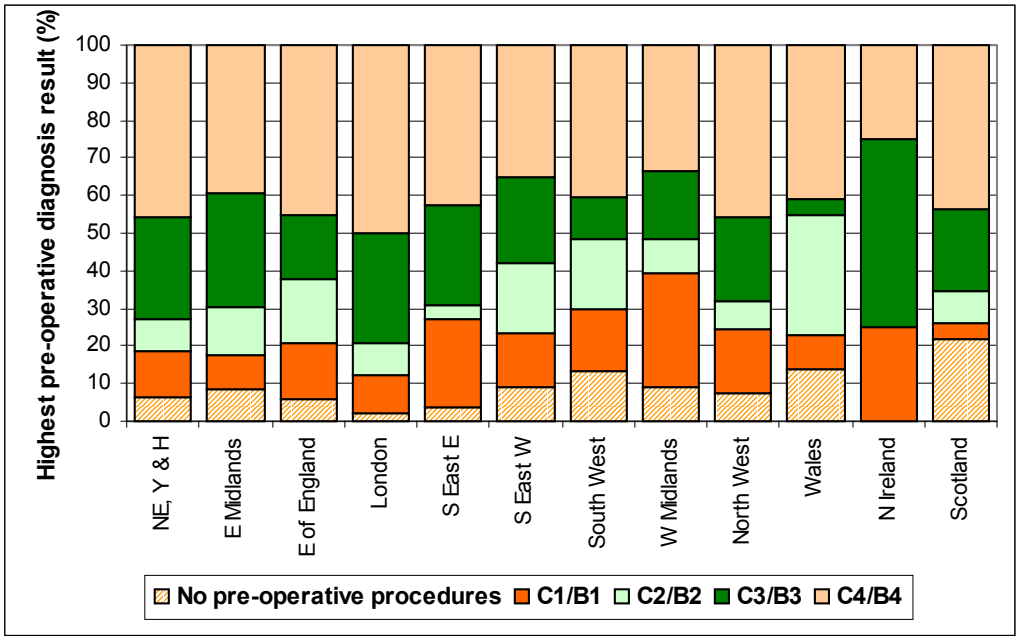

Figure 13 (Table 18): Variation by region in the highest pre-operative diagnosis result for invasive cancers diagnosed by open biopsy, expressed as a percentage of invasive malignant diagnostic open biopsies

Figure 14 shows the highest pre-operative diagnosis result for cancers ultimately determined to be non-invasive. In Wales and East of England, 25% and 22% respectively of the 28 and 50 non-invasive cancers diagnosed by open biopsy had an inadequate (C1) cytology sample or a normal (B1) core biopsy sample, compared to 12% in the UK as a whole.

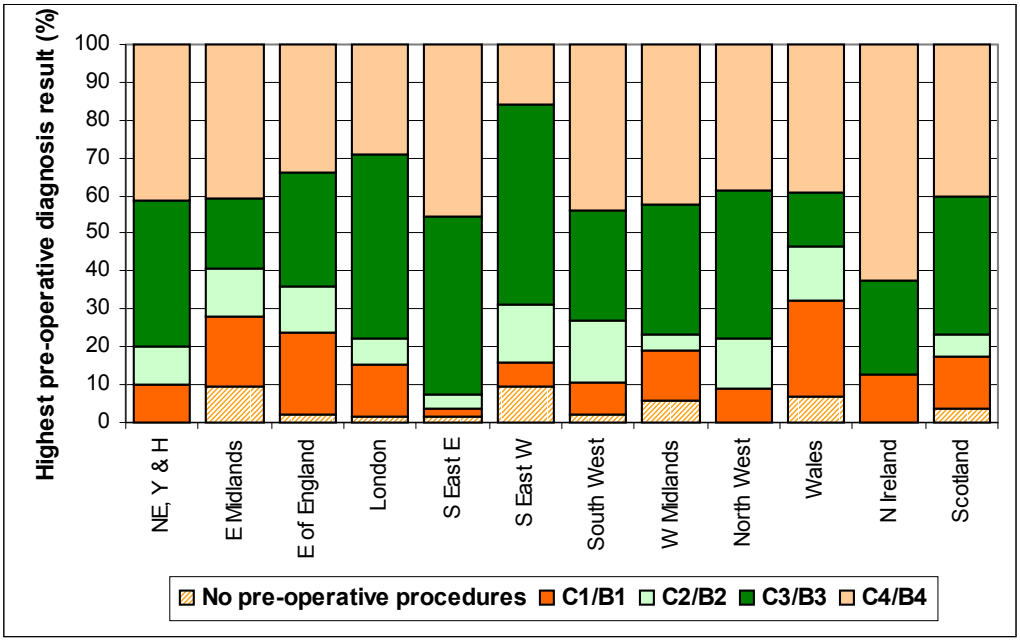

Figure 14 (Table 19): Variation by region in the highest pre-operative diagnosis result for non-invasive cancers diagnosed by open biopsy, as a percentage of non-invasive malignant diagnostic open biopsies

The following summary table shows the changes that have occurred since 2000/01 in the highest pre-operative diagnosis results for cancers that had a core biopsy or cytology sample taken prior to a diagnostic open biopsy. Throughout the three year period studied the highest proportion (45%) of cancers diagnosed by malignant open biopsy were those with C4 cytology or B4 core biopsy. The proportion of cancers with C3 cytology or B3 core biopsy has increased over the 3 year period from 18% to 24% while the proportion with C1 cytology or B1 core biopsy has fallen from 22% to 17%.

3 YEAR COMPARISON :
HIGHEST CYTOLOGY AND CORE BIOPSY FOR MALIGNANT OPEN BIOPSIES (INVASIVE)

Year	Total with core/cyt	C1/B1		C2/B2		C3/B3		C4/B4	
		No	%	No	%	No	%	No	%
2000/01	623	134	22	93	15	111	18	285	46
2001/02	508	88	17	94	19	113	22	213	42
2002/03	409	68	17	54	13	98	24	189	46

COMMENT:

- In the UK as a whole, 2,919 diagnostic open biopsies were performed in 2002/03. Of these 65% were benign and 35% were malignant.
- The benign open biopsy rate was 1.20 per 1000 women screened and the malignant open biopsy rate was 0.64 per 1000 women screened. The malignant open biopsy rate has fallen from 2.04 per 1000 in 1996/97 as the pre-operative diagnosis rate has increased from 63% to 91%.
- Of the 445 invasive cancers diagnosed by open biopsy, 36 (8%) had no pre-operative procedure recorded. Of the 560 non-invasive cancers diagnosed by open biopsy, 17 (3%) had no pre-operative procedure recorded. Regional QA Reference Centres and Regional QA Surgeons should audit these 53 cases to establish whether they reflect a data collection problem. If the data are found to represent clinical practice correctly, the reasons for the failure to attempt pre-operative diagnosis should be ascertained.
- 42% of invasive cancers diagnosed by malignant open biopsy following cytology or core biopsy performed during the assessment process had C4 cytology or B4 core biopsy indicating suspicion of malignant disease.

3. SURGICAL TREATMENT

3.1 Treatment for Non-invasive and Micro-invasive Breast Cancer

The variation in treatment type for non-invasive and micro-invasive breast cancers is shown by region in Figure 15 and by individual screening unit in Figure 16. 32 cancers (1%) apparently received no surgery. Regional QA Reference Centres and Regional QA Surgeons should review the tumour data for these cases to ensure that invasive disease has not been left untreated. Overall 69% of non-invasive and micro-invasive cancers were treated with conservation surgery, varying from 58% in Wales and 62% in North East, Yorkshire & Humber to 76% in London and 79% in Northern Ireland. Conservation surgery rates in individual screening units varied between 33% and 100%. The 4 units with conservation surgery rates under 50% treated 3, 5, 14 and 9 non-invasive or micro-invasive cancers. The 3 units with 100% conservation surgery treated between 3 and 10 non-invasive or micro-invasive cancers.

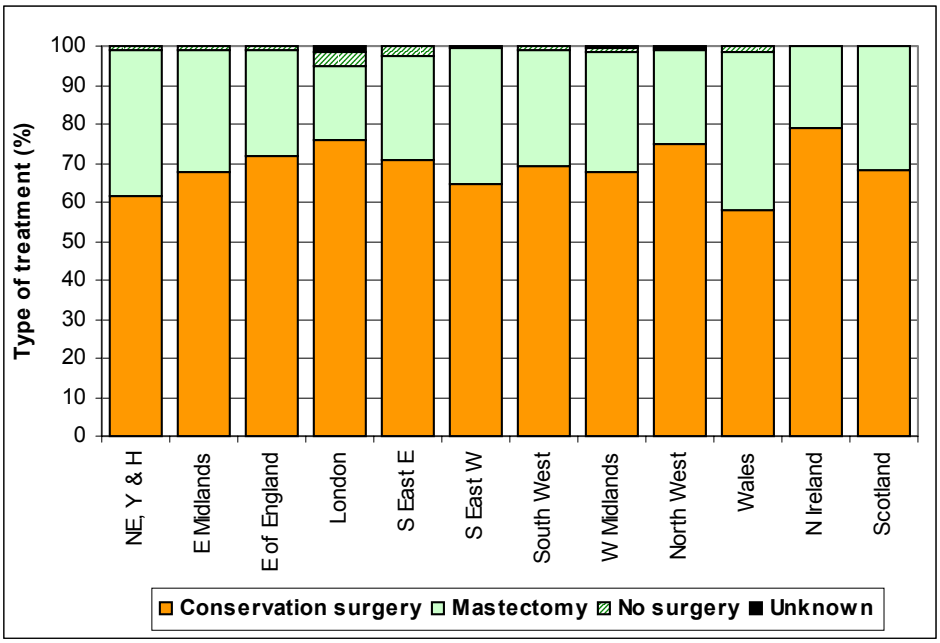

Figure 15 (Table 20): Variation in treatment for non-invasive and micro-invasive cancers

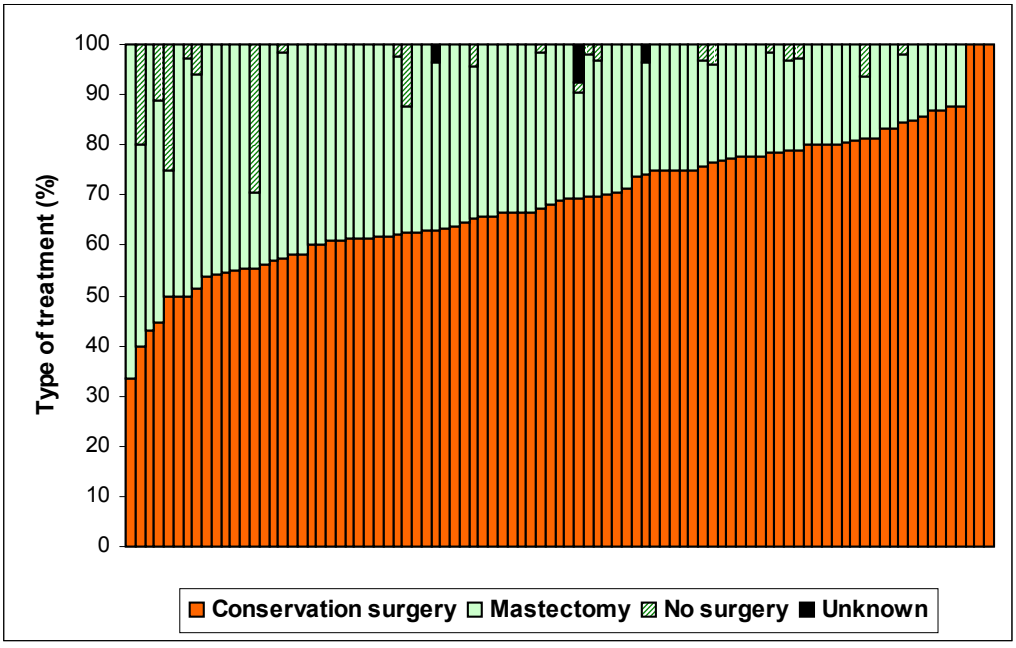

Figure 16: Variation by screening unit in treatment for non-invasive and micro-invasive cancers

In the UK as a whole, 1,122 (48%) of the 2348 non-invasive cancers were high grade, 906 (39%) other grade and for 50 (2%) grade was not assessable. 270 non-invasive cancers (11%) had unknown nuclear grade (Table 21). In 6 units the proportion of cancers with unknown nuclear grade was 73% or above. These units treated between 11 and 32 non-invasive cancers. The variation in the nuclear grade of non-invasive cancers in each screening unit is shown in Figure 17. 53 screening services supplied grade for 100% of cases. In these 53 units, 55% of non-invasive cancers were high grade.

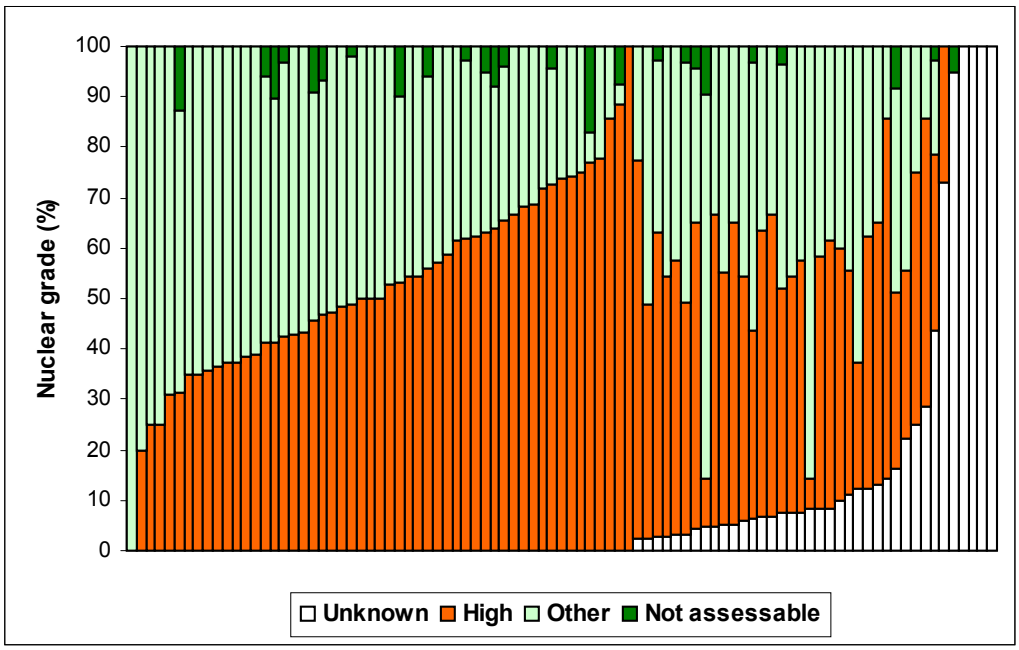

Figure 17: Variation by unit in the nuclear grade of non-invasive cancers

The regional variation in the size of non-invasive cancers is provided in Table 23. Figure 18 shows the variation in size in each screening unit. In 6 screening units the proportion of non-invasive cancers with unknown size was 50% or more. These units treated between 8 and 30 non-invasive cancers. 33 screening services supplied size for all non-invasive cancers. In these 33 units, 47% of non-invasive cancers measured <15mm.

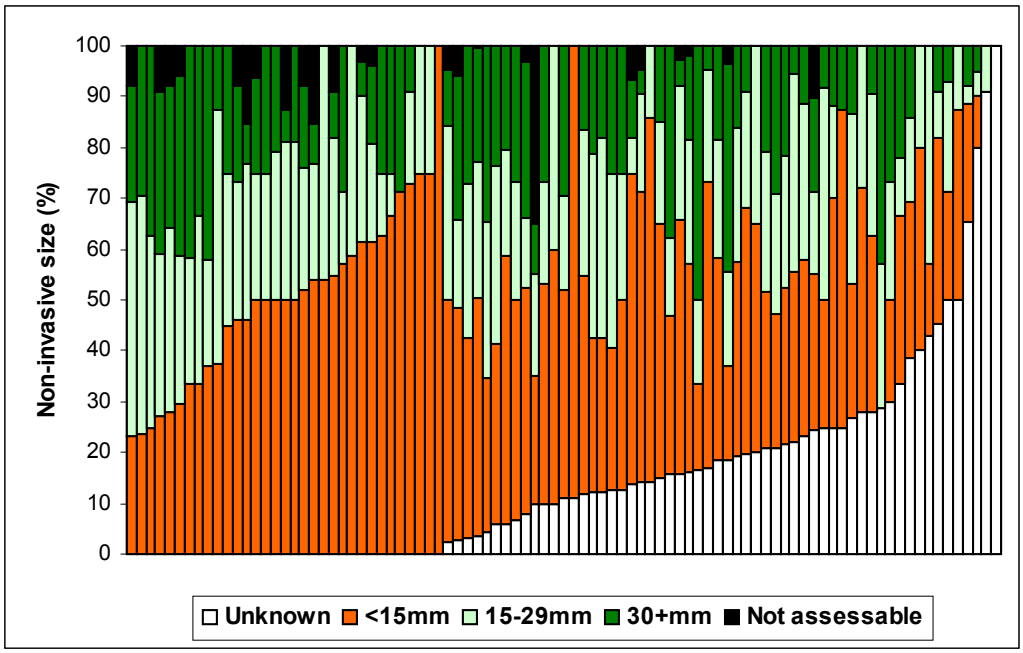

Figure 18: Variation by unit in the size of non-invasive cancers

Table 22 shows the regional variation in the disease extent of non-invasive cancers. Overall, 48% of non-invasive cancers had not assessable or unknown disease extent. In South East (East), for 49% of non-invasive cancers, disease extent was not assessable. The data completeness of nuclear grade, disease extent and pathological size recorded for the 2,348 non-invasive cancers detected by the UK NHSBSP in 2002/03 is shown in Table 24. In Scotland and North West, respectively 44% and 32% of non-invasive cancers had unknown nuclear grade compared with 11% in the UK as a whole. 32% of non-invasive cancers in East of England and 24% in Northern Ireland had unknown size. Disease extent, which was unknown for 36% of non-invasive cancers, is not included as a data item in the Sloane project. Data for non-invasive cancers have therefore been considered to be complete if both size and grade are known.

Figure 19 shows the data completeness for non-invasive cancers at each screening unit. Five screening units in East of England and North West, with between 11 and 32 non-invasive cancers, were unable to provide any grade or size data. 32 screening units were able to provide grade and size data for all non-invasive cancers. In the screening units with complete data, 55% of non-invasive cancers were high grade and 47% were <15mm in diameter.

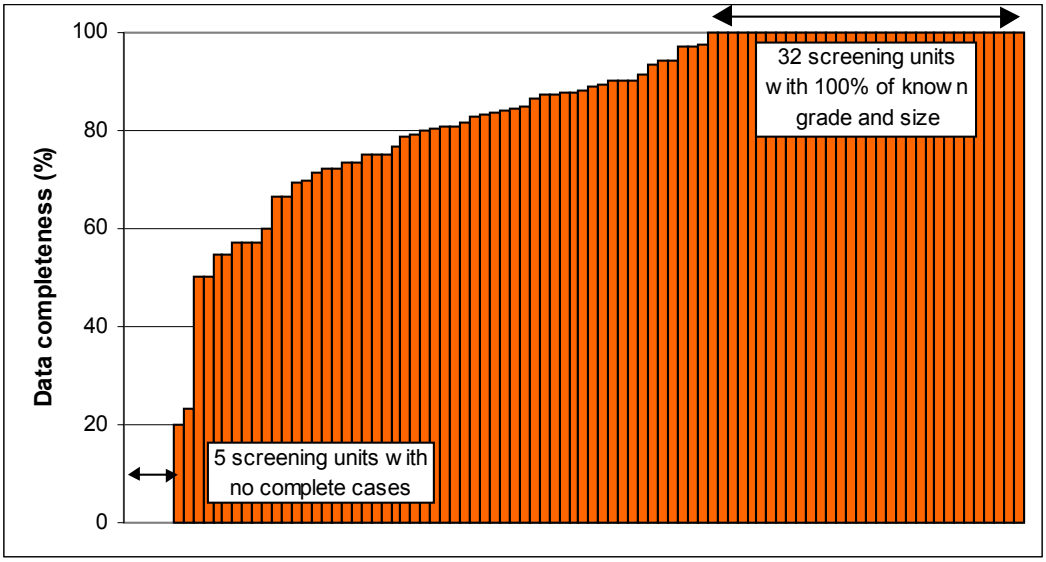

Figure 19: Variation by screening unit in the data completeness of grade and size for non-invasive cancers

Overall, data were incomplete (unknown grade and/or size) for 21% of non-invasive cancers. Data completeness varied from 0 cases in East Midlands and 4% in West Midlands to more than 30% in East of England (33%), North West (42%) and Scotland (45%). The following summary table shows that the proportion of incomplete data has remained stable over the past five years. It is hoped that this will improve as screening units sign up to the Sloane project to record and audit the pathology and treatment for all screen detected non-invasive cancers.

5 YEAR COMPARISON: DATA COMPLETENESS FOR NON-INVASIVE CANCERS			
Year of data collection	*Unknown nuclear grade*	*Unknown size*	*Unknown grade or size*
	%	*%*	*%*
1998/99	*17*	*-*	*-*
1999/00	*6*	*16*	*19*
2000/01	*7*	*12*	*14*
2001/02	*11*	*13*	*20*
2002/03	*11*	*15*	*21*

Data from Scotland are absent in 1998/99
Disease extent was termed “focal status” in 1998/99

Of the 114 non-invasive cancers recorded as high grade multi-focal, 28 cases (25%) were treated by conservation surgery (Table 25). Of the large (30+mm) multi-focal non-invasive cancers, 6 (9%) were treated with conservation surgery (Table 26). 289 non-invasive cancers were recorded as large (30+mm) high grade lesions. Of these, 90 (31%) were treated with conservation surgery (Table 27). Tables 28-30 show the treatment provided to cancers with incomplete data which could potentially be large high grade lesions.

The following summary table shows that, in total, 239 high grade multi-focal, large multi-focal, large high grade and potentially large high grade non-invasive cancers were treated with conservation surgery. Regional QA Reference Centres and Regional QA Surgeons should review the data recorded for these cases to ensure that they were not undertreated.

TABLE 3.1A : NUMBER OF NON-INVASIVE CANCERS IN EACH REGION TREATED WITH CONSERVATION SURGERY

		30+ mm			Unknown size		
Region	**High Grade multi-focal** (Table 25)	**Multi-focal** (Table 26)	**High grade** (Table 27)	**Unknown grade** (Table 28)	**High grade** (Table 29)	**Unknown grade** (Table 30)	**Total***
N East, Yorks & Humber	*1*	*0*	*12*	*0*	*9*	*1*	*23*
East Midlands	*4*	*0*	*7*	*0*	*0*	*0*	*11*
East of England	*6*	*1*	*6*	*0*	*4*	*27*	*44*
London	*1*	*1*	*14*	*0*	*13*	*10*	*39*
South East (East)	*1*	*0*	*4*	*0*	*7*	*4*	*16*
South East (West)	*0*	*0*	*7*	*0*	*5*	*3*	*15*
South West	*8*	*2*	*10*	*0*	*7*	*1*	*26*
West Midlands	*2*	*0*	*9*	*0*	*0*	*0*	*11*
North West	*2*	*0*	*7*	*1*	*5*	*14*	*29*
Wales	*0*	*0*	*5*	*0*	*0*	*0*	*5*
Northern Ireland	*1*	*1*	*5*	*0*	*3*	*2*	*10*
Scotland	*2*	*1*	*4*	*2*	*1*	*2*	*10*
United Kingdom	***28***	***6***	***90***	***3***	***54***	***64***	***239***

*counts each non-invasive cancer once only

COMMENT:

- Overall, 69% of non-invasive and micro-invasive cancers were treated with conservation surgery, varying from 58% in Wales and 62% in North East, Yorkshire & Humber to 76% in London and 79% in Northern Ireland.
- 32 screening units were able to provide grade and size data for all non-invasive cancers.
- In the screening units with complete data, 55% of non-invasive cancers were high grade and 47% were <15mm in diameter.
- 239 high grade multi-focal, large multi-focal, large high grade and potentially large high grade non-invasive cancers were treated with conservation surgery. Regional QA Reference Centres and Regional QA Surgeons should review the data recorded for these cases to ensure that they were not under-treated.

3.2 Treatment for Invasive Breast Cancer

Of the 9,086 invasive breast cancers detected by the UK NHSBSP in 2002/03, 6,519 (72%) underwent conservation surgery, 2,444 (27%) had a mastectomy and 100 cases (1%) had no surgery. Treatment information was unavailable for 23 cases, of which 10 (43%) were in London. Figure 20 shows the regional variation in invasive cancer mastectomy rates from 19% in London to 34% in Wales and 35% in North East, Yorkshire & Humber.

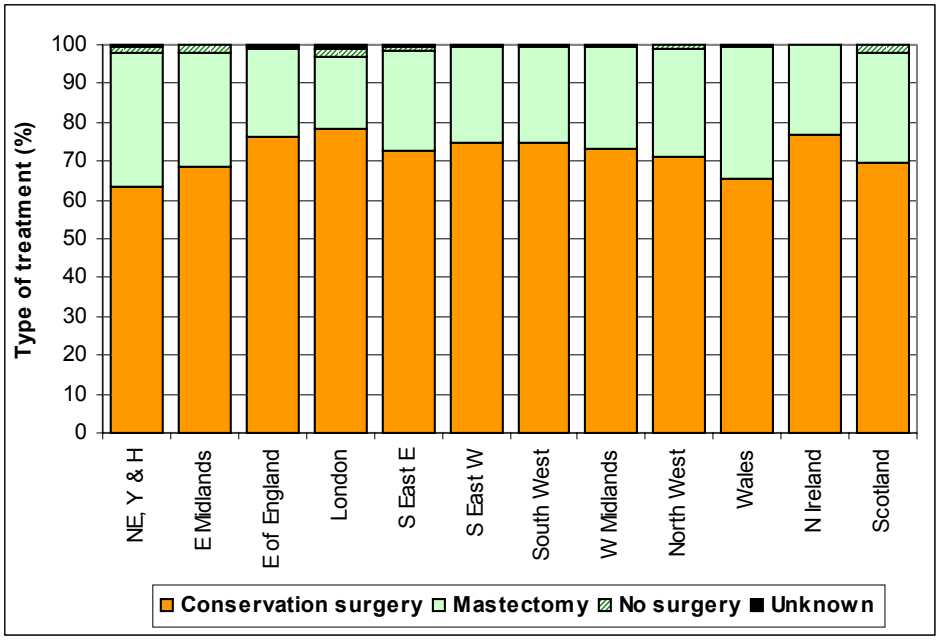

Figure 20 (Table 31): Variation in the type of treatment for invasive cancers (all sizes)

Mastectomy rates for individual screening units varied between 12% and 57% (Figure 21). The 7 screening units with mastectomy rates under 15% treated between 28 and 77 invasive cancers. The 4 units with mastectomy rates over 50% treated between 16 and 130 invasive cancers.

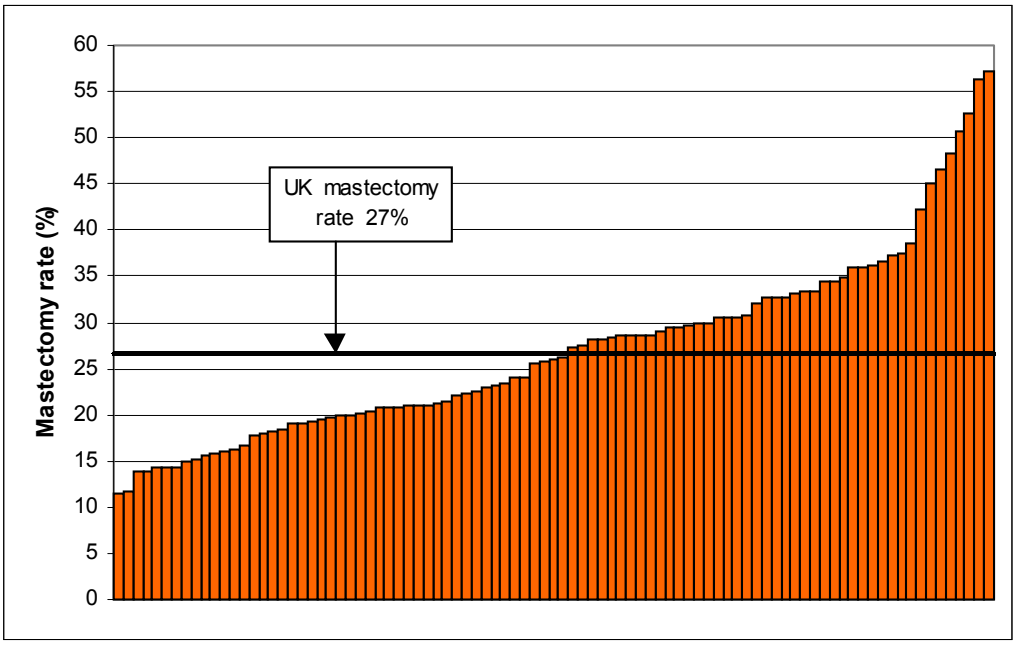

Figure 21: Variation in the type of treatment for invasive cancers (all sizes)

3.2.1 Treatment According to Invasive Size

Table 32 gives the invasive size of the 9,086 invasive breast cancers. Overall 2,232 cases (25%) measured less than 10mm, 2,646 (29%) were 10-<15mm in diameter, 1,752 (19%) were 15-<20mm in diameter and 1,965 (22%) were 20-<50mm. Only 171 cases (2%) were 50mm or more. Size was unavailable for 320 cases (4%). In East of England, 153 (16%) of the 954 invasive cancers had no size recorded.

Figure 22 shows the regional variation in mastectomy rates for invasive breast cancer with invasive tumour size. In the UK as a whole, the mastectomy rate increased with invasive tumour size, with 81% of 50+mm tumours being treated with mastectomy compared with 19% of small (<15mm) invasive tumours. The mastectomy rate for large (50+mm) invasive cancers was only 73% in North West and 75% in East Midlands, East of England and West Midlands compared to 81% in the UK as a whole.

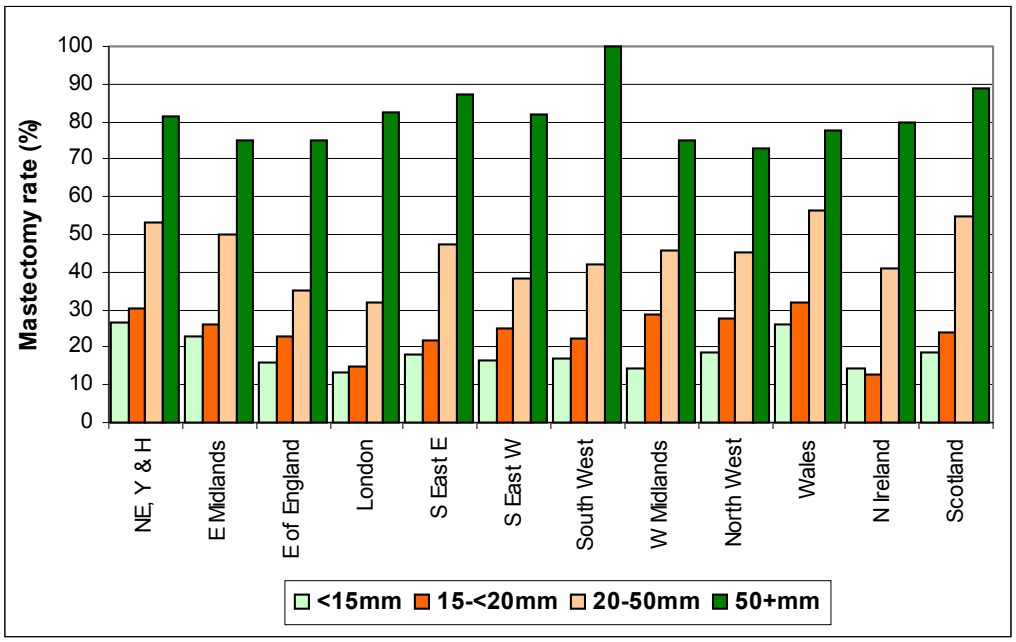

Figure 22 (Tables 35-38): Variation in mastectomy rates with invasive tumour size

3.2.2 Treatment of Invasive Cancers with Invasive Component <15mm in Diameter

The following summary table shows that the overall mastectomy rate for small (<15mm) invasive tumours has remained stable since 1996/97. The highest mastectomy rates for small (<15mm) invasive cancers were seen in Wales (26%) and North East, Yorkshire & Humber (26%) (Table 35).

7 YEAR COMPARISON: TREATMENT FOR SMALL INVASIVE CANCERS (<15mm)					
Year of data collection	*Total invasive cases <15mm*	*Conservation surgery*		*Mastectomy*	
		No.	*%*	*No.*	*%*
1996/97	*3135*	*2449*	*78*	*601*	*19*
1997/98	*3384*	*2693*	*80*	*651*	*19*
1998/99	*3344*	*2697*	*81*	*618*	*18*
1999/00	*4150*	*3337*	*80*	*773*	*19*
2000/01	*4189*	*3363*	*80*	*796*	*19*
2001/02	*4233*	*3333*	*79*	*879*	*21*
2002/03	*4878*	*3950*	*81*	*918*	*19*

Data from Scotland are absent in 1998/99

The variation by screening unit in the mastectomy rates for <15mm invasive tumours is shown in Figure 23. For 21 screening units, with between 7 and 83 small (<15mm) invasive cancers, the mastectomy rate was less than 10%. For 7 screening units, with between 7 and 67 small (<15mm) invasive cancers, the mastectomy rate was 35% or more.

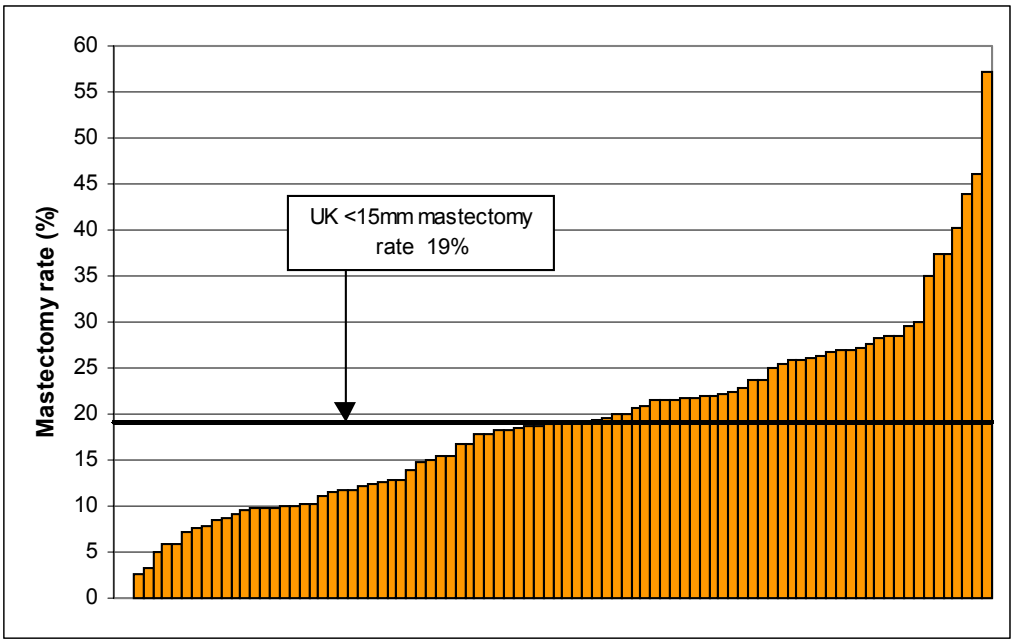

Figure 23: Variation by unit in mastectomy rates for <15mm invasive tumours

3.2.3 Treatment of Invasive Cancers According to Whole Tumour Size

Once again, screening services were asked to provide whole tumour size for invasive cancers (Table 39). The whole tumour size is the maximum diameter of the whole tumour, including any non-invasive component. The whole size was not provided for 1,242 (14%) of the 9,086 invasive cancers. In London (33%), North West (24%), South East (East) and South East (West) (23%) more than 20% of invasive cancers had whole size unknown.

Table 40 shows the whole size of small (<15mm) invasive cancers. Of the 4,878 invasive cancers with invasive size <15mm, 3,397 (70%) had whole size <15mm, 424 (9%) had whole size 15-<20mm, 458 (9%) had whole size 20-<50mm and 81 (2%) had whole size 50+mm. Whole size was unknown for 518 cancers (11%).

TREATMENT FOR INVASIVE CANCERS				
Size	***Invasive size mastectomy rates*** *(Tables 35-38)*		***Whole size mastectomy rates for <15mm invasive cancers*** *(Tables 39, 41-43)*	
	No.	***%***	***No.***	***%***
50+mm	*138/171*	*81*	*71/81*	*88*
20-<50mm	*890/1965*	*45*	*166/458*	*36*
15-<20mm	*437/1752*	*25*	*87/424*	*21*
<15mm	*918/4878*	*19*	*496/3397*	*15*

The above summary table shows how overall mastectomy rates varied with the size of the invasive cancer and with whole tumour size. The mastectomy rate for 50+mm invasive cancers (81%) was lower than that for <15mm cancers with 50+mm whole size (88%). The mastectomy rates for 20-<50mmm and 15-<20mm cancers were higher than for <15mm invasive cancers with 20-<50mm and 15-<20mm whole size respectively. For small cancers, only 15% of tumours with whole size <15mm were treated with mastectomy compared with 19% of cancers with invasive size <15mm.

These data suggest that the presence of *in situ* disease accounts for a proportion of the mastectomies performed on tumours with invasive size <15mm.

Figure 24 and the accompanying summary table illustrate the regional variation in mastectomy rates for cancers with invasive size <15mm and for cancers where the whole invasive size was <15mm. In every region, the mastectomy rate for cancers with whole size <15mm was lower than that for cancers with invasive size <15mm. The difference was greatest in South East (West) (16% compared to 7%) and least in Wales (26% compared to 25%).

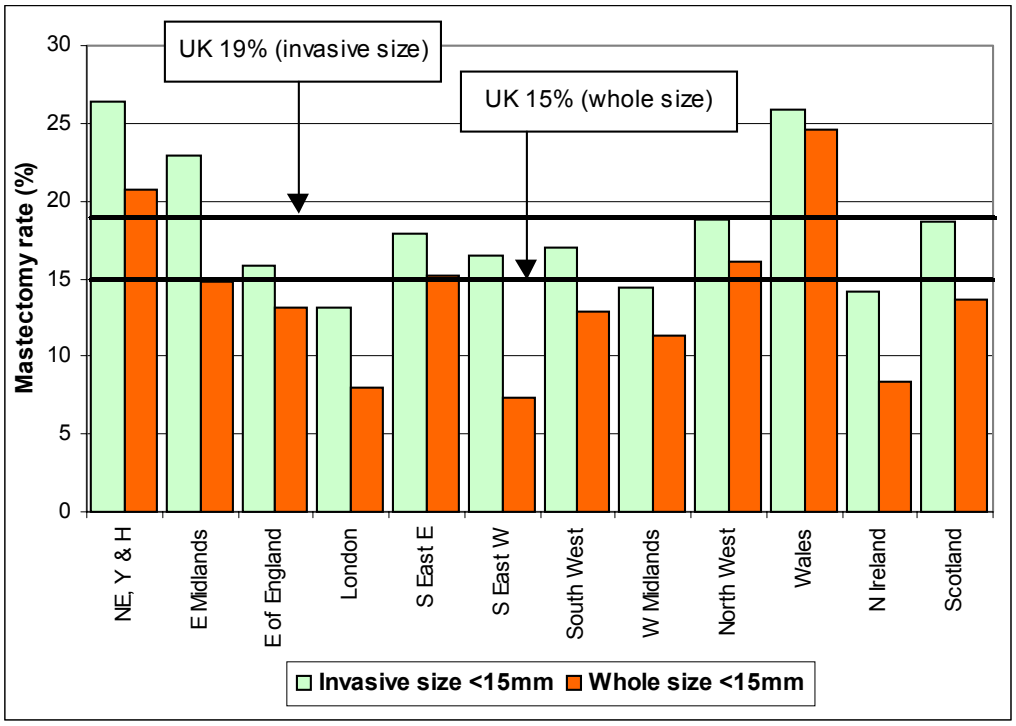

Figure 24 (Tables 35, 41): Variation in mastectomy rates for <15mm invasive size cancers and <15mm whole size invasive cancers

DIFFERENCE IN MASTECTOMY RATES FOR <15MM INVASIVE CANCERS AND <15MM WHOLESIZE CANCERS				
	<15mm invasive size (Table 35)		***<15mm whole size (Tables 41)***	
Region	***No.***	***%***	***No.***	***%***
N East, Yorks & Humber	*155/586*	*26*	*89/430*	*21*
East Midlands	*96/420*	*23*	*45/304*	*15*
East of England	*74/467*	*16*	*51/387*	*13*
London	*61/466*	*13*	*18/224*	*8*
South East (East)	*67/375*	*18*	*34/224*	*15*
South East (West)	*52/316*	*16*	*14/191*	*7*
South West	*80/469*	*17*	*44/342*	*13*
West Midlands	*60/415*	*14*	*37/325*	*11*
North West	*115/612*	*19*	*63/390*	*16*
Wales	*78/302*	*26*	*55/224*	*25*
Northern Ireland	*12/85*	*14*	*4/48*	*8*
Scotland	*68/365*	*19*	*42/308*	*14*
UK	***918/4878***	***19***	***496/3397***	***15***

3.3 Immediate Reconstruction Following Mastectomy

Overall, of the 11,593 cancers detected, 3,174 (27%) were treated with mastectomy. Of these, 264 (8%) were recorded as having immediate reconstruction. 2,106 (66%) cases had no immediate reconstruction recorded and for 804 (25%) cases it was unknown whether immediate reconstruction was performed (Figure 25). Immediate reconstruction data were not available in all screening units, but 8% is the minimum proportion that did have immediate reconstruction. The availability of immediate reconstruction may influence women's decision to choose mastectomy. Thus in Wales, where mastectomy rates for small tumours were not influenced by the presence of *in situ* disease, at least 14% of cancers undergoing mastectomy received immediate reconstruction.

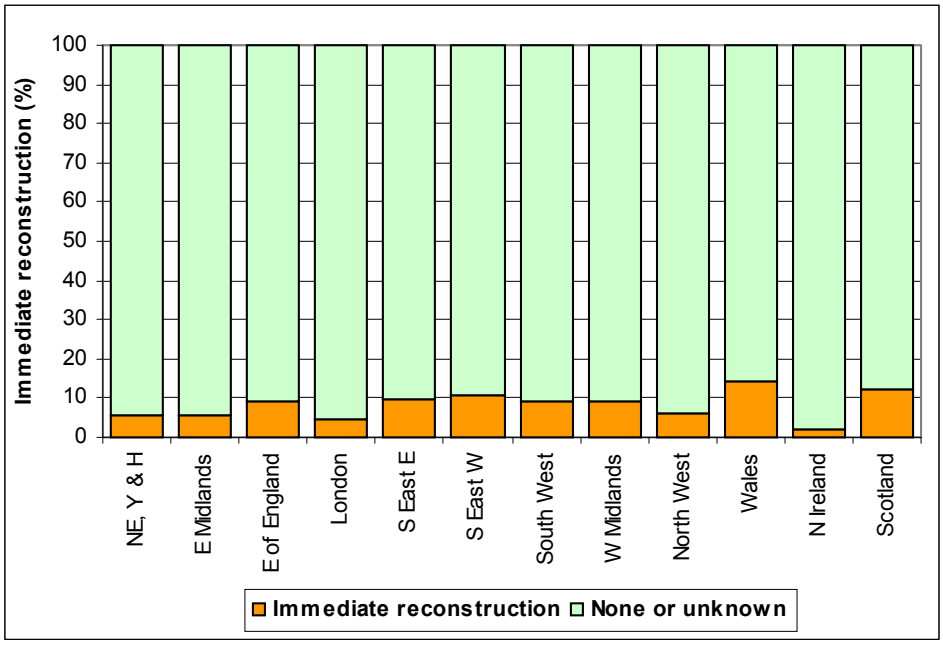

Figure 25 (Table 46): Proportion of immediate reconstruction (all cancers)

Table 47 shows that, of the 264 cases known to have had immediate reconstruction following mastectomy, 156 (59%) were invasive, 5 (2%) were micro-invasive, 103 (39%) were non-invasive.

COMMENT:

- In the UK as a whole, the mastectomy rate for invasive cancers was 27%. This varied between 12% and 57% in individual screening units.
- 81% of 50+mm invasive cancers were treated with mastectomy compared with 19% of small (<15mm) invasive cancers.
- For 7 screening units, with between 7 and 67 small (<15mm) invasive cancers, the mastectomy rate was 35% or more.
- Only 15% of cancers with whole size <15mm were treated with mastectomy compared with 19% of cancers with invasive size <15mm. These data suggest that the presence of *in situ* disease accounts for a proportion of the mastectomies performed on tumours with invasive size <15mm.
- 8% of cancers treated with mastectomy were recorded as having immediate reconstruction.

4 LYMPH NODE STATUS, INVASIVE GRADE AND NPI

4.1 Lymph Node Status of Invasive Cancers

Screening guidelines recommended that invasive cancers should have axillary node assessment. Axillary node assessment is not usually indicated for non-invasive cancers.

Quality Objective: To ensure adequate pathological data to decide on appropriate adjuvant treatment

Outcome Measures & Standard: Patients with invasive cancers treated by surgery should have adequate axillary node assessment (minimum 90%, target 95%)

(Quality Assurance Guidelines for Surgeons in Breast Cancer Screening, NHSBSP Publication 20, November 2003)

4.1.1 Availability of Nodal Status for Invasive Cancers

Overall, nodal status was known for 95% of invasive cancers, varying from 86% in Northern Ireland to 99% in West Midlands and Wales (Table 48). In Northern Ireland, it was unknown whether nodes were obtained for 9% of invasive cancers.

The availability of nodal status for invasive cancers is shown for individual screening units in Figure 26. Where nodal status is unknown, this may be because no nodes were obtained or because it is not known whether nodes were obtained. At 10 screening services, with between 15 and 125 invasive cancers, nodal status was ascertained for 100% of invasive cancers. The 2 screening units where nodal status was unknown for more than 25% of cases diagnosed 31 and 89 invasive cancers.

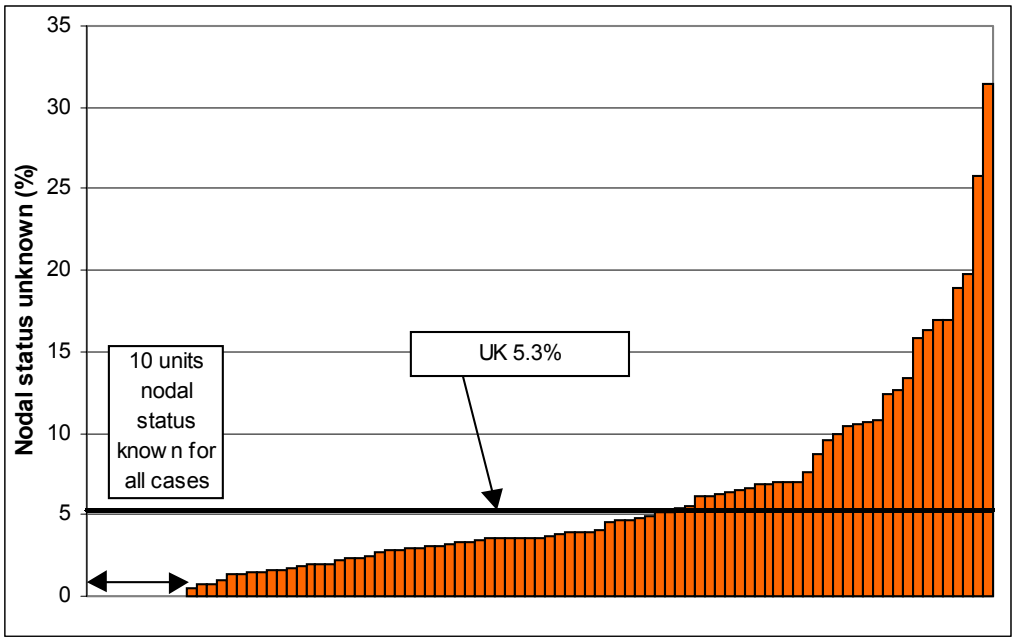

Figure 26: Variation by unit in the availability of lymph node status for invasive breast cancers

Of the 8,607 invasive cancers with known nodal status, 2,133 (25%) had positive nodal status (Table 49). This is the same as the 25:75 ratio obtained in previous year's audits which is shown in the following table.

7 YEAR COMPARISON: AVAILABILITY OF LYMPH NODE STATUS				
Year of data collection	Number of invasive cancers	% with nodal information	% of invasive cancers with known nodal status	
			Positive	Negative
1996/97	5860	81	26	74
1997/98	6427	87	25	75
1998/99	6200	90	26	74
1999/00	7675	93	25	75
2000/01	7945	93	25	75
2001/02	7911	94	25	75
2002/03	9086	95	25	75

Data from Scotland and Northern Ireland are absent in 1998/99

There was also little regional variation in lymph node status, with the proportion of node positive cancers varying from 23% in Wales and East Midlands to 27% in South East (West), West Midlands and Northern Ireland (Table 49). The variation in nodal status in individual screening units is illustrated in Figure 27. At 3 screening units, more than 40% of invasive cancers with known nodal status were node positive. These screening units diagnosed between 53 and 59 invasive cancers. At the other extreme, 5 screening units found positive nodes in less than 15% of invasive cancers with known nodal status. These screening units diagnosed between 21 and 69 invasive cancers.

