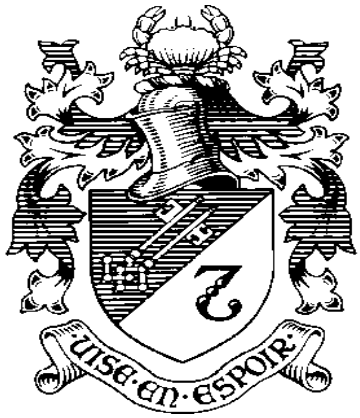


NHS
Cancer Screening Programmes

NHS BREAST SCREENING PROGRAMME

&

ASSOCIATION OF BREAST SURGERY AT BASO

AN AUDIT OF SCREEN DETECTED BREAST CANCERS FOR THE YEAR OF SCREENING APRIL 2003 TO MARCH 2004

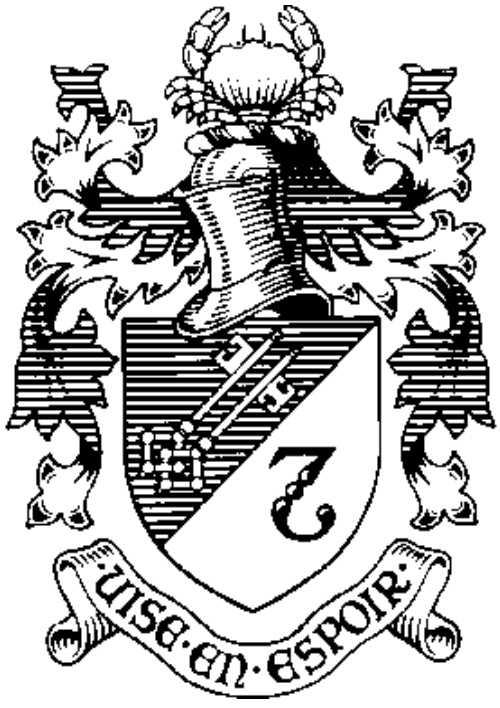
DISTRIBUTED AT THE ASSOCIATION OF BREAST SURGERY AT BASO CONFERENCE

11th May 2005

NATIONAL MOTORCYCLE MUSEUM, BIRMINGHAM

NHS

Cancer Screening Programmes



FOREWORDS

Once again I am pleased to welcome the ABS at BASO audit of screen-detected breast cancers. The audit is the product of a great deal of effort on the part of the surgical and quality assurance teams working within the NHS Breast screening Programme, but it is well worth it. The availability of good quality information is essential to the maintenance of and improvement in standards of care for women with breast cancer. Collecting and studying this information over the years has enabled the NHS Breast Screening Programme and the surgical profession to examine and develop their practise, to take advantage of new technologies and to address any apparent weaknesses. Over the next few years we will be able to monitor the impact of the introduction of the new sentinel node technique in this way.

Waiting times for surgery have improved over the years but waiting times for radiotherapy after conservation surgery remain a problem, particularly for women in London, Kent, Surrey and Sussex. Hormone receptor status ascertainment also has room for improvement. As these challenges are met, no doubt new ones will arise. Quality assurance and its supporting requirement for audit is a never-ending process.

Julietta Patnick
Director for the NHS Cancer Screening Programmes
April 2005

Thank you for submitting your data to the ABS at BASO National Screening Audit.

Your auditors, who correlate the submissions and produce this document are, once again, proud to present your results. I am delighted that we seem to be maintaining a high standard of care and data quality, within the NHS Breast Screening Programme. As auditors we are very conscious that any criticism of an individual programme or unit is utterly dependent on having accurate data on which to base our comments.

Closing the audit loop, the last act in an audit cycle, has in the past received less attention within the NHS Breast Screening Programme with some regional quality assurance teams appearing to be unwilling to address some of the deficiencies which this audit has consistently highlighted. More recently, robust regional study days designed to close the audit loop have started to take place in all regions, and the audit data are being included in the professional discussions undertaken with surgeons as part of QA visits. Because of these developments, we have changed the format of the National Study Day to concentrate on the additional audits being carried out by individual breast screening units and breast screening QA reference centres. We are very pleased by the response from units and regions that have submitted audits. Often these audits are difficult to perform. We very much hope that these local and regional audits will inform us on how to audit sensitive issues such as local recurrence in subsequent national audits.