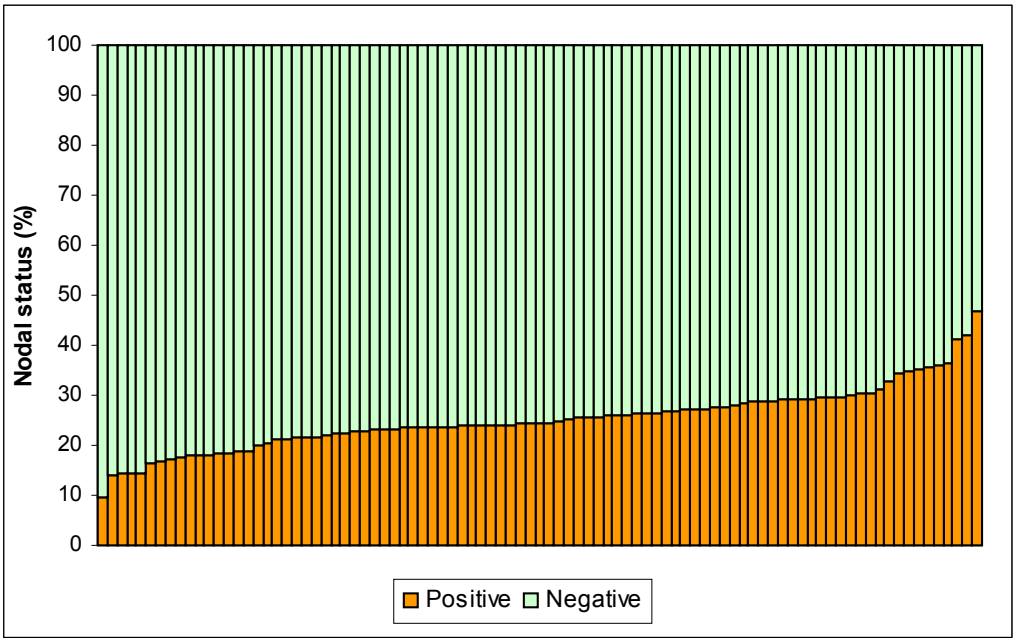

Figure 27: Variation by unit in the lymph node status of invasive breast cancers

4.1.2 Number of Nodes Examined

Quality Objective:

"**Patients receiving surgery for screen-detected invasive breast cancer should be recommended to have axillary node staging by sampling or clearance, and this recommendation should be documented in their case notes. A minimum of four nodes should be obtained for axillary node sampling."**

(Quality Assurance Guidelines for Surgeons in Breast Cancer Screening, NHSBSP Publication 20, November 2003)

For invasive cancers with known nodal status, the mean number of nodes examined was 11 nodes and the median 10 nodes (Table 50). The mean and median number of nodes examined were highest in Northern Ireland (mean and median 15) and lowest in East Midlands (mean 8, median 6).

The summary table below shows that the proportion of invasive cancers for which nodal status was recorded that had fewer than 4 nodes examined has decreased from 10.6% in 1996/97 to 5.2% in 2002/03 (Table 51).

7 YEAR COMPARISON: NODAL STATUS ASSESSED ON THE BASIS OF <4 NODES		
Year of data collection	***Number of invasive cancers with known nodal status***	***% with <4 nodes examined***
1996/97	*4773*	*10.6*
1997/98	*5585*	*9.0*
1998/99	*5574*	*6.7*
1999/00	*7126*	*5.5*
2000/01	*7379*	*5.0*
2001/02	*7465*	*5.1*
2002/03	*8607*	*5.2*

Data from Scotland and Northern Ireland are absent in 1998/99

If a sentinel node procedure is performed as part of a trial (e.g. ALMANAC), it is acceptable to obtain fewer than 4 nodes. The use of this new technique was therefore taken into account when analysing the data on the proportion of cases with fewer than 4 nodes examined. 320 (3.7%) of the invasive cancers for which nodal status was recorded had negative status determined on the basis of fewer than 4 nodes without a sentinel node procedure. Figure 28 shows that this varied from 0.7% in Northern Ireland (1 cancer) to 6.7% (51 cancers) in London.

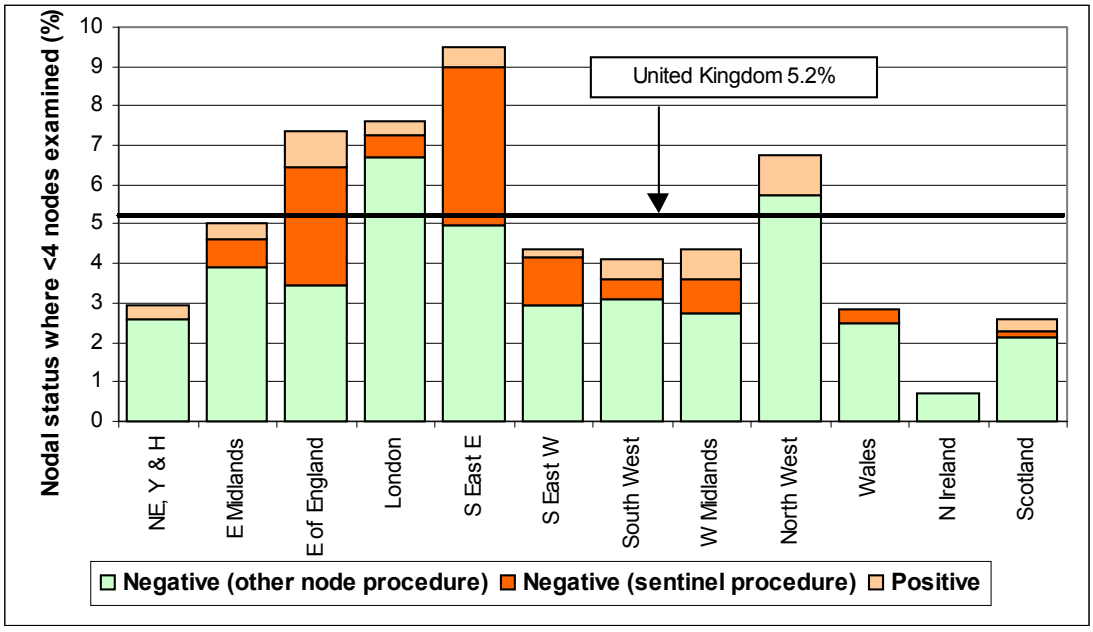

Figure 28 (Table 51): Variation in nodal status for invasive cancers where nodal status was determined on the basis of <4 nodes, expressed as the percentage of invasive cancers with known nodal status

A further 81 cancers (0.9%) had negative nodal status determined by a sentinel procedure. The majority of these cases were in East of England and South East (East). 39 (0.5%) of the invasive cancers had positive nodal status determined on the basis of fewer than 4 nodes without a sentinel procedure. A further 6 cases had their positive nodal status determined from a sentinel procedure. These cases should have had a subsequent nodal procedure as part of the sentinel node trial but these data were not collected in the audit.

Tables 48 and 51 show that of the 9,086 invasive cancers detected, 479 (5.3%) had unknown nodal status and 320 (3.7%) had negative nodal status determined without a sentinel procedure on the basis of 1, 2 or 3 nodes. Thus, 799 (8.8%) of the 9,086 invasive cancers detected appear to have insufficient nodal information to provide a satisfactory diagnostic work-up. The variation by region, from 4.0% in Scotland and 4.1% in West Midlands, to 17.7% in London and 14.7% in Northern Ireland is shown in the summary table below. Regional QA Reference Centres and Regional QA Surgeons should audit these cases to ascertain whether the data are a true reflection of clinical practice, as these cancers may have had an insufficient diagnostic work-up.

INVASIVE CANCERS WITH INSUFFICIENT NODAL INFORMATION					
	Total invasive cancers	***Unknown nodal status*** *(Table 48)*	***Negative <4 nodes*** *(Other node procedure - Table 51)*	***Insufficient nodal information***	
Region	***No.***	***No.***	***No.***	***No.***	***%***
N East, Yorks & Humber	*1134*	*48*	*28*	*76*	*6.7*
East Midlands	*720*	*27*	*27*	*54*	*7.5*
East of England	*954*	*83*	*30*	*113*	*11.8*
London	*862*	*102*	*51*	*153*	*17.7*
South East (East)	*652*	*29*	*31*	*60*	*9.2*
South East (West)	*596*	*22*	*17*	*39*	*6.5*
South West	*849*	*42*	*25*	*67*	*7.9*
West Midlands	*811*	*11*	*22*	*33*	*4.1*
North West	*1141*	*74*	*61*	*135*	*11.8*
Wales	*532*	*5*	*13*	*18*	*3.4*
Northern Ireland	*163*	*23*	*1*	*24*	*14.7*
Scotland	*672*	*13*	*14*	*27*	*4.0*
UK	***9086***	***479***	***320***	***799***	***8.8***

Figure 29 shows how the proportion of invasive cancers with unknown nodal status and with negative nodal status determined on the basis of less than 4 nodes without a sentinel procedure varied in individual screening units. The proportion of invasive cancers with insufficient nodal information to provide a satisfactory diagnostic work-up varied between 0 cases and 33%. In 4 screening units, more than 13% of invasive cancers had negative nodal status determined on the basis of less than 4 nodes without a sentinel procedure. These units treated between 43 and 136 invasive cancers.

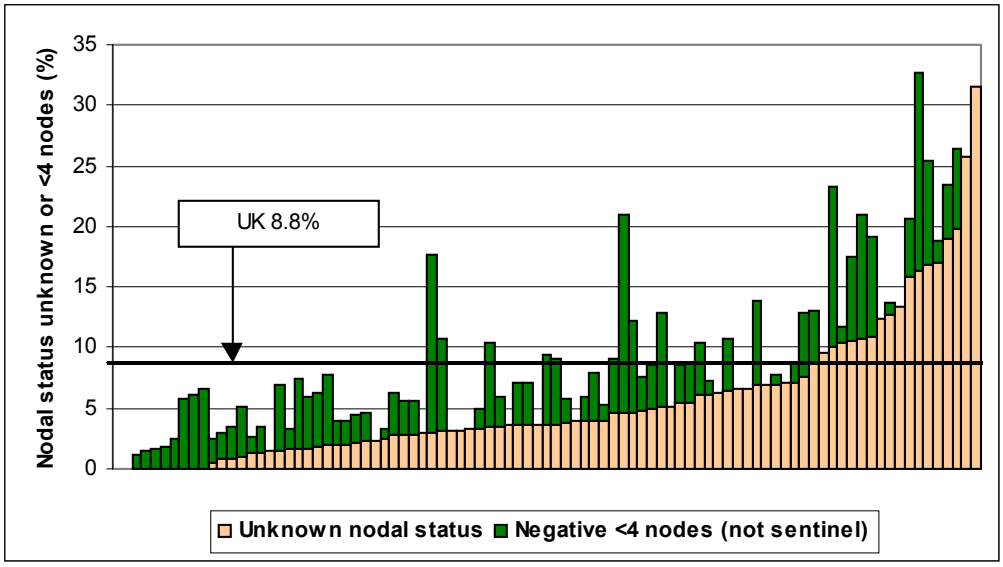

Figure 29: Variation by individual screening unit in the proportion of invasive cancers with insufficient nodal information

COMMENT:

- In the UK as a whole, 95% of invasive cancers had known nodal status. This varied between 86% in Northern Ireland and 99% in Wales and West Midlands.
- At 10 screening services nodal status was ascertained for 100% of invasive cancers. In 2 screening units diagnosing 31 and 89 invasive cancers, more than 25% of cases had unknown nodal status.
- For the fourth consecutive year, 25% of invasive cancers had positive nodal status, but this varied between 10% and 47% in individual screening units.
- Overall, 8.8% of invasive cancers had unknown nodal status, or had negative nodal status determined without a sentinel procedure on the basis of fewer than 4 nodes. This varied from 4.0% in Scotland and 4.1% in West Midlands, to 17.7% in London and 14.7% in Northern Ireland. Regional QA Reference Centres and Regional QA Surgeons should audit these cases to ascertain whether the data are a true reflection of clinical practice, as these cancers may have had an insufficient diagnostic work-up.

4.2 Lymph Node Status of Non-invasive Cancers

Of the 2,348 non-invasive cancers, 26% had nodal status known, varying from 16% in Northern Ireland to 37% in Wales (Figure 30). For 31 non-invasive cancers (1%) it was unknown whether nodes were taken, the majority of these were in Northern Ireland.

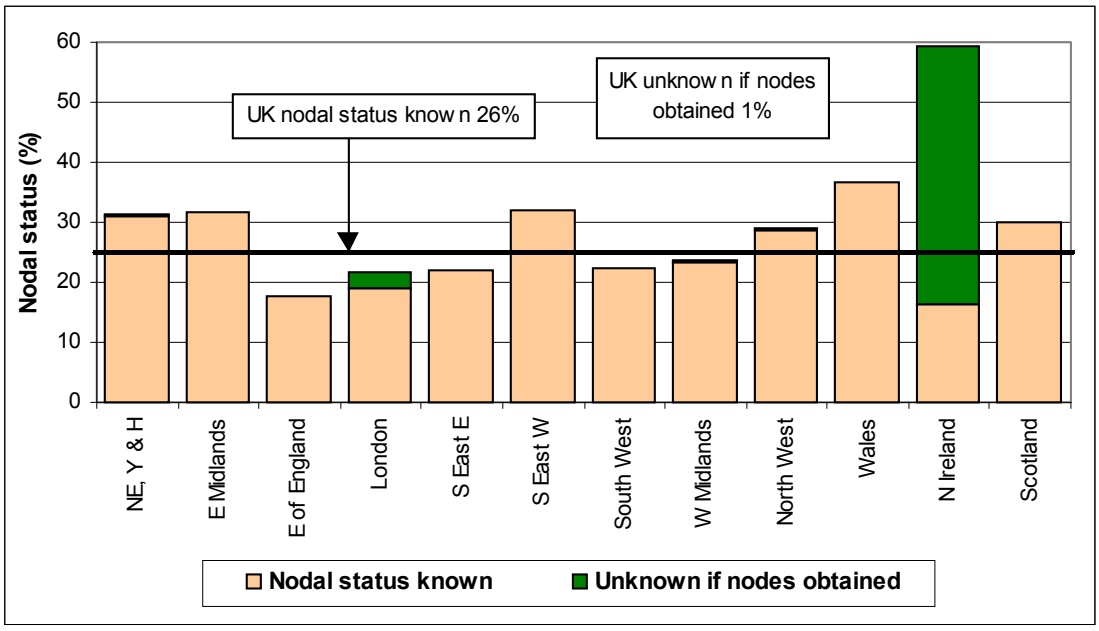

Figure 30 (Table 52): Variation in the proportion of non-invasive cancers with nodal status recorded

Of the 605 non-invasive cancers with known nodal status, 11 (2%) had positive nodal status recorded (Table 53). This is consistent with previous studies suggesting that 2% of non-invasive breast cancers have non-identified invasive disease removed during the diagnostic process. Table 54 shows that the median number of nodes examined for non-invasive cancers with known nodal status was 5. In Northern Ireland the median was 14 nodes.

Although nodal assessment is not usually indicated for non-invasive cancers, nodes may be obtained when a mastectomy is performed, especially if the assessment process provides suspicion of invasive disease. Figure 31 shows that the mastectomy rate for non-invasive cancers with known nodal status was much higher than for non-invasive cancers with no nodes obtained (76% and 13% respectively). The lowest mastectomy rates for non-invasive cancers with known nodal status were

in North West (59%) and Northern Ireland (50%). This suggests that in these regions, nodal assessment is being carried out when conservation surgery is performed.

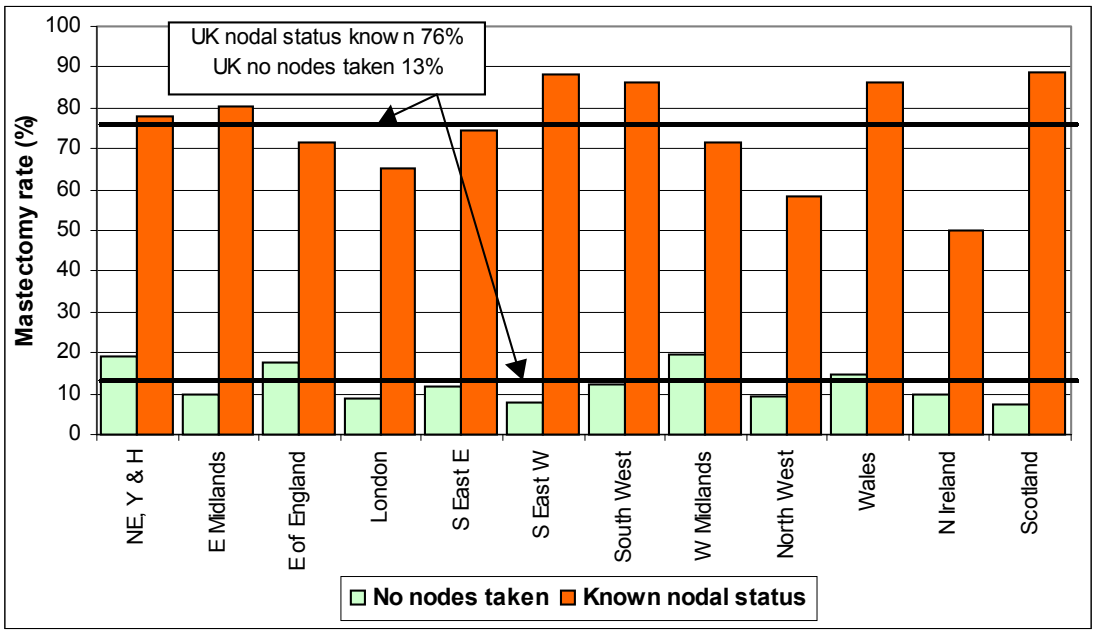

Figure 31 (Table 55, 57): Variation in the mastectomy rate for non-invasive cancers with known nodal status and with no nodes taken

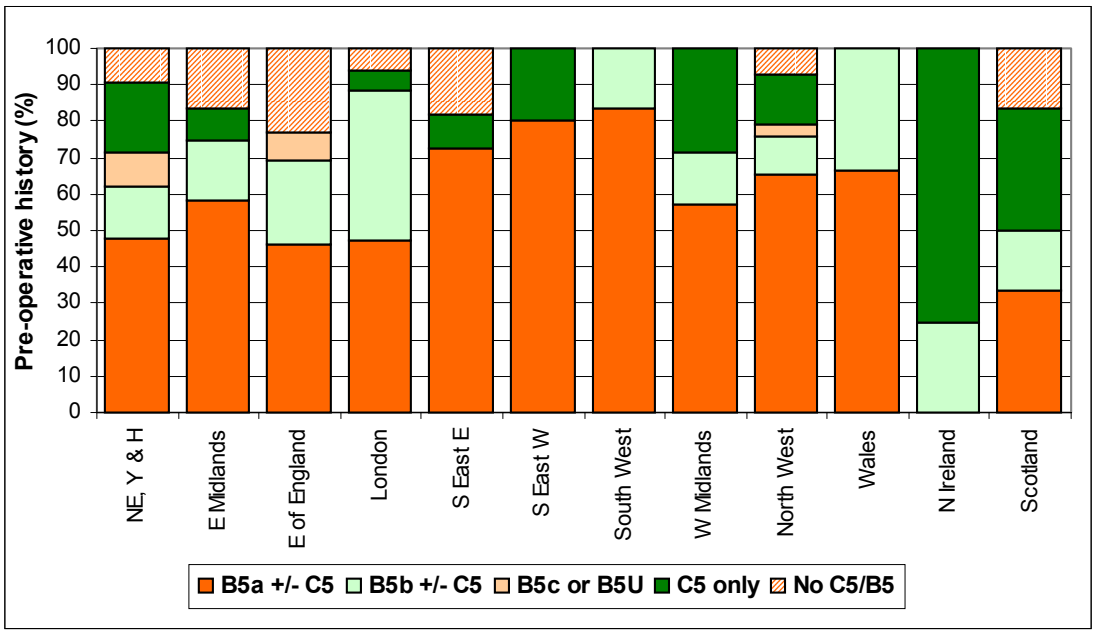

Figure 32 (Table 56): Variation in the proportion of pre-operative history for non-invasive cancers with known nodal status treated by conservation

Figure 32 shows the pre-operative history for the conservatively treated non-invasive cancers with known nodal status. For 81 cancers (56%) non-invasive disease was predicted by the core biopsy (B5a). Radiological or clinical factors may have influenced the decision to take nodes for these cases. For 25 cases (17%) a B5b (Invasive) core biopsy predicted invasive disease but the invasive status of the tumour was determined to be non-invasive following surgery. Nodes were therefore taken at surgery as recommended for the anticipated invasive disease. 21 cases (15%) had C5 cytology alone with no B5 core biopsy before proceeding to breast conservation with axillary surgery. A further 4 cases had not assessable or unknown malignancy type at core biopsy and 13 cases had neither a C5 cytology nor B5 core biopsy prior to surgery.

COMMENT:

- Although nodal assessment is not usually indicated for non-invasive cancers, 26% of non-invasive cancers had known nodal status.
- 2% of non-invasive cancers with known nodal status had positive nodal status recorded. This is consistent with previous studies suggesting that 2% of non-invasive breast cancers have non-identified invasive disease removed during the diagnostic process.
- The mastectomy rate for non-invasive cancers with known nodal status was much higher than for non-invasive cancers with no nodes obtained (76% and 13% respectively in the UK as a whole).
- 56% of conservatively treated non-invasive cancers with known nodal status had non-invasive disease predicted by B5a core biopsy. Radiological or clinical factors may have influenced the decision to take nodes for these cases.

4.3 Grade of Invasive Cancers

Of the 9,086 invasive cancers detected, 2,952 (32%) were Grade I, 4,249 (47%) were Grade II and 1,498 (16%) were Grade III (Table 58). Grade was not assessable for 78 cases (1%). Grade was unknown for 309 cases (3%), varying from 0% in East Midlands (1 case) and South West (4 cases) to 4% in London (32 cases) and 17% in East of England (161 cases). These data are shown for individual screening units in Figure 33.

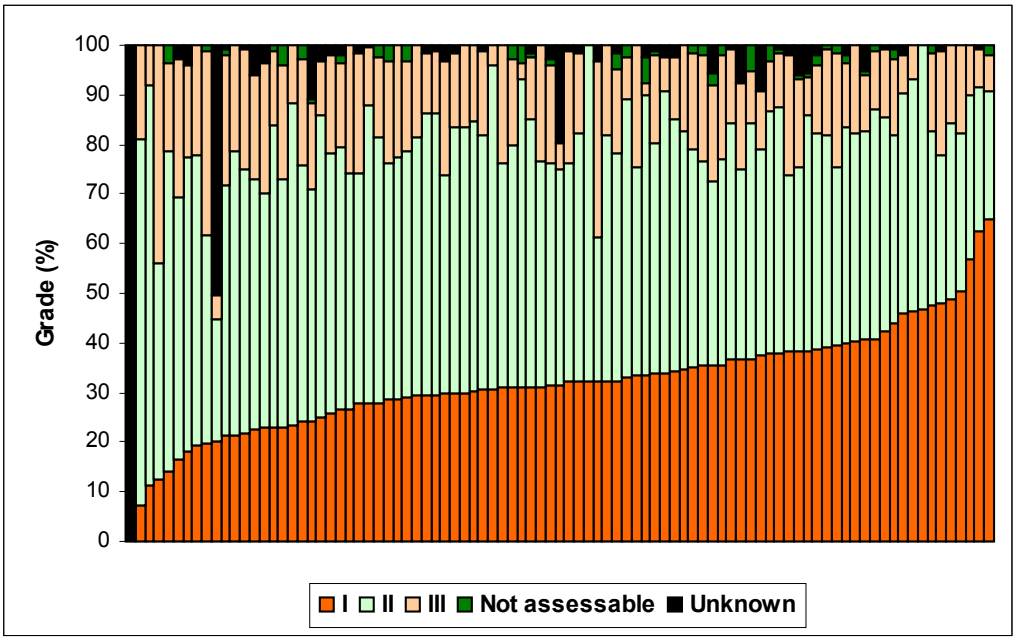

Figure 33: Variation by screening units in the invasive grade of invasive cancers

One screening unit with 95 invasive cancers was unable to provide invasive grade for any case. The proportion of Grade I cancers varied between 7% and 65%. The 4 units with fewer than 15% of cancers recorded as Grade I treated between 16 and 61 invasive cancers. The 4 units with more than 50% of cancers recorded as Grade I treated between 54 and 120 invasive cancers. This suggests that there are local variations in the interpretation of invasive grade definitions.

4.4 NPI of Invasive Cancers

The Nottingham Prognostic Index (NPI) was calculated for invasive cancers in order to allocate the invasive cancers to one of five prognostic groups. An NPI score was calculated for all invasive cancers with complete size, grade and nodal status information, even if nodal status was based on

fewer than 4 nodes. It should be noted that the differences in invasive grade outlined in the previous figure will also have affected the NPI groupings.

NPI Group = 0.2 x Invasive Size (cm) + Grade + Nodes

where Nodes equals 1 (0 positive nodes), 2 (1, 2 or 3 positive nodes) or 3 (≥4 positive nodes)

EPG	**(Excellent Prognostic Group)**	**≤2.4**
GPG	**(Good Prognostic Group)**	**2.401-3.4**
MPG1	**(Moderate Prognostic Group 1)**	**3.401-4.4**
MPG2	**(Moderate Prognostic Group 2)**	**4.401-5.4**
PPG	**(Poor Prognostic Group)**	**>5.4**

An NPI score cannot be calculated if size, nodal status or grade are unknown or grade is not assessable. The NPI score was unknown for 8% of invasive cancers. Figure 34 shows that this varied from 2% in West Midlands to 15% or more in London (15%), Northern Ireland (17%) and East of England (23%). In Northern Ireland and London the high proportions of unknown NPI score were largely due to unknown nodal status. In East of England it was largely due to unknown grade and unknown size.

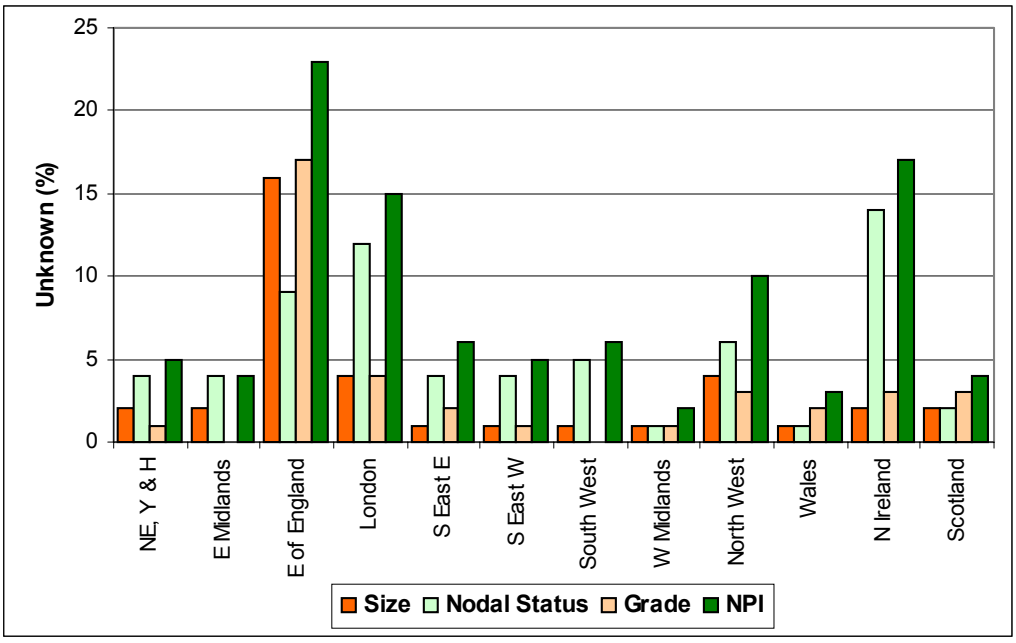

Figure 34 (Table 59): Variation in the data completeness of invasive cancers

Of the 8,333 invasive cancers with known NPI score, the highest proportion fell into the Good Prognostic Group (35%), with 6% in the Poor Prognostic Group. As expected with cancers detected by screening, the majority (61%) of cancers fell into the two best prognostic groups, EPG (Excellent Prognostic Group) and GPG (Good Prognostic Group). This varied from 54% in Northern Ireland to 65% in Wales (Table 60). The relatively low proportion of EPG and GPG cancers in Northern Ireland is due to the high proportion of Grade III cancers compared with the UK as a whole (24% compared to 16%, Table 58).

Figure 35 shows the variation in the NPI group of invasive cancers in individual screening units. The proportion of cancers in the best two prognostic groups (EPG, PPG) varied from 35% in a unit with 35 cancers with known NPI score to 81% in a unit with 53 cancers with known NPI score, compared to 61% in the UK as a whole. Seven screening units, with between 27 and 56 invasive cancers with known NPI score, had no Poor Prognostic Group cancers. The screening units with

the highest proportion of Poor Prognostic Group cancers (15%) diagnosed 41 invasive cancers with known NPI score.

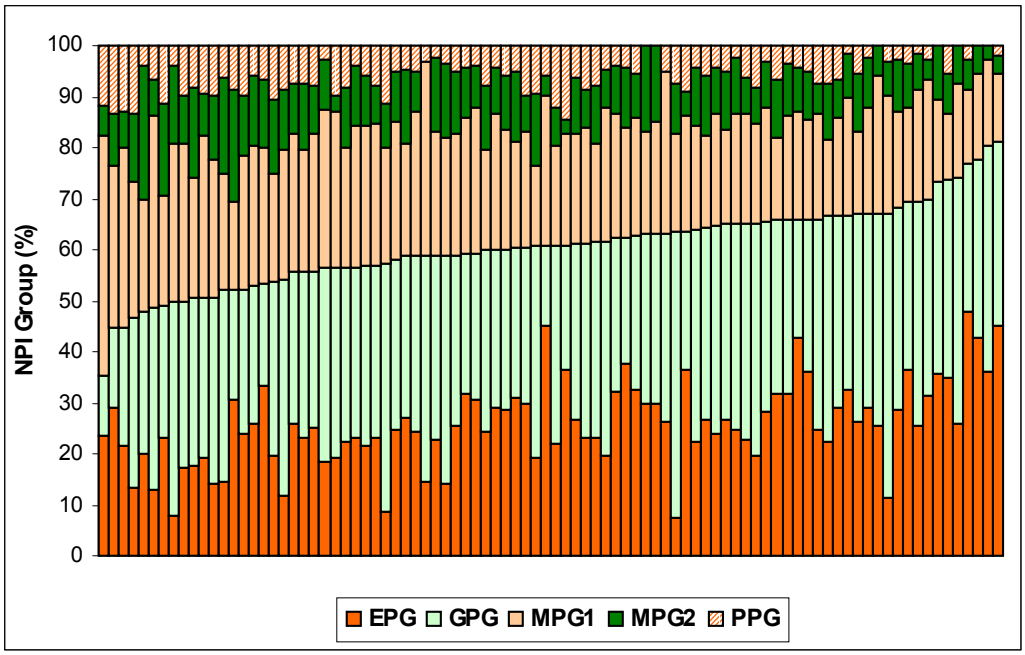

Figure 35: Variation by individual screening unit in the NPI Group of invasive cancers

COMMENT:

- Overall, 32% of invasive cancers were Grade I, 47% were Grade II and 16% were Grade III. Grade was not assessable for 78 cases (1%) and unknown for 309 cases (3%). In Northern Ireland 24% of cancers were Grade III.
- The proportion of Grade I cancers varied between 7% and 65% in individual screening units, suggesting that there are local variations in the interpretation of invasive grade definitions.
- Data were available to calculate the Nottingham Prognostic Index (NPI) for 92% of invasive cancers.
- As expected with cancers detected by screening, the majority (61%) of cancers fell into the two best prognositic groups, EPG (Excellent Prognostic Group) and GPG (Good Prognostic Group).
- The proportion of EPG and GPG cancers varied from 54% in Northern Ireland to 65% in Wales. The relatively low proportion of EPG and GPG cancers in Northern Ireland is due to the high proportion of Grade III cancers compared with the UK as a whole.

5. SCREENING SURGICAL CASELOAD

There were 472 consultant breast surgeons working in the UK NHSBSP in 2002/03. This UK figure counts only once the 41 surgeons who worked in more than one region. Throughout this section, each surgeon is credited with their total UK screening caseload.

423 of the 472 consultant surgeons were identified by their unique GMC registration code. A code other than the GMC code was provided for a further 39, including all 32 surgeons in Scotland. 10 screening units could not provide unique identifying codes for all their cases. It has been assumed that the unknown surgeons at these 10 screening units are 10 individual surgeons.

The screening surgical caseload is shown for each region in Figure 36. The 41 surgeons working in more than 1 region appear in each region's figures. 154 surgeons (33%) treated 30-99 cases and 4 surgeons (0%) treated more than 100 cases. 70 surgeons (15%) treated 10-19 screening cases, 70 (15%) treated 20-29 cases, and 174 surgeons (37%) had a screening caseload of fewer than 10 cases.

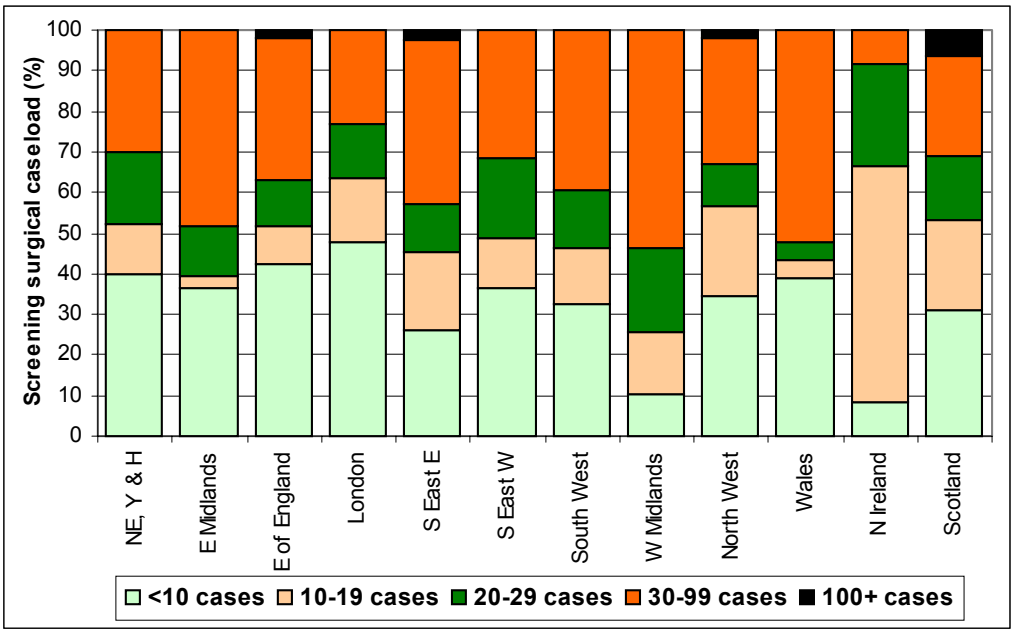

Figure 36 (Table 61): Variation in screening surgical caseload expressed as the number of cases per surgeon

The highest proportions of surgeons with a screening caseload of fewer than 10 were in London (48%) and East of England (43%). Surgical specialisation was most advanced in Northern Ireland and West Midlands where only 8-10% of surgeons treated fewer than 10 screening cases.

The median screening caseload per surgeon, and the interquartile range, are shown for each region in Figure 37. Overall the median was 18 screening cases, with a quarter of surgeons seeing 37 cases or more. The highest median was in Wales (32 cases) and the lowest in London (11 cases). The maximum screening caseload, seen by a surgeon in Scotland, was 132 cases. Another surgeon in Scotland treated 112 cases, and a surgeon in East of England treated 108 cases. One surgeon who worked in North West and South East (East) treated 100 screening cases.

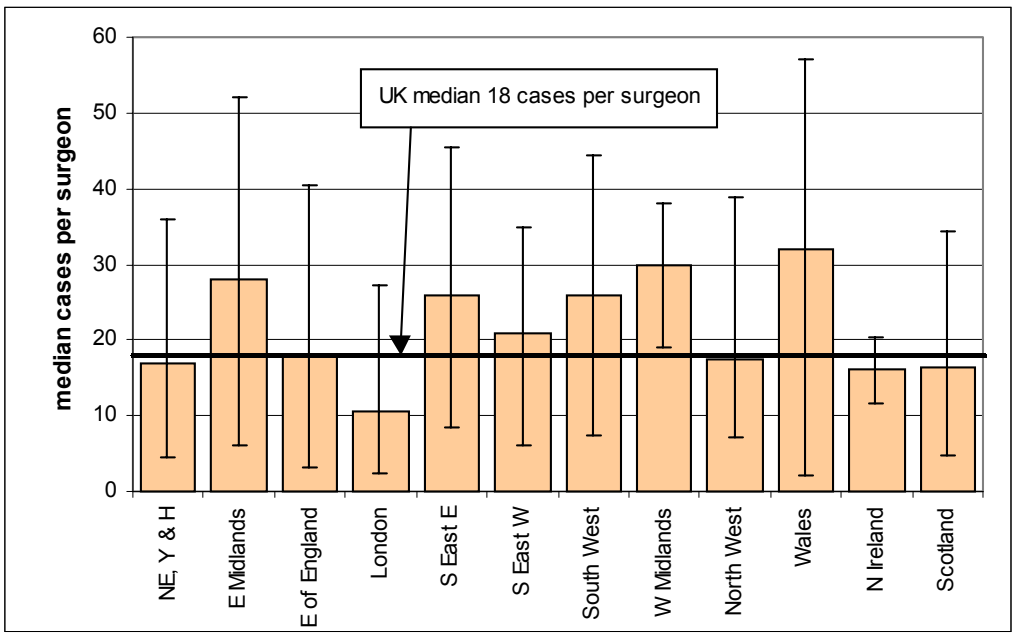

Figure 37 (Table 62): Variation in the median number of cases treated by individual surgeons, and the interquartile range

Table 63 shows the number of women treated by 2 or 3 surgeons and those with no surgery. Of the 11,593 women with screen detected cancer in 2002/03, 94 (1%) had no surgeon and 133 (1%) were treated by 2 surgeons. One woman in London was treated by 3 consultant surgeons. Women treated by more than 1 surgeon appear in the UK screening caseload figure for each surgeon, giving a total number of 11,634 treated cases.

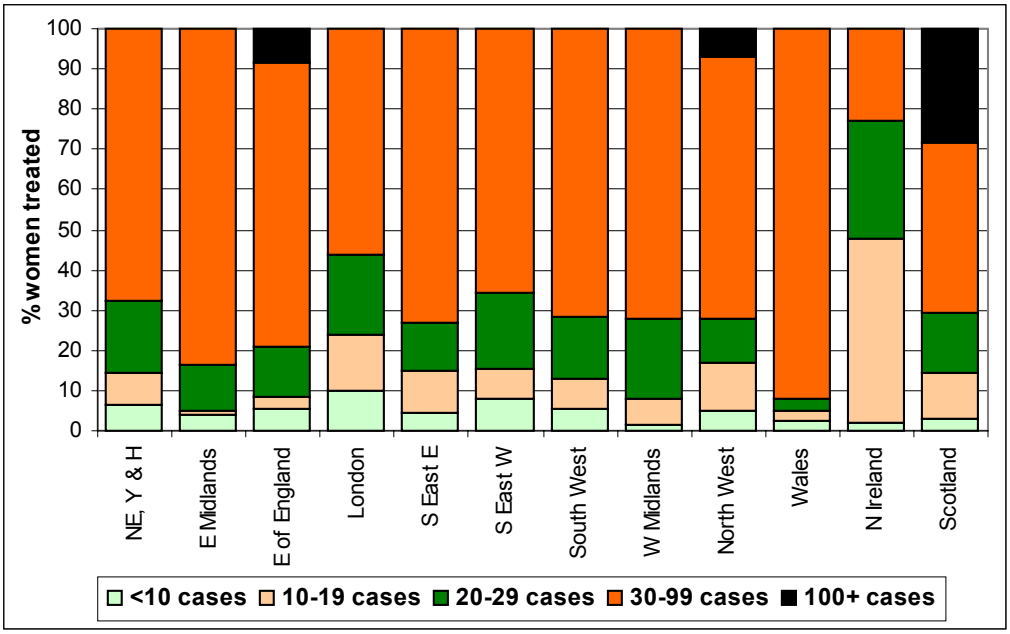

Figure 38 (Table 64): Variation in the proportion of women treated by surgeons with differing screening caseloads

Figure 38 shows the variation in the proportion of women treated by surgeons with differing screening caseloads. Of the 11,634 women treated, 7,855 (68%) were treated by a surgeon with a screening caseload of 30-99 cases. A further 452 women (4%) were treated by the 4 surgeons with screening caseload 100+ cases. For 1,723 women (15%) the treating surgeon had a screening caseload of 20-29 cases, and for 999 women (9%) the treating surgeon had a screening caseload of 10-19 cases. 605 women (5%) were treated by a surgeon with screening caseload of less than 10

cases. In London, 10% of women were treated by a surgeon with screening caseload of less than 10 cases.

Each region was asked to provide reasons for all surgeons with a screening caseload of less than 10 cases. A list of 7 satisfactory reasons for low caseload was provided (see Appendix 2). If multiple reasons were given, only one was included. The reasons given for the surgeons with UK screening caseload less than 10 are shown in Figure 39.

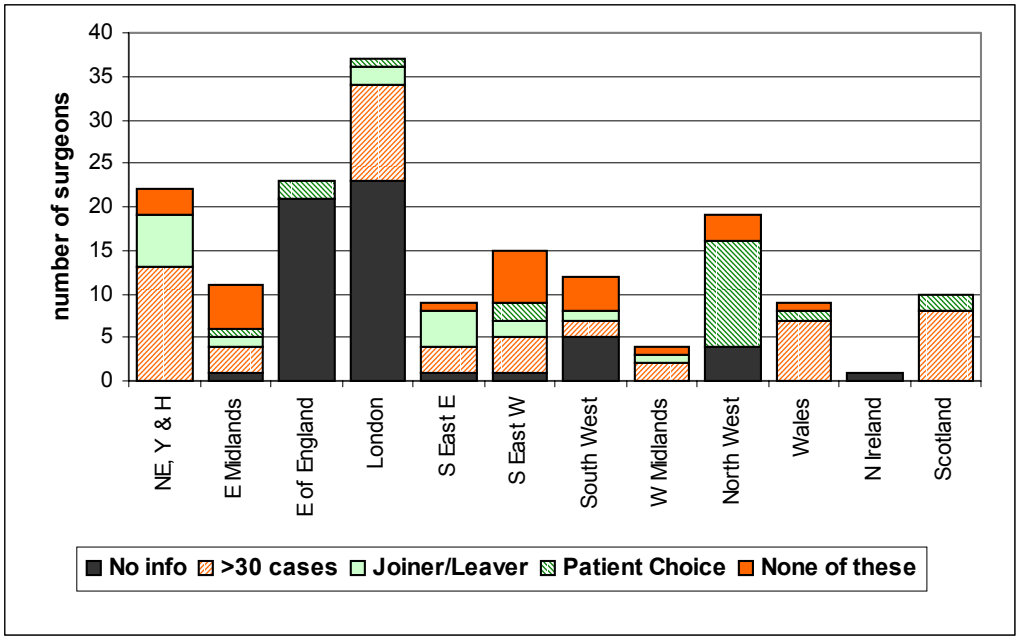

Figure 39 (Table 65): Explanations provided for surgeons treating <10 screening cases a year

Of the 174 surgeons in the UK with a screening caseload of less than 10 cases, 52 (30%) treated more than 30 symptomatic breast cancers during 2002/03. 25 (14%) either joined or left the NHSBSP during 2002/03. 21 (12%) of the low caseload surgeons operated under patient choice. One of the other satisfactory reasons (plastic surgeon, private practice, no screening in area) was given for 19 surgeons (11%). No information was available to explain the low screening caseload recorded for 55 surgeons (32%). These 55 surgeons treated a total of 164 women. For 2 surgeons a reason other than one of the 7 listed was provided. In both cases this reason was that the surgeon was an associate specialist.

3 YEAR SUMMARY : SCREENING SURGICAL CASELOAD					
Year	***Number of screening surgeons***	***Median screening caseload***	***Proportion of women treated by a surgeon with screening caseload 20+***	***Number of surgeons with screening caseload <10***	***Number of surgeons with no information to explain screening caseload <10***
2000/01	*419*	*17*	*86*	*159*	*25*
2001/02	*439*	*18*	*85*	*156*	*52*
2002/03	*472*	*18*	*86*	*174*	*55*

Since 2000/01, screening caseload data supplied by each screening service have been collated across the UK to improve the accuracy of the data. The number of surgeons working in the NHS Breast Screening Programme has risen from 419 in 2000/01 to 472 in 2002/03. The proportion of women treated by surgeons with a screening caseload of 20 or more has remained stable at 86%. However, the number of surgeons with a screening caseload of fewer than 10 cases has risen from

159 to 174. The number of surgeons with no reason for low caseload has risen from 25 to 55. East of England and London had most difficulty in identifying reasons for low caseload in 2002/03.

COMMENT:

- There were 472 consultant breast surgeons working in the UK NHSBSP in 2002/03, a rise of 13% from 419 surgeons in 2000/01.
- 86% of women were seen by a surgeon with a screening caseload of at least 20 cases.
- Of the 174 surgeons with a screening caseload of less than 10 cases, 52 (30%) treated more than 30 symptomatic breast cancers during 2002/03.
- Information was unavailable to explain the low caseload of 55 surgeons. These surgeons treated a total of 164 women.

6. NUMBER AND SEQUENCE OF THERAPEUTIC OPERATIONS

Summary tables giving regional variation are provided in Appendix 6 starting on p123

For the first time, details of each operation were requested so that the reasons for repeat therapeutic operations could be examined in detail. All operations, both diagnostic and therapeutic, were coded as either conservation surgery alone (Cons), mastectomy alone (Mx), axillary surgery alone (Ax) or a combination (Cons & Ax, Mx & Ax).

Diagnostic open biopsies were coded as conservation surgery. For any case without a pre-operative diagnosis by C5 cytology or B5 core biopsy, the first operation was defined to be diagnostic even if there was also therapeutic intent, so that the number of therapeutic operations is one fewer than the total number of operations. It should also be noted that attempting axillary surgery does not necessarily mean that axillary lymph nodes are successfully harvested. Conversely, incidental axillary lymph nodes can be obtained during a mastectomy or conservation surgery procedure. For this reason the nodal ascertainment rate presented in Section 4 does not exactly match the proportion of cases with a planned axillary procedure, but does agree approximately.

Repeat operation rates for various groups of screen detected breast cancers are presented, together with detailed flow charts of the sequence of operations. Each flow chart represents the number of different sequences in the UK as a whole. Sequences that make up less than 1% of the total cases are grouped together according to when the axillary surgery was performed. Regional variation in the most popular sequences is summarised in the tables in Appendix 6.

6.1 Repeat Therapeutic Operations

Quality Objective: To minimise the number of therapeutic operations.

Outcome Measure: 90% of women with single lesions (excluding multi-focal tumours and those with associated extensive ductal carcinoma *in situ*) should not require a further operation to ensure complete excision.

(Quality Assurance Guidelines for Surgeons in Breast Screening NHSBSP Publication No. 20 revised November 2003)

In the UK as a whole, 15% of cancers with a proven pre-operative diagnosis by C5 cytology and/or B5 core biopsy underwent more than one therapeutic operation (Table 66). This varied from 10% in East of England to 21% in South West.

Figure 40 shows that 14% of invasive cancers and 16% of non-invasive cancers underwent more than one therapeutic operation. For invasive cancers the proportion having more than one operation varied from 9% in East of England and Northern Ireland to 19% in South West. For non-invasive cancers this proportion varied from 10% in Wales to 24% in South West.

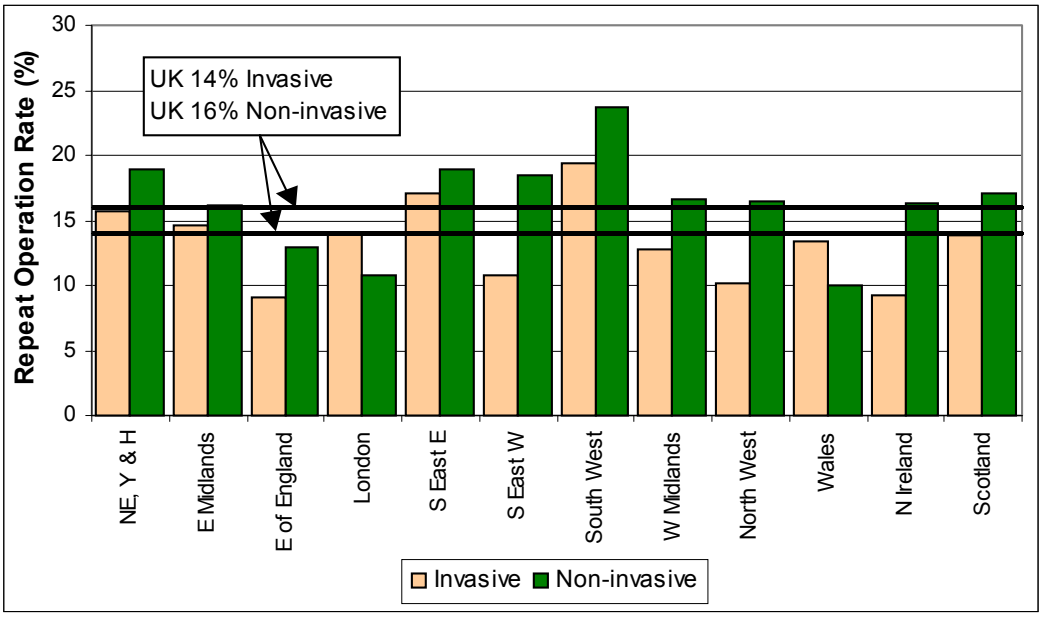

Figure 40 (Tables 67,68) : Variation in the proportion of invasive and non-invasive cancers undergoing two or more therapeutic operations

Repeat therapeutic operations may be carried out for a variety of reasons other than re-excision to clear margins. Repeat operations are also carried out for reasons of cosmesis, patient choice and to obtain axillary lymph nodes. The reasons for repeat therapeutic operations for cancers with a pre-operative diagnosis depend upon the invasive status predicted by the pre-operative core biopsy. C5 cytology does not predict invasive status. In all cases, radiological and clinical factors can also influence the treatment decision. The following hypothetical scenarios were considered.

Scenario 1 :	Invasion present which was not predicted by pre-operative diagnosis and repeat operation undertaken to obtain nodes - cancers with a B5a (Non-invasive) pre-operative diagnosis found to be invasive after surgery where nodes were not taken at the first operation - cancers with a C5 diagnosis where nodes were not taken at the first operation in line with local protocol

Scenario 2 :	Margins not clear for expected component of tumour - repeat operation (conservation or mastectomy) to clear margins

Scenario 3 :	Margins not clear for unexpected DCIS present with a small invasive tumour - small cancers with a B5b (Invasive) pre-operative diagnosis found to have DCIS present after surgery require repeat operation (conservation or mastectomy) to clear margins

Scenario 4 :	Additional therapeutic nodal procedure undertaken - insufficient number of nodes harvested at first operation - therapeutic clearance of nodes when large proportion of nodes taken at first operation are positive - clearance of nodes following positive sentinel node procedure

6.2 Sequence of Operations for Cancers with B5b (Invasive) Core Biopsy Proved to be Invasive After Surgery

97% of cancers with a B5b (Invasive) core biopsy result proved to be invasive following surgery (Table 9). The treatment operation can thus be planned in advance, so these cases are least likely to require a repeat therapeutic operation. In the UK as a whole, 12% of invasive cancers with a B5b (Invasive) core biopsy required a repeat therapeutic operation. This varied from 7% in East of England to 18% in South West (Table 69).

The flow chart in Figure 41 shows that the majority (62%) of these B5b (Invasive) cancers underwent a single therapeutic operation consisting of conservation surgery with an axillary procedure. 22% underwent a single therapeutic operation consisting of mastectomy with an axillary procedure. The next most popular sequence of operations was conservation surgery with an axillary procedure as the first therapeutic operation followed by repeat conservation surgery (355 cases, 5%). These repeat operations were probably undertaken to clear involved or close margins. Another 260 (4%) cases were converted to mastectomy or mastectomy with axillary procedure following the initial conservation surgery and axillary procedure. For these cases, DCIS was probably present at the margin.

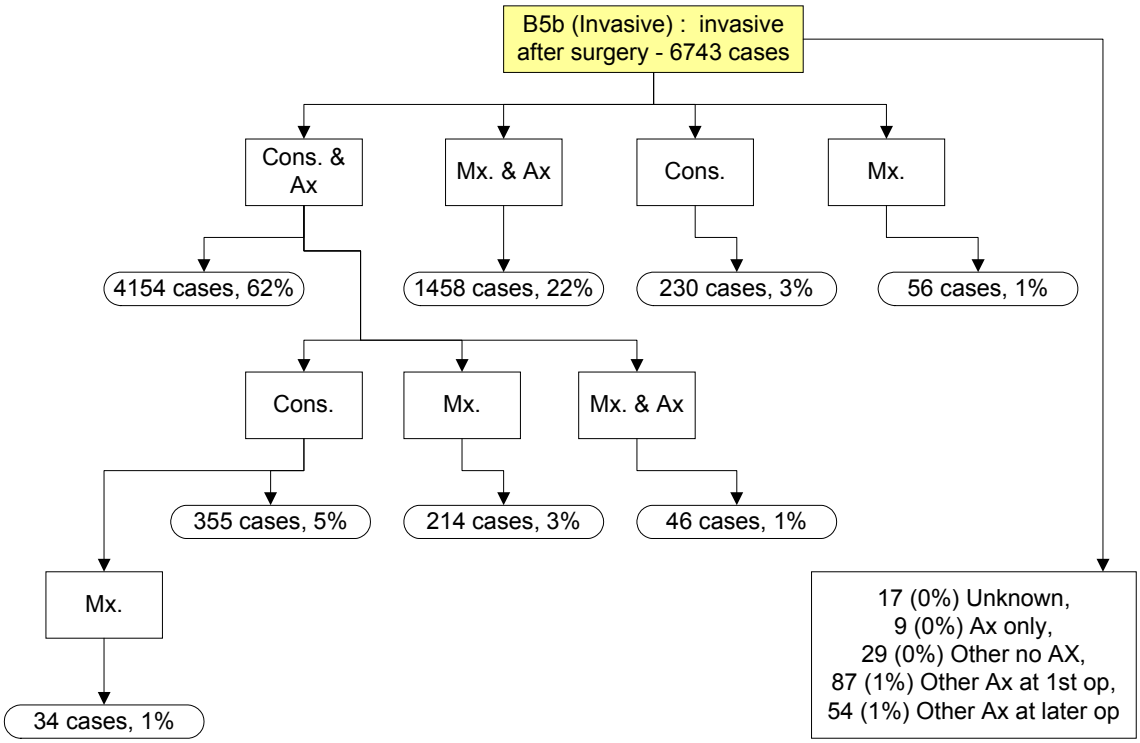

Figure 41 (Table 70): Sequence of operations for cancers with B5b (Invasive) core biopsy proved to be invasive after surgery

Overall, 6,357 cancers (94%) had an axillary procedure at the first operation. A further 54 (1%) cancers did not have nodes taken at the first operation but underwent a repeat operation to obtain nodes. This varied from 0 cases in East Midlands and South East (East) to 2% in London (10 cases), North West (14 cases) and Scotland (11 cases). In London 204 cases (31%) had no axillary procedure recorded. This regional variation is shown in Table 70 in Appendix 6, and in Tables 6.6B and 6.6C in Section 6.6.

6.3 Sequence of Operations for Invasive Cancers with C5 Cytology Only

For invasive cancers with C5 cytology only and no B5 core biopsy prior to surgery, radiological or clinical features are of increased importance when planning the treatment operation. The most popular treatment, given to 64% of these cancers, was a single therapeutic operation consisting of conservation surgery and an axillary procedure. 185 cases (16%) underwent a single therapeutic operation consisting of a mastectomy and an axillary procedure. Presumably in these cases, the clinical and radiological signs were strongly supportive of the presence of invasive disease. Of these 185 cases, 46 (9%) were small (<15mm) invasive tumours. 49 cancers (4%) underwent a second conservative operation following conservation and axillary surgery, probably to clear involved margins.

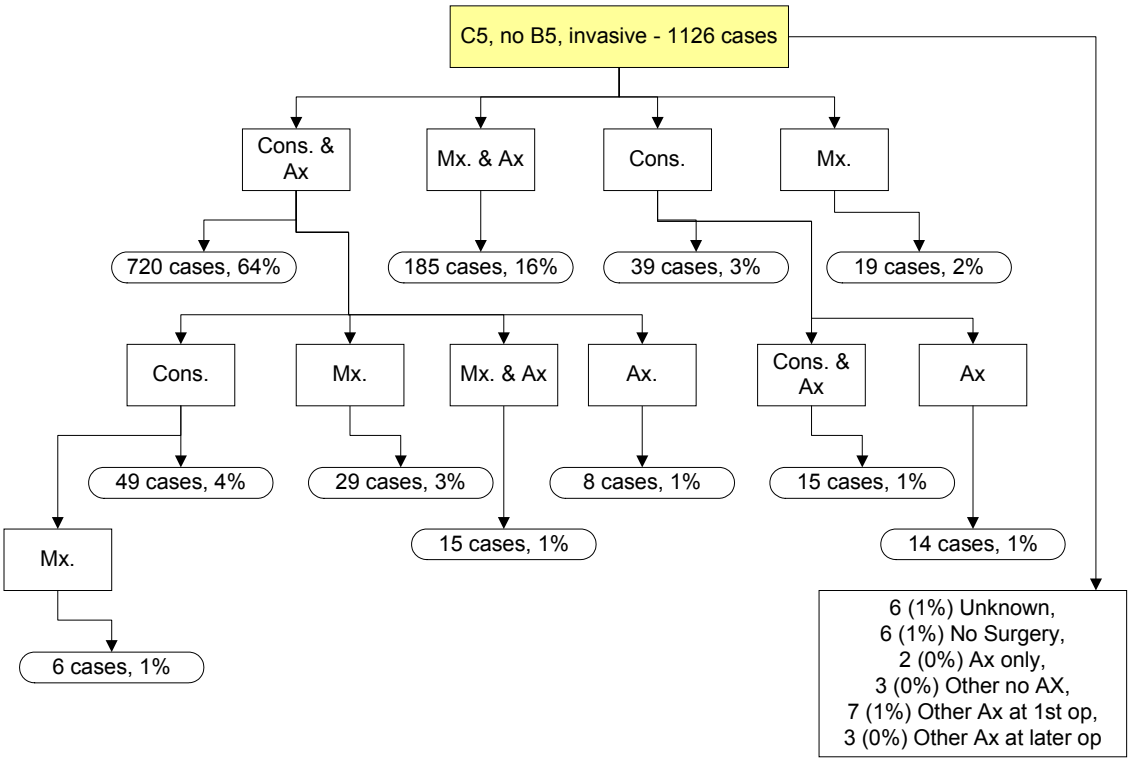

Figure 42 (Table 72) : Sequence of operations for invasive cancers with C5 cytology only, no B5

In the UK as a whole, 149 (13%) of the 1,126 invasive cancers diagnosed by C5 cytology only underwent a repeat operation, varying from 2% in South East (West) and Northern Ireland to 20% in London, 22% in South East (East) and 26% in South West (Table 71). Overall, 1,021 cancers (91%) had an axillary procedure at the first operation. A further 32 (3%) cancers did not have nodes taken at the first operation but underwent a repeat operation to obtain nodes. This varied from 0 cases in South East (West) and Northern Ireland to 16% (8 cases) in London. 61 cases (5%) did not have any axillary procedure recorded, varying from 0 cases in West Midlands, Wales and Scotland to 16% in London (8 cases) and 23% in East of England (31 cases). This regional variation is shown in Table 72 in Appendix 6, and in Tables 6.6B and 6.6C of Section 6.6.

6.4 Sequence of Operations for Cancers with B5a (Non-invasive) Core Biopsy Determined to be Invasive After Surgery

In the UK as a whole, 24% of cancers with a B5a (Non-invasive) core biopsy result were identified to have invasive disease following surgery (Table 8). However, there was wide variation in individual screening units. In screening units with 10 or more B5a (Non-invasive) core biopsy results, the proportion found to be invasive varied from 0 cases to 70% of cases. The accuracy of

the B5a (Non-invasive) core biopsy result together with radiological and clinical factors determines the planned treatment options. There were thus many different sequences of treatment operations seen across the UK as a whole.

224 (41%) of the 548 cancers with a B5a (Non-invasive) core biopsy determined to be invasive after surgery underwent a repeat operation (Table 73). This varied from 18% in Northern Ireland to 53% in East Midlands and 54% in West Midlands. The most popular treatments were a single operation consisting of mastectomy with an axillary procedure (129 cases, 24%) or a single operation consisting of conservation surgery with an axillary procedure (124 cases, 23%). Presumably in these cases, contrary to the core biopsy result, the clinical and radiological signs were strongly supportive of the presence of an invasive cancer.

The next most popular sequences of operations were conservation surgery as the first therapeutic operation followed by a repeat operation to obtain axillary lymph nodes with conservation surgery (68 cases, 12%) or axillary surgery alone (63 cases, 11%). In the former case, the repeat operation was presumably undertaken to clear involved margins as well as to obtain nodes. However, the 63 women who had a repeat operation solely to obtain nodes would not have had to undergo additional surgery had the original core biopsy correctly predicted the invasive status of the tumour.

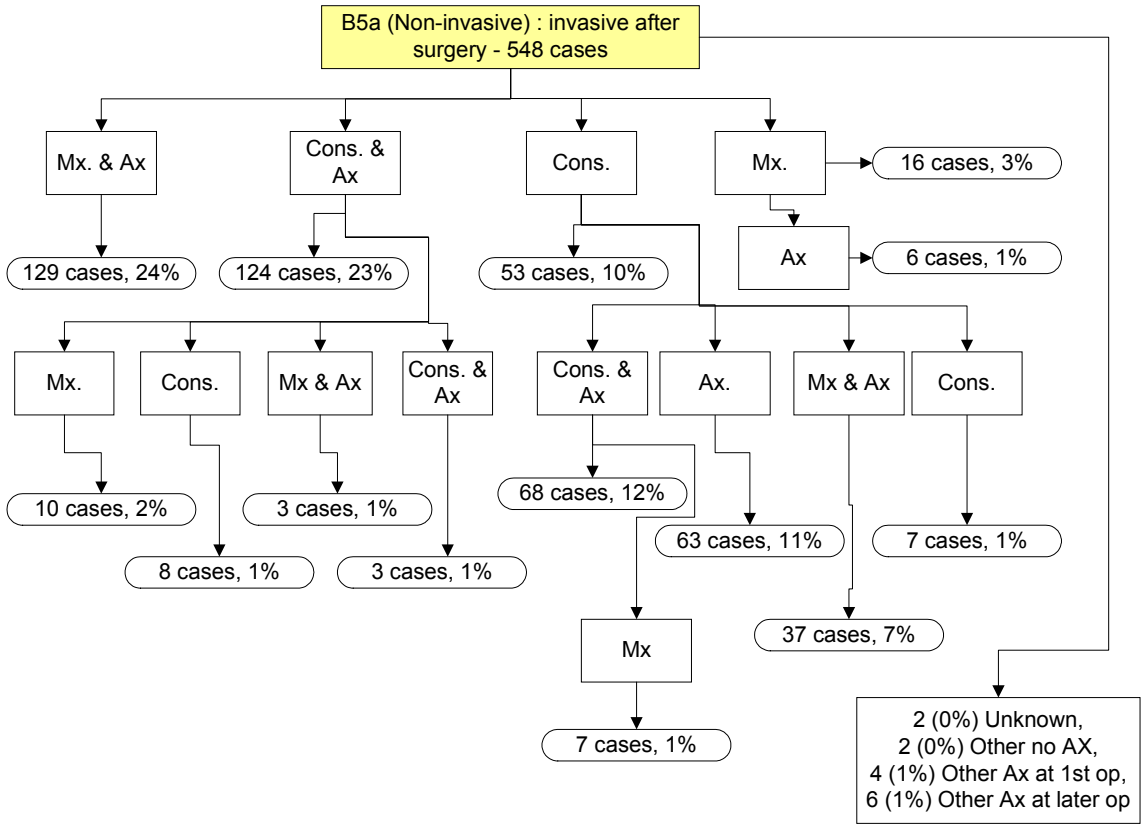

Figure 43 (Table 74) : Sequence of operations for cancers with B5a (Non-invasive) core biopsy determined to be invasive after surgery

Overall, 344 cancers (63%) had an axillary procedure at the first operation, varying from 48% in London to 75% in East Midlands and 78% in Wales. 124 cancers (23%) did not have nodes taken at the first operation but underwent a repeat operation to obtain nodes once invasive disease had been histologically proven. This varied from 6% (1 case) in Northern Ireland to 29% in North East, Yorkshire & Humber and 36% in West Midlands. 78 cases (14%) did not have any axillary procedure recorded, varying from 0 cases in Scotland to more than 20% of cases in North West

(21%), South East (East) (22%), East of England (24%) and London (31%). This regional variation is shown in Table 74 in Appendix 6, and in Tables 6.6B and 6.6C of Section 6.6.

6.5 Sequence of Operations for Cancers with B5a (Non-invasive) Core Biopsy Proved to be Non-invasive or Micro-invasive After Surgery

In the UK as a whole, 74% of cancers with a B5a (Non-invasive) core biopsy result were confirmed to be non-invasive or micro-invasive following surgery (Table 8). Overall, 348 (21%) of the 1,687 cancers with B5a (Non-invasive) core biopsy result that were confirmed to be non-invasive or micro-invasive following surgery had a repeat therapeutic operation (Table 75). The repeat operation rate varied from 13% in London and Wales to 29% in South West and Northern Ireland.

The flow chart below shows that the majority of these repeat operations were for re-excision or mastectomy without an axillary procedure. The most popular treatment for these cancers was a single conservation surgery operation (830 cases, 49%). A further 299 cases (18%) underwent a single therapeutic operation consisting of a mastectomy and axillary surgery.

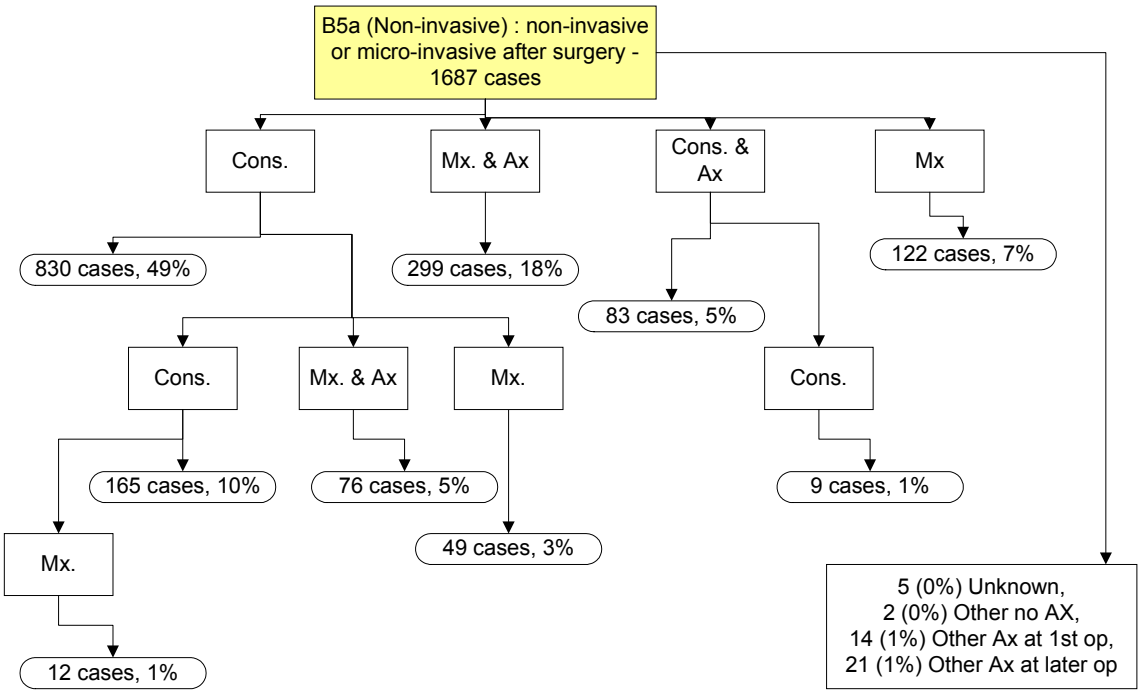

Figure 44 (Table 76) : Sequence of operations for cancers with B5a (Non-invasive) core biopsy proved to be non-invasive or micro-invasive after surgery

Table 6.5A shows that, of the 1,180 B5a (Non-invasive) cancers which proved to be non-invasive or micro-invasive, the majority (70%) had no axillary surgery. This varied from 59% in Scotland to 80% in East of England and London and 82% in Northern Ireland. Overall, 405 cancers (24%) had axillary surgery at the first operation. More than 25% of cases had axillary surgery at the first operation in South East (West) (26%), North West (26%), East Midlands (29%), North East, Yorkshire & Humber (30%), Scotland (31%) and Wales (34%). It would be interesting to know the reasons for undertaking axillary surgery at the first operation as it would appear that these women may have undergone an unnecessary procedure.

97 cancers (6%) had no axillary surgery at the first operation but underwent a repeat operation to obtain nodes. The majority of these (76 cases) had conservation surgery at the first operation then a repeat operation consisting of mastectomy with an axillary procedure.

TABLE 6.5A : AXILLARY SURGERY FOR B5A (NON-INVASIVE) CORE BIOPSIES PROVED TO BE NON-INVASIVE OR MICRO-INVASIVE AFTER SURGERY (TABLE 76)						
Region	**Axillary surgery at the first operation**		**No axillary surgery**		**Axillary surgery at a repeat operation**	
	No.	**%**	**No.**	**%**	**No.**	**%**
N East, Yorks & Humber	*63/213*	*30*	133/213	*62*	*17/213*	*8*
East Midlands	*48/168*	*29*	113/168	*67*	*7/168*	*4*
East of England	*30/181*	*17*	*145/181*	*80*	*6/181*	*3*
London	*26/177*	*15*	*142/177*	*80*	*5/177*	*3*
South East (East)	*35/139*	*25*	*97/139*	*70*	*7/139*	*5*
South East (West)	*28/107*	*26*	*69/107*	*64*	*10/107*	*9*
South West	*32/146*	*22*	*102/146*	*70*	*12/146*	*8*
West Midlands	*31/157*	*20*	*118/157*	*75*	*7/157*	*4*
North West	*42/164*	*26*	*112/164*	*68*	*10/164*	*6*
Wales	*31/91*	*34*	*57/91*	*63*	*3/91*	*3*
Northern Ireland	*3/28*	*11*	*23/28*	*82*	*2/28*	*7*
Scotland	*36/116*	*31*	*69/116*	*59*	*11/116*	*9*
United Kingdom	***405/ 1687***	***24***	***1180/ 1687***	***70***	***97/ 1687***	***6***

6.6 Summary of Repeat Operation Rates

TABLE 6.6A : REPEAT THERAPEUTIC OPERATION RATES								
	Invasive cancers						***Non-invasive or micro-invasive cancers***	
Region	**B5b** *(Table 69)*		**C5 only, no B5** *(Table 71)*		**B5a** *(Table 73)*		**B5a** *(Table 75)*	
	No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
N East, Yorks & Humber	*104/802*	*12*	*41/193*	*21*	*32/69*	*46*	*51/213*	*24*
East Midlands	*74/557*	*11*	*12/94*	*13*	*17/32*	*53*	*34/168*	*20*
East of England	*48/656*	*10*	*14/133*	*11*	*14/45*	*31*	*26/181*	*14*
London	*80/666*	*9*	*10/49*	*20*	*27/67*	*40*	*23/177*	*13*
South East (East)	*71/485*	*14*	*21/96*	*22*	*18/37*	*49*	*36/139*	*26*
South East (West)	*47/418*	*11*	*2/91*	*2*	*13/36*	*36*	*22/107*	*21*
South West	*123/690*	*17*	*12/46*	*26*	*25/67*	*37*	*43/146*	*29*
West Midlands	*65/651*	*11*	*9/72*	*13*	*27/50*	*54*	*32/157*	*20*
North West	*76/758*	*12*	*19/214*	*9*	*15/58*	*26*	*36/164*	*22*
Wales	*53/451*	*11*	*1/8*	*13*	*17/45*	*38*	*12/91*	*13*
Northern Ireland	*11/71*	*12*	*1/62*	*2*	*3/17*	*18*	*8/28*	*29*
Scotland	*67/538*	*8*	*7/68*	*10*	*16/25*	*64*	*25/116*	*22*
United Kingdom	***819/ 6743***	***12***	***149/ 1126***	***13***	***224/ 548***	***41***	***348/ 1687***	***21***

Table 6.6A summarises the regional variation in repeat operation rates for the types of cancer discussed in the previous sections. The data show that invasive cancers with B5b (Invasive) core biopsy had fewest repeat operations (12%), followed by invasive cancers diagnosed by C5 cytology only (13%). As expected, invasive cancers with a B5a (Non-invasive) core biopsy had the highest repeat operation rate (41%). One reason for repeat operations for invasive cancers is to ascertain the nodal status where axillary surgery has not been performed at the first operation. Table 6.6B shows that, as expected, this was rare when the core biopsy predicted invasive disease (54 cases, 1%). Most cases diagnosed on the basis of C5 cytology only, had axillary surgery at the first operation, with only 32 cases (3%) undergoing a repeat operation to obtain nodes. However for B5a (Non-invasive) cases where the invasive disease was not predicted by the core biopsy, 124 cancers (23%) had an axillary procedure at a repeat operation.

TABLE 6.6B : PROPORTION OF INVASIVE CANCERS WITH AXILLARY SURGERY AT A REPEAT OPERATION, NOT THE FIRST OPERATION						
Region	**B5b** (Table 69)		**C5 only, no B5** (Table 71)		**B5a** (Table 73)	
	No.	**%**	**No.**	**%**	**No.**	**%**
N East, Yorks & Humber	4/802	0	2/193	1	20/69	29
East Midlands	0/557	0	1/94	1	6/32	19
East of England	2/656	0	7/133	5	11/45	24
London	10/666	2	8/49	16	13/67	19
South East (East)	0/485	0	2/96	2	8/37	22
South East (West)	4/418	1	0/91	0	8/36	22
South West	2/690	0	3/46	7	13/67	19
West Midlands	3/651	0	2/72	3	18/50	36
North West	14/758	2	2/214	1	10/58	17
Wales	3/451	1	1/8	13	8/45	18
Northern Ireland	1/71	1	0/62	0	1/17	6
Scotland	11/538	2	4/68	6	8/25	32
United Kingdom	**54/ 6743**	**1**	**32/ 1126**	**3**	**124/ 548**	**23**

Table 6.6C shows the proportion of invasive cancers with no axillary surgery. Overall, 454 invasive cancers appear not to have had surgery to the axilla and may therefore have had an incomplete diagnostic work-up. This scenario occurred most frequently for cases with a B5a (Non-invasive) core biopsy. Overall, 14% of these cancers had no axillary procedure recorded, varying from 0 cases in Scotland to 21 cases (31%) in London and 11 cases (24%) in East of England.

Overall, 5% of invasive cancers with a B5b (Invasive) core biopsy and 5% of invasive cancers with C5 cytology only had no axillary procedure. However this proportion was higher for B5b (Invasive) cases in London (31%) and for C5 cytology only cases in London (16%) and East of England (23%). This may be due to data collection problems, since the nodal ascertainment rates for East of England and London were 91% and 88% respectively (Table 48). This could be a data collection problem. However, if the data do correctly reflect clinical practice, these cases should be reviewed by the Regional QA Reference Centres and the Regional QA Surgeons as they may have had insufficient diagnostic work-up.

TABLE 6.6C : PROPORTION OF INVASIVE CANCERS WITH NO AXILLARY OPERATION						
Region	**B5b** (Table 69)		**C5 only, no B5** (Table 71)		**B5a** (Table 73)	
	No.	**%**	**No.**	**%**	**No.**	**%**
N East, Yorks & Humber	5/802	1	4/193	2	4/69	6
East Midlands	5/557	1	3/94	3	2/32	6
East of England	27/656	4	31/133	23	11/45	24
London	204/666	31	8/49	16	21/67	31
South East (East)	10/485	2	3/96	3	8/37	22
South East (West)	5/418	1	2/91	2	4/36	11
South West	21/690	3	2/46	4	8/67	12
West Midlands	4/651	1	0/72	0	3/50	6
North West	27/758	4	3/214	1	12/58	21
Wales	0/451	0	0/8	0	2/45	4
Northern Ireland	2/71	3	5/62	8	3/17	18
Scotland	5/538	1	0/68	0	0/25	0
United Kingdom	**315/ 6743**	**5**	**61/ 1126**	**5**	**78/ 548**	**14**

COMMENT:

- In the UK as a whole, 15% of cancers with a proven pre-operative diagnosis by C5 cytology and/or B5 core biopsy underwent more than one therapeutic operation.
- 14% of invasive cancers and 16% of non-invasive cancers underwent more than one therapeutic operation.
- Invasive cancers with B5b (Invasive) core biopsy had the fewest repeat operations (12%), followed by invasive cancers diagnosed by C5 cytology only (13%). Invasive cancers with a B5a (Non-invasive) core biopsy had the highest repeat operation rate (41%).
- 62% of invasive cancers with a B5b (invasive) core biopsy underwent a single therapeutic operation consisting of conservation surgery with an axillary procedure. A further 5% of cases had conservation surgery with an axillary procedure followed by conservation surgery, presumably to clear involved or close margins.
- Only 1% of invasive cancers with a B5b (Invasive) core biopsy had a repeat operation to obtain axillary lymph nodes, compared to 3% diagnosed by C5 cytology only and 23% with a B5a (Non-invasive) core biopsy.
- 5% of invasive cancers with a B5b (Invasive) core biopsy or a C5 cytology had no axillary procedure recorded. For invasive cancers with a B5a (Non-invasive) core biopsy, this was 14%. This could be a data collection problem. However, if the data do correctly reflect clinical practice, these cases should be audited by Regional QA Reference Centres and Regional QA Surgeons as they may have had insufficient diagnostic work-up.
- 64% of invasive cancers diagnosed by C5 cytology only underwent a single therapeutic operation consisting of conservation surgery with an axillary procedure.
- A further 16% of these cancers underwent a single therapeutic operation consisting of a mastectomy and an axillary procedure. Presumably in these cases, the clinical and radiological signs were strongly supportive of the presence of invasive disease.
- 23% of invasive cancers with a B5a (Non-invasive) core biopsy underwent a single operation consisting of conservation surgery with an axillary procedure. Presumably in these cases, contrary to the core biopsy result, the clinical and radiological signs were strongly supportive of the presence of an invasive cancer.
- 24% of non-invasive or micro-invasive cancers with a B5a (Non-invasive) core biopsy underwent axillary surgery at the first therapeutic operation. It would be interesting to know the reasons for undertaking axillary surgery at the first operation as it would appear that these women may have undergone an unnecessary axillary procedure.

7. ADJUVANT THERAPY

Detailed tables giving full audit results are provided in Appendix 7 starting on p127

Surgeons were asked to supply radiotherapy, chemotherapy and hormonal therapy start dates for cancers detected through screening between 1st April 2001 and 31st March 2002, the period covered by the previous screening audit. Oestrogen receptor (ER), progesterone receptor (PgR) and Cerb-B2/HER-2 status were also requested. The cut off point for adjuvant treatment was 31st March 2003, allowing a minimum of 12 months follow up for each case. Some of these analyses should be treated with caution because it is probably easier to verify that a woman did not receive a given therapy than to provide a complete start date.

7.1 Data Completeness for the Adjuvant Therapy Audit

The 2001/02 ABS at BASO audit reported tumour characteristics and primary treatment data for 10,191 screen detected breast cancers. Details of a further 85 cancers which were not submitted to the main screening audit in 2001/02 have been registered since 2001/02, giving a total of 10,276 cancers eligible for this audit. Of these, 1,463 had no adjuvant data supplied and 137 had some adjuvant data supplied but were excluded from the audit due to incomplete surgery data or adjuvant treatment prior to the screening assessment date. Following these exclusions, 8,676 cases (84%) were included in the adjuvant therapy audit (Table 77).

Table 78 shows the regional variation in data completeness for radiotherapy, chemotherapy and hormonal therapy data (79%, 80%, 77% respectively in the UK as a whole). Overall, radiotherapy, chemotherapy and hormonal therapy data were complete for 7,372 cases (72%). Radiotherapy and chemotherapy alone were complete for 7,835 cases (76%). Figure 45 shows the regional variation in overall data completeness as well as the data completeness for radiotherapy and chemotherapy alone. The completeness of radiotherapy, chemotherapy and hormonal therapy data varied from 54% in East of England to 97% in Wales and 100% in East Midlands. This shows that regions with established systems for data collection find it easier to collect these data than regions that rely on surgeons reviewing case notes to complete the ABS at BASO adjuvant therapy audit.

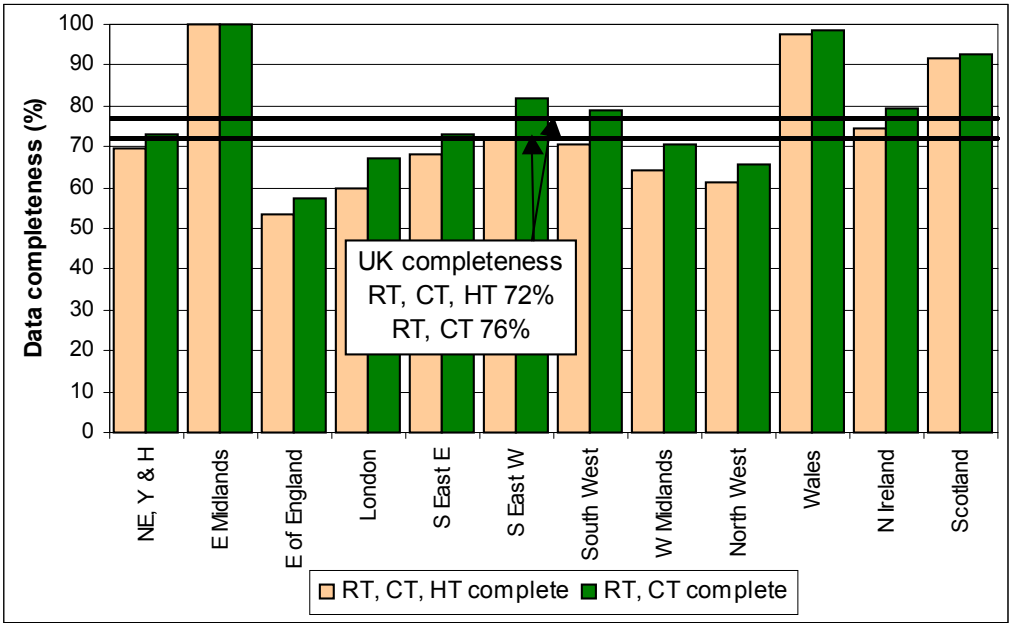

Figure 45 (Table 79) : Variation in the proportion of cases with complete RT, CT and HT data and those with complete RT and CT data, expressed as a proportion of all eligible cases

Tables 80 and 81 show that, of the 7,835 cases with complete radiotherapy and chemotherapy data, 4,963 (63%) had started radiotherapy and 1,330 (17%) had started chemotherapy before the audit cut off date. Table 82 shows that of the 7,958 cases with hormonal therapy data supplied, 5,726 (72%) received hormonal therapy. Age does not seem to be a factor in the provision of adjuvant therapy to screen detected cancers (Tables 83, 84). The median age of women in the audit was 58, which was also the median age of women receiving radiotherapy and of women not receiving radiotherapy. The median age of women receiving chemotherapy was 56, compared to 58 for women who did not receive chemotherapy. The median age of women receiving hormonal therapy was 58, compared to 57 for women who did not receive hormonal therapy. The regional variation in adjuvant therapy provision is discussed later with reference to tumour characteristics.

Of the 8,676 cancers included in the audit, 58 (1%) had no surgery, 6,720 (77%) had 1 surgical operation (diagnostic or therapeutic) and 1,898 (22%) had more than 1 operation (Table 85). The first operation was diagnostic for 947 (11%) of the 8,618 cases with surgery. For 7,600 (88%) cases the first operation was therapeutic following a malignant core biopsy or cytology result (Table 86). The remaining 71 cases were not submitted to the main screening audit in 2001/02 so pre-operative history data were unavailable. Of the 4,963 cancers given radiotherapy, 6 had no surgery, 4,030 (81%) had 1 operation and 927 (19%) had more than 1 operation (Table 87). Of the 1,330 cancers given chemotherapy, 10 (1%) had no surgery, 1,090 (82%) had 1 operation and 230 (17%) had more than 1 operation (Table 88).

Data completeness for ER, PgR and Cerb-B2/HER-2 status may depend on the invasive status of the cancer. 6,757 (78%) of the 8,676 included cases were invasive and 1,728 (20%) were non-invasive. A further 98 cancers were micro-invasive and for 93 (1%) cancers invasive status data were unavailable (Table 89). Of the 8,676 included cases, 6,021 (69%) were ER positive and 863 (10%) ER negative, giving a ratio of ER positive to ER negative cases of 7:1. For the first time, the code "Not Done" was introduced to indicate that ER status was unknown because the test was not performed. This code was not used by all regions taking part in the audit. Only 350 cancers (4%) had ER status not done, and ER status was unknown for 1,442 (17%).

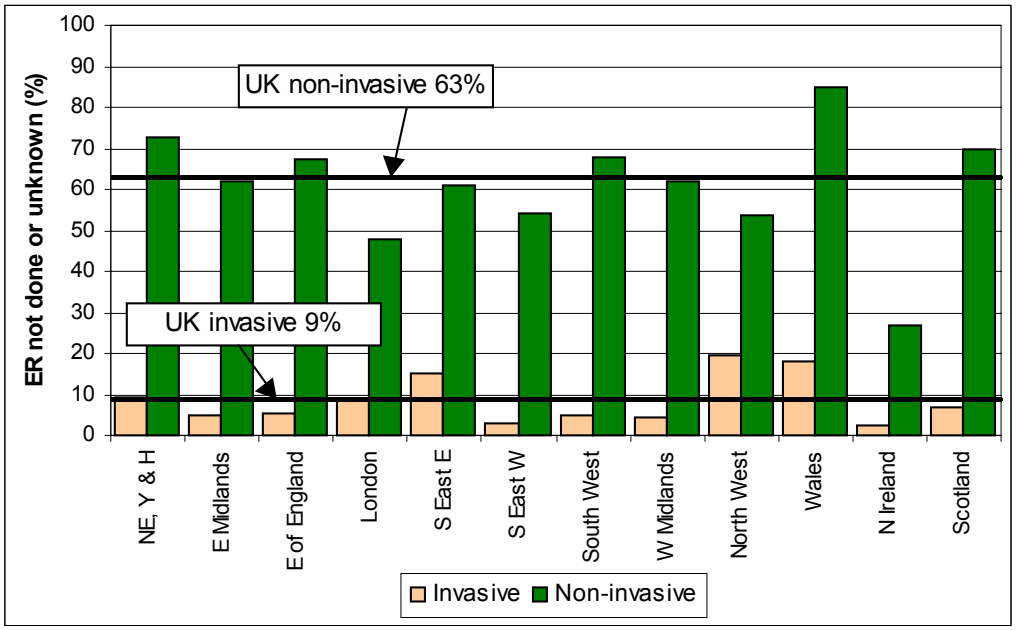

Figure 46 (Table 91) : The variation in the proportion of invasive and non-invasive cancers with unknown ER status or ER status not done

Of the 1,792 cases with ER status unknown or not done, 634 were invasive, 1,085 were non-invasive, 38 were micro-invasive and 35 had invasive status unknown. Thus, 9% of the 6,757 invasive cancers had unknown or not done ER status, compared to 63% of non-invasive cancers.

Regional variation is shown in Figure 46. The proportion of invasive cancers with ER status unknown or not done was 15-19% in South East (East), Wales and North West. Given the importance of ER status in determining adjuvant therapy, Regional QA Reference Centres and Regional QA Surgeons should ascertain the reasons why ER status was not available.

PgR status data were available for only 30% of cases. 1,893 cases were PgR positive and 701 PgR negative giving a ratio of PgR positive to PgR negative cases of 2.7:1. PgR status was known for 433 (50%) of the 863 ER negative cancers, suggesting that in some regions PgR status was not requested routinely but only when ER status was negative (Figure 47). In Wales in particular, PgR status was known for 8% of all cases, but for 55% of ER negative cases. For ER negative cases with known PgR status, 46 were PgR positive and 387 were PgR negative, giving a ratio of PgR positive to PgR negative for ER negative cases of 1:8 in the UK as a whole.

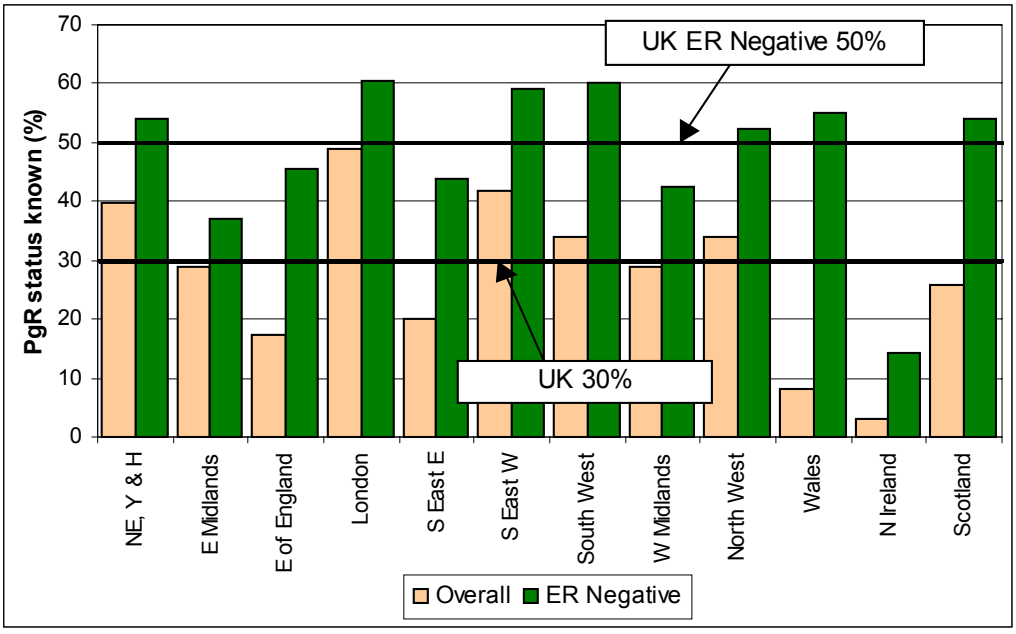

Figure 47 (Table 92,93) : The variation in the proportion of all cancers with PgR status known compared to the proportion of ER negative cancers with PgR status known

Overall, Cerb-B2/HER-2 status data were available for only 11% of the cases included in the audit, varying from 2% in Wales and East Midlands to 34% in South West (Table 94). Regional QA Reference Centres and Regional QA Surgeons should ascertain the reasons why Cerb-B2/HER-2 status was not available, especially in regions where the data would have been expected to be available from clinical trial databases.

COMMENT:

- The proportion of cases with radiotherapy, chemotherapy or hormonal therapy data supplied varied from 54% in East of England to 97% in Wales and 100% in East Midlands. This shows that regions with established systems for data collection find it easier to collect these data than regions that rely on surgeons reviewing case notes to complete the ABS at BASO adjuvant audit.
- For 4% of cases in the audit, ER status was not done. ER status was unknown for 17% of cases. 9% of invasive cancers had unknown or not done ER status, compared to 63% of non-invasive cancers. Given the importance of ER status in determining adjuvant therapy, Regional QA Reference Centres and Regional QA Surgeons should ascertain the reasons why ER status was not available.
- For the 79% of cases with known ER status, the ratio of ER positive to ER negative cases was 7:1.
- PgR status data were available for only 30% of all cases but 50% of ER negative cancers, suggesting that in some regions PgR status was not requested routinely but only when ER status was negative. Cerb-B2/HER-2 status data were available for only 11% of cases included in the audit.

7.2 Time Between Assessment, Surgery, Radiotherapy, Chemotherapy and Hormonal Therapy

Tables 95 to 102 show the regional variation in the cumulative percentage of cases having various therapies within 14, 30, 60, 90 and 120 days. These time periods were chosen for illustrative purposes and do not correspond to any published standards, although the 30 day time period is approximately equivalent to the new waiting times standard from decision to treat to first treatment. The cumulative percentage curve for the UK as a whole is drawn as a solid line and dashed lines represent the regions with the maximum and minimum cumulative percentage at each point. This means that the cumulative percentage curves for all regions can be drawn between the 2 dashed lines.

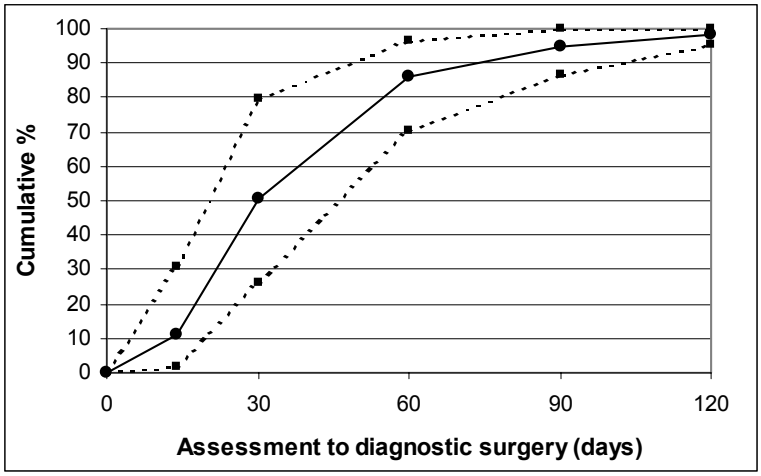

Figure 48 (Table 95) : The cumulative % of cases with diagnostic surgery up to 120 days after assessment

Figure 48 shows that 51% of cases undergoing diagnostic surgery had this surgery within 30 days of assessment. This varied from 26% in South East (East) to 78% in South East (West) and 80% in Wales. 86% of women received diagnostic surgery within 60 days of assessment, varying from 70% in South East (East) to 96% in Wales and Northern Ireland.

Figure 49 shows that 60% of cases with a pre-operative diagnosis underwent therapeutic surgery within 30 days of assessment, varying from 30% in South East (East) to 96% in Northern Ireland. The median number of days between assessment and therapeutic surgery in the UK as a whole was 27 days.

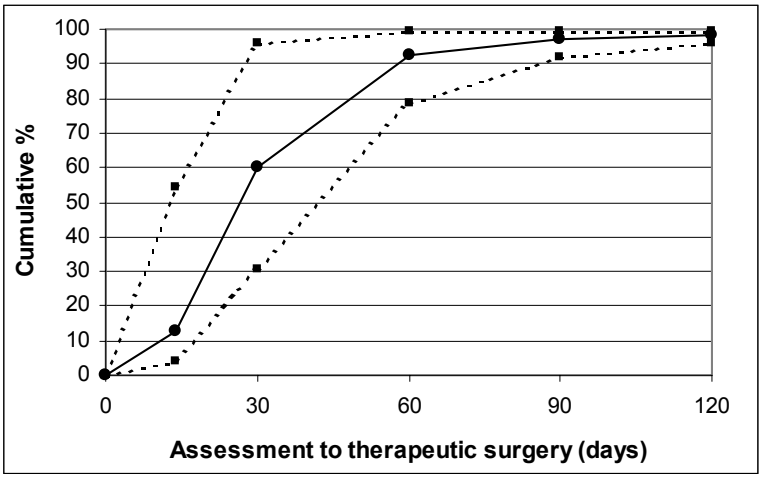

Figure 49 (Table 96) : The cumulative % of cases a pre-operative diagnosis that had therapeutic surgery up to 120 days after assessment

Adjuvant therapy should commence promptly after first surgery, but is delayed if there is a second operation to obtain axillary nodes or clear margins. Table 97 shows that 50% of the 1,896 women undergoing more than 1 diagnostic or therapeutic operation had all of their operations in the same 30 day period. The median number of days between first and final surgery varied between 15 days in Northern Ireland and 35 days in London and South East (East).

Figure 50 shows the variation in the time taken from surgery to radiotherapy for cases with 1 operation. Cases with chemotherapy between surgery and radiotherapy were excluded. In the UK as a whole, only 33% of cases received radiotherapy within 60 days of first surgery, 67% within 90 days and 87% within 120 days. The proportion receiving radiotherapy within 60 days was only 13-19% in South East (East), London and South East (West). In Scotland 59% received radiotherapy within 60 days.

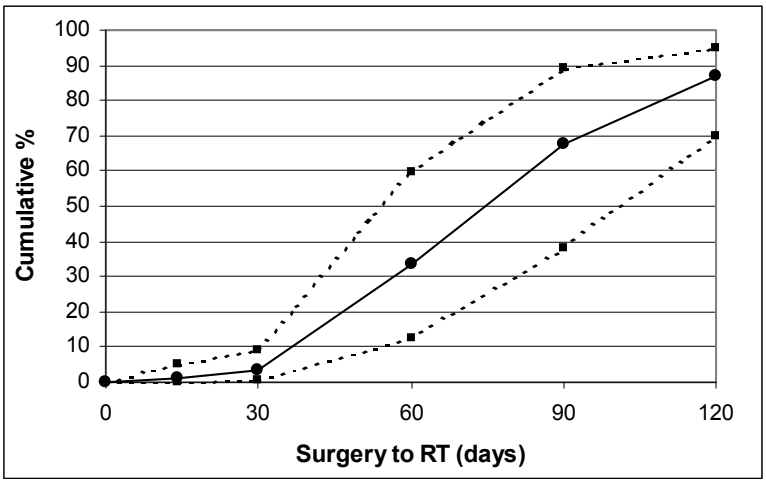

Figure 50 (Table 98) : The cumulative % of women with 1 operation receiving radiotherapy up to 120 days after surgery

Figure 51 shows the variation in the time taken from first surgery to radiotherapy for cases with more than 1 operation. Again, cases with chemotherapy between surgery and radiotherapy were excluded. Due to further surgery delaying the start of radiotherapy, only 7% of cases received radiotherapy within 60 days of their first surgery, 36% within 90 days and 67% within 120 days. In North West, 13% received radiotherapy within 60 days. The proportion of cancers receiving radiotherapy within 90 days of their first surgery varied between 14% in South East (East) and 57% in Scotland.

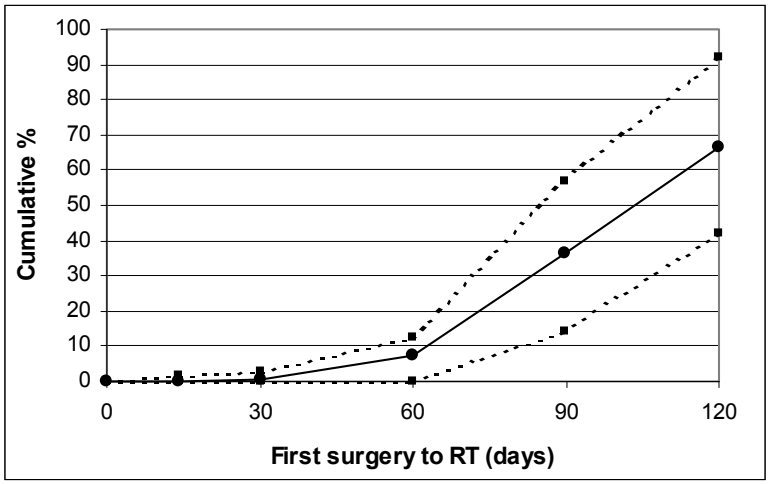

Figure 51 (Table 99) : The cumulative % of women with more than 1 operation receiving radiotherapy up to 120 days after first surgery

Figure 52 shows the variation in the time taken from surgery to chemotherapy for cases with 1 operation. Cases with radiotherapy between surgery and chemotherapy were excluded. In the UK as a whole, 86% of cases received chemotherapy within 60 days of first surgery, 95% within 90 days and 98% within 120 days. The proportion receiving chemotherapy within 60 days varied from 73% in London to 96% in Northern Ireland.

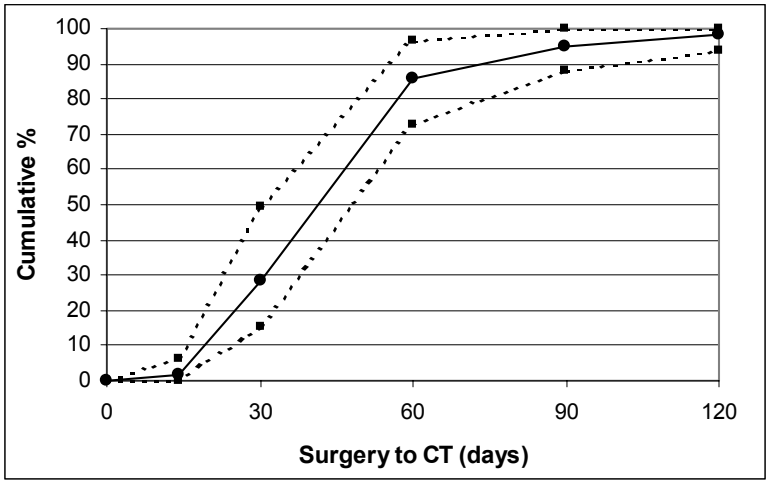

Figure 52 (Table 100) : The cumulative % of women with 1 operation receiving chemotherapy up to 120 days after surgery

Figure 53 shows the variation in the time taken from first surgery to chemotherapy for cases with more than 1 operation. Again, cases with radiotherapy between surgery and chemotherapy were excluded. Due to further surgery delaying the start of chemotherapy, only 39% of cases received chemotherapy within 60 days of first surgery, 82% within 90 days and 93% within 120 days. In London only 50% had chemotherapy within 90 days.

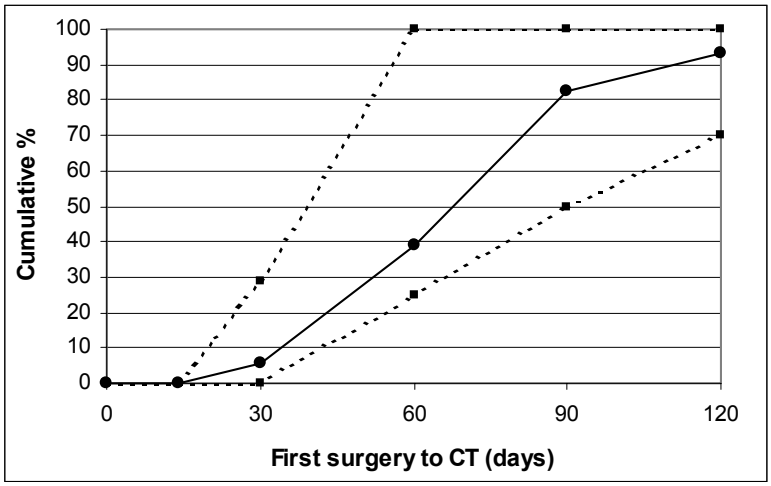

Figure 53 (Table 101) : The cumulative % of women with more than 1 operation receiving chemotherapy up to 120 days after first surgery

Figure 54 shows that, of the 5,726 cases receiving hormonal therapy, 562 (10%) started this therapy before surgery. The practice of starting women on hormonal therapy before surgery was most prevalent in South East (East) (25%), South West (21%) and West Midlands (19%). Recently, this practice has been questioned because of the potential thromboembolic effects of tamoxifen. In addition, if hormone therapy is started prior to surgery, it is possible that the ER status was not determined before the treatment was initiated and that women were therefore given unnecessary hormone therapy.

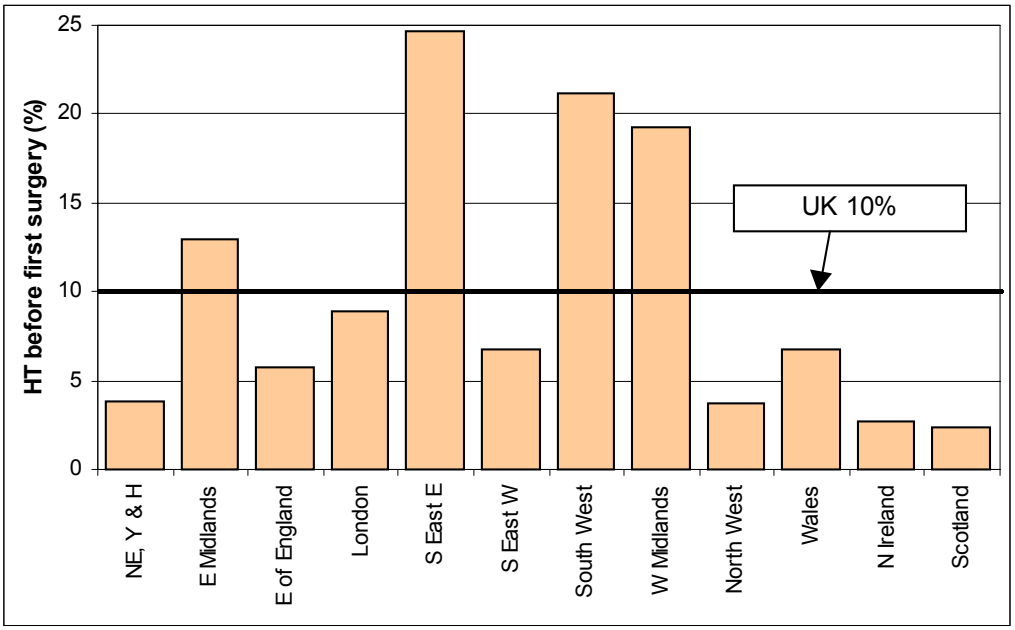

Figure 54 (Table 102) : The variation in the proportion of women starting hormonal therapy before first surgery

The regional variation in the median number of days between therapies examined in Figures 48-53 is summarised in Table 7.2A. The median number of days between surgery and radiotherapy for cases with 1 operation was 73 days, varying from 56 days in Scotland to 104 days in South East (West). The median number of days between first surgery and radiotherapy for cases with more than 1 operation was 103 days, varying from 87 days in Scotland and 88 days in South West to 131 days in North West. The median number of days between surgery and chemotherapy for cases with 1 operation was 38 days, varying from 31-33 days in East of England and South East (West) to 42 days in North East, Yorkshire & Humber and 43 days in Wales and South West. The median number of days between first surgery and chemotherapy for cases with more than 1 operation was 66 days, varying from 35 days in Northern Ireland and 90 days in London. It is clear from Table 7.2A that in 2001/02, women in London and South East (East) were experiencing the longest waiting times for treatments. Wales had particularly short waiting times for surgery, while Scotland and East Midlands had relatively short waiting times for radiotherapy.

TABLE 7.2 A : SUMMARY OF MEDIAN NUMBER OF DAYS BETWEEN VARIOUS THERAPIES

	Assessment to		***First Surgery to***		***Final Surgery to***			
Region	***Diag. surgery*** *(Table 95)*	***Therap. Surgery*** *(Table 96)*	***Final surgery*** *(Table 97)*	***HT*** *(Table 102)*	***RT (cases with 1 op)*** *(Table 98)*	***RT (cases with >1 op)*** *(Table 99)*	***CT (cases with 1 op)*** *(Table 100)*	***CT (cases with >1 op)*** *(Table 101)*
N East, Yorks & Humber	*30*	*27*	*28*	*21*	*78*	*106*	*42*	*63*
East Midlands	*32*	*28*	*34*	*16*	*62*	*90*	*38*	*78*
East of England	*28*	*27*	*28*	*22*	*90*	*114*	*31*	*63*
London	*35*	*30*	*35*	*31*	*92*	*119*	*40*	*90*
South East (East)	*43*	*40*	*35*	*20*	*95*	*127*	*41*	*80*
South East (West)	*22*	*25*	*29*	*21*	*104*	*129*	*33*	*62*
South West	*34*	*30*	*32*	*23*	*67*	*88*	*43*	*78*
West Midlands	*33*	*22*	*28*	*15*	*67*	*103*	*37*	*58*
North West	*33*	*28*	*34*	*28*	*76*	*131*	*40*	*61*
Wales	*22*	*23*	*24*	*20*	*72*	*101*	*43*	*66*
Northern Ireland	*28*	*14*	*15*	*29*	*69*	*111*	*37*	*35*
Scotland	*29*	*26*	*31*	*22*	*56*	*87*	*35*	*64*
UK	***30***	***27***	***30***	***21***	***73***	***103***	***38***	***66***

Shaded if 10% above the median for the UK as a whole

COMMENT:

- Only 51% of cases undergoing diagnostic surgery had this surgery within 30 days of assessment.
- Only 60% of cases with a pre-operative diagnosis underwent therapeutic surgery within 30 days of assessment.
- Only 33% of cases with 1 operation received radiotherapy within 60 days of this surgery. For cases with more than 1 operation, only 7% of cases received radiotherapy within 60 days of first surgery.
- 86% of cases with 1 operation received chemotherapy within 60 days of this surgery. For cases with more than 1 operation, only 39% of cases received radiotherapy within 60 days of first surgery.
- In 2001/02, Women in London and South East (East) were experiencing the longest waiting times for treatments. Wales had particularly short waiting times for surgery, while Scotland and East Midlands had relatively short waiting times for radiotherapy.
- 10% of cases receiving hormonal therapy started this therapy before surgery. Given the potential thromboembolic effects of tamoxifen, Regional QA Reference Centres and Regional QA Surgeons should ascertain whether this practise has now ceased.

7.3 Order of Surgery, Radiotherapy and Chemotherapy

For those 7,835 cases with complete radiotherapy and chemotherapy data, the order of treatments was determined. For this analysis hormonal therapy was ignored. The term surgery refers to one or multiple operations provided that no adjuvant therapy was given between first and final surgery.

The majority of cases (3,889, 50%) underwent one or more operations followed by radiotherapy. In Scotland, 55% of cases followed this treatment pathway compared to 39% in South East (East). In the UK as a whole, 2,555 cases (33%) only received surgery, and 931 cases (12%) had surgery followed by chemotherapy and then radiotherapy. Other variations included surgery to chemotherapy (248 cases, 3%) and surgery to radiotherapy to chemotherapy (54 cases, 1%).

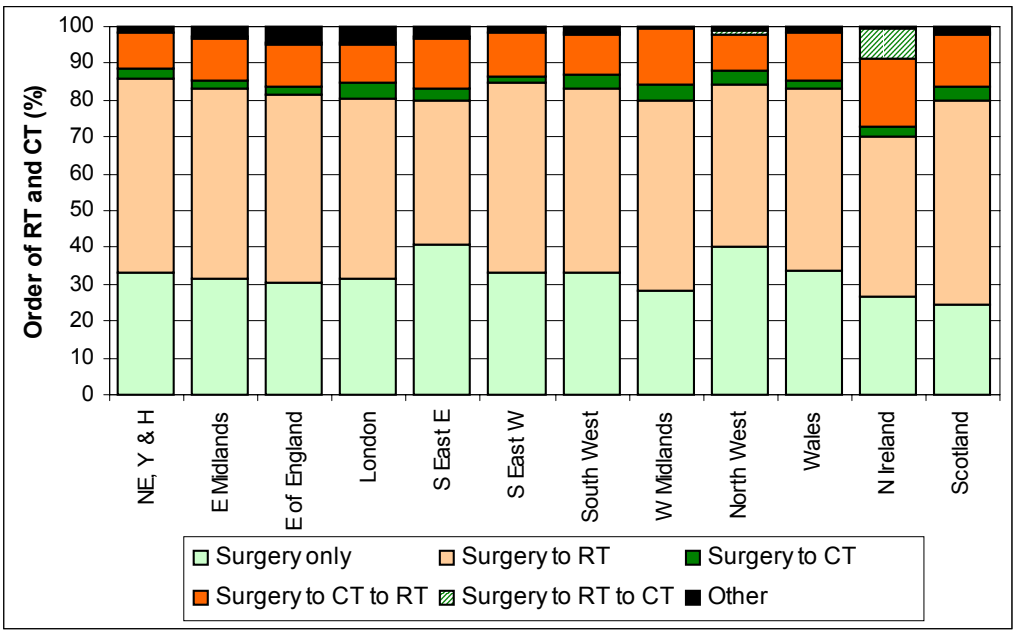

Figure 55 (Table 103) : Variations in the order of surgery, radiotherapy and chemotherapy

Figure 55 shows the regional variation in the order of surgery, radiotherapy and chemotherapy. Surgery to chemotherapy to radiotherapy (19%) and surgery to radiotherapy to chemotherapy (8%)

were most common in Northern Ireland where the highest proportion of cases received chemotherapy (30%, compared to 17% in the UK as a whole, see Table 81).

The number of days from the first assessment appointment to the start of the final therapy clearly depends on the number of therapies given, but overall the average (median) number of days from the first assessment appointment to the start of the final therapy was 94 days. The median time in days from assessment to final therapy was 39 days for women undergoing surgery alone, compared to 108 days for assessment to surgery followed by radiotherapy and 218 days for assessment to surgery followed by chemotherapy followed by radiotherapy. The median time from assessment to surgery to chemotherapy was 76 days (Table 104).

The median number of days from the first assessment appointment to the start of the final therapy was lowest in Northern Ireland for 3 of the treatment patterns (Surgery only 18 days, Surgery to CT 46 days, Surgery to CT to RT 167 days). East Midlands, West Midlands, Northern Ireland and Scotland had medians of less than 100 days for the most popular pattern of Surgery to RT. The methods practised to obtain these good results should be shared throughout the UK.

The regional variation in the median number of days from the first assessment appointment to the start of the final therapy, from 84 days in Scotland to 124 days in South East (East), is shown for all cases in Figure 56. This at first seems perverse since Scotland has the lowest proportion of cases in the audit undergoing surgery only (24%) and South East (East) has the highest (41%). However it is probably explained by the relatively long waiting times for surgery and radiotherapy in South East (East) compared with Scotland (Table 7.2A).

Figure 56 also shows the regional variation in the median number of days from assessment to surgery to radiotherapy (the most popular order of therapies). This varied from 86 days in Scotland to 146 days in South East (East).

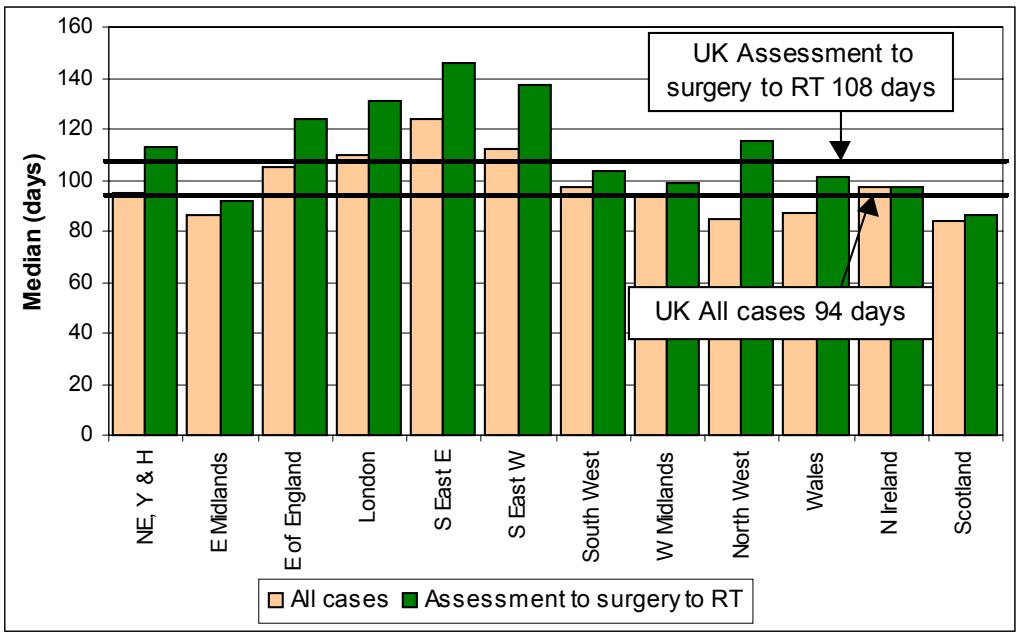

Figure 56 (Table 104) : Median number of days from assessment to final therapy

COMMENT:

- The most popular treatment order for screen detected breast cancers was one or more operations followed by radiotherapy alone without chemotherapy, followed by 50% of cases.
- The median number of days from the first assessment appointment to the start of the final therapy was 94 days, varying from 84 days in Scotland to 124 days in South East (East).
- The median time in days from assessment to final therapy was 33 days for women undergoing surgery alone, compared to 108 days for assessment to surgery followed by radiotherapy and 218 days for assessment to surgery followed by chemotherapy followed by radiotherapy. The median time from assessment to surgery to chemotherapy was 76 days.
- The good practice in East Midlands and Scotland which in 2001/02 led to the shortest intervals between assessment and final therapy should be shared throughout the UK.

7.4 Variations in Combinations of Treatment According to Tumour Characteristics

This section examines the combination of treatments given to tumours with various prognostic characteristics. It is clear that different screening units followed different surgical protocols. It is hoped that by presenting analyses for three specific propositions, an informative discussion to agree best practice can take place.

Proposition 1 : Women treated with conservation surgery should normally receive radiotherapy

Of the 8,169 cases with radiotherapy data available, 6,339 (78%) were invasive and 1,656 (28%) were non-invasive (Table 105). 4,431 (70%) of the invasive cancers were treated with conservation surgery (Table 106). Of these, 467 (11%) did not have radiotherapy. This varied from 4% in Wales to 17% in North West and London and 19% in South East (East). Of the 1,147 non-invasive cancers treated by conservation surgery (Table 109), 602 (52%) did not have radiotherapy (Table 110). This varied from 20% in Scotland to more than 60% in South East (East) (63%), South West (64%) and South East (West) (74%).

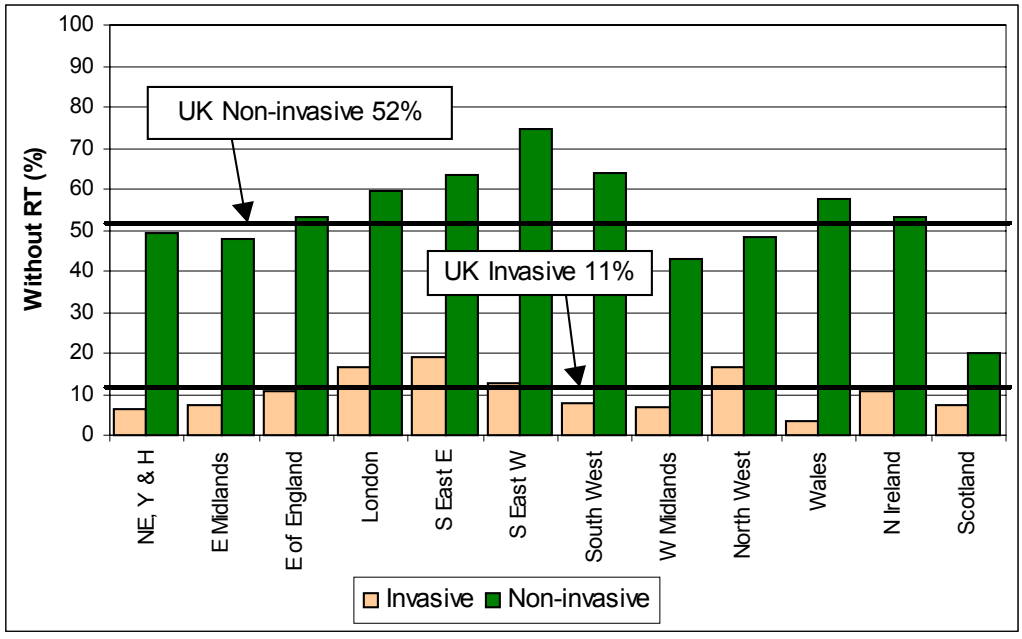

Figure 57 (Tables 107,110) : The variation in the proportion of conservatively treated invasive cancers and non-invasive cancers that did not receive radiotherapy

Figure 57 shows the variation in the proportion of conservatively treated invasive cancers and non-invasive cancers that did not receive radiotherapy. In the UK as a whole, the majority (65%) of conservatively treated invasive cancers not given radiotherapy were small (<15mm diameter) (Table 108). However, a total of 81 cancers were at least 20mm in diameter, of which 17 were in North West and 12 in London. Regional QA Reference Centres and Regional QA Surgeons should determine the reasons why these larger, invasive cancers did not receive radiotherapy.

In the UK as a whole, the majority (62%) of the 602 conservatively treated non-invasive cancers not given radiotherapy were other (low or intermediate) grade (Table 111). Overall, 58% of conservatively treated non-invasive cancers not given radiotherapy were small (<15mm diameter) (Table 112). However, in South East (West), 49% of cases not given radiotherapy were high grade, and 30% were at least 15mm in diameter. In Northern Ireland, 44% of cases not given radiotherapy were at least 15mm in diameter. Provided that the tumour margins were adequate, it may be acceptable that these conservatively treated cancers did not receive radiotherapy. However, Regional QA Reference Centres and Regional QA Surgeons should audit the treatment provided to large, high grade non-invasive cancers to ensure that these cancers did not receive less than optimal therapy.

Conclusion 1 :	89% of women with invasive cancers treated with conservation surgery received radiotherapy, compared to only 48% of women with conservatively treated non-invasive cancer. The majority of conservatively treated cancers without radiotherapy were small (<15mm) tumours (65% invasive, 58% non-invasive). 62% of conservatively treated non-invasive cancers not given radiotherapy were other (low or medium) grade. Regional QA Reference Centres and Regional QA Surgeons should audit large or high grade non-invasive tumours that did not receive radiotherapy to ensure that these cancers did not have less than optimal treatment.

Proposition 2 :	**Women with ER negative, node positive invasive cancers should normally receive chemotherapy**

Of the 8,245 cancers with known chemotherapy data, 189 (2%) were recorded as ER negative, node positive invasive cancers and 442 (5%) were recorded as ER negative, node negative invasive cancers (Table 113).

Of the 189 ER negative node positive invasive cancers, 161 (85%) received chemotherapy, varying from 76% in South West and 77% in North West to 94% in London and 92% in East of England. In the UK as a whole, only 28 cancers in this group did not receive chemotherapy. Of the 442 ER negative node negative invasive cancers, 218 (49%) received chemotherapy, varying from 38% in South West and 39% in East of England and London to 75% in Northern Ireland. This implies that in most regions nodal status was taken into account when deciding whether ER negative cancers received chemotherapy.

The regional variation is shown in Figure 58. Nodal status made the least difference in Northern Ireland (86% with chemotherapy for node positive cancers compared to 75% with chemotherapy for node negative cancers), Scotland (88% compared to 67%), West Midlands (85% compared with 60%) and North West (77% compared with 55%). The biggest difference was apparent in London (94% compared with 39%) and East of England (92% compared with 39%).

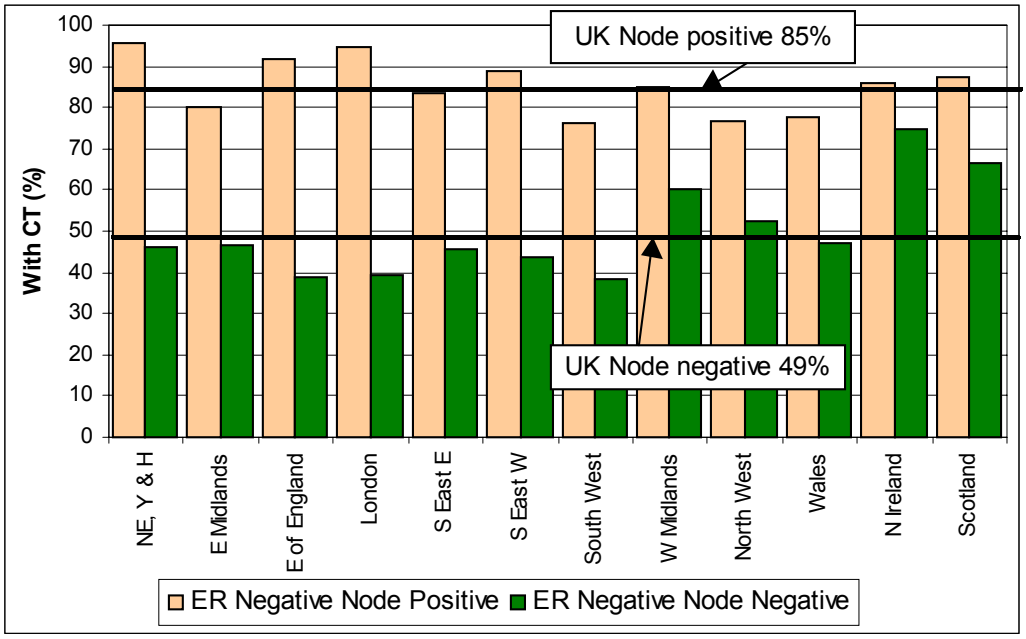

Figure 58 (Tables 114, 115) : The variation in the proportion of ER negative node positive invasive cancers that did not receive chemotherapy compared with the proportion of ER negative node negative invasive cancers that did not receive chemotherapy

183 (84%) of the 218 ER negative, node negative cancers given chemotherapy were Grade III (Table 116). Only 2 cancers were Grade I. 30 (14%) cancers were Grade II and 3 cancers had unknown grade. The lowest proportions of cancers receiving chemotherapy that were Grade III were in North West (64%) and London (64%). It would be interesting to examine the size of these Grade III cancers and the size and grade of the node positive cancers that did not receive chemotherapy to see if these factors also influenced the decision not to give chemotherapy.

Conclusion 2 :	85% of women with ER negative, node positive invasive cancers received chemotherapy compared to 49% of ER negative, node negative invasive cancers . This indicates that nodal status was taken into account when deciding whether ER negative cancers would benefit from chemotherapy. 84% of the ER negative node negative tumours given chemotherapy were Grade III.

Proposition 3 :	**Hormonal therapy (e.g. Tamoxifen) is only beneficial to women with ER positive cancers and ER negative, PgR positive cancers**

Of the 7,958 cases with known hormone therapy data, 5,607 (70%) were ER positive, 815 (10%) ER negative, 341 (4%) did not have ER status performed and for 1195 (15%) ER status was unknown (Table 117).

90% of the ER positive cancers and 78% of ER negative cancers with known hormone therapy data were invasive (Tables 120, 121). Overall, 9% of ER positive cancers did not receive hormone therapy, varying from 3% in North East, Yorkshire & Humber to 19% in Wales (Table 122). Figure 59 shows that 7% of ER positive invasive cancers did not receive hormone therapy (Table 123), compared to 33% of ER positive non-invasive cancers (Table 124). More than 10% of ER positive invasive cancers did not receive hormone therapy in East Midlands (12%) and Wales (18%). More than 60% of ER positive non-invasive cancers did not receive hormone therapy in South East

(West) (62%) and South West (69%). Regional QA Reference Centres and Regional QA Surgeons should determine the reasons why hormone therapy was not given to these cancers.

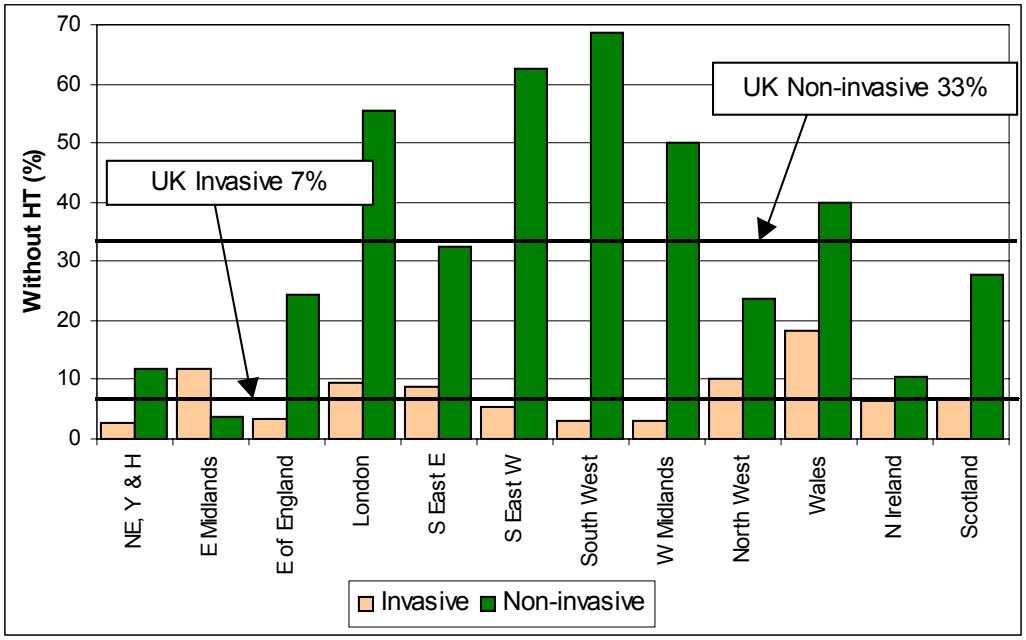

Figure 59 (Tables 123, 124) : The variation in the proportion of ER positive invasive cancers that did not receive hormone therapy, compared to the proportion of ER positive non-invasive cancers that did not receive hormone therapy

Figure 60 shows that in the UK as a whole, 16% of ER negative cancers received hormone therapy. More than 20% of ER negative cancers received hormone therapy in South East (East) (23%), South West (28%) and Wales (34%). Regional QA Reference Centres and Regional QA Surgeons should determine the reasons why hormone therapy was given to these cancers.

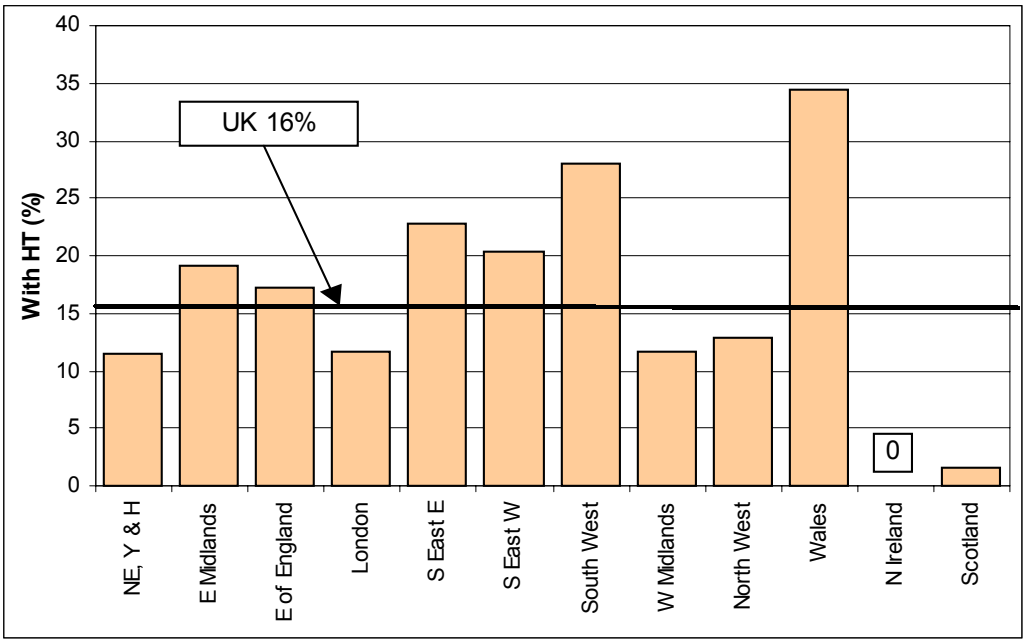

Figure 60 (Table 125) : The variation in the proportion of ER negative invasive cancers that received hormone therapy

Although the decision to give hormone therapy did in general depend on ER status, 54 (16%) of the 341 cancers with ER status not done had hormone therapy (Table 118). The code "Not Done" was not used by all regions. Table 119 shows that hormone therapy was also provided to 519 (34%) of

the 1,536 cases with ER status not done or unknown. Regional QA Reference Centres and Regional QA Surgeons should determine the reasons why hormone therapy was given to these cancers.

Of the 45 ER negative, PgR positive cancers with known hormone therapy data, 30 (67%) received hormone therapy (Table 127). In contrast, 14% of the ER negative, PgR negative cancers with known hormone therapy data received hormone therapy (Table 128). PgR status does therefore appear to have been a factor used to determine whether to give hormone therapy to ER negative cancers. Only 10 ER negative cancers with PgR status not done received hormone therapy, of which 6 were in South East (East) (Table 129). In total 47 (11%) of the 410 ER negative cancers with PgR not done or unknown received hormone therapy (Table 130).

Conclusion 3 : Although the decision to give hormone therapy did depend on ER status and PgR status, some cancers were given hormone therapy when ER or PgR status was not done or unknown. Overall, 9% of ER positive cancers did not receive hormone therapy and 16% of ER negative cancers received hormonal therapy. 67% of ER negative, PgR positive cancers did receive hormone therapy compared with only 14% of ER negative, PgR negative cancers. The number of cancers with known PgR status was, however, very small so these data should be treated with caution.

Table 7.4A provides a summary of the proportion of cancers in each region which did not receive treatment consistent with propositions 1, 2 and 3 presented in this section.

TABLE 7.4 A : SUMMARY OF PROPOSITIONS 1, 2 AND 3

	Proposition 1 Conservation surgery, no RT		***Proposition 2 ER negative node positive invasive no CT*** *(Table 114)*	***Proposition 3***		
Region	***Invasive*** *(Table 107)*	***Non-invasive*** *(Table 110)*		***ER positive no HT*** *(Table 122)*	***ER negative with HT*** *(Table 125)*	***ER negative PgR positive no HT*** *(Table 127)*
N East, Yorks & Humber	*6% (29/470)*	*49% (62/126)*	*4% (1/24)*	*3% (21/652)*	*11% (11/96)*	*0% (0/2)*
East Midlands	*7% (31/417)*	*48% (45/94)*	*20% (3/15)*	*11% (64/572)*	*19% (14/73)*	*20% (1/5)*
East of England	*11% (34/321)*	*53% (58/109)*	*8% (1/12)*	*5% (23/458)*	*17% (11/64)*	*14% (1/7)*
London	*17% (64/382)*	*60% (56/94)*	*6% (1/18)*	*14% (59/411)*	*12% (8/69)*	*20% (1/5)*
South East (East)	*19% (65/338)*	*63% (57/90)*	*17% (2/12)*	*12% (49/422)*	*23% (15/66)*	*0% (0/1)*
South East (West)	*13% (45/352)*	*74% (73/98)*	*11% (1/9)*	*11% (43/378)*	*20% (12/59)*	*60% (3/5)*
South West	*8% (32/413)*	*64% (76/119)*	*24% (5/21)*	*8% (38/504)*	*28% (21/75)*	*43% (3/7)*
West Midlands	*7% (25/356)*	*43% (31/72)*	*15% (3/20)*	*5% (24/443)*	*12% (9/77)*	*0% (0/1)*
North West	*17% (91/551)*	*48% (63/131)*	*23% (6/26)*	*12% (77/666)*	*13% (15/117)*	*60% (3/5)*
Wales	*4% (11/309)*	*57% (43/75)*	*22% (2/9)*	*19% (73/380)*	*34% (10/29)*	*20% (1/5)*
Northern Ireland	*11% (9/84)*	*53% (16/30)*	*14% (1/7)*	*7% (8/111)*	*0% (0/27)*	*100% (1/1)*
Scotland	*7% (31/438)*	*20% (22/109)*	*13% (2/16)*	*8% (48/610)*	*2% (1/63)*	*100% (1/1)*
UK	***11% (467/4431)***	***52% (602/1147)***	***15% (28/189)***	***9% (527/5607)***	***16% (127/815)***	***33% (15/45)***

Shaded if 10% above the value for the UK as a whole

8. SURVIVAL ANALYSIS

Detailed tables giving full audit results are provided in Appendix 8 starting on p145

UK NHS Breast Screening Programme data for women with breast cancers detected by screening between 1st April 1992 and 31st March 1998 were combined with data recorded by regional cancer registries to analyse breast cancer survival. All cases were followed up to the study end date of 31st March 2003, enabling survival for a period of up to 10 years post diagnosis to be calculated. By liaising with the cancer registries serving their population, 9 of the 12 Regional QA Reference Centres were able to provide complete data for this analysis. Scotland provided no data. East of England and London were only able to provide data for cases detected in 1997/98.

Age at diagnosis, invasive grade, invasive tumour size and nodal status were requested from the screening services for cases detected in 1997/98. Tumour characteristics for earlier years were collected in previous audits. Regional QA Reference Centres were given the opportunity to update the audit database if necessary.

8.1 Survival Analysis Methods

Relative survival is defined as the observed survival in the patient group divided by the expected survival of the general population, matched by age and sex. The cumulative relative survival is interpreted as the proportion surviving a given interval after diagnosis in the hypothetical situation that breast cancer is the only possible cause of death. A population without breast cancer would have a relative survival rate of 100%. Relative survival was calculated, using the statistical package Surv2 (*"Surv2: Relative Survival Analysis Program", Esko T Voutilainene, Paul W. Dickman, Timo Hakulinen. Finnish Cancer Registry (Helsinki) and Dept of Medical Epidemiology, Karolinska Institutet (Stockholm)*).

Expected survival probabilities for women in the general UK population were calculated using the Hakulinen method with probability of life tables supplied by the Government's Actuary Department. For each relative survival rate, 95% confidence intervals were approximated as twice the standard error. Relative survival curves were tested for statistically significant differences using the proportional hazards alternative hypothesis. Full details can be found in the Surv2 software manual.

8.2 Eligibility of Cases for the Survival Analysis

Details of 31,580 breast cancers detected by screening between 1st April 1992 and 31st March 1998 were submitted to the survival audit. Of these, 2,184 cancers (7%) were excluded if one of the following reasons applied.

- Unknown invasive status (380 cases)
- Case not registered at the regional cancer registry, or registered with an unknown diagnosis date (885 cases)
- Screen detected cancer not confirmed to be the primary tumour, either because it was flagged as a recurrence at the cancer registry or because the date of diagnosis at the cancer registry was more than 3 months prior to the screening surgery date (919 cases)

The diagnosis date recorded at the cancer registry was taken for the study, unless it was incomplete or later than the screening surgery date, in which case the screening surgery date was used. This can occur where the cancer registry has incomplete data for the cancer, for example a registration based only on the death certificate.

Regional variation in the number of excluded cases is shown in Table 131 and summarised below. The proportion of cancers with known invasive status that were not registered at the cancer registry varied from 0 cases in West Midlands and Northern Ireland to 13% in East of England. The proportion of screen detected cancers not confirmed to be primary breast cancer varied from 0% in Northern Ireland (0 cases) and East Midlands (4 cases) to 5% (233 cases) in North East, Yorkshire & Humber and 7% (251 cases) in South West. Where small numbers of cancers were not confirmed to be primary breast cancer, this suggests that recurrences detected at screening are not included in the audit data for these screening services. Overall, 29,396 cancers were eligible for inclusion in the survival analysis, of which 23,756 were invasive, 617 micro-invasive cancers and 5,023 non-invasive cancers (Table132).

PROPORTION OF CASES REGISTERED AT THE CANCER REGISTRY (SEE TABLE 131)						
Region	Total cases with known invasive status	Cases not registered at the cancer registry*		Cases not confirmed to be primary breast cancer**		Total eligible
		No.	%	No.	%	
N East, Yorks & Humber	5038	219	4	233	5	4586
East Midlands	2921	148	5	4	0	2769
East of England	753	96	13	21	3	636
London	794	8	1	20	3	766
South East (East)	3463	123	4	134	4	3206
South East (West)	2859	6	0	52	2	2801
South West	3786	105	3	251	7	3430
West Midlands	3373	0	0	79	2	3294
North West	4567	73	2	107	2	4387
Wales	2708	107	4	18	1	2583
Northern Ireland	938	0	0	0	0	938
United Kingdom	**31200**	**885**	**3**	**919**	**3**	**29396**

*includes cases with unknown diagnosis date at the cancer registry
** flagged as a recurrence, or with cancer registry diagnosis date more than 3 months after screening surgery

8.3 Data Quality and Characteristics of Cases Included in the Analysis

Data completeness has improved markedly in the 6 year study period. The proportion of invasive cancers with unknown size has fallen from 7% in 1992/93 to 2% in 1997/98 and the proportion with unknown grade has decreased from 21% to 5%. In 1992/93, 43% of cancers had unknown nodal status due to a combination of lower rates of axillary surgery and poor data collection. In 1996/97 only 16% of invasive cancers had unknown nodal status. Where size, grade and nodal status data were available, an NPI score could be calculated. The proportion of invasive cancers with unknown NPI score has fallen from 54% in 1992/93 to 20% in 1997/98.

Regional variations in the data completeness of size, grade and nodal status are shown in Tables 134 to 137. Overall, NPI score was unknown for 36% of cases, varying from 9% in Wales to 63% in North West where 54% of cancers had unknown nodal status.

6 YEAR COMPARISON: DATA COMPLETENESS FOR INVASIVE CANCERS (%)							
	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	Total
Unknown size	7	5	3	2	2	2	3
Unknown grade	21	20	14	11	5	5	12
Unknown nodal status	43	40	31	28	20	16	29
Unknown NPI	54	51	40	35	25	20	36

The following table shows that the tumour characteristics of the cases with known data have remained remarkably consistent over the 6 years of the audit, even with the improvement in data completeness. Of the 15,153 invasive cancers with known NPI score, 3,817 (25%) fell in the excellent prognostic group (EPG), 5,055 (33%) in the good prognostic group (GPG), 3,470 (23%) in moderate prognostic group 1 (MPG1), 1,781 (12%) in moderate prognostic group 2 (MPG2) and 1,030 (7%) in the poor prognostic group (PPG).

6 YEAR COMPARISON: SUMMARY PROFILE OF ELIGIBLE INVASIVE CANCERS EXCLUDING UNKNOWN DATA (%)							
	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	Total
	%	%	%	%	%	%	
1-<10 mm	21	23	23	23	24	24	23
10-<20 mm	50	51	52	52	51	50	51
20-<50 mm	27	24	24	24	23	24	24
50+ mm	2	2	1	1	1	2	1
Grade Not Assessable	0	0	0	0	1	1	0
Grade I	35	36	35	35	35	37	36
Grade II	48	47	46	46	46	45	46
Grade III	17	17	19	18	18	17	18
Node Positive	32	31	30	28	30	26	29
Node Negative	68	69	70	72	70	74	71
EPG	24	25	24	25	25	26	25
GPG	30	34	33	33	33	35	33
MPG1	24	21	24	24	23	22	23
MPG2	13	12	12	12	13	10	12
PPG	8	8	7	6	6	6	7

Table 133 shows that the median age of the invasive cancers included in the survival analysis was 58. The summary table below shows that the age profile of women in the survival analysis has remained stable over the 6 year study period.

6 YEAR COMPARISON : AGE PROFILE OF ELIGIBLE INVASIVE CANCERS (%)							
	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	Total
<49	0	0	0	0	0	0	0
49	1	1	2	2	3	2	2
50-52	14	17	19	22	20	23	19
53-55	16	15	14	14	15	14	15
56-58	18	19	18	15	16	15	16
59-61	21	21	20	18	17	17	19
62-64	23	21	20	19	18	16	19
65-67	5	4	4	5	6	6	5
68-70	1	1	1	3	3	3	2
>70	1	1	1	2	3	3	2
Total	100	100	100	100	100	100	100

8.4 Cause of Death

The main advantage of calculating relative rather than cause-specific survival is that knowledge of the cause of death is not required. Cancer registries were asked to supply cause of death for each screen detected cancer with death recorded before the survival analysis cut-off point (31st March 2003) together with text from the death certificate to give the exact cause of death.

Table 139 shows that there were a total of 49 deaths recorded amongst the 617 women with micro-invasive cancer detected by screening. 47% of these were deaths from the screen detected cancer. Of the 330 deaths in women with non-invasive cancer, 110 (33%) were attributed to the tumour detected by screening (Table 140).

Overall, 62% of deaths among women with invasive cancer were recorded as being due to the screen detected breast cancer, 12% due to a cancer other than the screen detected breast cancer and 16% due to non-cancer related causes. Death cause was not collected or unknown for 382 deaths (11%). There were, however, wide regional variations in the proportions of women with invasive cancer recorded as dying from each cause of death. For instance, in East of England only 42% of deaths in women with invasive cancer were attributed to the screen detected breast cancer, compared to 70% in South East (East) and 73% in London (Table 138). Because of these differences, cause specific survival analysis was not performed as it was felt that it was necessary to validate the death cause codes submitted to the survival study against the original death certificate text.

8.5 5 Year Relative Survival Rates For Cancers Diagnosed in 1997/98

Each year, the ABS at BASO Survival Audit collects a new cohort of cancer data in order to provide the latest 5 year survival figure. All Regional QA Reference Centres apart from Scotland were able to provide data for 1997/98. Figure 61 shows the regional variation in 5 year survival compared to the UK figure of 95.8% (95%CI 95.0%-96.5%). Northern Ireland had the lowest relative survival at 91.5% (95%CI 85.1%-97.9%), and South East (East) the highest at 97.4% (95%CI 95.2%-99.6%).

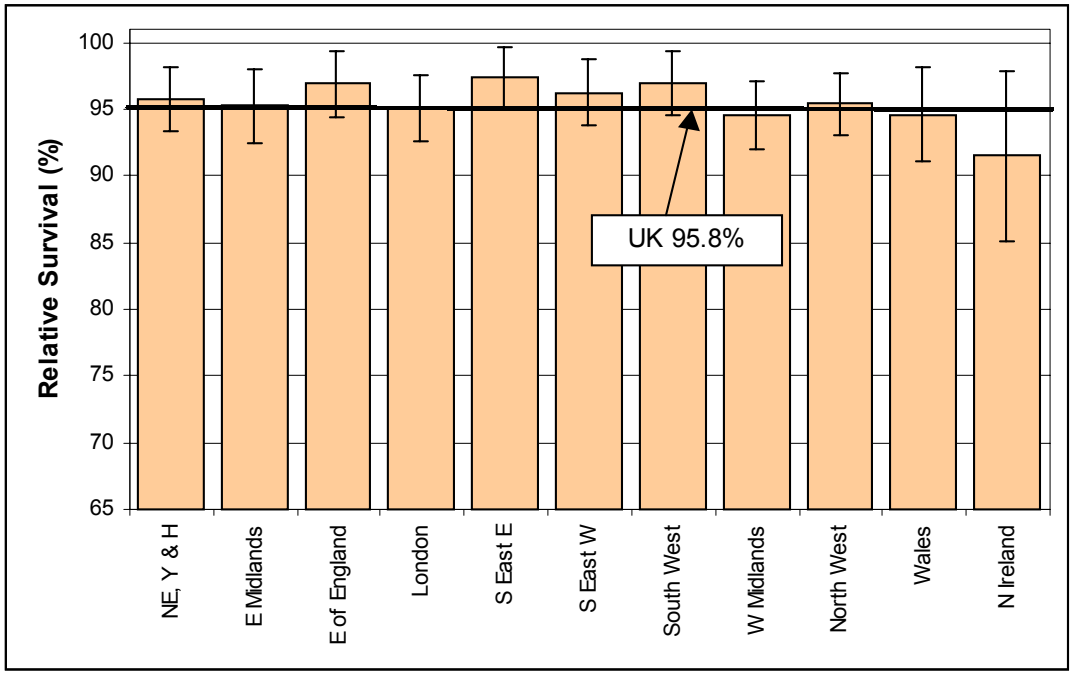

Figure 61 (Table 141) : Variation in 5 year relative survival for women with screen detected invasive breast cancer diagnosed in 1997/98

8.6 5 Year Relative Survival Rates For Cancers Diagnosed in 1992-98

The 5 year survival rate presented in previous years for each region was updated to provide 3 year rolling relative survival rates for each region for the 3 year periods 1992/93-1994/95 to 1995/96-1997/98 (Table 142).

Overall, no significant differences were seen in relative survival rates over the 6 year period studied. 5 year relative survival for invasive cancers was 94.2% (95%CI 93.6%-94.8%) for cases in the first 3 years of the study, and 95.1% (94.6%-95.6%) in the final 3 years. In each 3 year period, women with non-invasive cancer had relative survival rates slightly in excess of 100%, indicating that their chance of survival was no worse than that of the general UK female population.

3 YEAR ROLLING DATA: 5 YEAR RELATIVE SURVIVAL (TABLE 143)				
	1992/93-1994/95	***1993/94-1995/96***	***1994/95-1996/97***	***1995/96-1997/98***
Invasive	*94.2 (93.6,94.8)*	*94.5 (94.0,95.1)*	*94.8 (94.2,95.4)*	*95.1 (94.6,95.6)*
Micro-invasive	*101.6 (99.6,103.5)*	*100.3 (98.0,102.6)*	*99.7 (97.3,102.1)*	*99.6 (97.2,101.9)*
Non-invasive	*100.8 (100.0,101.6)*	*100.7 (99.9,101.4)*	*100.6 (99.9,101.4)*	*100.4 (99.7,101.1)*

8.7 10 Year Relative Survival Rates For Cancers Diagnosed in 1992/93

Women with breast cancer screen detected in 1992/93 had a 10 year relative survival rate of 87.8% (95%CI 86.3%-89.3%). This is the first time that the ABS at BASO Survival Audit has published a 10 year relative survival rate for women with screen detected breast cancer. Regional variations are shown in Figure 62. The regional differences in 10 year survival may reflect different levels of death certificate follow-up at each cancer registry.

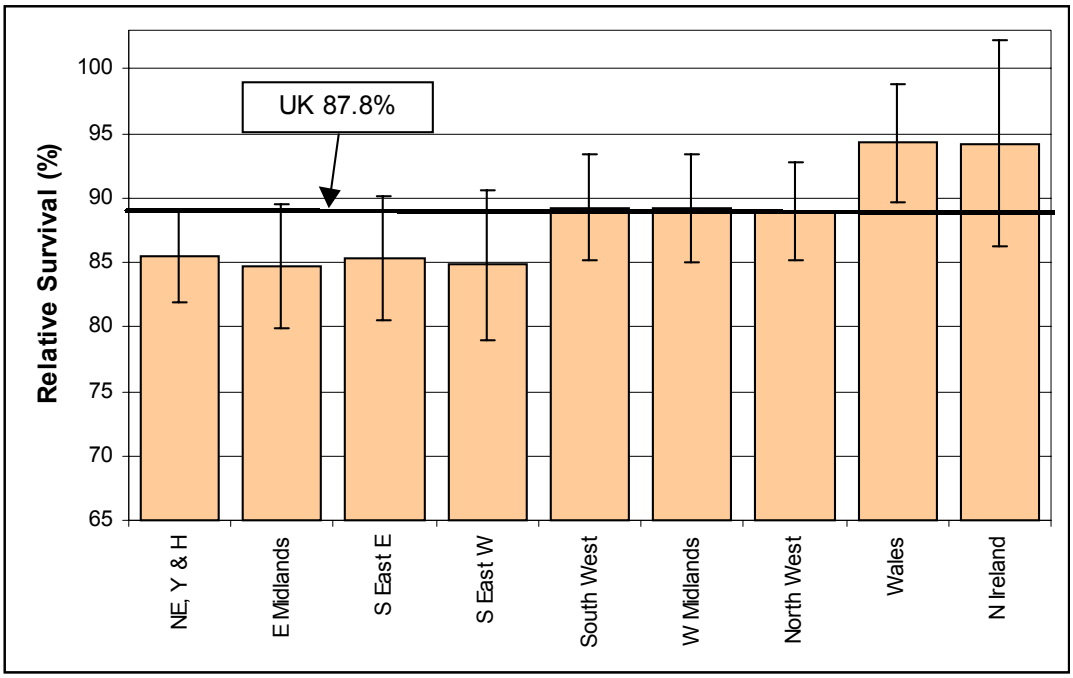

Figure 62 (Table 144) : Variation in 10 year relative survival for women with screen detected invasive breast cancer diagnosed in 1992/93

Figure 63 shows the variation in survival rates for each of the 6 years considered. Relative survival rates are given for the maximum number of years of follow-up post diagnosis. Thus, 10 years of follow-up are available for 1992/93 cases but only 5 years of follow-up for cases detected in 1997/98. Confidence intervals for the data in Figure 63 are given in Table 145. Although 5 year

relative survival has improved over the 6 year study period, this increase is not statistically significant.

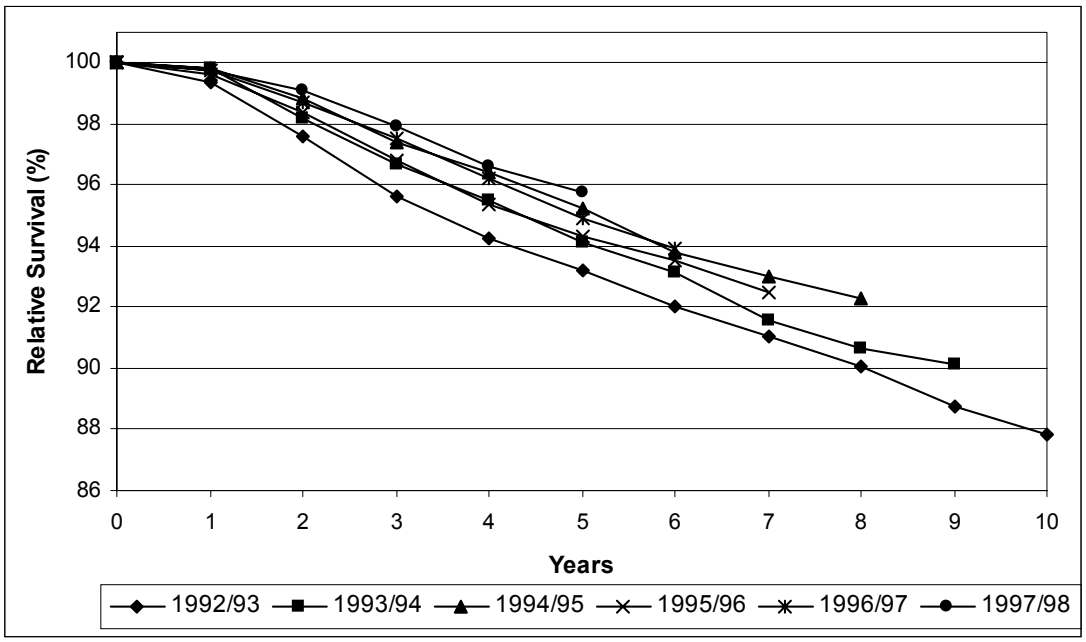

Figure 63 (Table 145) : Variation in relative survival for women with screen detected invasive breast cancer diagnosed in 1992-98

8.8 Relative Survival According to Tumour Characteristics

8.8.1 Relative Survival of Invasive Cancers by Age Group

Table 146 shows the variation in relative survival rates of women with invasive cancer with age at diagnosis. For women in the screening age range, the 5 year relative survival rate for 1995-98 was highest for women in the first two screening rounds at 95.3% (age 50-52 95%CI 94.4%-96.3%, age 53-55 95%CI 94.0%-96.5%). Differences in survival rates with age band were not statistically significant.

8.8.2 Relative Survival of Invasive Cancers by Tumour Size

Table 147 shows how relative survival rates varied with tumour size at diagnosis. The 5 year relative survival rate in 1995-98 for women with <10mm invasive cancers was 98.3% (95% CI 97.4%-99.1%) and for those with 10-<20mm invasive cancers was 96.8% (95% CI 96.1%-97.4%). Relative survival rates were worse for larger cancers but these have improved since 1992. The 5 year relative survival for 50+mm invasive cancers was 78.4% (95% CI 71.6%-85.2%) in 1995-98 compared to 69.1% (95% CI 71.6%-85.2%) in 1992-95.

8.8.3 Relative Survival of Invasive Cancers by Tumour Grade

Table 148 shows how relative survival rates varied with tumour grade at diagnosis. The 5 year relative survival rate in 1995-98 for women with Grade I cancers was 100.2% (95% CI 99.6%-100.8%), suggesting that women with Grade I screen detected cancers have a 5 year survival no worse than that of the general UK female population.

8.8.4 Relative Survival of Invasive Cancers by Nodal Status

Although the number of invasive cancers with unknown nodal status fell from 43% in 1992/93 to 16% in 1997/98, this is still much higher than the 7% with nodal status unknown in the main audit

of cases diagnosed in 2002/03. The ratio of node negative to node positive cancers for those cancers in the survival study with nodal status known was 71:29 (Table 136). This is slightly lower than the 75:25 ratio found in the main 2002/03 audit and is consistent with the interpretation that many of the cancers with unknown nodal status are in fact node negative.

Table 149 shows how relative survival rates varied with nodal status at diagnosis. The 5 year relative survival rate for women with node negative cancers in 1995-98 was 98.0% (95% CI 97.5%-98.6%), compared with only 85.9% (95% CI 84.4%-87.4%) in those with positive nodes.

8.8.5 Relative Survival of Invasive Cancers by NPI Group

Figure 64 shows how relative survival rates varied with NPI score at diagnosis. The 5 year relative survival rate in 1995-98 for cancers in the excellent prognostic group (EPG) was 100.9% (95% CI 100.1%-101.6%), and for cancers in the good prognostic group (GPG) and moderate prognostic group 1 (MPG1) was 98.6% (95% CI 97.8%-99.5%) and 94.0% (95% CI 92.7%-95.3%) respectively. The excellent 5 year relative survival in these good prognostic groups has not changed in the 6 year period studied. However, for women with tumours in the poor prognostic group (PPG) the 5 year relative survival rate has increased from 57.8% (95% CI 52.8%-62.8%) in 1992-95 to 66.7% (95% CI 62.6%-70.8%) in 1995-98. 5 year relative survival has also improved with time for women in moderate prognostic group 2 (MPG2), increasing from 82.6% (95% CI 79.4%-85.8%) in 1992-95 to 86.1% (95% CI 83.6%-88.5%) in 1995-98.

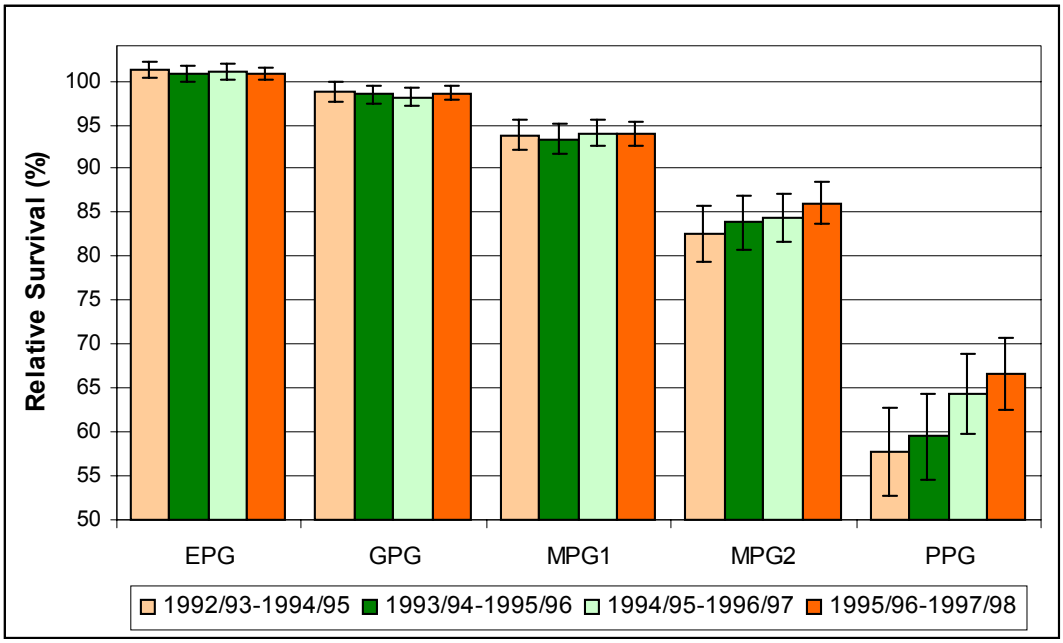

Figure 64 (Table 150) : Variation in 5 year relative survival by NPI for women with screen detected invasive breast cancer diagnosed in 1995/96-1997/98

COMMENT:

- Of the 31,200 cancers with known invasive status submitted to the survival analysis for the period 1st April 1992 and 31st March 1998, 885 (3%) were excluded because they were not registered at the cancer registry. A further 919 cancers (3%) were excluded because the cancer registry could not confirm that the cancer detected by screening was the primary tumour.
- The survival analysis included 29,396 screen detected cancers. Of these, 23,756 were invasive cancers, 617 micro-invasive cancers and 5023 non-invasive cancers.

- Data completeness has improved markedly in the 6 year period studied. The proportion of invasive cancers with unknown size has fallen from 7% in 1992/93 to 2% in 1997/98. The proportion of invasive cancers with unknown NPI score has decreased from 54% in 1992/93 to 20% in 1997/98.
- Cause-specific survival was not performed due to regional differences in the proportion of breast cancer deaths.
- 5 year relative survival for invasive cancers screen detected in 1997/98 was 95.8% (95%CI 95.0%-96.5%).
- 5 year relative survival for invasive cancers screen detected in 1997/98 was highest for small (<10mm diameter), node negative, Grade I cancers.
- 10 year relative survival for invasive cancers screen detected in 1992/93 was 87.8% (95%CI 86.3%-89.3%).
- The 5 year relative survival rate in 1995-98 for tumours in the excellent prognostic group (EPG) was 100.9% (95% CI 100.1%-101.6%), indicating that their chance of survival was no worse than that of the general UK female population.
- For women with tumours in the poor prognostic group (PPG) the 5 year relative survival rate has increased from 57.8% (95% CI 52.8%-62.8%) in 1992-95 to 66.7% (95% CI 62.6%-70.8%) in 1995-98.

APPENDIX 1

ABS AT BASO AUDIT OF SCREEN DETECTED BREAST CANCERS FOR THE YEAR OF SCREENING 1ST APRIL 2002 - 31ST MARCH 2003

REVISED AUDIT TIMETABLE (EXTENDED SURVIVAL DEADLINE)	
Date	**Event**
3 April 03	Audit group meet to plan the 2002/03 audit. Proposed data items emailed to QA Co-ordinators as soon as possible after the meeting.
14 May 03	Survival audit to be discussed at Cancer Registry Directors meeting
23 May 03	Draft audit documents emailed to QA Reference Centres (QARCs) for comment.
28 May 03	Draft audit documents discussed at QA Co-ordinators Meeting.
29 May - 11 Jun 03	QA Co-ordinators to discuss draft audit documents with their QA Surgeon, QA Director and QA Data Managers and return comments to the West Midlands Cancer Intelligence Unit (WMCIU).
13 Jun 03	Audit documents sent to QA Surgeons, QA Directors and QA Co-ordinators. QA Co-ordinators liaise with lead surgeons, data managers and screening office managers on methods used to collect data. Survival and adjuvant audit data collection can begin immediately. Main audit data can be collected as soon as the screening office computer system is ready to provide a KC62 return for 2002/03. *Main audit data collection is not dependent on the version of KC62 to be run nor on the deadline for KC62 submission.*
19 Jun 03	Audit to be discussed at QA Directors meeting
18 Aug 03	Deadline for QARCs to request survival audit data from Cancer Registries.
6-10 Oct 03	All QARCs to ensure that an appropriate member of staff is available to respond to any queries from the WMCIU regarding the survival audit.
1 Oct 03	Audit to be discussed at the ABS at BASO Screening Representatives meeting
5 Dec 03 or earlier	Suggested deadline for main and adjuvant audit data to be provided to QARCs with the signature of the lead breast surgeon to confirm that the data are correct. *An earlier deadline may be set by the QARC due to local issues, eg. new NBSS software.*
5 Dec 03 – 16 Jan 04	QARCs validate audit data and collate into the main and adjuvant spreadsheets provided. QARCs ensure that all cases are coded correctly, that all internal data checks are resolved and that there are no anomalies in the data.
19 Jan 04	**Deadline for receipt of main and adjuvant audit data from QARCs at the WMCIU.**
19-30 Jan 04	All QARCs to ensure that an appropriate member of staff is available to respond to any queries from the WMCIU. The WMCIU liaises with QARCs to ensure data are complete, correct and surgically confirmed. It will not be possible to incorporate new or late data after this stage.
23 Jan 04	**Deadline for Cancer Registries to provide data to the QARCs for the survival audit.**
30 Jan 04	**Deadline for receipt of survival data from QARCs at the WMCIU.**
20 Feb 04	Data tables sent to the Audit Group in advance of the first draft meeting.
26 Feb 04	Audit Group meet to discuss the first draft.
3 Mar 04	Audit booklet first draft to be taken to the ABS at BASO Screening Representatives meeting, and emailed to QA Reference Centres for information. *All draft data should be marked "Not for circulation" to avoid unpublished data getting into the public domain.*
26 Mar 04	Audit booklet final draft sent to the Audit Group to act as scrutinisers/editors and to finalise the possible issues to be raised during the Motorcycle Museum presentation.
19 April 04	Deadline for receipt of the audit booklet at the printers.
19-23 April 04	Advance copies of booklet to be sent to speakers and QARCs for the information of QA Directors, QA Co-ordinators and QA Data Managers. Possible issues to be raised during the Motorcycle Museum presentation to be sent to QA Directors and QA Surgeons.
26 May 04	**2004 ABS at BASO Meeting at the East Midlands Conference Centre, Nottingham**

APPENDIX 2

ABS AT BASO AUDIT OF WOMEN WITH SCREEN DETECTED BREAST CANCER DETECTED BETWEEN 1ST APRIL 2002 AND 31ST MARCH 2003

PLEASE SUPPLY DATA FOR WOMEN OF ALL AGES WITH SCREEN DETECTED BREAST CANCER WITH FIRST OFFERED APPOINTMENT FROM 1ST APRIL 2002 - 31ST MARCH 2003 INCLUSIVE ACCORDING TO THE REGIONAL BOUNDARIES EXTANT FROM 1ST APRIL 2003

This document accompanies the MS Excel spreadsheet designed to record ABS at BASO breast audit main surgical data and screening surgical caseload data which has been prepared by the West Midlands Cancer Intelligence Unit.

It is the responsibility of the QA Co-ordinator to organise collection at unit level, on paper and/or using copies of the spreadsheet. Regional data should then be sent to the West Midlands Cancer Intelligence Unit (WMCIU) on the accompanying spreadsheet for collation of national data. A number of data quality checks have been included in the questionnaire to assist those supplying and collating data. These should be checked before submitting the data. **Please do not delete any rows, columns or tables in the spreadsheet.**

Each unit should be identified with a distinct code such as "Unit 1", "Unit 2" etc. Data will be presented by region and unit (with only the region identified). Each surgeon should be identified by their GMC code in order to audit screening caseload accurately. The unique identifying number known as the "Sx" number is required for data validation and matching purposes.

The deadline for submission of regional data by the regional QA Co-ordinator to the WMCIU is 19th January 2004

****

UNIT:

REGION:

****

SURGICAL CONFIRMATION

I confirm that these data are an accurate record for the above unit

Signed (Lead Surgeon):

Print name:

Date:

DEFINITIONS AND GUIDANCE NOTES

Bilateral and multiple cancers*:* The KC62 report only counts one cancer per woman. Cancers included in the ABS at BASO breast audit should be counted in the same way so that the total number of cancers in the ABS at BASO breast audit equals the total number of cancers counted on the KC62 report for 2002/03. If bilateral or multiple cancers have been detected the KC62 software selects the worst prognosis cancer. If a non-invasive and an invasive tumour have been detected the KC62 report counts the invasive tumour only. The same rules should be applied for this audit. All data for bilateral cases should be taken from the cancer included in the KC62.

Diagnosis on radiological and/or clinical grounds only: Cancers diagnosed with neither C5 nor B5 nor malignant diagnostic open biopsy should not be included this audit. Enter the total number of such cancers in the preliminary data table.

Pre-operative diagnosis for cancers: NHSBSP policy defines non-operative diagnosis as diagnosis by C5 cytology and/or B5 core biopsy only. These cancers appear in KC62 C18 L24. The more familiar term "pre-operative" is retained for this audit rather than "non-operative" even though not all cancers with C5/B5 undergo surgery.

Malignant diagnostic open biopsies: Cancers diagnosed by neither C5 nor B5 will have had a diagnostic open biopsy with outcome of cancer. These cancers appear in KC62 C24 L24, which includes some cancers with operations which were both diagnostic and therapeutic. If the diagnostic open biopsy was treatment, and was the only operation, then the total number of therapeutic operations is zero.

Cytology and Core biopsy: The following codes are used on the NHSBSP pathology reporting forms

Cytology reporting	**Core biopsy reporting**
C1=Unsatisfactory	B1=Unsatisfactory/Normal tissue only
C2=Benign	B2=Benign
C3=Atypia probably benign	B3=Benign but of uncertain malignant potential
C4=Suspicious of malignancy	B4=Suspicious of malignancy
C5=Malignant	B5A=Non-invasive cancer
	B5B=Invasive cancer
	B5C=Cancer of not assessable invasive status

If cytology was carried out please indicate the highest (worst) cytology result in the "worst cytology". If no cytology was carried out enter NONE. If core biopsy was carried out please indicate the highest (worst) core biopsy result in the "worst core biopsy" column. If no core biopsy was carried out enter NONE. If a B5 result was obtained but the malignancy type (B5A, B5B or B5C) is unknown enter B5U in the "worst core biopsy" column

The number of visits to an assessment clinic (excluding results clinics) in order to undergo core biopsy or cytology procedures should be recorded.

Screening surgical caseload: To each cancer in Part A assign the GMC code of the consultant surgeon. Women with no GMC code assigned (e.g. because the woman refused treatment) should be recorded as having no surgery in the surgical caseload audit. If the woman was under the care of more than one consultant surgeon for her diagnostic and therapeutic surgery enter GMC codes for

each of the surgeons in Part A (separated by semicolons) and count the woman in the caseloads for each surgeon in the surgical caseload audit. By assigning a GMC code to each cancer in Part A each consultant surgeon can be credited with their total UK NHSBSP screening caseload.

Reasons for low caseload: An explanation is required for surgeons who have screening caseload <10 in 2002/03. Explanations given at unit level may become redundant when caseloads are collated at regional and then at national level.

First surgery date: The first surgery date given should be the first overall, whether this surgery was diagnostic or therapeutic.

Reconstruction surgery: Surgery which is only for the purpose of reconstruction should be excluded when calculating the date of final surgery. For women undergoing mastectomy, the surgeon should indicate whether there was immediate reconstruction.

Surgery for benign conditions: Surgery for benign conditions should be excluded when calculating the total number of therapeutic operations.

Type of operation/treatment : An operation is a visit to theatre, at which one or more procedures may be carried out. For this audit, code each diagnostic or therapeutic operation (up to a maximum of 5) according to whether conservation surgery or mastectomy was carried out, with or without an axillary procedure. Exclude reconstruction. Conservation surgery can be wide local excision, repeat excision, localisation biopsy etc. If a case had only 2 operations, code the 3rd, 4th and 5th operation as no surgery (NS).

Diagnostic and therapeutic operations : The number of operations will be calculated by the West Midlands Cancer Intelligence Unit. A woman with screen detected breast cancer who did not have a pre-operative diagnosis (C5 or B5) must have had a diagnostic open biopsy to be included in this audit. All other operations (including axillary procedures), are considered to be therapeutic for this audit. If the diagnostic open biopsy was treatment, and was the only operation, then the total number of therapeutic operations is zero.

Nodal Status: Nodal status refers to **axillary lymph nodes only.** The number of nodes obtained at each operation (visit to theatre) is requested. This will be 0 in many cases, even if an axillary procedure is recorded as part of the operation type. Incidental nodes may be obtained at operations where no axillary procedure is recorded. These should be recorded in the nodal columns but all such anomalies should be checked before submission. If a case had only 2 operations, code the nodal columns for the 3rd, 4th and 5th operation as no surgery (NS).

Sentinel node biopsy: In some regions a small number of cancers may have undergone a sentinel node procedure as part of the ALMANAC trial, or another sentinel node trial. For the first, second and third operation, there are separate columns to record the number of nodes according to whether the nodes were obtained as part of a sentinel node procedure or not. A sentinel node procedure endeavours to obtain the sentinel node, however more than 1 node may be obtained.

Lobular carcinoma in situ (LCIS): All women with non-invasive cancer, including those with LCIS, should be included in Part C of the audit. It is accepted that for LCIS the grade, disease extent and size are not assessable.

Micro-invasive cancer : Non-invasive cancer with possible micro-invasion should be included in Part A and Part C of the audit. Cancers which are definitely micro-invasive should only appear in Part A.

DATA CHECKS

References to the new KC62 Table T column and line numbers are given for information.

Check 1 — The total number of cancers should equal KC62 C25 L36 and be equal to the number of invasive cancers (KC62 C35 L36) plus the number of micro-invasive cancers (KC62 C28 L36) plus the number of non-invasive cancers (KC62 C27 L36) plus the number of cancers with invasive status unknown (KC62 C26 L36).

Check 2 — We assume that any cancer with neither B5 nor C5 was diagnosed by malignant diagnostic open biopsy. The number of pre-operative diagnoses (B5 and/or C5) should match KC62 C18 L24. The number of malignant diagnostic open biopsies should match KC62 C24 L24.

Check 3 — If the age at first offered appointment cannot be calculated, #VALUE! will appear. If the age at first offered appointment is negative, the date of diagnosis has been entered as before the date of birth. All such cases should be checked.

Check 4 — If the number of days from assessment to first surgery cannot be calculated, #VALUE! will appear. If the number of days is negative, the first surgery date has been entered as before the date of assessment. All such cases should be checked.

Check 5 — If the number of days from first to final surgery cannot be calculated, #VALUE! will appear. If the number of days is negative, the date of final surgery has been entered as before the date of first surgery. All such cases should be checked. Cases with only 1 surgery (so first surgery equals final surgery) should display 0.

Check 6 — The invasive size of tumour should be less than or equal to the whole size.

Checks 7-16 — Checks are embedded into the spreadsheet to ensure that the following items can be calculated for all cases; pre-operative diagnosis, type of pre-operative procedure, number of operations, number of nodes, number of positive nodes,

nodal status, and size bands. All checks should be examined, in particular nodal status and size bands, to ensure that the spreadsheet is picking up the data correctly.

Caseload Check

In the screening surgical caseload audit, the total number of cancers should equal the total caseload plus the total number of women with no surgery minus the total number of women treated by two surgeons. This formula is different if any woman is treated by more than 2 surgeons.

The regional QA Coordinator must ensure that the data checks are satisfactory, that only valid codes have been entered and that no blanks remain in any tables. Anomalies between columns, especially between operation type and node columns, should be identified and checked prior to submission of the audit to the WMCIU.

Queries

Any queries about the ABS at BASO audit should be directed to:

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Breast Screening QA Research and Information Manager
West Midlands Cancer Intelligence Unit
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The University of Birmingham
Birmingham
B15 2TT

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Fax: 0121 414 7714
Jackie.Walton@wmciu.nhs.uk
qarc@wmciu.nhs.uk

ABS AT BASO BREAST AUDIT 2002/03

PRELIMINARY DATA SHEET

Unit Name	Number of women screened (KC62 C3 L12)	Number of women with radiological/clinical diagnosis only (KC62 C13 L24)	Number benign diagnostic open biopsies (KC62 C22 L24 + KC62 C23 L24)	Unit participating in ALMANAC trial? (Y/N)

PART A1: TO BE COMPLETED FOR ALL CANCERS (KC62 C25 L36)

GMC Code (enter GMC code of the consultant surgeon or NS=No surgery).
If the woman was treated by more than one consultant surgeon enter all GMC codes, separated by semicolons.
Worst cytology (C5, C4, C3, C2, C1 or NONE) Worst core biopsy (B5A, B5B, B5C, B4, B3, B2, B1, NONE)
Type of treatment (C=Conservation surgery, M=Mastectomy, NS=No surgery, U=Unknown)
Immediate Reconstruction - to be completed by the surgeon for mastectomies only. Enter X if type of treatment not M.
Invasive status (I=Invasive, M=Micro-invasive, N=Non-invasive, U=Unknown)

{C} **Sx Number**	*{D}* **Consultant GMC Code**	*{E}* **Date of birth** *(dd/mm/yyyy)*	*{F}* **Date of first offered appt** *(dd/mm/yyyy)*	*{G}* **First assessment date** *(dd/mm/yyyy,U)*	*{H}* **Worst cytology** *(see above)*	*{I}* **Worst core biopsy** *(see above)*	*{J}* **Number of visits for cytology/core biopsy** *(exclude results clinic) (U,0,1,2,.)*	*{K}* **Type of treat-ment** *(C,M,NS,U)*	*{L}* **Immediate recon-struction** *(only for M =Mastectomy) (Y,N,U,X)*	*{M}* **Invasive status** *(I,N,M,U)*

PART A2: TO BE COMPLETED FOR ALL CANCERS (KC62 C25 L36)

For each operation (visit to theatre) - ignoring reconstruction, enter the most appropriate from the following list
(C=Conservation surgery, M=Mastectomy, AX=Axillary procedure, C+AX, M+AX, NS=No surgery, U=Unknown)
Conservation surgery can be wide local excision (WLE), repeat excision, localisation biopsy etc
(eg. a diagnostic open biopsy on one day followed at a later date by a mastectomy where nodes were taken
should be coded 1st=C, 2nd=M+AX, 3rd=NS, 4th=NS, 5th=NS)

{C} **Sx Number**	*{N}* **First surgery date** *(diag or therapeutic)* *(dd/mm/yyyy,NS,U)*	*{O}* **Final surgery date** *(excl reconstruction only)* *(dd/mm/yyyy,NS,U)*	*{P}* **First operation type** *(diag or therapeutic)* *(C,M,AX, C+AX,M+AX, NS,U)*	*{Q}* **Second operation type** *(C,M,AX, C+AX,M+AX, NS,U)*	*{R}* **Third operation type** *(C,M,AX, C+AX,M+AX, NS,U)*	*{S}* **Fourth operation type** *(C,M,AX, C+AX,M+AX, NS,U)*	*{T}* **Fifth operation type** *(C,M,AX, C+AX,M+AX, NS,U)*

PART A3: TO BE COMPLETED FOR ALL CANCERS (KC62 C25 L36)

Coding: NS, U, 0,1,2,…The number of nodes obtained at each operation (visit to theatre) is requested. This will be 0 in many cases, even if an axillary procedure is recorded as part of the operation type. Incidental nodes may be obtained at operations where no axillary procedure is recorded. These should be recorded in the nodal (not sentinel) columns but all such anomalies should be checked before the spreadsheet is submitted.
If a case had only 2 operations, code the nodal columns for the 3rd, 4th and 5th operation as no surgery (NS).

For the first, second and third operation, there are separate columns to record the number of nodes according to whether the nodes were obtained as part of a sentinel node procedure or not. Leave sentinel node columns blank if the screening unit does not undertake sentinel node procedures. If a case had a sentinel procedure at the 2nd operation that obtained 2 nodes, put 0 in the 2nd op (if not sentinel) columns.

	1st operation (diagnostic or therapeutic)				**2nd operation**				**3rd operation**				**4th & 5th operations**	
	Not sentinel procedure		**Sentinel procedure**		**Not sentinel procedure**		**Sentinel procedure**		**Not sentinel procedure**		**Sentinel procedure**		**All procedures**	
{C} **Sx Number**	*{U}* **Total nodes obtained** *(NS,U, 0,1,2,..)*	*{V}* **Number nodes positive** *(NS,U, 0,1,2,..)*	*{W}* **Total nodes obtained** *(NS,U, 0,1,2,..)*	*{X}* **Number nodes positive** *(NS,U, 0,1,2,..)*	*{Y}* **Total nodes obtained** *(NS,U, 0,1,2,..)*	*{Z}* **Number nodes positive** *(NS,U, 0,1,2,..)*	*{AA}* **Total nodes obtained** *(NS,U, 0,1,2,..)*	*{AB}* **Number nodes positive** *(NS,U, 0,1,2,..)*	*{AC}* **Total nodes obtained** *(NS,U, 0,1,2,..)*	*{AD}* **Number nodes positive** *(NS,U, 0,1,2,..)*	*{AE}* **Total nodes obtained** *(NS,U, 0,1,2,..)*	*{AF}* **Number nodes positive** *(NS,U, 0,1,2,..)*	*{AG}* **Total nodes obtained** *(NS,U, 0,1,2,..)*	*{AH}* **Number nodes positive** *(NS,U, 0,1,2,..)*

PART B: TO BE COMPLETED FOR INVASIVE CANCERS ONLY (KC62 C35 L36)

Invasive size (enter size in millimetres, U = Unknown)
Whole size (enter size in millimetres, U = Unknown). Whole size includes any surrounding DCIS.
Invasive grade (I, II, III, NA=Not assessable, U=Unknown)

{C} **Sx Number**	*{AK}* **Invasive size of tumour**	*{AL}* **Whole size of tumour** *(including surrounding DCIS)*	*{AM}* **Invasive grade** (I,II,III, NA, U)

PART C: TO BE COMPLETED FOR NON-INVASIVE CANCERS ONLY (KC62 C27 L36)

Grade (H = High grade, O = Other grade, NA = Not assessable, U = Unknown)
Disease extent (L = Localised, M = Multiple, NA = Not assessable, U = Unknown)
Pathological size (enter size in millimetres, NA = Not assessable, U = Unknown)

{C} **Sx Number**	*{AP}* **Grade** (H,O,NA,U)	*{AQ}* **Disease extent** (L,M,NA,U)	*{AR}* **Pathological size** (size (mm), NA,U)

SCREENING SURGICAL CASELOAD AUDIT

Please fill in Part A first.

Screening surgical caseload should be calculated by summing the number of times each GMC code appears in Part A.
Cases with no surgery (NS) should appear on the top line.
Cases treated by more than one surgeon should be counted in each surgeon's caseload. The number of such cases is needed for the Caseload Check.

GMC Code	**Screening caseload (from Part A)**	**If caseload <10 was this because............ (write Y in the first applicable reason)**								
		Other caseload > 30 per year	**Joined NHSBSP 2002/03**	**Left NHSBSP 2002/03**	**Surgeon operated on patient request**	**Surgeon is a plastic surgeon**	**Surgeon operated in private practice**	**Not screening in area 2002/03**	**No information available for surgeon**	**Other reason (text)**
NS										

APPENDIX 3

ABS AT AUDIT FOR WOMEN WITH SCREEN DETECTED BREAST CANCER BASO ADJUVANT DETECTED BETWEEN 1ST APRIL 2001 AND 31ST MARCH 2002

PLEASE SUPPLY DATA FOR WOMEN OF ALL AGES WITH SCREEN DETECTED BREAST CANCER WITH FIRST OFFERED APPOINTMENT FROM 1ST APRIL 2001 TO 31ST MARCH 2002 INCLUSIVE ACCORDING TO THE REGIONAL BOUNDARIES EXTANT FROM 1ST APRIL 2003

This document accompanies the MS Excel spreadsheet designed to record BASO breast audit adjuvant therapy data which has been prepared by the West Midlands Cancer Intelligence Unit (WMCIU). The spreadsheet contains data validation checks.

The BASO breast audit group expects the consultant surgeon to collect adjuvant therapy data for the list of cases supplied by the screening office or regional QA Reference Centre. The QA Co-ordinator will organise collation of these data. A box is provided for the signature of the surgeons to verify that these data are correct.

Data will be presented by region and unit (with only the region identified). The unique identifying number known as the "Sx" number is required for data validation and matching purposes. **Names, dates of birth and other identifiable data should not be sent by the QA Co-ordinator to the WMCIU**.

The deadline for submission of regional data by the regional QA Co-ordinator to the WMCIU is 19th January 2004

DEFINITIONS AND GUIDANCE NOTES

Audit cut-off date: If a woman has not received radiotherapy or chemotherapy or hormonal therapy before 31st March 2003 then it should be assumed for the purposes of this audit that she has not had this treatment. This cut off date allows at least 1 year follow up for all cases.

Bilateral and multiple cancers*:* The KC62 report only counts one cancer per woman. Cancers included in the BASO breast audit should be counted in the same way so that the number of cancers in the BASO breast audit equals the number counted on the KC62 report. If bilateral or multiple cancers have been detected the KC62 selects the worst prognosis cancer. If a non-invasive and an invasive tumour have been detected the KC62 report counts the invasive tumour only. The same rules should be applied for this audit.

Diagnosis on radiological and/or clinical grounds only: Cancers diagnosed with neither C5 nor B5 nor malignant diagnostic open biopsy should not be included in this audit.

First surgery date: The first surgery date given should be the first overall, whether this surgery was diagnostic or therapeutic.

Reconstruction surgery: Surgery which is only for the purpose of reconstruction should be excluded when calculating the date of final surgery.

Surgery for benign conditions: Surgery for benign conditions should be excluded when calculating the dates of first and final surgery.

MATCHING TO TUMOUR DATA

The adjuvant data collected in this audit will be matched by the WMCIU to previously collected tumour data. In order to do this, the WMCIU must be advised of any changes in the region or anonymous unit code assigned to each screening unit's cases.

DATA CHECKS

The following checks are included in the Excel spreadsheet

Checks 1-4 (Assessment to Treatment)	If the number of days from assessment to treatment (surgery, RT, CT, HT) cannot be calculated, #VALUE! will appear. If the number of days is negative, the date of treatment has been entered as before the date of assessment. All such cases should be checked.
Check 5 (First surgery to final surgery)	If the number of days from first to final surgery cannot be calculated, #VALUE! will appear. If the number of days is negative, the date of final surgery has been entered as before the date of first surgery. All such cases should be checked. Cases with only 1 surgery (so first surgery equals final surgery) should display 0.
Data check Summary	Minima, maxima, average and quartiles of the number of days in each data check are provided in the spreadsheet.

Queries

Any queries about the adjuvant audit should be directed to:

Dr Jackie Walton
Breast Screening QA Research and Information Manager
West Midlands Cancer Intelligence Unit
Public Health Building
The University of Birmingham
Birmingham
B15 2TT

Tel: 0121 414 7713
Fax: 0121 414 7714
Jackie.Walton@wmciu.nhs.uk
qarc@wmciu.nhs.uk

BASO ADJUVANT THERAPY AUDIT - TO BE COMPLETED FOR ALL CANCERS WITH DATE OF FIRST OFFERED APPOINTMENT FROM 1ST APRIL 2001 TO 31ST MARCH 2002 INCLUSIVE

Enter dates in dd/mm/yyyy format (e.g. 01/04/2001) or U=Unknown, NS=No surgery, NRT=No radiotherapy, NCT=No chemotherapy, NHT=No hormonal therapy
ER Status, PgR Status, Cerb-B2/HER-2 (P = Positive, N = Negative, U = Unknown) to be completed according to local definitions

{C} **Sx Number**	*{D}* **Date of first offered appointment** (dd/mm/yyyy)	*{E}* **First assessment date** (dd/mm/yyyy,U)	*{F}* **First surgery date** *(diagnostic or therapeutic)* (dd/mm/yyyy,NS,U)	*{G}* **Final surgery date** *(excl reconstruction only)* (dd/mm/yyyy,NS,U)

UNIT:

ADJUVANT THERAPY AUDIT - TO BE COMPLETED FOR ALL CANCERS WITH DATE OF FIRST OFFERED APPOINTMENT FROM 1ST APRIL 2001 TO 31ST MARCH 2002 INCLUSIVE

Enter dates in dd/mm/yyyy format (e.g. 01/10/2000) or U=Unknown, NS=No surgery, NRT=No radiotherapy, NCT=No chemotherapy, NHT=No hormonal therapy
ER Status (P = Positive, N = Negative, U = Unknown, "Not Done") to be completed according to local definitions

	To aid data collection by the consultant surgeon. Do not send to WMCIU.					*See above for coding – to be completed according to local definitions*					
{C} **Sx Number**	*{H}* **Surgeon**	*{I}* **Name**	*{J}* **NHS Number**	*{K}* **Hospital Number**	*{L}* **Date of birth**	*{M}* **RT start date**	*{N}* **CT start date**	*{O}* **HT start date (eg. Tamoxifen)**	*{P}* **ER Status**	*{Q}* **PgR Status**	*{R}* **Cerb-B2/ HER-2**

I confirm the data above are correct and as complete as possible	**Signature (Surgeon):** **Print Name:** **Date:**

APPENDIX 4

ABS AT BASO SURVIVAL AUDIT FOR WOMEN WITH SCREEN DETECTED BREAST CANCER DETECTED BETWEEN 1ST APRIL 1992 AND 31ST MARCH 1998

Aim: To combine NHS Breast Screening Programme (NHSBSP) data for women with breast cancer detected by screening between 1st April 1992 – 31st March 1998 with data recorded by regional cancer registries to enable analysis of breast cancer survival for a period of up to 10 years post-diagnosis. Where tumour size, grade and nodal status are available the survival profiles according to prognostic characteristics will be examined. The audit will continue to demonstrate effective information exchange between the NHSBSP and regional cancer registries.

Study population: All women with breast cancer detected at screening with a date of first offered appointment between 1st April 1992 and 31st March 1998 should be included in the audit.

Core patient and tumour data for women detected at screening with a date of first offered appointment between 1st April 1997 and 31st March 1998 should be extracted from screening service computer systems and matched with records held by regional cancer registries. Screen detected cancers matched to recurrences at the cancer registry should be included in the audit, but flagged by the cancer registry so that they can be excluded from the survival analysis.

Data for cancers detected on screening between 1st April 1992 and 31st March 1997 have previously been collected from screening offices and matched to the cancer registry records. Lists of cases submitted in previous years should be checked to confirm that they accurately reflect past screening activity. Women may have been excluded in the past because they were under 45 or over 75 at diagnosis or because the cancer was not histologically verified or not registered as a primary tumour at the cancer registry. Duplicate cases may now be evident.

Cancer registries should identify deaths in women with breast cancer detected on screening between 1st April 1992 and 31st March 1998 prior to the end of study censor date of 31st March 2003. Each cancer registry should confirm that death data are complete to 31st March 2003, or provide an alternative date to which survival can be calculated.

Data collection: Two MS Excel spreadsheets have been designed by the West Midlands Cancer Intelligence Unit to record survival audit data. Copies of these spreadsheets have been provided to each Breast Screening Quality Assurance Reference Centre. QA Reference Centres should liaise with Cancer Registries to complete the survival audit spreadsheets:

- a spreadsheet to record data from screening offices and cancer registries for women with breast cancer detected on screening between 1st April 1997 and 31st March 1998 (SURVIVAL A.xls).
- a spreadsheet to update data from cancer registries for women with breast cancer detected on screening between 1st April 1992 and 31st March 1997 (SURVIVAL B.xls).

Lists of cases submitted in previous years are provided in spreadsheet SURVIVAL C.xls. Corrections to screening data can be submitted to the WMCIU if necessary. This could be in the same format as spreadsheet C or in another format, subject to the following rules.

- All corrections to previously submitted cases must be accompanied by the unique "SurvivalID" assigned by the WMCIU.
- The spreadsheet recording updated cancer registry data (Spreadsheet B) should include new and corrected cases.
- Cases for which corrections are not necessary should not be included in the list of corrections.

A paper representation of the format used in the spreadsheets is provided and may be used as the basis for a data collection form. Co-writer reports designed by Mrs Margot Wheaton may be used to collect data from screening offices that use the NBSS computer system.

The completed spreadsheets should be submitted by the Breast Screening QA Reference Centre to the WMCIU by 26th September 2003.

DATA TO BE COLLECTED FROM SCREENING SERVICES AND COLLATED BY BREAST SCREENING QUALITY ASSURANCE REFERENCE CENTRES

For cases screen detected in 1997/98 the following data should be extracted from breast screening computer systems:

- Forename — for use within region only
- Surname — for use within region only
- NHS number — for use within region only
- Address — for use within region only
- Postcode — for use within region only
- Date of birth — (dd/mm/yyyy) necessary for age calculations
- Sx No. (Screening Office Number) — for checking data and matching queries
- Date of first surgery — (dd/mm/yyyy, NS, U) a proxy for date of diagnosis, and to help match cases at the cancer registry.
- Invasive status — Invasive/Micro-Invasive/Non-Invasive/Unknown

For invasive cancers only (enter X if the case is not invasive):

- Tumour size — invasive size in mm, 'U' for unknown
- Tumour grade — Bloom & Richardson I, II, III, NA or 'U' for unknown
- Total number of lymph nodes — total number, 0 if no nodes obtained, 'U' if unknown *(new data item for 1997/98 cases)*
- Number of positive lymph nodes — total number, 0 if node negative, 'U' if unknown

The region, screening unit and cancer registry should be added to each case.

DATA TO BE COLLECTED FROM REGIONAL CANCER REGISTRIES

Regional cancer registries will be asked by the Breast Screening QA Reference Centres to match screen detected breast tumours detected by screening in 1997/98 with data held on the cancer registration systems using name, NHS number, address, postcode, date of birth, and date of first surgery (as a proxy for date of diagnosis). Regional cancer registries will also be asked to update data previously submitted for 1992-97 cases. Overall responsibility for regional data collection remains with the QA Co-ordinator.

All requests for data should be submitted to the Cancer Registry by 18th August 2003.

The following data items are required from the cancer registry for all breast tumours screen detected between 1st April 1992 and 31st March 1998.

- Registration number — the unique registration number should be added. **For cases not registered indicate NR in the appropriate column. For cases matched to recurrences enter the primary tumour registration number and indicate R in the appropriate column.**
- Date of diagnosis — dd/mm/yyyy (leave blank if unknown)
- Date of death — dd/mm/yyyy (leave blank if no death)
- ICDM code — morphology code e.g. 85003
- Cause of death code — B= breast cancer,
  C = other cancer (ie. other than the screen detected tumour),
  N= non-cancer,
  U = unknown,
  X = Information not collected at cancer registry
  (leave blank if no death)
- Cause of death text — for all deaths the actual cause of death should be entered e.g. for a

woman who died from pneumonia due to lung cancer (code 'C') the cause text should read 'lung'. For a woman who died from breast cancer metastases (code 'B') the text should read 'breast'.

The censor date for the audit has been set at **31st March 2003**. The cancer registry should confirm to the QA Reference Centre that death data are complete to 31st March 2003, or provide an alternative date to which survival time can be calculated.

Cancer Registries should return these data to the appropriate QA Reference Centre by 19th September 2003.

DATA VALIDATION

A number of data checks have been incorporated into the spreadsheet.

Check 1 (Age at Diagnosis)	If the age at diagnosis cannot be calculated, #VALUE! will appear. If the age at diagnosis is negative, the date of diagnosis has been entered as before the date of birth. All such cases should be checked.
Check 2 (Invasive Status)	If an invasive status has not been entered a prompt will appear in this column.
Check 3 (Survival Status)	The survival status is whether the woman was alive or dead at the end of the audit period. If the survival status cannot be calculated, #VALUE! will appear. All such cases should be checked.
Check 4 (Survival Time)	The survival time is the number of complete years from diagnosis to death or the end of the study period, whichever is earlier. If the survival time cannot be calculated, #VALUE! will appear. If the survival time is negative, the date of death has been entered as before the date of diagnosis. All such cases should be checked.
Check 5 (Nodal Status)	The nodal status is unknown if no axillary lymph nodes were obtained, or if it is unknown whether nodes were obtained. If the number of positive nodes is unknown, or greater than the number of nodes obtained, a check will appear. All such cases should be checked.

QUERIES

Any queries about the survival audit should be directed to:

Dr Jackie Walton
Breast Screening QA Research and Information Manager
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Public Health Building
The University of Birmingham
Birmingham
B15 2TT

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Jackie.Walton@wmciu.nhs.uk
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SURVIVAL AUDIT: SCREENING OFFICE DATA FOR CASES DETECTED IN 1997/98 (SURVIVAL A.xls)

Region:
Screening Unit:
Cancer Registry:

Date of first surgery (dd/mm/yyyy, NS = No surgery, U = Unknown)
Invasive status (I = Invasive, M = Micro-invasive, N = Non-invasive, U = Unknown)
Tumour grade – Bloom & Richardson (I, II, III, NA = Not assessable or U = Unknown. Enter X if not invasive)
Total number of axillary nodes obtained (total number, zero if no nodes obtained, U = Unknown. Enter X if not invasive)
Number of positive axillary nodes (number positive, zero if node negative, U = Unknown. Enter X if not invasive)
DO NOT SEND DATA IN SHADED COLUMNS TO THE WMCIU

{C}	{D}	{E}	{F}	{G}	{H}	{I}	{J}	{K}	{L}	{M}	{N}	**Invasive Tumours only**			
Sx No.	**Fore name**	**Sur-Name**	**NHS Number**	**Address Line1**	**Address Line2**	**Address Line3**	**Address Line4**	**Post code**	**Date of birth** dd/mm/yyyy	**Date of first surgery** (dd/mm/yyyy, NS, U)	**Invasive Status** (I,N,M,U)	{O} **Invasive Size** (size (mm), U,X)	{P} **Tumour grade** (I,II,III, NA,U,X)	{Q} **Total nodes obtained** (0, 1, 2, ..,U,X)	{R} **Number positive nodes** (0, 1, 2, ..,U,X)

SURVIVAL AUDIT: CANCER REGISTRY DATA FOR CASES DETECTED IN 1997/98 (SURVIVAL A.xls)

(The spreadsheet to record updated cancer registry data for cases detected in 1992-97 (SURVIVAL B.xls) contains the same data items as this table, with the addition of SurvivalID, the unique number assigned to each case by the WMCIU.)

Region:
Screening Unit:
Cancer Registry: **Data complete to : 31/03/2003 (amend if necessary)**

Cause of death code (B = Breast cancer, C = Other cancer (ie. other than the screen detected tumour), N = Non-cancer, U = Unknown, X = Not collected at cancer registry) e.g. a woman who died from lung cancer should be coded as 'C', a woman who died from breast cancer should be coded as 'B'.
Cause of death text - for all deaths, the actual cause of death should be entered e.g. for a woman who died from pneumonia due to lung cancer (code 'C') the cause text should read 'lung'. For a woman who died from breast cancer metastases (code 'B') the text should read 'breast'.

{C} **Sx No. (Screening Office Number)**	{T} **Cancer Registration Number**	{U} **Not Registered** (NR)	{V} **Recurrence** (R)	{W} **Date of diagnosis** dd/mm/yyyy	{X} **Date of death** dd/mm/yyyy	{Y} **ICDM code (morphology)**	{Z} **Cause of death code** (B, C, N, U, X)	{AA} **Cause of death text**

APPENDIX 5

DATA FROM THE 2002/03 AUDIT OF SCREEN DETECTED BREAST CANCERS IN WOMEN ALL AGES FOR THE PERIOD 1ST APRIL 2002 – 31ST MARCH 2003

Table 1 : Number and invasive status of screen detected breast cancers and total women screened

Region	Invasive		Micro-invasive		Non-invasive		Status unknown		Total		Total women screened	Non-invasive cancer rate	Invasive cancer rate
	No	%	No	%	No	%	No	%	No	%			
N East, Yorks & Humber	1134	78	13	1	306	21	4	0	1457	100	202366	1.6	5.6
East Midlands	720	77	17	2	192	21	1	0	930	100	123655	1.7	5.8
East of England	954	77	4	0	262	21	25	2	1245	100	163415	1.6	5.8
London	862	76	14	1	260	23	3	0	1139	100	155277	1.8	5.6
South East (East)	652	76	11	1	196	23	4	0	863	100	122588	1.7	5.3
South East (West)	596	81	7	1	135	18	0	0	738	100	110014	1.3	5.4
South West	849	81	3	0	198	19	3	0	1053	100	130823	1.5	6.5
West Midlands	811	78	11	1	210	20	2	0	1034	100	149252	1.5	5.4
North West	1141	81	16	1	244	17	2	0	1403	100	190004	1.4	6.0
Wales	532	81	8	1	120	18	0	0	660	100	78354	1.6	6.8
Northern Ireland	163	75	3	1	49	23	1	0	216	100	31705	1.6	5.1
Scotland	672	79	7	1	176	21	0	0	855	100	124816	1.5	5.4
United Kingdom	**9086**	**78**	**114**	**1**	**2348**	**20**	**45**	**0**	**11593**	**100**	**1582269**	**1.6**	**5.7**

Table 2 : Age at screening appointment

Region	<50		50-64		65-70		>70		Total
	No	%	No	%	No	%	No	%	
N East, Yorks & Humber	31	2	1189	82	183	13	54	4	1457
East Midlands	15	2	737	79	145	16	33	4	930
East of England	8	1	1001	80	171	14	65	5	1245
London	22	2	937	82	128	11	52	5	1139
South East (East)	19	2	694	80	115	13	35	4	863
South East (West)	16	2	604	82	73	10	45	6	738
South West	13	1	835	79	140	13	65	6	1053
West Midlands	27	3	812	79	171	17	24	2	1034
North West	37	3	1099	78	217	15	50	4	1403
Wales	11	2	522	79	79	12	48	7	660
Northern Ireland	4	2	197	91	12	6	3	1	216
Scotland	1	0	716	84	97	11	41	5	855
United Kingdom	**204**	**2**	**9343**	**81**	**1531**	**13**	**515**	**4**	**11593**

Table 3 : Cancers diagnosed on radiological/clinical grounds only

Region	Total cancers including radiological/clinical cancers	Cancers diagnosed on radiological/clinical grounds only	
		No	%
N East, Yorks & Humber	1457	0	0.00
East Midlands	930	0	0.00
East of England	1246	1	0.08
London	1142	3	0.26
South East (East)	863	0	0.00
South East (West)	739	1	0.14
South West	1055	2	0.19
West Midlands	1036	2	0.19
North West	1403	0	0.00
Wales	661	1	0.15
Northern Ireland	216	0	0.00
Scotland	855	0	0.00
United Kingdom	**11603**	**10**	**0.09**

Table 4 : Pre-operative diagnosis rate									
Region	Total cancers	C5 only		C5 & B5		B5 only		Pre-operative diagnosis rate	
		No	%	No	%	No	%	No	%
N East, Yorks & Humber	1457	214	15	128	9	997	68	1339	92
East Midlands	930	96	10	21	2	758	82	875	94
East of England	1245	143	11	150	12	846	68	1139	91
London	1139	59	5	62	5	910	80	1031	91
South East (East)	863	102	12	50	6	627	73	779	90
South East (West)	738	92	12	21	3	550	75	663	90
South West	1053	50	5	20	2	897	85	967	92
West Midlands	1034	80	8	33	3	835	81	948	92
North West	1403	221	16	41	3	991	71	1253	89
Wales	660	10	2	22	3	578	88	610	92
Northern Ireland	216	65	30	44	20	83	38	192	89
Scotland	855	73	9	336	39	370	43	779	91
United Kingdom	**11593**	**1205**	**10**	**928**	**8**	**8442**	**73**	**10575**	**91**

Table 5 : Pre-operative diagnosis rate (invasive cancers)									
Region	Total cancers	C5 only		C5 & B5		B5 only		Pre-operative diagnosis rate	
		No	%	No	%	No	%	No	%
N East, Yorks & Humber	1134	193	17	105	9	788	69	1086	96
East Midlands	720	94	13	19	3	584	81	697	97
East of England	954	133	14	130	14	638	67	901	94
London	862	49	6	56	6	709	82	814	94
South East (East)	652	96	15	46	7	484	74	626	96
South East (West)	596	91	15	20	3	442	74	553	93
South West	849	46	5	20	2	746	88	812	96
West Midlands	811	72	9	30	4	676	83	778	96
North West	1141	214	19	38	3	808	71	1060	93
Wales	532	8	2	22	4	480	90	510	96
Northern Ireland	163	62	38	38	23	55	34	155	95
Scotland	672	68	10	296	44	285	42	649	97
United Kingdom	**9086**	**1126**	**12**	**820**	**9**	**6695**	**74**	**8641**	**95**

Table 6 : Pre-operative diagnosis rate (non-invasive cancers)									
Region	Total cancers	C5 only		C5 & B5		B5 only		Pre-operative diagnosis rate	
		No	%	No	%	No	%	No	%
N East, Yorks & Humber	306	18	6	22	7	196	64	236	77
East Midlands	192	2	1	2	1	156	81	160	83
East of England	262	7	3	17	6	188	72	212	81
London	260	8	3	6	2	188	72	202	78
South East (East)	196	3	2	3	2	135	69	141	72
South East (West)	135	1	1	1	1	101	75	103	76
South West	198	3	2	0	0	147	74	150	76
West Midlands	210	6	3	2	1	150	71	158	75
North West	244	6	2	2	1	169	69	177	73
Wales	120	2	2	0	0	90	75	92	77
Northern Ireland	49	3	6	5	10	25	51	33	67
Scotland	176	5	3	38	22	81	46	124	70
United Kingdom	**2348**	**64**	**3**	**98**	**4**	**1626**	**69**	**1788**	**76**

Table 7 : Invasive status of the diagnostic core biopsy									
Region	Total	B5a (Non-invasive)		B5b (Invasive)		B5c (Not assessable)		Unknown	
		No	%	No	%	No	%	No	%
N East, Yorks & Humber	1125	285	25	828	74	0	0	12	1
East Midlands	779	202	26	576	74	1	0	0	0
East of England	996	239	24	679	68	3	0	75	8
London	972	250	26	699	72	9	1	14	1
South East (East)	677	181	27	493	73	0	0	3	0
South East (West)	571	144	25	420	74	6	1	1	0
South West	917	215	23	698	76	0	0	4	0
West Midlands	868	209	24	659	76	0	0	0	0
North West	1032	225	22	783	76	2	0	22	2
Wales	600	138	23	460	77	2	0	0	0
Northern Ireland	127	45	35	75	59	0	0	7	6
Scotland	706	141	20	551	78	0	0	14	2
United Kingdom	**9370**	**2274**	**24**	**6921**	**74**	**23**	**0**	**152**	**2**

Table 8 : B5a (Non-invasive) core biopsy: histological invasive status after surgery											
Region	Invasive		Micro-invasive		Non-invasive		No surgery		Unknown status		Total	
	No	%	No	%	No	%	No	%	No	%	No	%
N East, Yorks & Humber	69	24	12	4	201	71	3	1	0	0	285	100
East Midlands	32	16	14	7	154	76	2	1	0	0	202	100
East of England	45	19	1	0	180	75	4	2	9	4	239	100
London	67	27	10	4	167	67	6	2	0	0	250	100
South East (East)	37	20	7	4	132	73	5	3	0	0	181	100
South East (West)	36	25	7	5	100	69	1	1	0	0	144	100
South West	67	31	2	1	144	67	2	1	0	0	215	100
West Midlands	50	24	9	4	148	71	2	1	0	0	209	100
North West	58	26	13	6	151	67	2	1	1	0	225	100
Wales	45	33	6	4	85	62	2	1	0	0	138	100
Northern Ireland	17	38	2	4	26	58	0	0	0	0	45	100
Scotland	25	18	4	3	112	79	0	0	0	0	141	100
United Kingdom	**548**	**24**	**87**	**4**	**1600**	**70**	**29**	**1**	**10**	**0**	**2274**	**100**

Table 9 : B5b (Invasive) core biopsy: histological invasive status after surgery											
Region	Invasive		Micro-invasive		Non-invasive		No surgery		Unknown status		Total	
	No	%	No	%	No	%	No	%	No	%	No	%
N East, Yorks & Humber	802	97	0	0	8	1	17	2	1	0	828	100
East Midlands	557	97	3	1	2	0	14	2	0	0	576	100
East of England	656	97	1	0	6	1	13	2	3	0	679	100
London	666	95	0	0	17	2	16	2	0	0	699	100
South East (East)	485	98	0	0	2	0	6	1	0	0	493	100
South East (West)	418	100	0	0	0	0	2	0	0	0	420	100
South West	690	99	0	0	1	0	7	1	0	0	698	100
West Midlands	651	99	1	0	2	0	5	1	0	0	659	100
North West	758	97	0	0	13	2	11	1	1	0	783	100
Wales	451	98	2	0	3	1	4	1	0	0	460	100
Northern Ireland	71	95	0	0	4	5	0	0	0	0	75	100
Scotland	538	98	1	0	3	1	9	2	0	0	551	100
United Kingdom	**6743**	**97**	**8**	**0**	**61**	**1**	**104**	**2**	**5**	**0**	**6921**	**100**

Table 10 : Invasive status of cancers diagnosed by C5 only									
Region	Total	Invasive		Micro-invasive		Non-invasive		Status unknown	
		No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	214	193	90	1	0	18	8	2	1
East Midlands	96	94	98	0	0	2	2	0	0
East of England	143	133	93	0	0	7	5	3	2
London	59	49	83	2	3	8	14	0	0
South East (East)	102	96	94	1	1	3	3	2	2
South East (West)	92	91	99	0	0	1	1	0	0
South West	50	46	92	0	0	3	6	1	2
West Midlands	80	72	90	0	0	6	8	2	3
North West	221	214	97	1	0	6	3	0	0
Wales	10	8	80	0	0	2	20	0	0
Northern Ireland	65	62	95	0	0	3	5	0	0
Scotland	73	68	93	0	0	5	7	0	0
United Kingdom	**1205**	**1126**	**93**	**5**	**0**	**64**	**5**	**10**	**1**

Table 11 : Number of visits for cytology/core biopsy for all cancers														
Region	0		1		2		3+		Unknown		Total		Repeat (2+) visit for core/cyt	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	1	0	1290	89	162	11	4	0	0	0	1457	100	166	11
East Midlands	5	1	815	88	103	11	7	1	0	0	930	100	110	12
East of England	1	0	683	55	138	11	14	1	409	33	1245	100	152	12
London	0	0	1035	91	97	9	7	1	0	0	1139	100	104	9
South East (East)	0	0	683	79	162	19	18	2	0	0	863	100	180	21
South East (West)	7	1	631	86	91	12	9	1	0	0	738	100	100	14
South West	5	0	888	84	150	14	9	1	1	0	1053	100	159	15
West Midlands	6	1	929	90	95	9	4	0	0	0	1034	100	99	10
North West	6	0	1192	85	199	14	5	0	1	0	1403	100	204	15
Wales	5	1	619	94	35	5	1	0	0	0	660	100	36	5
Northern Ireland	0	0	203	94	10	5	2	1	1	0	216	100	12	6
Scotland	5	1	732	86	115	13	3	0	0	0	855	100	118	14
United Kingdom	**41**	**0**	**9700**	**84**	**1357**	**12**	**83**	**1**	**412**	**4**	**11593**	**100**	**1440**	**12**

Table 12 : Average number of visits					
Region	Total	Mean	Min	Median	Max
N East, Yorks & Humber	1457	1.1	0	1	3
East Midlands	930	1.1	0	1	4
East of England	1245	1.2	0	1	4
London	1139	1.1	1	1	3
South East (East)	863	1.2	1	1	4
South East (West)	738	1.1	0	1	4
South West	1053	1.2	0	1	5
West Midlands	1034	1.1	0	1	3
North West	1403	1.1	0	1	4
Wales	660	1.0	0	1	3
Northern Ireland	216	1.1	1	1	3
Scotland	855	1.1	0	1	3
United Kingdom	**11593**	**1.1**	**0**	**1**	**5**

Table 13 : Pre-operative diagnosis rate compared to C5 and/or B5 at first visit						
	1 C5/B5		Pre-operative diagnosis		All cancers	
Region	No.	%	No.	%	No.	%
N East, Yorks & Humber	1207	83	1339	92	1457	100
East Midlands	781	84	875	94	930	100
East of England*	629	51	1139	91	1245	100
London	943	83	1031	91	1139	100
South East (East)	644	75	779	90	863	100
South East (West)	581	79	663	90	738	100
South West	822	78	967	92	1053	100
West Midlands	866	84	948	92	1034	100
North West	1092	78	1253	89	1403	100
Wales	578	88	610	92	660	100
Northern Ireland	183	85	192	89	216	100
Scotland	677	79	779	91	855	100
United Kingdom	**9003**	**78**	**10575**	**91**	**11593**	**100**

*Results affected by data completeness.

Table 14 : Status of diagnostic open biopsies									
	Benign		Malignant		Total		Total women screened	Benign biopsy rate	Malignant biopsy rate
Region	No.	%	No.	%	No.	%			
N East, Yorks & Humber	245	67	118	33	363	100	202366	1.21	0.58
East Midlands	126	70	55	30	181	100	123655	1.02	0.44
East of England	243	70	106	30	349	100	163415	1.49	0.65
London	167	61	108	39	275	100	155277	1.08	0.70
South East (East)	128	60	84	40	212	100	122588	1.04	0.69
South East (West)	119	61	75	39	194	100	110014	1.08	0.68
South West	169	66	86	34	255	100	130823	1.29	0.66
West Midlands	191	69	86	31	277	100	149252	1.28	0.58
North West	241	62	150	38	391	100	190004	1.27	0.79
Wales	101	67	50	33	151	100	78354	1.29	0.64
Northern Ireland	34	59	24	41	58	100	31705	1.07	0.76
Scotland	137	64	76	36	213	100	124816	1.10	0.61
United Kingdom	**1901**	**65**	**1018**	**35**	**2919**	**100**	**1582269**	**1.20**	**0.64**

Table 15 : Invasive status of malignant diagnostic open biopsies									
	Total malignant open biopsies	Invasive		Micro-invasive		Non-invasive		Status unknown	
Region		No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	118	48	41	0	0	70	59	0	0
East Midlands	55	23	42	0	0	32	58	0	0
East of England	106	53	50	2	2	50	47	1	1
London	108	48	44	2	2	58	54	0	0
South East (East)	84	26	31	3	4	55	65	0	0
South East (West)	75	43	57	0	0	32	43	0	0
South West	86	37	43	1	1	48	56	0	0
West Midlands	86	33	38	1	1	52	60	0	0
North West	150	81	54	2	1	67	45	0	0
Wales	50	22	44	0	0	28	56	0	0
Northern Ireland	24	8	33	0	0	16	67	0	0
Scotland	76	23	30	1	1	52	68	0	0
United Kingdom	**1018**	**445**	**44**	**12**	**1**	**560**	**55**	**1**	**0**

Table 16 : Pre-operative history for invasive cancers diagnosed by open biopsy									
Region	Total malignant open biopsies	No pre-operative procedures		Cytology only		Core biopsy only		Both cytology and core biopsy	
		No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	48	3	6	3	6	26	54	16	33
East Midlands	23	2	9	1	4	13	57	7	30
East of England	53	3	6	16	30	20	38	14	26
London	48	1	2	7	15	31	65	9	19
South East (East)	26	1	4	4	15	14	54	7	27
South East (West)	43	4	9	8	19	24	56	7	16
South West	37	5	14	4	11	23	62	5	14
West Midlands	33	3	9	4	12	23	70	3	9
North West	81	6	7	22	27	40	49	13	16
Wales	22	3	14	0	0	19	86	0	0
Northern Ireland	8	0	0	0	0	4	50	4	50
Scotland	23	5	22	2	9	7	30	9	39
United Kingdom	**445**	**36**	**8**	**71**	**16**	**244**	**55**	**94**	**21**

Table 17 : Pre-operative history for non-invasive cancers diagnosed by open biopsy									
Region	Total malignant open biopsies	No pre-operative procedures		Cytology only		Core biopsy only		Both cytology and core biopsy	
		No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	70	0	0	2	3	55	79	13	19
East Midlands	32	3	9	0	0	28	88	1	3
East of England	50	1	2	1	2	30	60	18	36
London	58	1	2	4	7	46	79	7	12
South East (East)	55	1	2	1	2	50	91	3	5
South East (West)	32	3	9	0	0	27	84	2	6
South West	48	1	2	2	4	42	88	3	6
West Midlands	52	3	6	0	0	48	92	1	2
North West	67	0	0	2	3	57	85	8	12
Wales	28	2	7	1	4	24	86	1	4
Northern Ireland	16	0	0	4	25	5	31	7	44
Scotland	52	2	4	1	2	38	73	11	21
United Kingdom	**560**	**17**	**3**	**18**	**3**	**450**	**80**	**75**	**13**

Table 18 : Highest cytology and core biopsy score prior to malignant diagnostic open biopsies (invasive cancer)											
Region	Total malignant open biopsies	No pre-operative procedures		C4, B4 or both		C3, B3 or both		C2, B2 or both		C1, B1 or both	
		No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	48	3	6	22	46	13	27	4	8	6	13
East Midlands	23	2	9	9	39	7	30	3	13	2	9
East of England	53	3	6	24	45	9	17	9	17	8	15
London	48	1	2	24	50	14	29	4	8	5	10
South East (East)	26	1	4	11	42	7	27	1	4	6	23
South East (West)	43	4	9	15	35	10	23	8	19	6	14
South West	37	5	14	15	41	4	11	7	19	6	16
West Midlands	33	3	9	11	33	6	18	3	9	10	30
North West	81	6	7	37	46	18	22	6	7	14	17
Wales	22	3	14	9	41	1	5	7	32	2	9
Northern Ireland	8	0	0	2	25	4	50	0	0	2	25
Scotland	23	5	22	10	43	5	22	2	9	1	4
United Kingdom	**445**	**36**	**8**	**189**	**42**	**98**	**22**	**54**	**12**	**68**	**15**

Table 19 : Highest cytology and core biopsy score prior to malignant diagnostic open biopsies (non-invasive cancer)											
Region	Total malignant open biopsies	No pre-operative procedures		C4, B4 or both		C3, B3 or both		C2, B2 or both		C1, B1 or both	
		No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	70	0	0	29	41	27	39	7	10	7	10
East Midlands	32	3	9	13	41	6	19	4	13	6	19
East of England	50	1	2	17	34	15	30	6	12	11	22
London	58	1	2	17	29	28	48	4	7	8	14
South East (East)	55	1	2	25	45	26	47	2	4	1	2
South East (West)	32	3	9	5	16	17	53	5	16	2	6
South West	48	1	2	21	44	14	29	8	17	4	8
West Midlands	52	3	6	22	42	18	35	2	4	7	13
North West	67	0	0	26	39	26	39	9	13	6	9
Wales	28	2	7	11	39	4	14	4	14	7	25
Northern Ireland	16	0	0	10	63	4	25	0	0	2	13
Scotland	52	2	4	21	40	19	37	3	6	7	13
United Kingdom	**560**	**17**	**3**	**217**	**39**	**204**	**36**	**54**	**10**	**68**	**12**

Table 20 : Treatment for non-invasive and micro-invasive breast cancers										
Region	Conservation surgery		Mastectomy		No surgery		Unknown		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	197	62	119	37	3	1	0	0	319	100
East Midlands	141	67	66	32	2	1	0	0	209	100
East of England	191	72	72	27	3	1	0	0	266	100
London	208	76	52	19	10	4	4	1	274	100
South East (East)	147	71	55	27	5	2	0	0	207	100
South East (West)	92	65	49	35	1	1	0	0	142	100
South West	139	69	60	30	2	1	0	0	201	100
West Midlands	150	68	68	31	2	1	1	0	221	100
North West	195	75	62	24	2	1	1	0	260	100
Wales	74	58	52	41	2	2	0	0	128	100
Northern Ireland	41	79	11	21	0	0	0	0	52	100
Scotland	125	68	58	32	0	0	0	0	183	100
United Kingdom	**1700**	**69**	**724**	**29**	**32**	**1**	**6**	**0**	**2462**	**100**

Table 21 : Nuclear grade of non-invasive cancers										
Region	High		Other		Not assessable		Unknown		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	153	50	138	45	10	3	5	2	306	100
East Midlands	109	57	79	41	4	2	0	0	192	100
East of England	103	39	102	39	7	3	50	19	262	100
London	112	43	110	42	5	2	33	13	260	100
South East (East)	99	51	88	45	0	0	9	5	196	100
South East (West)	71	53	59	44	0	0	5	4	135	100
South West	115	58	77	39	3	2	3	2	198	100
West Midlands	126	60	73	35	7	3	4	2	210	100
North West	93	38	70	29	4	2	77	32	244	100
Wales	53	44	59	49	5	4	3	3	120	100
Northern Ireland	27	55	18	37	0	0	4	8	49	100
Scotland	61	35	33	19	5	3	77	44	176	100
United Kingdom	**1122**	**48**	**906**	**39**	**50**	**2**	**270**	**11**	**2348**	**100**

Table 22 : Disease extent of non-invasive cancers														
	Localized		Multiple		Not assessable		Unknown disease extent with...						Total	
							Size known		Size not assessable		Size unknown			
Region	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	119	39	17	6	35	11	107	35	0	0	28	9	306	100
East Midlands	136	71	34	18	22	11	0	0	0	0	0	0	192	100
East of England	51	19	22	8	14	5	90	34	6	2	79	30	262	100
London	104	40	13	5	44	17	66	25	0	0	33	13	260	100
South East (East)	60	31	10	5	96	49	18	9	0	0	12	6	196	100
South East (West)	29	21	9	7	14	10	68	50	0	0	15	11	135	100
South West	70	35	23	12	33	17	48	24	0	0	24	12	198	100
West Midlands	128	61	18	9	15	7	43	20	1	0	5	2	210	100
North West	75	31	11	5	11	5	111	45	0	0	36	15	244	100
Wales	66	55	16	13	5	4	31	26	0	0	2	2	120	100
Northern Ireland	18	37	5	10	1	2	14	29	0	0	11	22	49	100
Scotland	149	85	19	11	3	2	4	2	0	0	1	1	176	100
United Kingdom	**1005**	**43**	**197**	**8**	**293**	**12**	**600**	**26**	**7**	**0**	**246**	**10**	**2348**	**100**

Table 23 : Size of non-invasive cancers												
	<15mm		15-<30mm		30+ mm		Not assessable		Unknown		Tota	
Region	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	105	34	79	26	75	25	3	1	44	14	306	100
East Midlands	93	48	59	31	33	17	7	4	0	0	192	100
East of England	88	34	44	17	33	13	13	5	84	32	262	100
London	108	42	52	20	39	15	6	2	55	21	260	100
South East (East)	86	44	49	25	27	14	0	0	34	17	196	100
South East (West)	52	39	38	28	26	19	0	0	19	14	135	100
South West	77	39	51	26	37	19	4	2	29	15	198	100
West Midlands	87	41	56	27	48	23	10	5	9	4	210	100
North West	108	44	62	25	26	11	0	0	48	20	244	100
Wales	53	44	25	21	29	24	3	3	10	8	120	100
Northern Ireland	10	20	13	27	14	29	0	0	12	24	49	100
Scotland	83	47	47	27	39	22	1	1	6	3	176	100
United Kingdom	**950**	**40**	**575**	**24**	**426**	**18**	**47**	**2**	**350**	**15**	**2348**	**100**

Table 24 : Data completeness for non-invasive cancers									
	Unknown nuclear grade		Unknown disease extent		Unknown size		Unknown grade or size		Total
Region	No.	%	No.	%	No.	%	No.	%	
N East, Yorks & Humber	5	2	135	44	44	14	44	14	306
East Midlands	0	0	0	0	0	0	0	0	192
East of England	50	19	175	67	84	32	87	33	262
London	33	13	99	38	55	21	60	23	260
South East (East)	9	5	30	15	34	17	34	17	196
South East (West)	5	4	83	61	19	14	21	16	135
South West	3	2	72	36	29	15	30	15	198
West Midlands	4	2	49	23	9	4	9	4	210
North West	77	32	147	60	48	20	103	42	244
Wales	3	3	33	28	10	8	13	11	120
Northern Ireland	4	8	25	51	12	24	14	29	49
Scotland	77	44	5	3	6	3	80	45	176
United Kingdom	**270**	**11**	**853**	**36**	**350**	**15**	**495**	**21**	**2348**

Table 25 : Treatment of high grade multi-focal non-invasive cancers						
	Conservation Surgery		Mastectomy		Total	
Region	No.	%	No.	%	No.	%
N East, Yorks & Humber	1	11	8	89	9	100
East Midlands	4	27	11	73	15	100
East of England	6	43	8	57	14	100
London	1	17	5	83	6	100
South East (East)	1	17	5	83	6	100
South East (West)	0	0	5	100	5	100
South West	8	53	7	47	15	100
West Midlands	2	17	10	83	12	100
North West	2	29	5	71	7	100
Wales	0	0	9	100	9	100
Northern Ireland	1	20	4	80	5	100
Scotland	2	18	9	82	11	100
United Kingdom	**28**	**25**	**86**	**75**	**114**	**100**

Table 26 : Treatment of multi-focal non-invasive cancers (30+ mm)										
	Conservation Surgery		Mastectomy		No Surgery		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	0	0	4	100	0	0	0	0	4	100
East Midlands	0	0	9	100	0	0	0	0	9	100
East of England	1	13	7	88	0	0	0	0	8	100
London	1	25	3	75	0	0	0	0	4	100
South East (East)	0	0	1	100	0	0	0	0	1	100
South East (West)	0	0	3	100	0	0	0	0	3	100
South West	2	40	3	60	0	0	0	0	5	100
West Midlands	0	0	6	100	0	0	0	0	6	100
North West	0	0	2	100	0	0	0	0	2	100
Wales	0	0	9	100	0	0	0	0	9	100
Northern Ireland	1	20	4	80	0	0	0	0	5	100
Scotland	1	11	8	89	0	0	0	0	9	100
United Kingdom	**6**	**9**	**59**	**91**	**0**	**0**	**0**	**0**	**65**	**100**

Table 27 : Treatment of high grade non-invasive cancers (30+ mm)										
	Conservation Surgery		Mastectomy		No Surgery		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	12	24	39	76	0	0	0	0	51	100
East Midlands	7	29	17	71	0	0	0	0	24	100
East of England	6	35	11	65	0	0	0	0	17	100
London	14	61	9	39	0	0	0	0	23	100
South East (East)	4	24	12	71	1	6	0	0	17	100
South East (West)	7	37	12	63	0	0	0	0	19	100
South West	10	38	16	62	0	0	0	0	26	100
West Midlands	9	26	26	74	0	0	0	0	35	100
North West	7	35	13	65	0	0	0	0	20	100
Wales	5	24	16	76	0	0	0	0	21	100
Northern Ireland	5	42	7	58	0	0	0	0	12	100
Scotland	4	17	20	83	0	0	0	0	24	100
United Kingdom	**90**	**31**	**198**	**69**	**1**	**0**	**0**	**0**	**289**	**100**

Table 28 : Treatment of unknown grade non-invasive cancers (30+ mm)										
	Conservation Surgery		Mastectomy		No Surgery		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%
North West	1	33	2	67	0	0	0	0	3	100
Scotland	2	25	6	75	0	0	0	0	8	100
United Kingdom	**3**	**27**	**8**	**73**	**0**	**0**	**0**	**0**	**11**	**100**

Table 29 : Treatment of non-invasive cancers with high grade and unknown size										
	Conservation Surgery		Mastectomy		No Surgery		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	9	60	6	40	0	0	0	0	15	100
East Midlands	0	-	0	-	0	-	0	-	0	0
East of England	4	33	8	67	0	0	0	0	12	100
London	13	68	6	32	0	0	0	0	19	100
South East (East)	7	64	4	36	0	0	0	0	11	100
South East (West)	5	56	4	44	0	0	0	0	9	100
South West	7	54	6	46	0	0	0	0	13	100
West Midlands	0	0	1	100	0	0	0	0	1	100
North West	5	42	6	50	1	8	0	0	12	100
Wales	0	0	1	100	0	0	0	0	1	100
Northern Ireland	3	75	1	25	0	0	0	0	4	100
Scotland	1	100	0	0	0	0	0	0	1	100
United Kingdom	**54**	**55**	**43**	**44**	**1**	**1**	**0**	**0**	**98**	**100**

Table 30 : Treatment of non-invasive cancers with unknown grade and unknown size										
	Conservation Surgery		Mastectomy		No Surgery		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	1	20	1	20	3	60	0	0	5	100
East Midlands	0	-	0	-	0	-	0	-	0	0
East of England	27	57	17	36	3	6	0	0	47	100
London	10	36	6	21	9	32	3	11	28	100
South East (East)	4	44	2	22	3	33	0	0	9	100
South East (West)	3	100	0	0	0	0	0	0	3	100
South West	1	50	0	0	1	50	0	0	2	100
West Midlands	0	0	1	25	2	50	1	25	4	100
North West	14	64	7	32	1	5	0	0	22	100
Wales	0	-	0	-	0	-	0	-	0	0
Northern Ireland	2	100	0	0	0	0	0	0	2	100
Scotland	2	67	1	33	0	0	0	0	3	100
United Kingdom	**64**	**51**	**35**	**28**	**22**	**18**	**4**	**3**	**125**	**100**

Table 31 : Treatment for invasive breast cancers of all sizes including size unknown										
	Conservation surgery		Mastectomy		No surgery		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	718	63	395	35	17	1	4	0	1134	100
East Midlands	493	68	211	29	16	2	0	0	720	100
East of England	729	76	217	23	5	1	3	0	954	100
London	677	79	160	19	15	2	10	1	862	100
South East (East)	475	73	168	26	6	1	3	0	652	100
South East (West)	447	75	146	24	2	0	1	0	596	100
South West	633	75	211	25	5	1	0	0	849	100
West Midlands	595	73	211	26	5	1	0	0	811	100
North West	814	71	314	28	11	1	2	0	1141	100
Wales	347	65	181	34	4	1	0	0	532	100
Northern Ireland	125	77	38	23	0	0	0	0	163	100
Scotland	466	69	192	29	14	2	0	0	672	100
United Kingdom	**6519**	**72**	**2444**	**27**	**100**	**1**	**23**	**0**	**9086**	**100**

Table 32 : Size of invasive breast cancers														
	<10mm		10-<15mm		15-<20mm		20-<50mm		50+mm		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	272	24	314	28	217	19	281	25	27	2	23	2	1134	100
East Midlands	171	24	249	35	127	18	144	20	12	2	17	2	720	100
East of England	220	23	247	26	169	18	153	16	12	1	153	16	954	100
London	213	25	253	29	164	19	181	21	17	2	34	4	862	100
South East (East)	186	29	189	29	132	20	123	19	16	2	6	1	652	100
South East (West)	153	26	163	27	116	19	146	24	11	2	7	1	596	100
South West	202	24	267	31	173	20	188	22	11	1	8	1	849	100
West Midlands	173	21	242	30	181	22	191	24	16	2	8	1	811	100
North West	286	25	326	29	201	18	258	23	26	2	44	4	1141	100
Wales	131	25	171	32	107	20	110	21	9	2	4	1	532	100
Northern Ireland	43	26	42	26	31	19	39	24	5	3	3	2	163	100
Scotland	182	27	183	27	134	20	151	22	9	1	13	2	672	100
United Kingdom	**2232**	**25**	**2646**	**29**	**1752**	**19**	**1965**	**22**	**171**	**2**	**320**	**4**	**9086**	**100**

Table 33 : Treatment for invasive breast cancers <10mm										
	Conservation surgery		Mastectomy		No surgery		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	186	68	85	31	0	0	1	0	272	100
East Midlands	131	77	40	23	0	0	0	0	171	100
East of England	182	83	36	16	0	0	2	1	220	100
London	183	86	30	14	0	0	0	0	213	100
South East (East)	153	82	31	17	1	1	1	1	186	100
South East (West)	129	84	24	16	0	0	0	0	153	100
South West	164	81	38	19	0	0	0	0	202	100
West Midlands	147	85	26	15	0	0	0	0	173	100
North West	229	80	57	20	0	0	0	0	286	100
Wales	98	75	33	25	0	0	0	0	131	100
Northern Ireland	39	91	4	9	0	0	0	0	43	100
Scotland	153	84	28	15	1	1	0	0	182	100
United Kingdom	**1794**	**80**	**432**	**19**	**2**	**0**	**4**	**0**	**2232**	**100**

Table 34 : Treatment for invasive breast cancers 10-<15mm										
	Conservation surgery		Mastectomy		No surgery		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	244	78	70	22	0	0	0	0	314	100
East Midlands	193	78	56	22	0	0	0	0	249	100
East of England	209	85	38	15	0	0	0	0	247	100
London	222	88	31	12	0	0	0	0	253	100
South East (East)	152	80	36	19	0	0	1	1	189	100
South East (West)	135	83	28	17	0	0	0	0	163	100
South West	224	84	42	16	1	0	0	0	267	100
West Midlands	208	86	34	14	0	0	0	0	242	100
North West	268	82	58	18	0	0	0	0	326	100
Wales	126	74	45	26	0	0	0	0	171	100
Northern Ireland	34	81	8	19	0	0	0	0	42	100
Scotland	141	77	40	22	2	1	0	0	183	100
United Kingdom	**2156**	**81**	**486**	**18**	**3**	**0**	**1**	**0**	**2646**	**100**

Table 35 : Treatment for invasive breast cancers <15mm										
	Conservation surgery		Mastectomy		No surgery		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	430	73	155	26	0	0	1	0	586	100
East Midlands	324	77	96	23	0	0	0	0	420	100
East of England	391	84	74	16	0	0	2	0	467	100
London	405	87	61	13	0	0	0	0	466	100
South East (East)	305	81	67	18	1	0	2	1	375	100
South East (West)	264	84	52	16	0	0	0	0	316	100
South West	388	83	80	17	1	0	0	0	469	100
West Midlands	355	86	60	14	0	0	0	0	415	100
North West	497	81	115	19	0	0	0	0	612	100
Wales	224	74	78	26	0	0	0	0	302	100
Northern Ireland	73	86	12	14	0	0	0	0	85	100
Scotland	294	81	68	19	3	1	0	0	365	100
United Kingdom	**3950**	**81**	**918**	**19**	**5**	**0**	**5**	**0**	**4878**	**100**

Table 36 : Treatment for invasive breast cancers 15-<20mm										
	Conservation surgery		Mastectomy		No surgery		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	151	70	66	30	0	0	0	0	217	100
East Midlands	94	74	33	26	0	0	0	0	127	100
East of England	130	77	39	23	0	0	0	0	169	100
London	139	85	24	15	0	0	1	1	164	100
South East (East)	102	77	29	22	0	0	1	1	132	100
South East (West)	87	75	29	25	0	0	0	0	116	100
South West	134	77	39	23	0	0	0	0	173	100
West Midlands	129	71	52	29	0	0	0	0	181	100
North West	145	72	56	28	0	0	0	0	201	100
Wales	73	68	34	32	0	0	0	0	107	100
Northern Ireland	27	87	4	13	0	0	0	0	31	100
Scotland	101	75	32	24	1	1	0	0	134	100
United Kingdom	**1312**	**75**	**437**	**25**	**1**	**0**	**2**	**0**	**1752**	**100**

Table 37 : Treatment for invasive breast cancers 20-<50mm										
	Conservation surgery		Mastectomy		No surgery		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	132	47	149	53	0	0	0	0	281	100
East Midlands	72	50	72	50	0	0	0	0	144	100
East of England	99	65	54	35	0	0	0	0	153	100
London	121	67	58	32	1	1	1	1	181	100
South East (East)	65	53	58	47	0	0	0	0	123	100
South East (West)	90	62	56	38	0	0	0	0	146	100
South West	109	58	79	42	0	0	0	0	188	100
West Midlands	104	54	87	46	0	0	0	0	191	100
North West	141	55	116	45	0	0	1	0	258	100
Wales	48	44	62	56	0	0	0	0	110	100
Northern Ireland	23	59	16	41	0	0	0	0	39	100
Scotland	68	45	83	55	0	0	0	0	151	100
United Kingdom	**1072**	**55**	**890**	**45**	**1**	**0**	**2**	**0**	**1965**	**100**

Table 38 : Treatment for invasive breast cancers 50+mm										
	Conservation surgery		Mastectomy		No surgery		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	3	11	22	81	0	0	2	7	27	100
East Midlands	3	25	9	75	0	0	0	0	12	100
East of England	3	25	9	75	0	0	0	0	12	100
London	2	12	14	82	0	0	1	6	17	100
South East (East)	2	13	14	88	0	0	0	0	16	100
South East (West)	2	18	9	82	0	0	0	0	11	100
South West	0	0	11	100	0	0	0	0	11	100
West Midlands	4	25	12	75	0	0	0	0	16	100
North West	7	27	19	73	0	0	0	0	26	100
Wales	2	22	7	78	0	0	0	0	9	100
Northern Ireland	1	20	4	80	0	0	0	0	5	100
Scotland	0	0	8	89	1	11	0	0	9	100
United Kingdom	**29**	**17**	**138**	**81**	**1**	**1**	**3**	**2**	**171**	**100**

Table 39 : Whole size of invasive breast cancers														
	<10mm		10-<15mm		15-<20mm		20-<50mm		50+mm		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	168	15	262	23	262	23	365	32	54	5	23	2	1134	100
East Midlands	102	14	202	28	151	21	220	31	28	4	17	2	720	100
East of England	149	16	238	25	174	18	217	23	19	2	157	16	954	100
London	86	10	139	16	117	14	213	25	23	3	284	33	862	100
South East (East)	84	13	140	21	119	18	147	23	14	2	148	23	652	100
South East (West)	68	11	123	21	101	17	147	25	20	3	137	23	596	100
South West	122	14	220	26	164	19	241	28	21	2	81	10	849	100
West Midlands	103	13	224	28	186	23	254	31	33	4	11	1	811	100
North West	154	13	236	21	181	16	267	23	29	3	274	24	1141	100
Wales	83	16	141	27	98	18	137	26	17	3	56	11	532	100
Northern Ireland	18	11	31	19	31	19	47	29	5	3	31	19	163	100
Scotland	138	21	170	25	144	21	176	26	21	3	23	3	672	100
United Kingdom	**1275**	**14**	**2126**	**23**	**1728**	**19**	**2431**	**27**	**284**	**3**	**1242**	**14**	**9086**	**100**

Table 40 : Whole size of invasive cancers with invasive size <15mm												
	Whole size <15mm		Whole size 15-<20mm		Whole size 20-<50mm		Whole size 50+mm		Whole size unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	430	73	72	12	67	11	17	3	0	0	586	100
East Midlands	304	72	53	13	53	13	10	2	0	0	420	100
East of England	387	83	36	8	34	7	6	1	4	1	467	100
London	224	48	36	8	53	11	6	1	147	32	466	100
South East (East)	224	60	30	8	29	8	4	1	88	23	375	100
South East (West)	191	60	27	9	31	10	9	3	58	18	316	100
South West	342	73	43	9	40	9	4	1	40	9	469	100
West Midlands	325	78	36	9	46	11	6	1	2	0	415	100
North West	390	64	41	7	45	7	8	1	128	21	612	100
Wales	224	74	17	6	23	8	4	1	34	11	302	100
Northern Ireland	48	56	11	13	15	18	1	1	10	12	85	100
Scotland	308	84	22	6	22	6	6	2	7	2	365	100
United Kingdom	**3397**	**70**	**424**	**9**	**458**	**9**	**81**	**2**	**518**	**11**	**4878**	**100**

Table 41 : Treatment for invasive breast cancers <15mm with whole size <15mm										
	Conservation surgery		Mastectomy		No surgery		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	340	79	89	21	0	0	1	0	430	100
East Midlands	259	85	45	15	0	0	0	0	304	100
East of England	335	87	51	13	0	0	1	0	387	100
London	206	92	18	8	0	0	0	0	224	100
South East (East)	188	84	34	15	1	0	1	0	224	100
South East (West)	177	93	14	7	0	0	0	0	191	100
South West	298	87	44	13	0	0	0	0	342	100
West Midlands	288	89	37	11	0	0	0	0	325	100
North West	327	84	63	16	0	0	0	0	390	100
Wales	169	75	55	25	0	0	0	0	224	100
Northern Ireland	44	92	4	8	0	0	0	0	48	100
Scotland	264	86	42	14	2	1	0	0	308	100
United Kingdom	**2895**	**85**	**496**	**15**	**3**	**0**	**3**	**0**	**3397**	**100**

Table 42 : Treatment for invasive breast cancers <15mm with whole size <15mm or whole size unknown										
	Conservation surgery		Mastectomy		No surgery		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	340	79	89	21	0	0	1	0	430	100
East Midlands	259	85	45	15	0	0	0	0	304	100
East of England	337	86	52	13	0	0	2	1	391	100
London	331	89	40	11	0	0	0	0	371	100
South East (East)	264	85	45	14	1	0	2	1	312	100
South East (West)	223	90	26	10	0	0	0	0	249	100
South West	325	85	56	15	0	0	1	0	382	100
West Midlands	289	88	38	12	0	0	0	0	327	100
North West	432	83	86	17	0	0	0	0	518	100
Wales	193	75	65	25	0	0	0	0	258	100
Northern Ireland	52	90	6	10	0	0	0	0	58	100
Scotland	267	85	46	15	2	1	0	0	315	100
United Kingdom	**3312**	**85**	**594**	**15**	**3**	**0**	**6**	**0**	**3915**	**100**

Table 43 : Treatment for invasive breast cancers <15mm with whole size 15-<20mm								
	Conservation surgery		Mastectomy		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	54	75	18	25	0	0	72	100
East Midlands	37	70	16	30	0	0	53	100
East of England	26	72	10	28	0	0	36	100
London	31	86	5	14	0	0	36	100
South East (East)	23	77	7	23	0	0	30	100
South East (West)	24	89	3	11	0	0	27	100
South West	34	79	9	21	0	0	43	100
West Midlands	34	94	2	6	0	0	36	100
North West	32	78	9	22	0	0	41	100
Wales	15	88	2	12	0	0	17	100
Northern Ireland	10	91	1	9	0	0	11	100
Scotland	16	73	5	23	1	5	22	100
United Kingdom	**336**	**79**	**87**	**21**	**1**	**0**	**424**	**100**

Table 44 : Treatment for invasive breast cancers <15mm with whole size 20-<50mm								
	Conservation surgery		Mastectomy		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	36	54	31	46	0	0	67	100
East Midlands	28	53	25	47	0	0	53	100
East of England	25	74	9	26	0	0	34	100
London	43	81	10	19	0	0	53	100
South East (East)	16	55	13	45	0	0	29	100
South East (West)	17	55	14	45	0	0	31	100
South West	29	73	11	28	0	0	40	100
West Midlands	28	61	18	39	0	0	46	100
North West	33	73	12	27	0	0	45	100
Wales	16	70	7	30	0	0	23	100
Northern Ireland	11	73	4	27	0	0	15	100
Scotland	10	45	12	55	0	0	22	100
United Kingdom	**292**	**64**	**166**	**36**	**0**	**0**	**458**	**100**

Table 45 : Treatment for invasive breast cancers <15mm with whole size 50+mm										
	Conservation surgery		Mastectomy		No Surgery		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	0	0	17	100	0	0	0	0	17	100
East Midlands	0	0	10	100	0	0	0	0	10	100
East of England	3	50	3	50	0	0	0	0	6	100
London	0	0	6	100	0	0	0	0	6	100
South East (East)	2	50	2	50	0	0	0	0	4	100
South East (West)	0	0	9	100	0	0	0	0	9	100
South West	0	0	4	100	0	0	0	0	4	100
West Midlands	4	67	2	33	0	0	0	0	6	100
North West	0	0	8	100	0	0	0	0	8	100
Wales	0	0	4	100	0	0	0	0	4	100
Northern Ireland	0	0	1	100	0	0	0	0	1	100
Scotland	1	17	5	83	0	0	0	0	6	100
United Kingdom	**10**	**12**	**71**	**88**	**0**	**0**	**0**	**0**	**81**	**100**

Table 46 : Immediate reconstruction with mastectomy (all cancers)								
	Immediate Reconstruction		No Immediate Reconstruction*		Unknown		Total Mastectomies	
Region	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	30	6	355	69	129	25	514	100
East Midlands	15	5	262	95	0	0	277	100
East of England	27	9	201	68	67	23	295	100
London	10	5	84	40	118	56	212	100
South East (East)	22	10	17	8	184	83	223	100
South East (West)	21	11	95	49	79	41	195	100
South West	25	9	173	64	73	27	271	100
West Midlands	26	9	251	90	2	1	279	100
North West	23	6	232	62	121	32	376	100
Wales	33	14	200	86	0	0	233	100
Northern Ireland	1	2	26	53	22	45	49	100
Scotland	31	12	210	84	9	4	250	100
United Kingdom	**264**	**8**	**2106**	**66**	**804**	**25**	**3174**	**100**

*May include some cases with immediate reconstruction not recorded at the breast unit.

Table 47: Invasive status of immediate reconstruction after mastectomy								
	Invasive		Micro-invasive		Non-invasive		Total	
Region	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	16	53	1	3	13	43	30	100
East Midlands	8	53	0	0	7	47	15	100
East of England	22	81	0	0	5	19	27	100
London	6	60	0	0	4	40	10	100
South East (East)	14	64	1	5	7	32	22	100
South East (West)	13	62	1	5	7	33	21	100
South West	17	68	0	0	8	32	25	100
West Midlands	9	35	1	4	16	62	26	100
North West	15	65	1	4	7	30	23	100
Wales	18	55	0	0	15	45	33	100
Northern Ireland	0	0	0	0	1	100	1	100
Scotland	18	58	0	0	13	42	31	100
United Kingdom	**156**	**59**	**5**	**2**	**103**	**39**	**264**	**100**

Table 48 : Availability of lymph node status for invasive cancers									
	Total invasive cancers	Nodal status known		Nodes obtained but status unknown		No nodes obtained		Unknown if nodes obtained	
Region		No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	1134	1086	96	0	0	45	4	3	0
East Midlands	720	693	96	0	0	27	4	0	0
East of England	954	871	91	0	0	77	8	6	1
London	862	760	88	0	0	83	10	19	2
South East (East)	652	623	96	0	0	29	4	0	0
South East (West)	596	574	96	0	0	22	4	0	0
South West	849	807	95	0	0	42	5	0	0
West Midlands	811	800	99	0	0	11	1	0	0
North West	1141	1067	94	0	0	69	6	5	0
Wales	532	527	99	0	0	5	1	0	0
Northern Ireland	163	140	86	0	0	9	6	14	9
Scotland	672	659	98	0	0	13	2	0	0
United Kingdom	**9086**	**8607**	**95**	**0**	**0**	**432**	**5**	**47**	**1**

Table 49 : Nodal status of nodes with status known for invasive cancers					
Region	Total known nodal status	Positive		Negative	
		No.	%	No.	%
N East, Yorks & Humber	1086	265	24	821	76
East Midlands	693	162	23	531	77
East of England	871	211	24	660	76
London	760	194	26	566	74
South East (East)	623	158	25	465	75
South East (West)	574	157	27	417	73
South West	807	200	25	607	75
West Midlands	800	217	27	583	73
North West	1067	253	24	814	76
Wales	527	123	23	404	77
Northern Ireland	140	38	27	102	73
Scotland	659	155	24	504	76
United Kingdom	**8607**	**2133**	**25**	**6474**	**75**

Table 50 : Average number of nodes obtained for invasive cancers			
Region	Total invasive cancers with known nodal status	Mean number of nodes examined	Median number of nodes examined
N East, Yorks & Humber	1086	11	9
East Midlands	693	8	6
East of England	871	10	10
London	760	12	11
South East (East)	623	10	8
South East (West)	574	11	11
South West	807	11	10
West Midlands	800	11	10
North West	1067	11	10
Wales	527	11	10
Northern Ireland	140	15	15
Scotland	659	11	10
United Kingdom	**8607**	**11**	**10**

Table 51 : Status of cases with <4 nodes obtained for invasive cancers											
Region	Total with nodal status known	Nodal status determined on basis of <4 nodes		Positive				Negative			
				Sentinel node procedure		Other node procedure		Sentinel node procedure		Other node procedure	
		No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	1086	32	2.9	0	0.0	4	0.4	0	0.0	28	2.6
East Midlands	693	35	5.1	1	0.1	2	0.3	5	0.7	27	3.9
East of England	871	64	7.3	2	0.2	6	0.7	26	3.0	30	3.4
London	760	58	7.6	0	0.0	3	0.4	4	0.5	51	6.7
South East (East)	623	59	9.5	1	0.2	2	0.3	25	4.0	31	5.0
South East (West)	574	25	4.4	1	0.2	0	0.0	7	1.2	17	3.0
South West	807	33	4.1	1	0.1	3	0.4	4	0.5	25	3.1
West Midlands	800	35	4.4	0	0.0	6	0.8	7	0.9	22	2.8
North West	1067	72	6.7	0	0.0	11	1.0	0	0.0	61	5.7
Wales	527	15	2.8	0	0.0	0	0.0	2	0.4	13	2.5
Northern Ireland	140	1	0.7	0	0.0	0	0.0	0	0.0	1	0.7
Scotland	659	17	2.6	0	0.0	2	0.3	1	0.2	14	2.1
United Kingdom	**8607**	**446**	**5.2**	**6**	**0.1**	**39**	**0.5**	**81**	**0.9**	**320**	**3.7**

Table 52: Availability of lymph node status for non-invasive cancers									
Region	Total non-invasive cancers	Nodal status known		Nodes obtained but status unknown		No nodes obtained		Unknown if nodes obtained	
		No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	306	95	31	0	0	210	69	1	0
East Midlands	192	61	32	0	0	131	68	0	0
East of England	262	46	18	0	0	216	82	0	0
London	260	49	19	0	0	204	78	7	3
South East (East)	196	43	22	0	0	153	78	0	0
South East (West)	135	43	32	0	0	92	68	0	0
South West	198	44	22	0	0	154	78	0	0
West Midlands	210	49	23	0	0	160	76	1	0
North West	244	70	29	0	0	173	71	1	0
Wales	120	44	37	0	0	76	63	0	0
Northern Ireland	49	8	16	0	0	20	41	21	43
Scotland	176	53	30	0	0	123	70	0	0
United Kingdom	**2348**	**605**	**26**	**0**	**0**	**1712**	**73**	**31**	**1**

Table 53 : Nodal status of nodes with status known for non-invasive cancers					
Region	Total known nodal status	Positive		Negative	
		No.	%	No.	%
N East, Yorks & Humber	95	3	3	92	97
East Midlands	61	0	0	61	100
East of England	46	0	0	46	100
London	49	4	8	45	92
South East (East)	43	0	0	43	100
South East (West)	43	0	0	43	100
South West	44	1	2	43	98
West Midlands	49	0	0	49	100
North West	70	2	3	68	97
Wales	44	0	0	44	100
Northern Ireland	8	0	0	8	100
Scotland	53	1	2	52	98
United Kingdom	**605**	**11**	**2**	**594**	**98**

Table 54 : Average number of nodes obtained for non-invasive cancers			
Region	Total non-invasive cancers with known nodal status	Mean number of nodes examined	Median number of nodes examined
N East, Yorks & Humber	95	8	6
East Midlands	61	6	6
East of England	46	8	7
London	49	8	6
South East (East)	43	6	5
South East (West)	43	7	5
South West	44	7	6
West Midlands	49	7	6
North West	70	6	5
Wales	44	6	5
Northern Ireland	8	16	14
Scotland	53	5	5
United Kingdom	**605**	**7**	**5**

Table 55 : Treatment for non-invasive cancers with known nodal status					
Region	Total known nodal status	Conservation		Mastectomy	
		No.	%	No.	%
N East, Yorks & Humber	95	21	22	74	78
East Midlands	61	12	20	49	80
East of England	46	13	28	33	72
London	49	17	35	32	65
South East (East)	43	11	26	32	74
South East (West)	43	5	12	38	88
South West	44	6	14	38	86
West Midlands	49	14	29	35	71
North West	70	29	41	41	59
Wales	44	6	14	38	86
Northern Ireland	8	4	50	4	50
Scotland	53	6	11	47	89
United Kingdom	**605**	**144**	**24**	**461**	**76**

Table 56: Pre-operative history for non-invasive cancers with known nodal status treated by conservation surgery											
Region	Total	B5a +/- C5		B5b +/- C5		B5c & Unknown B5		C5 only		No C5/B5	
				No	%	No	%	No	%	No	%
N East, Yorks & Humber	21	10	48	3	14	2	10	4	19	2	10
East Midlands	12	7	58	2	17	0	0	1	8	2	17
East of England	13	6	46	3	23	1	8	0	0	3	23
London	17	8	47	7	41	0	0	1	6	1	6
South East (East)	11	8	73	0	0	0	0	1	9	2	18
South East (West)	5	4	80	0	0	0	0	1	20	0	0
South West	6	5	83	1	17	0	0	0	0	0	0
West Midlands	14	8	57	2	14	0	0	4	29	0	0
North West	29	19	66	3	10	1	3	4	14	2	7
Wales	6	4	67	2	33	0	0	0	0	0	0
Northern Ireland	4	0	0	1	25	0	0	3	75	0	0
Scotland	6	2	33	1	17	0	0	2	33	1	17
United Kingdom	**144**	**81**	**56**	**25**	**17**	**4**	**3**	**21**	**15**	**13**	**9**

Table 57: Treatment for non-invasive cancers with no nodes obtained							
Region	Total	Conservation		Mastectomy		No Surgery	
		No.	%	No.	%	No.	%
N East, Yorks & Humber	210	167	80	40	19	3	1
East Midlands	131	116	89	13	10	2	2
East of England	216	175	81	38	18	3	1
London	204	176	86	18	9	10	5
South East (East)	153	130	85	18	12	5	3
South East (West)	92	84	91	7	8	1	1
South West	154	133	86	19	12	2	1
West Midlands	160	127	79	31	19	2	1
North West	173	155	90	16	9	2	1
Wales	76	63	83	11	14	2	3
Northern Ireland	20	18	90	2	10	0	0
Scotland	123	114	93	9	7	0	0
United Kingdom	**1712**	**1458**	**85**	**222**	**13**	**32**	**2**

Table 58 : Grade of invasive cancers												
	Grade I		Grade II		Grade III		Not Assessable		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	418	37	514	45	179	16	6	1	17	1	1134	100
East Midlands	239	33	335	47	127	18	18	3	1	0	720	100
East of England	259	27	415	44	119	12	0	0	161	17	954	100
London	287	33	366	42	166	19	11	1	32	4	862	100
South East (East)	211	32	321	49	106	16	4	1	10	2	652	100
South East (West)	204	34	272	46	111	19	3	1	6	1	596	100
South West	255	30	450	53	128	15	12	1	4	0	849	100
West Midlands	276	34	384	47	142	18	3	0	6	1	811	100
North West	368	32	546	48	178	16	10	1	39	3	1141	100
Wales	178	33	271	51	70	13	3	1	10	2	532	100
Northern Ireland	46	28	73	45	39	24	0	0	5	3	163	100
Scotland	211	31	302	45	133	20	8	1	18	3	672	100
United Kingdom	**2952**	**32**	**4249**	**47**	**1498**	**16**	**78**	**1**	**309**	**3**	**9086**	**100**

Table 59 : Data completeness for invasive cancers										
	Unknown invasive size		Unknown nodal status		Unknown grade		Unknown NPI*		Invasive Total	
Region	No	%	No	%	No	%	No	%	No	%
N East, Yorks & Humber	23	2	48	4	17	1	54	5	1134	100
East Midlands	17	2	27	4	1	0	29	4	720	100
East of England	153	16	83	9	161	17	217	23	954	100
London	34	4	102	12	32	4	127	15	862	100
South East (East)	6	1	29	4	10	2	37	6	652	100
South East (West)	7	1	22	4	6	1	31	5	596	100
South West	8	1	42	5	4	0	53	6	849	100
West Midlands	8	1	11	1	6	1	17	2	811	100
North West	44	4	74	6	39	3	115	10	1141	100
Wales	4	1	5	1	10	2	16	3	532	100
Northern Ireland	3	2	23	14	5	3	27	17	163	100
Scotland	13	2	13	2	18	3	30	4	672	100
United Kingdom	**320**	**4**	**479**	**5**	**309**	**3**	**753**	**8**	**9086**	**100**

*NPI is unknown if size, nodal status or grade are unknown or grade is not assessable

Table 60 : NPI Group of invasive cancers												
	EPG		GPG		MPG1		MPG2		PPG		Total with known NPI	
Region	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	314	29	362	34	229	21	115	11	60	6	1080	100
East Midlands	194	28	248	36	142	21	69	10	38	5	691	100
East of England	183	25	283	38	173	23	65	9	33	4	737	100
London	205	28	224	30	180	24	78	11	48	7	735	100
South East (East)	147	24	232	38	145	24	55	9	36	6	615	100
South East (West)	144	25	188	33	142	25	56	10	35	6	565	100
South West	177	22	297	37	207	26	76	10	39	5	796	100
West Midlands	208	26	267	34	182	23	80	10	57	7	794	100
North West	258	25	373	36	242	24	96	9	57	6	1026	100
Wales	142	28	191	37	112	22	44	9	27	5	516	100
Northern Ireland	31	23	43	32	35	26	17	13	10	7	136	100
Scotland	172	27	221	34	139	22	70	11	40	6	642	100
United Kingdom	**2175**	**26**	**2929**	**35**	**1928**	**23**	**821**	**10**	**480**	**6**	**8333**	**100**

Table 61 : Annual screening surgical caseload per surgeon											
Region	Total surgeons	<10 cases		10-19 cases		20-29 cases		30-99 cases		100+ cases	
		No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	63	25	40	8	13	11	17	19	30	0	0
East Midlands	33	12	36	1	3	4	12	16	48	0	0
East of England	54	23	43	5	9	6	11	19	35	1	2
London	82	39	48	13	16	11	13	19	23	0	0
South East (East)	42	11	26	8	19	5	12	17	40	1	2
South East (West)	41	15	37	5	12	8	20	13	32	0	0
South West	43	14	33	6	14	6	14	17	40	0	0
West Midlands	39	4	10	6	15	8	21	21	54	0	0
North West	58	18	31	13	22	6	10	20	34	1	2
Wales	23	9	39	1	4	1	4	12	52	0	0
Northern Ireland	12	1	8	7	58	3	25	1	8	0	0
Scotland	32	10	31	7	22	5	16	8	25	2	6
United Kingdom	**472**	**174**	**37**	**70**	**15**	**70**	**15**	**154**	**33**	**4**	**0**

NB : The surgeons in each region are credited with their total UK screening caseload.
Surgeons working in more than one region appear in each of these region's figures.

Table 62 : Screening cases per surgeon							
Region	Total surgeons	Mean	Min.	1st quartile	Median	3rd quartile	Max.
N East, Yorks & Humber	63	23.0	1	5	17	36	93
East Midlands	33	31.7	1	6	28	52	90
East of England	54	25.2	1	3	18	41	108
London	82	18.9	1	2	11	27	87
South East (East)	42	30.7	1	9	26	46	100
South East (West)	41	24.0	1	6	21	35	94
South West	43	27.0	1	8	26	45	95
West Midlands	39	32.6	1	19	30	38	95
North West	58	27.7	1	7	18	39	100
Wales	23	32.4	1	2	32	57	84
Northern Ireland	12	17.9	4	12	16	20	49
Scotland	32	26.7	1	5	17	34	132
United Kingdom	**472**	**24.6**	**1**	**5**	**18**	**37**	**132**

Table 63 : Number of surgeons treating each woman										
Region	Total cancers	Number of women seen by…								Total treated
		No surgeon		1 surgeon		2 surgeons		3 surgeons		
N East, Yorks & Humber	1457	22	2	1435	98	0	0	0	0	1435
East Midlands	930	0	0	930	100	0	0	0	0	930
East of England	1245	9	1	1220	98	16	1	0	0	1252
London	1139	17	1	1105	97	16	1	1	0	1140
South East (East)	863	8	1	855	99	0	0	0	0	855
South East (West)	738	1	0	719	97	18	2	0	0	755
South West	1053	9	1	1039	99	5	0	0	0	1049
West Midlands	1034	9	1	1023	99	2	0	0	0	1027
North West	1403	11	1	1323	94	69	5	0	0	1461
Wales	660	6	1	647	98	7	1	0	0	661
Northern Ireland	216	1	0	215	100	0	0	0	0	215
Scotland	855	1	0	854	100	0	0	0	0	854
United Kingdom	**11593**	**94**	**1**	**11365**	**98**	**133**	**1**	**1**	**0**	**11634**

Table 64 : Proportion of women treated according to annual screening caseload of surgeon											
Region	Total treated	<10 cases		10-19 cases		20-29 cases		30-99 cases		100+ cases	
		No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	1435	95	7	112	8	260	18	968	67	0	0
East Midlands	930	35	4	11	1	106	11	778	84	0	0
East of England	1252	70	6	37	3	155	12	882	70	108	9
London	1140	112	10	161	14	225	20	642	56	0	0
South East (East)	855	38	4	88	10	105	12	623	73	1	0
South East (West)	755	61	8	55	7	143	19	496	66	0	0
South West	1049	60	6	77	7	163	16	749	71	0	0
West Midlands	1027	16	2	67	7	201	20	743	72	0	0
North West	1461	70	5	178	12	157	11	957	66	99	7
Wales	661	18	3	15	2	21	3	607	92	0	0
Northern Ireland	215	4	2	99	46	63	29	49	23	0	0
Scotland	854	26	3	99	12	124	15	361	42	244	29
United Kingdom	**11634**	**605**	**5**	**999**	**9**	**1723**	**15**	**7855**	**68**	**452**	**4**

Table 65 : Explanations for surgeons treating less than 10 screening cases in 2002/03										
Region	Total	Other caseload >30 year	Joined NHS BSP	Left NHS BSP	Patient choice	Plastic surgeon	Private practice	Not screening in area	No information	Other
N East, Yorks & Humber	25	13	6	3	0	0	2	0	0	1
East Midlands	12	3	1	1	1	1	4	0	1	0
East of England	23	0	0	0	2	0	0	0	21	0
London	39	11	2	2	1	0	0	0	23	0
South East (East)	11	3	4	2	0	0	0	1	1	0
South East (West)	15	4	2	0	2	5	1	0	1	0
South West	14	2	1	2	0	0	2	2	5	0
West Midlands	4	2	1	0	0	1	0	0	0	0
North West	18	0	0	1	12	0	0	0	4	1
Wales	9	7	0	0	1	1	0	0	0	0
Northern Ireland	1	0	0	0	0	0	0	0	1	0
Scotland	10	8	0	0	2	0	0	0	0	0
United Kingdom	**174**	**52**	**15**	**10**	**21**	**8**	**8**	**3**	**55**	**2**

APPENDIX 6

DATA FROM THE 2002/03 AUDIT OF SCREEN DETECTED BREAST CANCERS IN WOMEN ALL AGES FOR THE PERIOD 1ST APRIL 2002 – 31ST MARCH 2003 (NUMBER AND SEQUENCE OF OPERATIONS)

Table 66 : Number of therapeutic operations for cancers with a pre-operative diagnosis (C5 and/or B5)

	0		1		2		3+		Unknown		Total		Repeat (2+) rate	
Region	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**
N East, Yorks & Humber	23	2	1076	80	226	17	11	1	3	0	1339	100	237	18
East Midlands	19	2	716	82	132	15	8	1	0	0	875	100	140	16
East of England	9	1	987	87	107	9	9	1	27	2	1139	100	116	10
London	26	3	840	81	142	14	7	1	16	2	1031	100	149	14
South East (East)	13	2	618	79	133	17	14	2	1	0	779	100	147	19
South East (West)	3	0	574	87	78	12	8	1	0	0	663	100	86	13
South West	10	1	750	78	196	20	11	1	0	0	967	100	207	21
West Midlands	9	1	803	85	123	13	12	1	1	0	948	100	135	14
North West	13	1	1082	86	143	11	11	1	4	0	1253	100	154	12
Wales	6	1	520	85	78	13	6	1	0	0	610	100	84	14
Northern Ireland	1	1	167	87	23	12	0	0	1	1	192	100	23	12
Scotland	12	2	648	83	108	14	11	1	0	0	779	100	119	15
United Kingdom	**144**	**1**	**8781**	**83**	**1489**	**14**	**108**	**1**	**53**	**1**	**10575**	**100**	**1597**	**15**

Table 67 : Number of therapeutic operations (invasive cancers)

	0		1		2		3+		Unknown		Total		Repeat (2+) rate	
Region	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**
N East, Yorks & Humber	33	3	921	81	169	15	9	1	2	0	1134	100	178	16
East Midlands	18	3	597	83	100	14	5	1	0	0	720	100	105	15
East of England	38	4	817	86	81	8	5	1	13	1	954	100	86	9
London	36	4	694	81	115	13	6	1	11	1	862	100	121	14
South East (East)	15	2	525	81	102	16	9	1	1	0	652	100	111	17
South East (West)	12	2	520	87	59	10	5	1	0	0	596	100	64	11
South West	14	2	671	79	153	18	11	1	0	0	849	100	164	19
West Midlands	9	1	699	86	95	12	8	1	0	0	811	100	103	13
North West	40	4	983	86	106	9	10	1	2	0	1141	100	116	10
Wales	5	1	456	86	67	13	4	1	0	0	532	100	71	13
Northern Ireland	7	4	140	86	15	9	0	0	1	1	163	100	15	9
Scotland	21	3	558	83	87	13	6	1	0	0	672	100	93	14
United Kingdom	**248**	**3**	**7581**	**83**	**1149**	**13**	**78**	**1**	**30**	**0**	**9086**	**100**	**1227**	**14**

Table 68 : Number of therapeutic operations (non-invasive cancers)

	0		1		2		3+		Unknown		Total		Repeat (2+) rate	
Region	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**
N East, Yorks & Humber	34	11	214	70	56	18	2	1	0	0	306	100	58	19
East Midlands	17	9	144	75	28	15	3	2	0	0	192	100	31	16
East of England	30	11	196	75	30	11	4	2	2	1	262	100	34	13
London	47	18	182	70	27	10	1	0	3	1	260	100	28	11
South East (East)	32	16	127	65	32	16	5	3	0	0	196	100	37	19
South East (West)	23	17	87	64	22	16	3	2	0	0	135	100	25	19
South West	22	11	129	65	47	24	0	0	0	0	198	100	47	24
West Midlands	29	14	145	69	31	15	4	2	1	0	210	100	35	17
North West	43	18	160	66	39	16	1	0	1	0	244	100	40	16
Wales	11	9	97	81	10	8	2	2	0	0	120	100	12	10
Northern Ireland	14	29	27	55	8	16	0	0	0	0	49	100	8	16
Scotland	33	19	113	64	25	14	5	3	0	0	176	100	30	17
United Kingdom	**335**	**14**	**1621**	**69**	**355**	**15**	**30**	**1**	**7**	**0**	**2348**	**100**	**385**	**16**

Table 69 : Number of therapeutic operations (B5b (Invasive) core biopsies : invasive after surgery)												
	1		2		3+		Unknown		Total		Repeat (2+) rate	
Region	No	%	No	%	No	%	No	%	No	%	No	%
N East, Yorks & Humber	696	87	101	13	3	0	2	0	802	100	104	13
East Midlands	483	87	71	13	3	1	0	0	557	100	74	13
East of England	606	92	45	7	3	0	2	0	656	100	48	7
London	576	86	75	11	5	1	10	2	666	100	80	12
South East (East)	413	85	65	13	6	1	1	0	485	100	71	15
South East (West)	371	89	43	10	4	1	0	0	418	100	47	11
South West	567	82	116	17	7	1	0	0	690	100	123	18
West Midlands	586	90	61	9	4	1	0	0	651	100	65	10
North West	680	90	68	9	8	1	2	0	758	100	76	10
Wales	398	88	50	11	3	1	0	0	451	100	53	12
Northern Ireland	60	85	11	15	0	0	0	0	71	100	11	15
Scotland	471	88	61	11	6	1	0	0	538	100	67	12
United Kingdom	**5907**	**88**	**767**	**11**	**52**	**1**	**17**	**0**	**6743**	**100**	**819**	**12**

Table 70 : Sequence of operations (B5b (Invasive) core biopsies : invasive after surgery)																		
	Cons. & Ax		Mx. & Ax		Cons. & Ax then Cons.		Cons. & Ax then Mx		Other (Ax at 1st op)		Other (Ax at later op)		Other no Ax		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	464	58	226	28	45	6	36	4	20	2	4	0	5	1	2	0	802	100
East Midlands	328	59	150	27	48	9	14	3	12	2	0	0	5	1	0	0	557	100
East of England	446	68	131	20	21	3	11	2	16	2	2	0	27	4	2	0	656	100
London	320	48	71	11	29	4	11	2	11	2	10	2	204	31	10	2	666	100
South East (East)	304	63	101	21	40	8	13	3	16	3	0	0	10	2	1	0	485	100
South East (West)	281	67	85	20	24	6	10	2	9	2	4	1	5	1	0	0	418	100
South West	427	62	120	17	52	8	29	4	39	6	2	0	21	3	0	0	690	100
West Midlands	439	67	143	22	37	6	11	2	14	2	3	0	4	1	0	0	651	100
North West	477	63	177	23	16	2	27	4	18	2	14	2	27	4	2	0	758	100
Wales	272	60	125	28	17	4	22	5	12	3	3	1	0	0	0	0	451	100
Northern Ireland	48	68	10	14	3	4	7	10	0	0	1	1	2	3	0	0	71	100
Scotland	348	65	119	22	23	4	23	4	9	2	11	2	5	1	0	0	538	100
United Kingdom	**4154**	**62**	**1458**	**22**	**355**	**5**	**214**	**3**	**176**	**3**	**54**	**1**	**315**	**5**	**17**	**0**	**6743**	**100**

Table 71 : Number of therapeutic operations (invasive cancers with C5 only, no B5)														
	0		1		2		3+		Unknown		Total		Repeat (2+) rate	
Region	No	%	No	%	No	%	No	%	No	%	No	%	No	%
N East, Yorks & Humber	0	0	152	79	37	19	4	2	0	0	193	100	41	21
East Midlands	2	2	80	85	11	12	1	1	0	0	94	100	12	13
East of England	0	0	113	85	14	11	0	0	6	5	133	100	14	11
London	1	2	38	78	10	20	0	0	0	0	49	100	10	20
South East (East)	0	0	75	78	18	19	3	3	0	0	96	100	21	22
South East (West)	0	0	89	98	2	2	0	0	0	0	91	100	2	2
South West	0	0	34	74	11	24	1	2	0	0	46	100	12	26
West Midlands	0	0	63	88	9	13	0	0	0	0	72	100	9	13
North West	0	0	195	91	19	9	0	0	0	0	214	100	19	9
Wales	0	0	7	88	1	13	0	0	0	0	8	100	1	13
Northern Ireland	0	0	61	98	1	2	0	0	0	0	62	100	1	2
Scotland	3	4	58	85	7	10	0	0	0	0	68	100	7	10
United Kingdom	**6**	**1**	**965**	**86**	**140**	**12**	**9**	**1**	**6**	**1**	**1126**	**100**	**149**	**13**

Table 72 : Sequence of operations (invasive cancers with C5 only, no B5)																		
	Cons. & Ax		Mx. & Ax		Cons. & Ax then Cons.		Cons. & Ax then Mx		Other (Ax at 1st op)		Other (Ax at later op)		Other no Ax		Unknown or No Surgery		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	106	55	42	22	17	9	13	7	9	5	2	1	4	2	0	0	193	100
East Midlands	67	71	10	11	3	3	7	7	1	1	1	1	3	3	2	2	94	100
East of England	65	49	18	14	5	4	0	0	1	1	7	5	31	23	6	5	133	100
London	24	49	7	14	1	2	0	0	0	0	8	16	8	16	1	2	49	100
South East (East)	61	64	11	11	12	13	2	2	5	5	2	2	3	3	0	0	96	100
South East (West)	63	69	23	25	1	1	0	0	2	2	0	0	2	2	0	0	91	100
South West	29	63	3	7	4	9	0	0	5	11	3	7	2	4	0	0	46	100
West Midlands	47	65	16	22	2	3	3	4	2	3	2	3	0	0	0	0	72	100
North West	159	74	33	15	4	2	2	1	11	5	2	1	3	1	0	0	214	100
Wales	5	63	2	25	0	0	0	0	0	0	1	13	0	0	0	0	8	100
Northern Ireland	48	77	9	15	0	0	0	0	0	0	0	0	5	8	0	0	62	100
Scotland	46	68	11	16	0	0	2	3	2	3	4	6	0	0	3	4	68	100
United Kingdom	**720**	**64**	**185**	**16**	**49**	**4**	**29**	**3**	**38**	**3**	**32**	**3**	**61**	**5**	**12**	**1**	**1126**	**100**

Table 73 : Number of therapeutic operations (B5a (non-invasive) core biopsies : invasive after surgery)												
	1		2		3+		Unknown		Total		Repeat (2+) rate	
Region	No	%	No	%	No	%	No	%	No	%	No	%
N East, Yorks & Humber	37	54	30	43	2	3	0	0	69	100	32	46
East Midlands	15	47	16	50	1	3	0	0	32	100	17	53
East of England	31	69	13	29	1	2	0	0	45	100	14	31
London	39	58	26	39	1	1	1	1	67	100	27	40
South East (East)	19	51	18	49	0	0	0	0	37	100	18	49
South East (West)	23	64	12	33	1	3	0	0	36	100	13	36
South West	42	63	23	34	2	3	0	0	67	100	25	37
West Midlands	23	46	23	46	4	8	0	0	50	100	27	54
North West	43	74	13	22	2	3	0	0	58	100	15	26
Wales	28	62	16	36	1	2	0	0	45	100	17	38
Northern Ireland	13	76	3	18	0	0	1	6	17	100	3	18
Scotland	9	36	16	64	0	0	0	0	25	100	16	64
United Kingdom	**322**	**59**	**209**	**38**	**15**	**3**	**2**	**0**	**548**	**100**	**224**	**41**

Table 74 : Sequence of operations (B5a (Non-invasive) core biopsies : invasive after surgery)																		
	Mx. & Ax		Cons. & Ax		Cons. then Cons. & Ax		Cons. then Ax		Other (Ax at 1st op)		Other (Ax at later op)		Other no Ax		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	21	30	12	17	10	14	7	10	5	7	10	14	4	6	0	0	69	100
East Midlands	10	31	3	9	4	13	10	31	1	3	2	6	2	6	0	0	32	100
East of England	10	22	11	24	5	11	2	4	0	0	6	13	11	24	0	0	45	100
London	8	12	13	19	10	15	8	12	3	4	3	4	21	31	1	1	67	100
South East (East)	9	24	3	8	3	8	5	14	4	11	5	14	8	22	0	0	37	100
South East (West)	7	19	12	33	4	11	3	8	2	6	4	11	4	11	0	0	36	100
South West	12	18	24	36	6	9	7	10	3	4	7	10	8	12	0	0	67	100
West Midlands	12	24	8	16	12	24	7	14	2	4	6	12	3	6	0	0	50	100
North West	15	26	18	31	4	7	2	3	1	2	6	10	12	21	0	0	58	100
Wales	14	31	12	27	5	11	5	11	4	9	3	7	2	4	0	0	45	100
Northern Ireland	3	18	7	41	0	0	0	0	2	12	1	6	3	18	1	6	17	100
Scotland	8	32	1	4	5	20	7	28	1	4	3	12	0	0	0	0	25	100
United Kingdom	**129**	**24**	**124**	**23**	**68**	**12**	**63**	**11**	**28**	**5**	**56**	**10**	**78**	**14**	**2**	**0**	**548**	**100**

Table 75 : Number of therapeutic operations (B5a (non-invasive) core biopsies: non-invasive or micro-invasive after surgery)												
	1		2		3+		Unknown		Total		Repeat (2+) rate	
Region	No	%	No	%	No	%	No	%	No	%	No	%
N East, Yorks & Humber	162	76	49	23	2	1	0	0	213	100	51	24
East Midlands	134	80	31	18	3	2	0	0	168	100	34	20
East of England	155	86	22	12	4	2	0	0	181	100	26	14
London	150	85	22	12	1	1	4	2	177	100	23	13
South East (East)	103	74	31	22	5	4	0	0	139	100	36	26
South East (West)	85	79	19	18	3	3	0	0	107	100	22	21
South West	103	71	43	29	0	0	0	0	146	100	43	29
West Midlands	124	79	28	18	4	3	1	1	157	100	32	20
North West	128	78	35	21	1	1	0	0	164	100	36	22
Wales	79	87	10	11	2	2	0	0	91	100	12	13
Northern Ireland	20	71	8	29	0	0	0	0	28	100	8	29
Scotland	91	78	20	17	5	4	0	0	116	100	25	22
United Kingdom	**1334**	**79**	**318**	**19**	**30**	**2**	**5**	**0**	**1687**	**100**	**348**	**21**

Table 76 : Sequence of operations (B5a (Non-invasive) core biopsies : non-invasive or micro-invasive after surgery)																		
	Cons.		Mx. & Ax		Cons. then Cons.		Mx		Other (Ax at 1st op)		Other (Ax at later op)		Other no Ax		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	86	40	49	23	22	10	15	7	14	7	17	8	10	5	0	0	213	100
East Midlands	78	46	40	24	21	13	8	5	8	5	7	4	6	4	0	0	168	100
East of England	102	56	22	12	10	6	25	14	8	4	6	3	8	4	0	0	181	100
London	111	63	15	8	12	7	14	8	11	6	5	3	5	3	4	2	177	100
South East (East)	64	46	21	15	15	11	11	8	14	10	7	5	7	5	0	0	139	100
South East (West)	52	49	24	22	9	8	5	5	4	4	10	9	3	3	0	0	107	100
South West	68	47	22	15	25	17	6	4	10	7	12	8	3	2	0	0	146	100
West Midlands	76	48	24	15	12	8	18	11	7	4	7	4	12	8	1	1	157	100
North West	83	51	21	13	16	10	7	4	21	13	10	6	6	4	0	0	164	100
Wales	39	43	27	30	7	8	9	10	4	4	3	3	2	2	0	0	91	100
Northern Ireland	14	50	2	7	6	21	3	11	1	4	2	7	0	0	0	0	28	100
Scotland	57	49	32	28	10	9	1	1	4	3	11	9	1	1	0	0	116	100
United Kingdom	**830**	**49**	**299**	**18**	**165**	**10**	**122**	**7**	**106**	**6**	**97**	**6**	**63**	**4**	**5**	**0**	**1687**	**100**

APPENDIX 7

ADJUVANT THERAPY AUDIT FOR 1ST APRIL 2001 – 31ST MARCH 2002 WITH TUMOUR DATA FROM THE 2001/02 AUDIT OF SCREEN DETECTED BREAST CANCERS

Table 77 : 2001/02 cases supplied to the ABS at BASO adjuvant audit

Region	Eligible tumours submitted in 2001/02	Eligible tumours newly registered since 2001/02*	Total cases in the adjuvant audit	No adjuvant data supplied		Some adjuvant data but exclude***		Include	
				No.	%	No.	%	No.	%
N East, Yorks & Humber	1261	0	1261	251	20	0	0	1010	80
East Midlands	779	0	779	0	0	0	0	779	100
East of England	1055	23	1078	281	26	100	9	697	65
London	890	11	901	205	23	10	1	686	76
South East (East)	850	0	850	157	18	0	0	693	82
South East (West)	686	7	693	102	15	1	0	590	85
South West	937	4	941	113	12	18	2	810	86
West Midlands	841	1	842	164	19	6	1	672	80
North West	1236	0	1236	100	8	0	0	1136	92
Wales	609	0	609	5	1	0	0	604	99
Northern Ireland	194	0	194	33	17	1	1	160	82
Scotland	853	39	892	52	6	1	0	839	94
United Kingdom	**10191**	**85**	**10276**	**1463**	**14**	**137**	**1**	**8676**	**84**

*Newly registered tumours included in the adjuvant audit had no tumour data supplied in 2001/02
**East of England include 24 new tumours, but exclude 1 duplicate case
***Exclude cases with incomplete surgery data or with treatment prior to first assessment date

Table 78 : Data completeness for each adjuvant therapy

Region	Total	Complete RT		Complete CT		Complete HT		Include	
		No.	%	No.	%	No.	%		
N East, Yorks & Humber	1261	931	74	983	78	954	76	1010	80
East Midlands	779	779	100	779	100	779	100	779	100
East of England	1078	628	58	679	63	629	58	697	65
London	901	630	70	654	73	582	65	686	76
South East (East)	850	640	75	666	78	618	73	693	82
South East (West)	693	585	84	571	82	506	73	590	85
South West	941	765	81	769	82	711	76	810	86
West Midlands	842	621	74	639	76	601	71	672	80
North West	1236	1007	81	902	73	1003	81	1136	92
Wales	609	601	99	604	99	596	98	604	99
Northern Ireland	194	154	79	160	82	150	77	160	82
Scotland	892	828	93	839	94	829	93	839	94
United Kingdom	**10276**	**8169**	**79**	**8245**	**80**	**7958**	**77**	**8676**	**84**

Table 79 : Overall data completeness

Region	Total eligible	RT, CT and HT complete		RT and CT complete		Total included	
		No.	%	No.	%		
N East, Yorks & Humber	1261	877	70	918	73	1010	80
East Midlands	779	779	100	779	100	779	100
East of England	1078	577	54	619	57	697	65
London	901	538	60	604	67	686	76
South East (East)	850	579	68	620	73	693	82
South East (West)	693	501	72	567	82	590	85
South West	941	665	71	742	79	810	86
West Midlands	842	541	64	594	71	672	80
North West	1236	758	61	809	65	1136	92
Wales	609	593	97	601	99	604	99
Northern Ireland	194	145	75	154	79	160	82
Scotland	892	819	92	828	93	839	94
United Kingdom	**10276**	**7372**	**72**	**7835**	**76**	**8676**	**84**

Table 80 : Radiotherapy start date						
	Radiotherapy		No radiotherapy		Total	
Region	No	%	No	%	No	%
N East, Yorks & Humber	577	63	341	37	918	100
East Midlands	507	65	272	35	779	100
East of England	405	65	214	35	619	100
London	377	62	227	38	604	100
South East (East)	340	55	280	45	620	100
South East (West)	366	65	201	35	567	100
South West	468	63	274	37	742	100
West Midlands	402	68	192	32	594	100
North West	444	55	365	45	809	100
Wales	380	63	221	37	601	100
Northern Ireland	109	71	45	29	154	100
Scotland	588	71	240	29	828	100
United Kingdom	**4963**	**63**	**2872**	**37**	**7835**	**100**

Audit cut-off date 31/03/2003

Table 81 : Chemotherapy start date						
	Chemotherapy		No chemotherapy		Total	
Region	No	%	No	%	No	%
N East, Yorks & Humber	128	14	790	86	918	100
East Midlands	128	16	651	84	779	100
East of England	100	16	519	84	619	100
London	104	17	500	83	604	100
South East (East)	121	20	499	80	620	100
South East (West)	82	14	485	86	567	100
South West	119	16	623	84	742	100
West Midlands	118	20	476	80	594	100
North West	123	15	686	85	809	100
Wales	96	16	505	84	601	100
Northern Ireland	46	30	108	70	154	100
Scotland	165	20	663	80	828	100
United Kingdom	**1330**	**17**	**6505**	**83**	**7835**	**100**

Audit cut-off date 31/03/2003

Table 82 : Hormonal therapy start date						
	Hormonal therapy		No hormonal therapy		Total	
Region	No	%	No	%	No	%
N East, Yorks & Humber	712	75	242	25	954	100
East Midlands	566	73	213	27	779	100
East of England	474	75	155	25	629	100
London	393	68	189	32	582	100
South East (East)	434	70	184	30	618	100
South East (West)	368	73	138	27	506	100
South West	523	74	188	26	711	100
West Midlands	447	74	154	26	601	100
North West	691	69	312	31	1003	100
Wales	411	69	185	31	596	100
Northern Ireland	110	73	40	27	150	100
Scotland	597	72	232	28	829	100
United Kingdom	**5726**	**72**	**2232**	**28**	**7958**	**100**

Audit cut-off date 31/03/2003

Table 83 : Median age of cases with adjuvant therapy compared to overall median age								
Region	Radiotherapy		Chemotherapy		Hormone Therapy		Total cases	
	Total cases	Median	Total cases	Median	Total cases	Median	Total cases	Median
N East, Yorks & Humber	577	58	57	57	712	58	1010	58
East Midlands	507	58	56	56	566	58	779	58
East of England	405	59	56	56	474	60	697	59
London	377	58	56	55	393	58	686	58
South East (East)	340	58	56	55	434	58	693	58
South East (West)	366	58	56	56	368	58	590	58
South West	468	59	57	57	523	59	810	59
West Midlands	402	57	55	55	447	57	672	57
North West	444	58	57	56	691	58	1136	57
Wales	380	58	56	56	411	58	604	58
Northern Ireland	109	58	57	58	110	58	160	58
Scotland	588	58	58	57	597	58	839	58
United Kingdom	**4963**	**58**	**57**	**56**	**5726**	**58**	**8676**	**58**

Table 84 : Median age of cases without adjuvant therapy compared to overall median age								
Region	No Radiotherapy		No Chemotherapy		No Hormone Therapy		Total cases	
	Total cases	Median	Total cases	Median	Total cases	Median	Total cases	Median
N East, Yorks & Humber	341	58	790	58	242	57	1010	58
East Midlands	272	58	651	59	213	59	779	58
East of England	214	59	519	60	155	57	697	59
London	227	58	500	58	189	57	686	58
South East (East)	280	57	499	58	184	57	693	58
South East (West)	201	58	485	58	138	56	590	58
South West	274	59	623	59	188	58	810	59
West Midlands	192	57	476	57	154	56	672	57
North West	365	57	686	58	312	56	1136	57
Wales	221	58	505	59	185	58	604	58
Northern Ireland	45	58	108	59	40	59	160	58
Scotland	240	59	663	58	232	57	839	58
United Kingdom	**2872**	**58**	**6505**	**58**	**2232**	**57**	**8676**	**58**

Table 85 : Surgery for included cases								
Region	No surgery		1 operation		>1 operation		Total	
	No	%	No	%	No	%	No	%
N East, Yorks & Humber	5	0	744	74	261	26	1010	100
East Midlands	6	1	637	82	136	17	779	100
East of England	11	2	498	71	188	27	697	100
London	11	2	565	82	110	16	686	100
South East (East)	3	0	522	75	168	24	693	100
South East (West)	4	1	455	77	131	22	590	100
South West	3	0	562	69	245	30	810	100
West Midlands	0	0	535	80	137	20	672	100
North West	6	1	914	80	216	19	1136	100
Wales	6	1	467	77	131	22	604	100
Northern Ireland	0	0	129	81	31	19	160	100
Scotland	3	0	692	82	144	17	839	100
United Kingdom	**58**	**1**	**6720**	**77**	**1898**	**22**	**8676**	**100**

Table 86 : First surgery								
	Diagnostic (no pre-operative diagnosis)		Therapeutic		Unknown*		Total	
Region	No	%	No	%	No	%	No	%
N East, Yorks & Humber	118	12	887	88	0	0	1005	100
East Midlands	67	9	706	91	0	0	773	100
East of England	55	8	607	88	24	3	686	100
London	69	10	600	89	6	1	675	100
South East (East)	61	9	629	91	0	0	690	100
South East (West)	86	15	495	84	5	1	586	100
South West	83	10	721	89	3	0	807	100
West Midlands	65	10	606	90	1	0	672	100
North West	158	14	972	86	0	0	1130	100
Wales	49	8	549	92	0	0	598	100
Northern Ireland	27	17	133	83	0	0	160	100
Scotland	109	13	695	83	32	4	836	100
United Kingdom	**947**	**11**	**7600**	**88**	**71**	**1**	**8618**	**100**

*Some cases had no tumour data supplied for 2001/02

Table 87 : Surgery for cases with radiotherapy								
	No surgery		1 operation		>1 operation		Total	
Region	No	%	No	%	No	%	No	%
N East, Yorks & Humber	0	0	435	75	142	25	577	100
East Midlands	1	0	441	87	65	13	507	100
East of England	2	0	315	78	88	22	405	100
London	0	0	319	85	58	15	377	100
South East (East)	2	1	265	78	73	21	340	100
South East (West)	0	0	301	82	65	18	366	100
South West	0	0	344	74	124	26	468	100
West Midlands	0	0	344	86	58	14	402	100
North West	1	0	371	84	72	16	444	100
Wales	0	0	307	81	73	19	380	100
Northern Ireland	0	0	91	83	18	17	109	100
Scotland	0	0	497	85	91	15	588	100
United Kingdom	**6**	**0**	**4030**	**81**	**927**	**19**	**4963**	**100**

Table 88 : Surgery for cases with chemotherapy								
	No surgery		1 operation		>1 operation		Total	
Region	No	%	No	%	No	%	No	%
N East, Yorks & Humber	2	2	107	84	19	15	128	100
East Midlands	2	2	109	85	17	13	128	100
East of England	0	0	71	71	29	29	100	100
London	2	2	90	87	12	12	104	100
South East (East)	1	1	97	80	23	19	121	100
South East (West)	1	1	68	83	13	16	82	100
South West	1	1	89	75	29	24	119	100
West Midlands	0	0	103	87	15	13	118	100
North West	1	1	103	84	19	15	123	100
Wales	0	0	71	74	25	26	96	100
Northern Ireland	0	0	39	85	7	15	46	100
Scotland	0	0	143	87	22	13	165	100
United Kingdom	**10**	**1**	**1090**	**82**	**230**	**17**	**1330**	**100**

Table 89 : Invasive status of included cases										
	Invasive		Micro-invasive		Non-invasive		Unknown		Total	
Region	No	%	No	%	No	%	No	%	No	%
N East, Yorks & Humber	783	78	10	1	211	21	6	1	1010	100
East Midlands	605	78	9	1	164	21	1	0	779	100
East of England	523	75	6	1	143	21	25	4	697	100
London	524	76	5	1	147	21	10	1	686	100
South East (East)	528	76	13	2	151	22	1	0	693	100
South East (West)	460	78	1	0	122	21	7	1	590	100
South West	620	77	12	1	173	21	5	1	810	100
West Midlands	548	82	5	1	118	18	1	0	672	100
North West	905	80	20	2	210	18	1	0	1136	100
Wales	479	79	9	1	113	19	3	0	604	100
Northern Ireland	122	76	1	1	37	23	0	0	160	100
Scotland	660	79	7	1	139	17	33	4	839	100
United Kingdom	**6757**	**78**	**98**	**1**	**1728**	**20**	**93**	**1**	**8676**	**100**

Table 90 : ER status										
	Positive		Negative		Not Done		Unknown		Total	
Region	No	%	No	%	No	%	No	%	No	%
N East, Yorks & Humber	678	67	98	10	87	9	147	15	1010	100
East Midlands	572	73	73	9	105	13	29	4	779	100
East of England	503	72	66	9	0	0	128	18	697	100
London	484	71	81	12	25	4	96	14	686	100
South East (East)	451	65	66	10	0	0	176	25	693	100
South East (West)	441	75	66	11	6	1	77	13	590	100
South West	569	70	88	11	0	0	153	19	810	100
West Midlands	486	72	85	13	10	1	91	14	672	100
North West	719	63	120	11	59	5	238	21	1136	100
Wales	384	64	29	5	0	0	191	32	604	100
Northern Ireland	119	74	28	18	0	0	13	8	160	100
Scotland	615	73	63	8	58	7	103	12	839	100
United Kingdom	**6021**	**69**	**863**	**10**	**350**	**4**	**1442**	**17**	**8676**	**100**

Table 91 : Proportion of cases with ER status not done or unknown according to invasive status										
	Invasive		Micro-invasive		Non-invasive		Unknown		Total cases	
Region	Total	%	Total	%	Total	%	Total	%	Total	%
N East, Yorks & Humber	73	9	3	30	153	73	5	83	234	23
East Midlands	30	5	2	22	102	62	0	0	134	17
East of England	28	5	2	33	96	67	2	8	128	18
London	46	9	2	40	70	48	3	30	121	18
South East (East)	80	15	4	31	92	61	0	0	176	25
South East (West)	13	3	0	0	66	54	4	57	83	14
South West	30	5	4	33	117	68	2	40	153	19
West Midlands	23	4	4	80	73	62	1	100	101	15
North West	176	19	7	35	113	54	1	100	297	26
Wales	87	18	6	67	96	85	2	67	191	32
Northern Ireland	3	2	0	0	10	27	0	-	13	8
Scotland	45	7	4	57	97	70	15	45	161	19
United Kingdom	**634**	**9**	**38**	**39**	**1085**	**63**	**35**	**38**	**1792**	**21**

Table 92 : PgR status										
	Positive		Negative		Not Done		Unknown		Total	
Region	No	%	No	%	No	%	No	%	No	%
N East, Yorks & Humber	311	31	91	9	301	30	307	30	1010	100
East Midlands	174	22	51	7	474	61	80	10	779	100
East of England	88	13	32	5	4	1	573	82	697	100
London	253	37	83	12	110	16	240	35	686	100
South East (East)	96	14	43	6	61	9	493	71	693	100
South East (West)	173	29	73	12	156	26	188	32	590	100
South West	196	24	80	10	57	7	477	59	810	100
West Midlands	138	21	56	8	106	16	372	55	672	100
North West	266	23	119	10	299	26	452	40	1136	100
Wales	37	6	13	2	0	0	554	92	604	100
Northern Ireland	2	1	3	2	0	0	155	97	160	100
Scotland	159	19	57	7	61	7	562	67	839	100
United Kingdom	**1893**	**22**	**701**	**8**	**1629**	**19**	**4453**	**51**	**8676**	**100**

Table 93 : PgR status of ER negative cases										
	Positive		Negative		Not Done		Unknown		Total	
Region	No	%	No	%	No	%	No	%	No	%
N East, Yorks & Humber	2	2	51	52	25	26	20	20	98	100
East Midlands	5	7	22	30	38	52	8	11	73	100
East of England	7	11	23	35	0	0	36	55	66	100
London	6	7	43	53	10	12	22	27	81	100
South East (East)	1	2	28	42	7	11	30	45	66	100
South East (West)	5	8	34	52	16	24	11	17	66	100
South West	7	8	46	52	0	0	35	40	88	100
West Midlands	1	1	35	41	17	20	32	38	85	100
North West	5	4	58	48	17	14	40	33	120	100
Wales	5	17	11	38	0	0	13	45	29	100
Northern Ireland	1	4	3	11	0	0	24	86	28	100
Scotland	1	2	33	52	0	0	29	46	63	100
United Kingdom	**46**	**5**	**387**	**45**	**130**	**15**	**300**	**35**	**863**	**100**

Table 94 : Cerb-B2/HER-2 status										
	Positive		Negative		Not Done		Unknown		Total	
Region	No	%	No	%	No	%	No	%	No	%
N East, Yorks & Humber	11	1	35	3	552	55	412	41	1010	100
East Midlands	3	0	11	1	652	84	113	15	779	100
East of England	6	1	30	4	109	16	552	79	697	100
London	14	2	76	11	183	27	413	60	686	100
South East (East)	7	1	25	4	106	15	555	80	693	100
South East (West)	33	6	72	12	267	45	218	37	590	100
South West	66	8	208	26	64	8	472	58	810	100
West Midlands	26	4	35	5	87	13	524	78	672	100
North West	56	5	124	11	314	28	642	57	1136	100
Wales	8	1	5	1	0	0	591	98	604	100
Northern Ireland	1	1	5	3	0	0	154	96	160	100
Scotland	18	2	104	12	73	9	644	77	839	100
United Kingdom	**249**	**3**	**730**	**8**	**2407**	**28**	**5290**	**61**	**8676**	**100**

Table 95 : Time from assessment to first diagnostic surgery (cases with no pre-operative diagnosis)												
	Total	≤14 days		≤30 days		≤60 days		≤90 days		≤120 days		Median
Region		No	%	No	%	No	%	No	%	No	%	
N East, Yorks & Humber	118	11	9	60	51	103	87	112	95	117	99	30
East Midlands	67	1	1	30	45	60	90	63	94	66	99	32
East of England	55	8	15	30	55	46	84	53	96	54	98	28
London	69	2	3	30	43	59	86	68	99	69	100	35
South East (East)	61	4	7	16	26	43	70	53	87	58	95	43
South East (West)	86	17	20	67	78	77	90	80	93	84	98	22
South West	83	6	7	32	39	71	86	78	94	81	98	34
West Midlands	65	4	6	26	40	53	82	61	94	63	97	33
North West	158	15	9	70	44	135	85	152	96	154	97	33
Wales	49	15	31	39	80	47	96	48	98	48	98	22
Northern Ireland	27	7	26	18	67	26	96	27	100	27	100	28
Scotland	109	14	13	62	57	96	88	105	96	107	98	29
United Kingdom	**947**	**104**	**11**	**480**	**51**	**816**	**86**	**900**	**95**	**928**	**98**	**30**

Table 96 : Time from assessment to first therapeutic surgery (cases with pre-operative diagnosis)												
	Total	≤14 days		≤30 days		≤60 days		≤90 days		≤120 days		Median
Region		No	%	No	%	No	%	No	%	No	%	
N East, Yorks & Humber	887	96	11	576	65	845	95	871	98	878	99	27
East Midlands	706	85	12	405	57	664	94	683	97	686	97	28
East of England	607	59	10	371	61	571	94	589	97	593	98	27
London	600	62	10	301	50	525	88	571	95	577	96	30
South East (East)	629	25	4	191	30	496	79	579	92	607	97	40
South East (West)	495	75	15	335	68	459	93	485	98	488	99	25
South West	721	46	6	380	53	674	93	708	98	711	99	30
West Midlands	606	110	18	441	73	575	95	599	99	602	99	22
North West	972	111	11	567	58	897	92	947	97	962	99	28
Wales	549	83	15	407	74	534	97	545	99	547	100	23
Northern Ireland	133	72	54	128	96	132	99	132	99	132	99	14
Scotland	695	123	18	470	68	663	95	681	98	686	99	26
United Kingdom	**7600**	**947**	**12**	**4572**	**60**	**7035**	**93**	**7390**	**97**	**7469**	**98**	**27**

Table 97 : Time from first surgery to final surgery												
	Total	≤14 days		≤30 days		≤60 days		≤90 days		≤120 days		Median
Region		No	%	No	%	No	%	No	%	No	%	
N East, Yorks & Humber	261	15	6	137	52	228	87	253	97	257	98	28
East Midlands	136	16	12	61	45	114	84	129	95	134	99	34
East of England	188	17	9	106	56	176	94	184	98	184	98	28
London	110	11	10	41	37	83	75	100	91	105	95	35
South East (East)	168	10	6	60	36	136	81	155	92	161	96	35
South East (West)	131	14	11	67	51	115	88	124	95	127	97	29
South West	245	25	10	116	47	208	85	233	95	238	97	32
West Midlands	137	13	9	83	61	117	85	130	95	133	97	28
North West	216	15	7	91	42	194	90	210	97	212	98	34
Wales	131	25	19	91	69	121	92	128	98	128	98	24
Northern Ireland	31	12	39	28	90	29	94	31	100	31	100	15
Scotland	144	10	7	72	50	121	84	132	92	139	97	31
United Kingdom	**1898**	**183**	**10**	**953**	**50**	**1642**	**87**	**1809**	**95**	**1849**	**97**	**30**

Table 98 : Time from surgery to radiotherapy for cases with 1 operation															
Region	Total	Exclusions		Total incl-uded	≤14 days		≤30 days		≤60 days		≤90 days		≤120 days		Median
		CT between RT and first surgery	RT before first surgery		No	%	No	%	No	%	No	%	No	%	
N East, Yorks & Humber	435	74	1	360	1	0	8	2	107	30	232	64	324	90	78
East Midlands	441	82	0	359	0	0	12	3	172	48	295	82	335	93	62
East of England	315	54	2	259	1	0	10	4	57	22	133	51	207	80	90
London	319	55	4	260	1	0	10	4	47	18	124	48	201	77	92
South East (East)	265	68	1	196	1	1	2	1	25	13	89	45	158	81	95
South East (West)	301	59	0	242	1	0	6	2	47	19	92	38	169	70	104
South West	344	60	1	283	3	1	5	2	100	35	250	88	269	95	67
West Midlands	344	79	0	265	0	0	7	3	98	37	204	77	240	91	67
North West	371	70	0	301	16	5	27	9	82	27	191	63	252	84	76
Wales	307	58	0	249	0	0	2	1	85	34	168	67	225	90	72
Northern Ireland	91	24	0	67	3	4	6	9	20	30	52	78	63	94	69
Scotland	497	98	0	399	1	0	9	2	237	59	355	89	372	93	56
United Kingdom	**4030**	**781**	**9**	**3240**	**28**	**1**	**104**	**3**	**1077**	**33**	**2185**	**67**	**2815**	**87**	**73**

Table 99 : Time from first surgery to radiotherapy for cases with 2+ operations															
Region	Total	Exclusions		Total incl-uded	≤14 days		≤30 days		≤60 days		≤90 days		≤120 days		Median
		CT between RT and first surgery	RT before first surgery		No	%	No	%	No	%	No	%	No	%	
N East, Yorks & Humber	142	14	0	128	0	0	1	1	5	4	46	36	79	62	106
East Midlands	65	8	0	57	0	0	0	0	4	7	29	51	49	86	90
East of England	88	21	0	67	0	0	0	0	7	10	17	25	36	54	114
London	58	7	0	51	0	0	1	2	4	8	16	31	27	53	119
South East (East)	73	16	0	57	0	0	0	0	4	7	8	14	25	44	127
South East (West)	65	8	0	57	0	0	0	0	1	2	9	16	24	42	129
South West	124	21	1	102	0	0	0	0	10	10	55	54	87	85	88
West Midlands	58	13	0	45	0	0	0	0	1	2	13	29	36	80	103
North West	72	8	0	64	1	2	2	3	8	13	19	30	28	44	131
Wales	73	19	0	54	0	0	0	0	6	11	21	39	44	81	101
Northern Ireland	18	5	0	13	0	0	0	0	0	0	4	31	12	92	111
Scotland	91	19	0	72	0	0	0	0	6	8	41	57	65	90	87
United Kingdom	**927**	**159**	**1**	**767**	**1**	**0**	**4**	**1**	**56**	**7**	**278**	**36**	**512**	**67**	**103**

Table 100 : Time from surgery to chemotherapy for cases with 1 operation															
Region	Total	Exclusions		Total included	≤14 days		≤30 days		≤60 days		≤90 days		≤120 days		Median
		RT between CT and first surgery	CT before first surgery		No	%	No	%	No	%	No	%	No	%	
N East, Yorks & Humber	107	1	7	99	2	2	17	17	81	82	90	91	97	98	42
East Midlands	109	3	13	93	2	2	27	29	85	91	92	99	93	100	38
East of England	71	2	8	61	1	2	30	49	59	97	60	98	61	100	31
London	90	5	8	77	5	6	28	36	56	73	68	88	72	94	40
South East (East)	97	3	8	86	0	0	13	15	72	84	82	95	84	98	41
South East (West)	68	1	2	65	1	2	29	45	58	89	61	94	64	98	33
South West	89	4	4	81	2	2	14	17	60	74	74	91	80	99	43
West Midlands	103	3	0	100	1	1	21	21	91	91	96	96	97	97	37
North West	103	7	1	95	1	1	26	27	85	89	93	98	93	98	40
Wales	71	2	3	66	1	2	15	23	49	74	62	94	65	98	43
Northern Ireland	39	12	1	26	1	4	5	19	25	96	26	100	26	100	37
Scotland	143	6	8	129	0	0	53	41	116	90	123	95	127	98	35
United Kingdom	**1090**	**49**	**63**	**978**	**17**	**2**	**278**	**28**	**837**	**86**	**927**	**95**	**959**	**98**	**38**

Table 101 : Time from first surgery to chemotherapy for cases with 2+ operations															
Region	Total	Exclusions		Total included	≤14 days		≤30 days		≤60 days		≤90 days		≤120 days		Median
		RT between CT and first surgery	CT before first surgery		No	%	No	%	No	%	No	%	No	%	
N East, Yorks & Humber	19	1	0	18	0	0	0	0	8	44	17	94	18	100	63
East Midlands	17	0	1	16	0	0	1	6	5	31	13	81	15	94	78
East of England	29	1	1	27	0	0	1	4	12	44	23	85	24	89	63
London	12	1	1	10	0	0	1	10	3	30	5	50	7	70	90
South East (East)	23	0	2	21	0	0	2	10	6	29	15	71	19	90	80
South East (West)	13	0	1	12	0	0	1	8	3	25	10	83	10	83	62
South West	29	1	1	27	0	0	0	0	8	30	20	74	27	100	78
West Midlands	15	0	0	15	0	0	0	0	8	53	13	87	14	93	58
North West	19	2	0	17	0	0	3	18	8	47	15	88	15	88	61
Wales	25	0	0	25	0	0	0	0	7	28	20	80	25	100	66
Northern Ireland	7	0	0	7	0	0	2	29	7	100	7	100	7	100	35
Scotland	22	0	0	22	0	0	1	5	10	45	21	95	21	95	64
United Kingdom	**230**	**6**	**7**	**217**	**0**	**0**	**12**	**6**	**85**	**39**	**179**	**82**	**202**	**93**	**66**

Table 102 : Time from first surgery to hormonal therapy																
Region	Total	No surgery	HT before first surgery		Total included	≤14 days		≤30 days		≤60 days		≤90 days		≤120 days		Median
			No.	%		No	%	No	%	No	%	No	%	No	%	
N East, Yorks & Humber	712	3	27	4	682	221	32	425	62	558	82	583	85	605	89	21
East Midlands	566	3	73	13	490	205	42	369	75	422	86	438	89	448	91	16
East of England	474	8	27	6	439	144	33	262	60	350	80	363	83	378	86	22
London	393	5	35	9	353	68	19	175	50	241	68	271	77	291	82	31
South East (East)	434	2	107	25	325	137	42	194	60	254	78	277	85	286	88	20
South East (West)	368	1	25	7	342	120	35	224	65	282	82	305	89	312	91	21
South West	523	0	111	21	412	152	37	247	60	331	80	359	87	368	89	23
West Midlands	447	0	86	19	361	175	48	247	68	308	85	318	88	322	89	15
North West	691	2	26	4	663	148	22	347	52	477	72	548	83	576	87	28
Wales	411	4	28	7	379	172	45	236	62	294	78	320	84	326	86	20
Northern Ireland	110	0	3	3	107	27	25	62	58	76	71	81	76	89	83	29
Scotland	597	1	14	2	582	207	36	351	60	448	77	471	81	484	83	22
United Kingdom	**5726**	**29**	**562**	**10**	**5135**	**1776**	**35**	**3139**	**61**	**4041**	**79**	**4334**	**84**	**4485**	**87**	**21**

Table 103 : Order of surgery, radiotherapy and chemotherapy treatments													
Region	Total	Surgery only		Surgery to RT		Surgery to CT		Surgery to CT to RT		Surgery to RT to CT		Other	
		No	%	No	%	No	%	No	%	No	%	No	%
N East, Yorks & Humber	918	306	33	480	52	28	3	88	10	2	0	14	2
East Midlands	779	244	31	403	52	19	2	89	11	3	0	21	3
East of England	619	190	31	315	51	13	2	72	12	3	0	26	4
London	604	190	31	297	49	24	4	62	10	5	1	26	4
South East (East)	620	252	41	242	39	22	4	83	13	3	0	18	3
South East (West)	567	187	33	295	52	9	2	67	12	1	0	8	1
South West	742	245	33	374	50	26	4	80	11	5	1	12	2
West Midlands	594	169	28	307	52	23	4	91	15	3	1	1	0
North West	809	327	40	353	44	32	4	78	10	9	1	10	1
Wales	601	202	34	298	50	14	2	76	13	2	0	9	1
Northern Ireland	154	41	27	67	44	4	3	29	19	12	8	1	1
Scotland	828	202	24	458	55	34	4	116	14	6	1	12	1
United Kingdom	**7835**	**2555**	**33**	**3889**	**50**	**248**	**3**	**931**	**12**	**54**	**1**	**158**	**2**

"Surgery" may be 1 or multiple operations (diagnostic or therapeutic)

Table 104 : Median time (in days) from assessment to final therapy (final surgery, RT or CT)										
Region	All cases		Surgery only		Surgery to RT		Surgery to CT		Surgery to CT to RT	
	Total	Median	Total	Median	Total	Median	Total	Median	Total	Median
N East, Yorks & Humber	918	95	306	36	480	113	28	64	88	221
East Midlands	779	86	244	36	403	92	19	82	89	205
East of England	619	105	190	42	315	124	13	67	72	217
London	604	110	190	41	297	131	24	95	62	231
South East (East)	620	124	252	54	242	146	22	97	83	239
South East (West)	567	112	187	35	295	137	9	71	67	218
South West	742	97	245	44	374	104	26	98	80	222
West Midlands	594	94	169	41	307	99	23	56	91	231
North West	809	85	327	42	353	115	32	74	78	230
Wales	601	87	202	27	298	102	14	91	76	231
Northern Ireland	154	97	41	18	67	97	4	46	29	167
Scotland	828	84	202	34	458	86	34	67	116	188
United Kingdom	**7835**	**94**	**2555**	**39**	**3889**	**108**	**248**	**76**	**931**	**218**

Table 105 : Invasive status of cancers with known radiotherapy data										
	Invasive		Micro-invasive		Non-invasive		Unknown		Total	
Region	No	%	No	%	No	%	No	%	No	%
N East, Yorks & Humber	720	77	10	1	195	21	6	1	931	100
East Midlands	605	78	9	1	164	21	1	0	779	100
East of England	467	74	6	1	141	22	14	2	628	100
London	478	76	5	1	138	22	9	1	630	100
South East (East)	484	76	12	2	143	22	1	0	640	100
South East (West)	456	78	1	0	121	21	7	1	585	100
South West	580	76	11	1	169	22	5	1	765	100
West Midlands	506	81	5	1	109	18	1	0	621	100
North West	800	79	18	2	188	19	1	0	1007	100
Wales	476	79	9	1	113	19	3	0	601	100
Northern Ireland	117	76	1	1	36	23	0	0	154	100
Scotland	650	79	7	1	139	17	32	4	828	100
United Kingdom	**6339**	**78**	**94**	**1**	**1656**	**20**	**80**	**1**	**8169**	**100**

Table 106 : Treatment of invasive cancers with known radiotherapy data										
	Conservation surgery		Mastectomy		No Surgery		Unknown		Total	
Region	No	%	No	%	No	%	No	%	No	%
N East, Yorks & Humber	470	65	244	34	4	1	2	0	720	100
East Midlands	417	69	183	30	5	1	0	0	605	100
East of England	321	69	144	31	1	0	1	0	467	100
London	382	80	88	18	8	2	0	0	478	100
South East (East)	338	70	143	30	3	1	0	0	484	100
South East (West)	352	77	99	22	4	1	1	0	456	100
South West	413	71	167	29	0	0	0	0	580	100
West Midlands	356	70	150	30	0	0	0	0	506	100
North West	551	69	243	30	5	1	1	0	800	100
Wales	309	65	159	33	8	2	0	0	476	100
Northern Ireland	84	72	33	28	0	0	0	0	117	100
Scotland	438	67	180	28	7	1	25	4	650	100
United Kingdom	**4431**	**70**	**1833**	**29**	**45**	**1**	**30**	**0**	**6339**	**100**

Table 107 : Radiotherapy for invasive cancers treated by conservation surgery						
	Radiotherapy		No radiotherapy		Total	
Region	No	%	No	%	No	%
N East, Yorks & Humber	441	94	29	6	470	100
East Midlands	386	93	31	7	417	100
East of England	287	89	34	11	321	100
London	318	83	64	17	382	100
South East (East)	273	81	65	19	338	100
South East (West)	307	87	45	13	352	100
South West	381	92	32	8	413	100
West Midlands	331	93	25	7	356	100
North West	460	83	91	17	551	100
Wales	298	96	11	4	309	100
Northern Ireland	75	89	9	11	84	100
Scotland	407	93	31	7	438	100
United Kingdom	**3964**	**89**	**467**	**11**	**4431**	**100**

Table 108 : Size of invasive cases treated by conservation without RT												
	<15mm		15-<20mm		20-<50mm		50+mm		Unknown		Total	
Region	No	%	No	%	No	%	No	%	No	%	No	%
N East, Yorks & Humber	18	62	2	7	7	24	0	0	2	7	29	100
East Midlands	21	68	5	16	4	13	0	0	1	3	31	100
East of England	16	47	10	29	7	21	0	0	1	3	34	100
London	39	61	12	19	12	19	0	0	1	2	64	100
South East (East)	44	68	12	18	8	12	0	0	1	2	65	100
South East (West)	33	73	6	13	6	13	0	0	0	0	45	100
South West	22	69	5	16	5	16	0	0	0	0	32	100
West Midlands	13	52	4	16	6	24	0	0	2	8	25	100
North West	66	73	8	9	15	16	2	2	0	0	91	100
Wales	8	73	1	9	0	0	0	0	2	18	11	100
Northern Ireland	5	56	1	11	3	33	0	0	0	0	9	100
Scotland	17	55	8	26	6	19	0	0	0	0	31	100
United Kingdom	**302**	**65**	**74**	**16**	**79**	**17**	**2**	**0**	**10**	**2**	**467**	**100**

Table 109 : Treatment of non-invasive cancers with known radiotherapy data										
	Conservation surgery		Mastectomy		No Surgery		Unknown		Total	
Region	No	%	No	%	No	%	No	%	No	%
N East, Yorks & Humber	126	65	69	35	0	0	0	0	195	100
East Midlands	94	57	70	43	0	0	0	0	164	100
East of England	109	77	32	23	0	0	0	0	141	100
London	94	68	36	26	5	4	3	2	138	100
South East (East)	90	63	49	34	4	3	0	0	143	100
South East (West)	98	81	23	19	0	0	0	0	121	100
South West	119	70	49	29	1	1	0	0	169	100
West Midlands	72	66	35	32	0	0	2	2	109	100
North West	131	70	53	28	4	2	0	0	188	100
Wales	75	66	38	34	0	0	0	0	113	100
Northern Ireland	30	83	6	17	0	0	0	0	36	100
Scotland	109	78	25	18	0	0	5	4	139	100
United Kingdom	**1147**	**69**	**485**	**29**	**14**	**1**	**10**	**1**	**1656**	**100**

Table 110 : Radiotherapy for non-invasive cancers treated by conservation surgery						
	Radiotherapy		No radiotherapy		Total	
Region	No	%	No	%	No	%
N East, Yorks & Humber	64	51	62	49	126	100
East Midlands	49	52	45	48	94	100
East of England	51	47	58	53	109	100
London	38	40	56	60	94	100
South East (East)	33	37	57	63	90	100
South East (West)	25	26	73	74	98	100
South West	43	36	76	64	119	100
West Midlands	41	57	31	43	72	100
North West	68	52	63	48	131	100
Wales	32	43	43	57	75	100
Northern Ireland	14	47	16	53	30	100
Scotland	87	80	22	20	109	100
United Kingdom	**545**	**48**	**602**	**52**	**1147**	**100**

Table 111 : Grade of non-invasive cancers treated by conservation without radiotherapy										
	High		Other		Not assessable		Unknown		Total	
Region	No	%	No	%	No	%	No	%	No	
N East, Yorks & Humber	15	24	44	71	3	5	0	0	62	100
East Midlands	14	31	29	64	1	2	1	2	45	100
East of England	21	36	30	52	0	0	7	12	58	100
London	17	30	35	63	2	4	2	4	56	100
South East (East)	18	32	32	56	4	7	3	5	57	100
South East (West)	36	49	35	48	1	1	1	1	73	100
South West	27	36	42	55	2	3	5	7	76	100
West Midlands	5	16	24	77	1	3	1	3	31	100
North West	15	24	45	71	0	0	3	5	63	100
Wales	2	5	38	88	0	0	3	7	43	100
Northern Ireland	6	38	10	63	0	0	0	0	16	100
Scotland	5	23	11	50	1	5	5	23	22	100
United Kingdom	**181**	**30**	**375**	**62**	**15**	**2**	**31**	**5**	**602**	**100**

Table 112 : Size of non-invasive cancers treated by conservation without radiotherapy												
	<15mm		15-<30mm		30+mm		Not assessable		Unknown		Total	
Region	No	%	No	%	No	%	No	%	No		%	
N East, Yorks & Humber	38	61	13	21	1	2	0	0	10	16	62	100
East Midlands	33	73	7	16	1	2	1	2	3	7	45	100
East of England	29	50	12	21	3	5	3	5	11	19	58	100
London	35	63	12	21	3	5	0	0	6	11	56	100
South East (East)	35	61	11	19	4	7	0	0	7	12	57	100
South East (West)	45	62	20	27	2	3	6	8	0	0	73	100
South West	45	59	14	18	5	7	2	3	10	13	76	100
West Midlands	19	61	7	23	2	6	1	3	2	6	31	100
North West	29	46	6	10	3	5	2	3	23	37	63	100
Wales	26	60	10	23	1	2	2	5	4	9	43	100
Northern Ireland	6	38	5	31	2	13	0	0	3	19	16	100
Scotland	12	55	3	14	1	5	2	9	4	18	22	100
United Kingdom	**352**	**58**	**120**	**20**	**28**	**5**	**19**	**3**	**83**	**14**	**602**	**100**

Table 113 : Invasive status, nodal status and ER status of cancers with known chemotherapy data														
	Invasive						Micro-invasive		Non-invasive		Invasive status unknown		Total	
	ER negative Node negative		ER negative Node positive		Other									
Region	No	%	No	%	No	%	No	%	No	%	No	%	No	%
N East, Yorks & Humber	52	5	24	2	685	70	10	1	207	21	5	1	983	100
East Midlands	43	6	15	2	547	70	9	1	164	21	1	0	779	100
East of England	31	5	12	2	469	69	6	1	139	20	22	3	679	100
London	28	4	18	3	451	69	4	1	144	22	9	1	654	100
South East (East)	35	5	12	2	457	69	13	2	148	22	1	0	666	100
South East (West)	39	7	9	2	397	70	1	0	118	21	7	1	571	100
South West	39	5	21	3	522	68	11	1	171	22	5	1	769	100
West Midlands	40	6	20	3	460	72	5	1	113	18	1	0	639	100
North West	63	7	26	3	632	70	19	2	161	18	1	0	902	100
Wales	17	3	9	1	453	75	9	1	113	19	3	0	604	100
Northern Ireland	16	10	7	4	99	62	1	1	37	23	0	0	160	100
Scotland	39	5	16	2	605	72	7	1	139	17	33	4	839	100
United Kingdom	**442**	**5**	**189**	**2**	**5777**	**70**	**95**	**1**	**1654**	**20**	**88**	**1**	**8245**	**100**

Table 114 : Chemotherapy for ER negative node positive invasive cancers						
	Chemotherapy		No chemotherapy		Total	
Region	No	%	No	%	No	%
N East, Yorks & Humber	23	96	1	4	24	100
East Midlands	12	80	3	20	15	100
East of England	11	92	1	8	12	100
London	17	94	1	6	18	100
South East (East)	10	83	2	17	12	100
South East (West)	8	89	1	11	9	100
South West	16	76	5	24	21	100
West Midlands	17	85	3	15	20	100
North West	20	77	6	23	26	100
Wales	7	78	2	22	9	100
Northern Ireland	6	86	1	14	7	100
Scotland	14	88	2	13	16	100
United Kingdom	**161**	**85**	**28**	**15**	**189**	**100**

Table 115 : Chemotherapy for ER negative node negative invasive cancers						
	Chemotherapy		No chemotherapy		Total	
Region	No	%	No	%	No	%
N East, Yorks & Humber	24	46	28	54	52	100
East Midlands	20	47	23	0	43	100
East of England	12	39	19	61	31	100
London	11	39	17	61	28	100
South East (East)	16	46	19	54	35	100
South East (West)	17	44	22	56	39	100
South West	15	38	24	62	39	100
West Midlands	24	60	16	40	40	100
North West	33	52	30	48	63	100
Wales	8	47	9	53	17	100
Northern Ireland	12	75	4	0	16	100
Scotland	26	67	13	0	39	100
United Kingdom	**218**	**49**	**224**	**51**	**442**	**100**

Table 116 :Grade of ER negative node negative invasive cancers given chemotherapy												
	Grade I		Grade II		Grade III		Not Assessable		Unknown		Total	
Region	No	%	No	%	No	%	No	%	No	%	No	%
N East, Yorks & Humber	0	0	4	17	20	83	0	0	0	0	24	100
East Midlands	0	0	0	0	20	100	0	0	0	0	20	100
East of England	0	0	0	0	12	100	0	0	0	0	12	100
London	0	0	4	36	7	64	0	0	0	0	11	100
South East (East)	0	0	2	13	14	88	0	0	0	0	16	100
South East (West)	0	0	1	6	16	94	0	0	0	0	17	100
South West	0	0	1	7	13	87	0	0	1	7	15	100
West Midlands	1	4	3	13	20	83	0	0	0	0	24	100
North West	1	3	9	27	21	64	0	0	2	6	33	100
Wales	0	0	0	0	8	100	0	0	0	0	8	100
Northern Ireland	0	0	2	17	10	83	0	0	0	0	12	100
Scotland	0	0	4	15	22	85	0	0	0	0	26	100
United Kingdom	**2**	**1**	**30**	**14**	**183**	**84**	**0**	**0**	**3**	**1**	**218**	**100**

Table 117 : ER status of cases with complete hormonal therapy data										
	Positive		Negative		Not Done		Unknown		Total	
Region	No	%	No	%	No	%	No	%	No	%
N East, Yorks & Humber	652	68	96	10	81	8	125	13	954	100
East Midlands	572	73	73	9	105	13	29	4	779	100
East of England	458	73	64	10	0	0	107	17	629	100
London	411	71	69	12	25	4	77	13	582	100
South East (East)	422	68	66	11	0	0	130	21	618	100
South East (West)	378	75	59	12	6	1	63	12	506	100
South West	504	71	75	11	0	0	132	19	711	100
West Midlands	443	74	77	13	9	1	72	12	601	100
North West	666	66	117	12	57	6	163	16	1003	100
Wales	380	64	29	5	0	0	187	31	596	100
Northern Ireland	111	74	27	18	0	0	12	8	150	100
Scotland	610	74	63	8	58	7	98	12	829	100
United Kingdom	**5607**	**70**	**815**	**10**	**341**	**4**	**1195**	**15**	**7958**	**100**

Table 118 : Hormonal therapy for cases with ER not done						
	Hormonal therapy		No hormonal therapy		Total	
Region	No	%	No	%	No	%
N East, Yorks & Humber	8	10	73	90	81	100
East Midlands	24	23	81	77	105	100
London	1	4	24	96	25	100
South East (West)	4	67	2	33	6	100
West Midlands	0	0	9	100	9	100
North West	11	19	46	81	57	100
Scotland	6	10	52	90	58	100
United Kingdom	**54**	**16**	**287**	**84**	**341**	**100**

Table 119 : Hormonal therapy for cases with ER not done or unknown						
	Hormonal therapy		No hormonal therapy		Total	
Region	No	%	No	%	No	%
N East, Yorks & Humber	70	34	136	66	206	100
East Midlands	44	33	90	67	134	100
East of England	28	26	79	74	107	100
London	33	32	69	68	102	100
South East (East)	46	35	84	65	130	100
South East (West)	21	30	48	70	69	100
South West	36	27	96	73	132	100
West Midlands	19	23	62	77	81	100
North West	87	40	133	60	220	100
Wales	94	50	93	50	187	100
Northern Ireland	7	58	5	42	12	100
Scotland	34	22	122	78	156	100
United Kingdom	**519**	**34**	**1017**	**66**	**1536**	**100**

Table 120 : Invasive status of ER positive cases with known hormonal therapy data										
	Invasive		Micro-invasive		Non-invasive		Unknown		Total	
Region	No	%	No	%	No	%	No	%	No	%
N East, Yorks & Humber	604	93	6	1	42	6	0	0	652	100
East Midlands	514	90	4	1	54	9	0	0	572	100
East of England	404	88	2	0	33	7	19	4	458	100
London	361	88	1	0	45	11	4	1	411	100
South East (East)	371	88	7	2	43	10	1	0	422	100
South East (West)	335	89	0	0	40	11	3	1	378	100
South West	464	92	3	1	35	7	2	0	504	100
West Midlands	421	95	0	0	22	5	0	0	443	100
North West	584	88	6	1	76	11	0	0	666	100
Wales	362	95	3	1	15	4	0	0	380	100
Northern Ireland	91	82	1	1	19	17	0	0	111	100
Scotland	554	91	2	0	36	6	18	3	610	100
United Kingdom	**5065**	**90**	**35**	**1**	**460**	**8**	**47**	**1**	**5607**	**100**

Table 121 : Invasive status of ER negative cases with known hormonal therapy data										
	Invasive		Micro-invasive		Non-invasive		Unknown		Total	
Region	No	%	No	%	No	%	No	%	No	%
N East, Yorks & Humber	79	82	1	1	15	16	1	1	96	100
East Midlands	61	84	3	4	8	11	1	1	73	100
East of England	45	70	2	3	13	20	4	6	64	100
London	45	65	2	3	20	29	2	3	69	100
South East (East)	49	74	2	3	15	23	0	0	66	100
South East (West)	45	76	1	2	13	22	0	0	59	100
South West	60	80	2	3	12	16	1	1	75	100
West Midlands	55	71	1	1	21	27	0	0	77	100
North West	95	81	6	5	16	14	0	0	117	100
Wales	26	90	0	0	2	7	1	3	29	100
Northern Ireland	22	81	0	0	5	19	0	0	27	100
Scotland	56	89	1	2	6	10	0	0	63	100
United Kingdom	**638**	**78**	**21**	**3**	**146**	**18**	**10**	**1**	**815**	**100**

Table 122 : Hormonal therapy for ER positive cancers						
	Hormonal therapy		No hormonal therapy		Total	
Region	No	%	No	%	No	%
N East, Yorks & Humber	631	97	21	3	652	100
East Midlands	508	89	64	11	572	100
East of England	435	95	23	5	458	100
London	352	86	59	14	411	100
South East (East)	373	88	49	12	422	100
South East (West)	335	89	43	11	378	100
South West	466	92	38	8	504	100
West Midlands	419	95	24	5	443	100
North West	589	88	77	12	666	100
Wales	307	81	73	19	380	100
Northern Ireland	103	93	8	7	111	100
Scotland	562	92	48	8	610	100
United Kingdom	**5080**	**91**	**527**	**9**	**5607**	**100**

Table 123 : Hormonal therapy for ER positive invasive cancers						
	Hormonal therapy		No hormonal therapy		Total	
Region	No	%	No	%	No	%
N East, Yorks & Humber	588	97	16	3	604	100
East Midlands	453	88	61	12	514	100
East of England	390	97	14	3	404	100
London	327	91	34	9	361	100
South East (East)	339	91	32	9	371	100
South East (West)	317	95	18	5	335	100
South West	450	97	14	3	464	100
West Midlands	408	97	13	3	421	100
North West	525	90	59	10	584	100
Wales	296	82	66	18	362	100
Northern Ireland	85	93	6	7	91	100
Scotland	517	93	37	7	554	100
United Kingdom	**4695**	**93**	**370**	**7**	**5065**	**100**

Table 124 : Hormonal therapy for ER positive non-invasive cancers						
	Hormonal therapy		No hormonal therapy		Total	
Region	No	%	No	%	No	%
N East, Yorks & Humber	37	88	5	12	42	100
East Midlands	52	96	2	4	54	100
East of England	25	76	8	24	33	100
London	20	44	25	56	45	100
South East (East)	29	67	14	33	43	100
South East (West)	15	38	25	63	40	100
South West	11	31	24	69	35	100
West Midlands	11	50	11	50	22	100
North West	58	76	18	24	76	100
Wales	9	60	6	40	15	100
Northern Ireland	17	89	2	11	19	100
Scotland	26	72	10	28	36	100
United Kingdom	**310**	**67**	**150**	**33**	**460**	**100**

Table 125 : Hormonal therapy for ER negative cancers						
	Hormonal therapy		No hormonal therapy		Total	
Region	No	%	No	%	No	%
N East, Yorks & Humber	11	11	85	89	96	100
East Midlands	14	19	59	81	73	100
East of England	11	17	53	83	64	100
London	8	12	61	88	69	100
South East (East)	15	23	51	77	66	100
South East (West)	12	20	47	80	59	100
South West	21	28	54	72	75	100
West Midlands	9	12	68	88	77	100
North West	15	13	102	87	117	100
Wales	10	34	19	66	29	100
Northern Ireland	0	0	27	100	27	100
Scotland	1	2	62	98	63	100
United Kingdom	**127**	**16**	**688**	**84**	**815**	**100**

Table 126 : PgR status of ER negative cancers with known hormonal therapy data										
	Positive		Negative		Not Done		Unknown		Total	
Region	No	%	No	%	No	%	No	%	No	%
N East, Yorks & Humber	2	2	50	52	25	26	19	20	96	100
East Midlands	5	7	22	30	38	52	8	11	73	100
East of England	7	11	22	34	0	0	35	55	64	100
London	5	7	35	51	10	14	19	28	69	100
South East (East)	1	2	28	42	7	11	30	45	66	100
South East (West)	5	8	27	46	16	27	11	19	59	100
South West	7	9	40	53	0	0	28	37	75	100
West Midlands	1	1	32	42	17	22	27	35	77	100
North West	5	4	58	50	17	15	37	32	117	100
Wales	5	17	11	38	0	0	13	45	29	100
Northern Ireland	1	4	2	7	0	0	24	89	27	100
Scotland	1	2	33	52	0	0	29	46	63	100
United Kingdom	**45**	**6**	**360**	**44**	**130**	**16**	**280**	**34**	**815**	**100**

Table 127 : Hormonal therapy for ER negative, PgR positive cancers						
	Hormonal therapy		No hormonal therapy		Total	
Region	No	%	No	%	No	%
N East, Yorks & Humber	2	100	0	0	2	100
East Midlands	4	80	1	20	5	100
East of England	6	86	1	14	7	100
London	4	80	1	20	5	100
South East (East)	1	100	0	0	1	100
South East (West)	2	40	3	60	5	100
South West	4	57	3	43	7	100
West Midlands	1	100	0	0	1	100
North West	2	40	3	60	5	100
Wales	4	80	1	20	5	100
Northern Ireland	0	0	1	100	1	100
Scotland	0	0	1	100	1	100
United Kingdom	**30**	**67**	**15**	**33**	**45**	**100**

Table 128 : Hormonal therapy for ER negative, PgR negative cancers						
	Hormonal therapy		No hormonal therapy		Total	
Region	No	%	No	%	No	%
N East, Yorks & Humber	7	14	43	86	50	100
East Midlands	8	36	14	64	22	100
East of England	0	0	22	100	22	100
London	2	6	33	94	35	100
South East (East)	5	18	23	82	28	100
South East (West)	4	15	23	85	27	100
South West	6	15	34	85	40	100
West Midlands	7	22	25	78	32	100
North West	8	14	50	86	58	100
Wales	1	9	10	91	11	100
Northern Ireland	0	0	2	100	2	100
Scotland	1	3	32	97	33	100
United Kingdom	**49**	**14**	**311**	**86**	**360**	**100**

Table 129 : Hormonal therapy for ER negative cancers with PgR not done						
	Hormonal therapy		No hormonal therapy		Total	
Region	No	%	No	%	No	%
N East, Yorks & Humber	0	0	25	100	25	100
East Midlands	1	3	37	97	38	100
London	1	10	9	90	10	100
South East (East)	6	86	1	14	7	100
South East (West)	2	13	14	88	16	100
West Midlands	0	0	17	100	17	100
North West	0	0	17	100	17	100
United Kingdom	**10**	**8**	**120**	**92**	**130**	**100**

Table 130 : Hormonal therapy for ER negative cancers with PgR not done or unknown						
	Hormonal therapy		No hormonal therapy		Total	
Region	No	%	No	%	No	%
N East, Yorks & Humber	2	5	42	95	44	100
East Midlands	2	4	44	96	46	100
East of England	5	14	30	86	35	100
London	2	7	27	93	29	100
South East (East)	9	24	28	76	37	100
South East (West)	6	22	21	78	27	100
South West	11	39	17	61	28	100
West Midlands	1	2	43	98	44	100
North West	4	7	50	93	54	100
Wales	5	38	8	62	13	100
Northern Ireland	0	0	24	100	24	100
Scotland	0	0	29	100	29	100
United Kingdom	**47**	**11**	**363**	**89**	**410**	**100**

APPENDIX 8

DATA OBTAINED FROM THE SURVIVAL AUDIT OF SCREEN DETECTED BREAST CANCERS FOR CANCERS DIAGNOSED BETWEEN 1ST APRIL 1992 AND 31ST MARCH 1998

Table 131 : Eligible cancers included in survival analysis

Region	Total submitted	Unknown invasive status	Not Registered at the Cancer Registry	Unknown diagnosis date	Recur-rence	Surgery >3 months after diagnosis	Total excluded	Total eligible	
								No.	%
N East, Yorks & Humber	5080	42	219	0	1	232	494	4586	90
East Midlands	2922	1	148	0	0	4	153	2769	95
East of England**	768	15	96	0	1	20	132	636	83
London**	855	61	8	0	0	20	89	766	90
South East (East)	3555	92	123	0	0	134	349	3206	90
South East (West)	2900	41	6	0	15	37	99	2801	97
South West	3834	48	105	0	60	191	404	3430	89
West Midlands	3383	10	0	0	63	16	89	3294	97
North West	4614	47	64	9	1	106	227	4387	95
Wales	2712	4	107	0	4	14	129	2583	95
Northern Ireland	957	19	0	0	0	0	19	938	98
United Kingdom	**31580**	**380**	**876**	**9**	**145**	**774**	**2184**	**29396**	**93**

* cases are eligible for inclusion if they are confirmed by the cancer registry to be primary screen detected breast cancers with known invasive status

** East of England and London only supplied data for 1997/98

Table 132 : Invasive status of screen detected breast cancers diagnosed 1992-98

Region	Invasive		Micro-invasive		Non-invasive		Total
	No.	%	No.	%	No.	%	
N East, Yorks & Humber	3734	81	87	2	765	17	4586
East Midlands	2281	82	38	1	450	16	2769
East of England	494	78	25	4	117	18	636
London	593	77	7	1	166	22	766
South East (East)	2610	81	31	1	565	18	3206
South East (West)	2160	77	44	2	597	21	2801
South West	2788	81	55	2	587	17	3430
West Midlands	2755	84	69	2	470	14	3294
North West	3553	81	179	4	655	15	4387
Wales	2054	80	58	2	471	18	2583
Northern Ireland	734	78	24	3	180	19	938
United Kingdom	**23756**	**81**	**617**	**2**	**5023**	**17**	**29396**

Table 133 : Median age of eligible invasive cancers														
	1992/93		1993/94		1994/95		1995/96		1996/97		1997/98		Total	
Region	No.	Med.	No.	Med.	No.	Med.	No.	Med.	No.	Med.	No.	Med.	No.	Med.
N East, Yorks & Humber	737	59	548	58	547	58	613	57	668	57	621	58	3734	58
East Midlands	402	59	270	58	376	58	352	58	401	58	480	58	2281	58
East of England	-	-	-	-	-	-	-	-	-	-	494	59	494	59
London	-	-	-	-	-	-	-	-	-	-	593	58	593	58
South East (East)	402	58	366	58	346	58	444	59	503	59	549	58	2610	58
South East (West)	270	58	331	58	307	59	369	57	412	58	471	57	2160	58
South West	501	59	428	59	476	59	430	58	439	58	514	57	2788	58
West Midlands	457	58	466	57	420	57	435	58	443	57	534	57	2755	58
North West	565	58	589	58	560	58	605	57	585	58	649	57	3553	58
Wales	330	58	401	58	429	58	318	58	279	58	297	57	2054	58
Northern Ireland	103	58	133	58	149	57	129	59	109	57	111	58	734	58
United Kingdom	**3767**	**59**	**3532**	**58**	**3610**	**58**	**3695**	**58**	**3839**	**58**	**5313**	**58**	**23756**	**58**

Table 134 : Size of eligible invasive cancers											
	1 - <10mm		10 - <20mm		20 - <50 mm		50 +mm		Unknown		Total
Region	No.	%	No.	%	No.	%	No.	%	No.	%	
N East, Yorks & Humber	830	22	1833	49	885	24	59	2	127	3	3734
East Midlands	432	19	1127	49	589	26	31	1	102	4	2281
East of England	120	24	253	51	106	21	13	3	2	0	494
London	135	23	284	48	158	27	8	1	8	1	593
South East (East)	604	23	1340	51	583	22	31	1	52	2	2610
South East (West)	477	22	1063	49	545	25	36	2	39	2	2160
South West	610	22	1415	51	606	22	39	1	118	4	2788
West Midlands	595	22	1340	49	749	27	46	2	25	1	2755
North West	828	23	1635	46	766	22	50	1	274	8	3553
Wales	540	26	1054	51	413	20	19	1	28	1	2054
Northern Ireland	161	22	354	48	192	26	10	1	17	2	734
United Kingdom	**5332**	**22**	**11698**	**49**	**5592**	**24**	**342**	**1**	**792**	**3**	**23756**

Table 135 : Grade of eligible invasive cancers											
	Grade I		Grade II		Grade III		Not assessable		Unknown		Total
Region	No.	%	No.	%	No.	%	No.		%		
N East, Yorks & Humber	1301	35	1470	39	673	18	14	0	276	7	3734
East Midlands	717	31	931	41	470	21	10	0	153	7	2281
East of England	175	35	201	41	69	14	0	0	49	10	494
London	209	35	255	43	100	17	7	1	22	4	593
South East (East)	813	31	1010	39	304	12	5	0	478	18	2610
South East (West)	686	32	904	42	361	17	7	0	202	9	2160
South West	802	29	1027	37	411	15	8	0	540	19	2788
West Midlands	908	33	1197	43	461	17	5	0	184	7	2755
North West	906	25	1409	40	509	14	20	1	709	20	3553
Wales	700	34	931	45	264	13	2	0	157	8	2054
Northern Ireland	225	31	300	41	104	14	3	0	102	14	734
United Kingdom	**7442**	**31**	**9635**	**41**	**3726**	**16**	**81**	**0**	**2872**	**12**	**23756**

Table 136 : Nodal status of eligible invasive cancers							
	Positive		Negative		Unknown		Total
Region	No.	%	No.	%	No.	%	
N East, Yorks & Humber	808	22	1976	53	950	25	3734
East Midlands	495	22	1408	62	378	17	2281
East of England	106	21	277	56	111	22	494
London	142	24	303	51	148	25	593
South East (East)	620	24	1270	49	720	28	2610
South East (West)	447	21	1113	52	600	28	2160
South West	472	17	1149	41	1167	42	2788
West Midlands	567	21	1516	55	672	24	2755
North West	561	16	1074	30	1918	54	3553
Wales	478	23	1563	76	13	1	2054
Northern Ireland	162	22	425	58	147	20	734
United Kingdom	**4858**	**20**	**12074**	**51**	**6824**	**29**	**23756**

Table 137 : NPI of eligible invasive cancers													
	EPG		GPG		MPG1		MPG2		PPG		Unknown		Total
Region	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
N East, Yorks & Humber	648	17	824	22	569	15	315	8	184	5	1194	32	3734
East Midlands	473	21	558	24	425	19	219	10	121	5	485	21	2281
East of England	93	19	126	26	63	13	39	8	26	5	147	30	494
London	94	16	137	23	106	18	54	9	35	6	167	28	593
South East (East)	401	15	535	20	374	14	203	8	110	4	987	38	2610
South East (West)	336	16	476	22	330	15	158	7	98	5	762	35	2160
South West	355	13	450	16	319	11	184	7	85	3	1395	50	2788
West Midlands	480	17	641	23	459	17	218	8	141	5	816	30	2755
North West	244	7	442	12	330	9	181	5	111	3	2245	63	3553
Wales	558	27	697	34	370	18	149	7	93	5	187	9	2054
Northern Ireland	135	18	169	23	125	17	61	8	26	4	218	30	734
United Kingdom	**3817**	**16**	**5055**	**21**	**3470**	**15**	**1781**	**7**	**1030**	**4**	**8603**	**36**	**23756**

Table 138 : Cause of death of eligible invasive cancers with death before 31/03/2003													
	Breast Cancer*		Other cancer		Non-cancer		Not Collected		Unknown		Total deaths		Total cancers
Region	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
N East, Yorks & Humber	404	66	88	14	24	4	99	16	1	0	616	16	3734
East Midlands	202	54	45	12	93	25	30	8	3	1	373	16	2281
East of England	16	42	8	21	12	32	2	5	0	0	38	8	494
London	40	73	4	7	9	16	2	4	0	0	55	9	593
South East (East)	265	70	40	11	67	18	3	1	3	1	378	14	2610
South East (West)	203	64	48	15	64	20	4	1	0	0	319	15	2160
South West	284	57	5	1	17	3	0	0	193	39	499	18	2788
West Midlands	256	63	45	11	90	22	0	0	14	3	405	15	2755
North West	348	64	79	15	113	21	0	0	3	1	543	15	3553
Wales	165	57	44	15	75	26	0	0	7	2	291	14	2054
Northern Ireland	60	52	16	14	21	18	0	0	18	16	115	16	734
United Kingdom	**2243**	**62**	**422**	**12**	**585**	**16**	**140**	**4**	**242**	**7**	**3632**	**15**	**23756**

* death from the screen detected breast cancer

Table 139 : Cause of death of eligible micro-invasive cancers with death before 31/03/2003													
	Breast Cancer*		Other cancer		Non-cancer		Not Collected		Unknown		Total deaths		Total cancers
Region	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
N East, Yorks & Humber	3	43	2	29	0	0	2	29	0	0	7	8	87
East Midlands	0	0	1	100	0	0	0	0	0	0	1	3	38
East of England	1	100	0	0	0	0	0	0	0	0	1	4	25
London	1	100	0	0	0	0	0	0	0	0	1	14	7
South East (East)	4	80	0	0	1	20	0	0	0	0	5	16	31
South East (West)	0	0	1	50	1	50	0	0	0	0	2	5	44
South West	3	33	1	11	0	0	0	0	5	56	9	16	55
West Midlands	3	75	0	0	1	25	0	0	0	0	4	6	69
North West	6	46	5	38	2	15	0	0	0	0	13	7	179
Wales	1	25	1	25	2	50	0	0	0	0	4	7	58
Northern Ireland	1	50	0	0	1	50	0	0	0	0	2	8	24
United Kingdom	**23**	**47**	**11**	**22**	**8**	**16**	**2**	**4**	**5**	**10**	**49**	**8**	**617**

* death from the screen detected breast cancer

Table 140 : Cause of death of eligible non-invasive cancers with death before 31/03/2003													
	Breast Cancer*		Other cancer		Non-cancer		Not Collected		Unknown		Total deaths		Total cancers
Region	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
N East, Yorks & Humber	26	43	23	38	2	3	9	15	1	2	61	8	765
East Midlands	8	33	8	33	8	33	0	0	0	0	24	5	450
East of England	1	33	1	33	1	33	0	0	0	0	3	3	117
London	3	33	1	11	4	44	0	0	1	11	9	5	166
South East (East)	14	45	9	29	8	26	0	0	0	0	31	5	565
South East (West)	14	36	8	21	16	41	1	3	0	0	39	7	597
South West	18	34	1	2	4	8	0	0	30	57	53	9	587
West Midlands	2	7	20	67	8	27	0	0	0	0	30	6	470
North West	19	49	7	18	13	33	0	0	0	0	39	6	655
Wales	2	7	11	39	14	50	0	0	1	4	28	6	471
Northern Ireland	3	23	3	23	4	31	0	0	3	23	13	7	180
United Kingdom	**110**	**33**	**92**	**28**	**82**	**25**	**10**	**3**	**36**	**11**	**330**	**7**	**5023**

* death from the screen detected breast cancer

Table 141 : Relative survival by region – primary invasive cancers diagnosed 1997/98			
	1 year	3 year	5 year
N East, Yorks & Humber	99.3 (98.4,100.3)	96.9 (95.0,98.8)	95.7 (93.4,98.1)
East Midlands	99.5 (98.5,100.6)	98.7 (97.0,100.5)	95.2 (92.5,98.0)
East of England	100.0 (99.2,100.8)	99.6 (98.1,101.2)	96.9 (94.4,99.4)
London	99.9 (99.1,100.7)	97.1 (95.2,98.9)	95.1 (92.7,97.6)
South East (East)	100.6 (100.2,100.9)	99.2 (97.7,100.7)	97.4 (95.2,99.6)
South East (West)	100.3 (99.7,100.9)	98.3 (96.5,100.1)	96.3 (93.7,98.8)
South West	100.1 (99.5,100.8)	98.8 (97.1,100.4)	97.0 (94.6,99.3)
West Midlands	99.5 (98.6,100.4)	95.8 (93.7,97.9)	94.5 (92.0,97.1)
North West	99.3 (98.4,100.2)	97.8 (96.1,99.4)	95.4 (93.1,97.6)
Wales	99.4 (98.0,100.7)	97.5 (95.0,100.1)	94.6 (91.1,98.2)
Northern Ireland	99.7 (97.9,101.5)	97.5 (93.5,101.5)	91.5 (85.1,97.9)
United Kingdom	**99.8 (99.5,100.1)**	**97.9 (97.4,98.5)**	**95.8 (95.0,96.5)**

Table 142 : 5 Year Relative survival by region – primary invasive cancers (3 year rolling)				
	1992/93-1994/95	1993/94-1995/96	1994/95-1996/97	1995/96-1997/98
N East, Yorks & Humber	93.1 (91.5,94.6)	93.9 (92.4,95.4)	94.4 (92.9,95.8)	94.4 (93.0,95.8)
East Midlands	92.5 (90.4,94.6)	94.0 (92.1,96.0)	94.3 (92.5,96.2)	94.9 (93.2,96.6)
South East (East)	93.5 (91.6,95.5)	95.2 (93.4,97.0)	94.9 (93.2,96.6)	95.9 (94.4,97.4)
South East (West)	93.6 (91.5,95.7)	94.0 (92.0,96.0)	94.7 (92.9,96.5)	95.2 (93.6,96.9)
South West	95.8 (94.3,97.4)	95.8 (94.2,97.4)	96.3 (94.8,97.9)	96.5 (95.0,98.0)
West Midlands	94.9 (93.3,96.5)	94.5 (92.9,96.2)	94.5 (92.8,96.1)	93.9 (92.2,95.5)
North West	94.3 (92.8,95.8)	94.4 (92.9,95.8)	94.8 (93.3,96.2)	95.2 (93.8,96.5)
Wales	96.3 (94.6,97.9)	95.9 (94.2,97.6)	95.1 (93.2,96.9)	94.1 (92.0,96.2)
Northern Ireland	91.5 (88.0,95.0)	91.0 (87.6,94.4)	93.8 (90.6,96.9)	94.4 (91.2,97.7)
United Kingdom	**94.2 (93.6,94.8)**	**94.5 (94.0,95.1)**	**94.8 (94.2,95.4)**	**95.1 (94.6,95.6)**

Table 143 : 5 Year Relative survival by invasive status (3 year rolling)				
	1992/93-1994/95	1993/94-1995/96	1994/95-1996/97	1995/96-1997/98
Invasive	94.2 (93.6,94.8)	94.5 (94.0,95.1)	94.8 (94.2,95.4)	95.1 (94.6,95.6)
Micro-invasive	101.6 (99.6,103.5)	100.3 (98.0,102.6)	99.7 (97.3,102.1)	99.6 (97.2,101.9)
Non-invasive	100.8 (100.0,101.6)	100.7 (99.9,101.4)	100.6 (99.9,101.4)	100.4 (99.7,101.1)

Table 144 : Relative survival by region – primary invasive cancers diagnosed 1992/93					
	1 year	3 year	5 year	8 year	10 year
N East, Yorks & Humber	98.7 (97.7,99.8)	93.6 (91.5,95.7)	91.1 (88.5,93.7)	88.0 (84.8,91.1)	85.5 (82.0,89.0)
East Midlands	99.1 (97.7,100.4)	94.2 (91.4,97.0)	90.7 (87.1,94.3)	88.2 (84.0,92.5)	84.7 (79.9,89.6)
South East (East)	98.8 (97.4,100.2)	93.5 (90.6,96.4)	91.9 (88.4,95.3)	88.2 (83.9,92.4)	85.3 (80.4,90.1)
South East (West)	100.0 (99.0,101.1)	96.5 (93.5,99.4)	92.6 (88.5,96.7)	90.0 (85.0,95.0)	84.8 (79.0,90.6)
South West	100.0 (99.2,100.8)	97.0 (94.8,99.1)	94.8 (92.1,97.6)	90.5 (86.9,94.2)	89.3 (85.2,93.3)
West Midlands	99.2 (98.1,100.4)	96.2 (93.9,98.5)	94.4 (91.5,97.3)	90.5 (86.7,94.2)	89.2 (85.0,93.3)
North West	99.4 (98.4,100.4)	97.1 (95.2,99.0)	94.1 (91.4,96.7)	91.6 (88.3,95.0)	89.0 (85.1,92.8)
Wales	100.5 (99.9,101.1)	97.6 (95.2,100.0)	96.8 (93.7,99.8)	95.2 (91.2,99.1)	94.3 (89.7,98.8)
Northern Ireland	99.8 (97.8,101.7)	97.5 (93.2,101.8)	94.4 (88.3,100.5)	91.5 (83.8,99.2)	94.2 (86.3,102.2)
United Kingdom	**99.4 (99.0,99.8)**	**95.6 (94.8,96.4)**	**93.2 (92.1,94.3)**	**90.1 (88.8,91.4)**	**87.8 (86.3,89.3)**

Table 145 : Relative Survival for primary invasive cancers screen detected in 1992-98						
	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98
0	100.0 (100.0,100.0)	100.0 (100.0,100.0)	100.0 (100.0,100.0)	100.0 (100.0,100.0)	100.0 (100.0,100.0)	100.0 (100.0,100.0)
1	99.4 (99.0,99.8)	99.8 (99.5,100.2)	99.8 (99.5,100.1)	99.6 (99.3,100.0)	99.8 (99.4,100.1)	99.8 (99.5,100.1)
2	97.6 (97.0,98.3)	98.2 (97.6,98.8)	98.9 (98.3,99.4)	98.4 (97.8,98.9)	98.7 (98.2,99.2)	99.1 (98.7,99.5)
3	95.6 (94.8,96.4)	96.7 (95.9,97.5)	97.4 (96.7,98.2)	96.8 (96.1,97.6)	97.6 (96.9,98.3)	97.9 (97.4,98.5)
4	94.2 (93.3,95.2)	95.5 (94.6,96.4)	96.4 (95.5,97.3)	95.3 (94.4,96.3)	96.2 (95.4,97.1)	96.6 (95.9,97.3)
5	93.2 (92.1,94.3)	94.1 (93.0,95.2)	95.2 (94.2,96.2)	94.3 (93.3,95.3)	94.9 (94.0,95.9)	95.8 (95.0,96.5)
6	92.0 (90.9,93.2)	93.1 (92.0,94.3)	93.8 (92.7,94.9)	93.5 (92.4,94.6)	93.9 (92.9,95.0)	
7	91.0 (89.8,92.3)	91.5 (90.3,92.8)	93.0 (91.8,94.2)	92.5 (91.3,93.7)		
8	90.1 (88.8,91.4)	90.7 (89.3,92.0)	92.3 (91.0,93.6)			
9	88.8 (87.3,90.2)	90.1 (88.7,91.5)				
10	87.8 (86.3,89.3)					

Table 146 : 5 Year Relative survival by age for primary invasive cancers (3 year rolling)				
	1992/93-1994/95	1993/94-1995/96	1994/95-1996/97	1995/96-1997/98
<50	94.9 (91.2,98.6)	95.8 (92.6,98.9)	96.3 (93.6,99.0)	96.1 (93.6,98.5)
50-52	93.6 (92.3,94.9)	94.3 (93.1,95.4)	94.7 (93.6,95.8)	95.3 (94.4,96.3)
53-55	92.7 (91.2,94.2)	93.7 (92.3,95.2)	94.8 (93.5,96.2)	95.3 (94.0,96.5)
56-58	93.8 (92.4,95.1)	93.9 (92.5,95.3)	94.1 (92.7,95.5)	94.4 (93.0,95.7)
59-61	94.4 (93.0,95.7)	93.9 (92.5,95.3)	93.8 (92.3,95.2)	94.5 (93.2,95.8)
62-64	94.4 (93.0,95.8)	95.2 (93.8,96.6)	95.1 (93.7,96.5)	94.2 (92.7,95.6)
65+	98.7 (96.0,101.3)	98.1 (95.5,100.7)	97.6 (95.2,99.9)	98.1 (96.2,100.1)
All invasive cancer	**94.2 (93.6,94.8)**	**94.5 (94.0,95.1)**	**94.8 (94.2,95.4)**	**95.1 (94.6,95.6)**

Table 147 : 5 Year Relative survival by size for primary invasive cancers (3 year rolling)				
	1992/93-1994/95	1993/94-1995/96	1994/95-1996/97	1995/96-1997/98
<10mm	99.0 (98.0,100.0)	98.9 (98.0,99.8)	98.5 (97.6,99.5)	98.3 (97.4,99.1)
10-<20mm	96.4 (95.6,97.1)	96.5 (95.7,97.2)	96.5 (95.7,97.2)	96.8 (96.1,97.4)
20-<49mm	88.0 (86.5,89.5)	88.5 (87.0,90.0)	89.1 (87.6,90.5)	89.8 (88.5,91.1)
50+mm	69.1 (61.3,76.8)	73.2 (65.1,81.3)	76.5 (68.6,84.4)	78.4 (71.6,85.2)
Unknown	88.7 (85.5,91.9)	86.9 (82.8,91.0)	88.3 (83.4,93.3)	89.0 (84.0,93.9)
All invasive cancer	**94.2 (93.6,94.8)**	**94.5 (94.0,95.1)**	**94.8 (94.2,95.4)**	**95.1 (94.6,95.6)**

Table 148: 5 Year Relative survival by grade for primary invasive cancers (3 year rolling)				
	1992/93-1994/95	1993/94-1995/96	1994/95-1996/97	1995/96-1997/98
Grade I	99.6 (98.9,100.4)	99.8 (99.1,100.5)	100.0 (99.3,100.7)	100.2 (99.6,100.8)
Grade II	94.4 (93.4,95.3)	94.9 (94.0,95.8)	95.1 (94.2,95.9)	95.6 (94.8,96.4)
Grade III	82.0 (79.8,84.1)	82.1 (80.0,84.2)	83.2 (81.2,85.1)	83.6 (81.8,85.4)
Unknown	94.8 (93.4,96.2)	95.8 (94.4,97.3)	96.6 (95.0,98.3)	95.4 (93.4,97.4)
All invasive cancer	**94.2 (93.6,94.8)**	**94.5 (94.0,95.1)**	**94.8 (94.2,95.4)**	**95.1 (94.6,95.6)**

Not calculated for grade not assessable due to small numbers

Table 149 : 5 Year Relative survival by nodal status for primary invasive cancers (3 year rolling)				
	1992/93-1994/95	1993/94-1995/96	1994/95-1996/97	1995/96-1997/98
Positive	81.6 (79.7,83.5)	82.8 (81.0,84.6)	84.6 (82.9,86.3)	85.9 (84.4,87.4)
Negative	98.2 (97.4,98.9)	98.1 (97.4,98.8)	98.1 (97.5,98.8)	98.0 (97.5,98.6)
Unknown	95.9 (95.0,96.8)	96.5 (95.5,97.4)	96.6 (95.5,97.6)	96.5 (95.4,97.6)
All invasive cancer	**94.2 (93.6,94.8)**	**94.5 (94.0,95.1)**	**94.8 (94.2,95.4)**	**95.1 (94.6,95.6)**

Table 150 : 5 Year Relative survival by NPI prognostic group for primary invasive cancers (3 year rolling)				
	1992/93-1994/95	1993/94-1995/96	1994/95-1996/97	1995/96-1997/98
EPG	101.3 (100.3,102.2)	100.9 (100.0,101.8)	101.0 (100.2,101.8)	100.9 (100.1,101.6)
GPG	98.8 (97.7,99.9)	98.4 (97.4,99.5)	98.2 (97.2,99.2)	98.6 (97.8,99.5)
MPG1	93.8 (92.1,95.6)	93.4 (91.7,95.0)	94.0 (92.6,95.5)	94.0 (92.7,95.3)
MPG2	82.6 (79.4,85.8)	83.9 (80.8,86.9)	84.5 (81.7,87.2)	86.1 (83.6,88.5)
PPG	57.8 (52.8,62.8)	59.5 (54.5,64.4)	64.3 (59.7,68.9)	66.7 (62.6,70.8)
NPI Unknown	95.3 (94.4,96.1)	96.1 (95.3,97.0)	96.4 (95.5,97.4)	96.2 (95.2,97.2)
All invasive cancer	**94.2 (93.6,94.8)**	**94.5 (94.0,95.1)**	**94.8 (94.2,95.4)**	**95.1 (94.6,95.6)**