The audit of non-invasive breast cancer in the NHS Breast Screening Programme (the Sloane Project) continues to progress well. Over a thousand patients with screen detected non-invasive cancer have been registered (including ADH, ALH and LISN as well as DCIS). This year the ABS at BASO provided stopgap financial support for the Sloane Project. I am therefore delighted to report that Pfizer Pharmaceuticals have generously given us an unrestricted educational grant of £75,000 over the next three years to secure the continuation of the Sloane Project. We very much appreciate their generosity and support for what is likely to be the biggest audit of screen detected non-invasive breast disease in the world.

In the meantime my thanks to you for contributing to this year's very successful ABS at BASO audit of surgical activity within the NHS Breast Screening Programme.

Hugh Bishop
Chairman, Breast Audit Group, Association of Breast Surgery at BASO
April 2005

ACKNOWLEDGEMENTS

The 2003/04 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).

Mr Hugh Bishop	Chairman, Breast Audit Group, Association of Breast Surgery at BASO
Mr James Bristol	Association of Breast Surgery at BASO
Ms Shan Cheung	Breast Screening QA Research and Information Officer, West Midlands QA Reference Centre
Miss Helen Davis	Breast Screening QA Information Assistant, West Midlands QA Reference Centre
Ms Olive Kearins	Deputy Director of Breast Screening Quality Assurance, West Midlands QA Reference Centre
Mr Mark Kissin	Association of Breast Surgery at BASO
Dr Gill Lawrence	Regional Director of Breast and Cervical Screening Quality Assurance, West Midlands Cancer Intelligence Unit
Mrs Julietta Patnick	Director for the NHS Cancer Screening Programmes
Ms Jacquie Reed	QA Performance Manager, East Midlands Breast Screening QA Reference Centre
Prof. Paul Sauven	Association of Breast Surgery at BASO
Dr Matthew Wallis	Radiology QA Co-ordinator, West Midlands NHSBSP
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 2003/04 audit of screen detected breast cancer.

NHSBSP Surgical QA Co-ordinators, QA Co-ordinators and Programme 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. Regional cancer registry staff who co-operated with their regional QA reference centres to collect survival audit data. Mrs Helen Bray from the Office for National Statistics and Miss Stacey Croft from the research and information team at the West Midlands Cancer Intelligence Unit for help with calculating relative survival.

Dr Catherine Lagord, Mrs Emma O'Sullivan and Mrs Jan Wardle from the West Midlands QA Reference Centre for audit preparation, proof reading the document and arranging the printing. Ms Lucy Davis 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 2003/04 audit of screen detected breast cancer.

CONTENTS

INTRODUCTION

AIMS AND OBJECTIVES

The 2003/04 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 2003 to 31st March 2004. 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 Third Edition 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 analysis

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 A)
- a main ABS at BASO breast audit questionnaire with guidance notes (Appendix B)
- an adjuvant therapy data collection form with guidance notes (Appendix C)
- a survival audit data collection form with guidance notes (Appendix D)

The format of the audit was designed by the Breast Audit Group and was subject to comment from the Surgical QA Co-ordinators, 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.

Main Audit Questionnaire

The ABS at BASO breast main audit questionnaire was designed to enable collection of data describing surgical screening activity in the 2003/04 screening year. The cohort of women included in this period was selected to be identical to that included in the statistical KC62 reports for 2003/04, 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.

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 2002 to 31st March 2003 inclusive. Information was sought regarding start dates for radiotherapy where applicable and whether or not the women had started chemotherapy and/or hormone therapy. These data were linked to data collected in the main audit for 2002/03 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 1998 and 31st March 1999 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 2004.

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 ABS at BASO 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.

PUBLICATION OF AUDIT DATA

The ABS at BASO 2003/04 audit of screen detected breast cancers is published as a booklet with financial assistance from NHSBSP National Office and distributed at the annual ABS at BASO annual meeting on 11th May 2005.

Following the ABS at BASO meeting, the booklet 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 should be cited in the following way: *"An audit of screen detected breast cancers for the year of screening April 2003 to March 2004", NHSBSP, ABS at BASO*.

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 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 ensure that screening services 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. A written report detailing the outcome should be produced and tabled for review at the National Breast Screening Surgeons' Co-ordinating Group meeting on 28th September 2005.

- 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

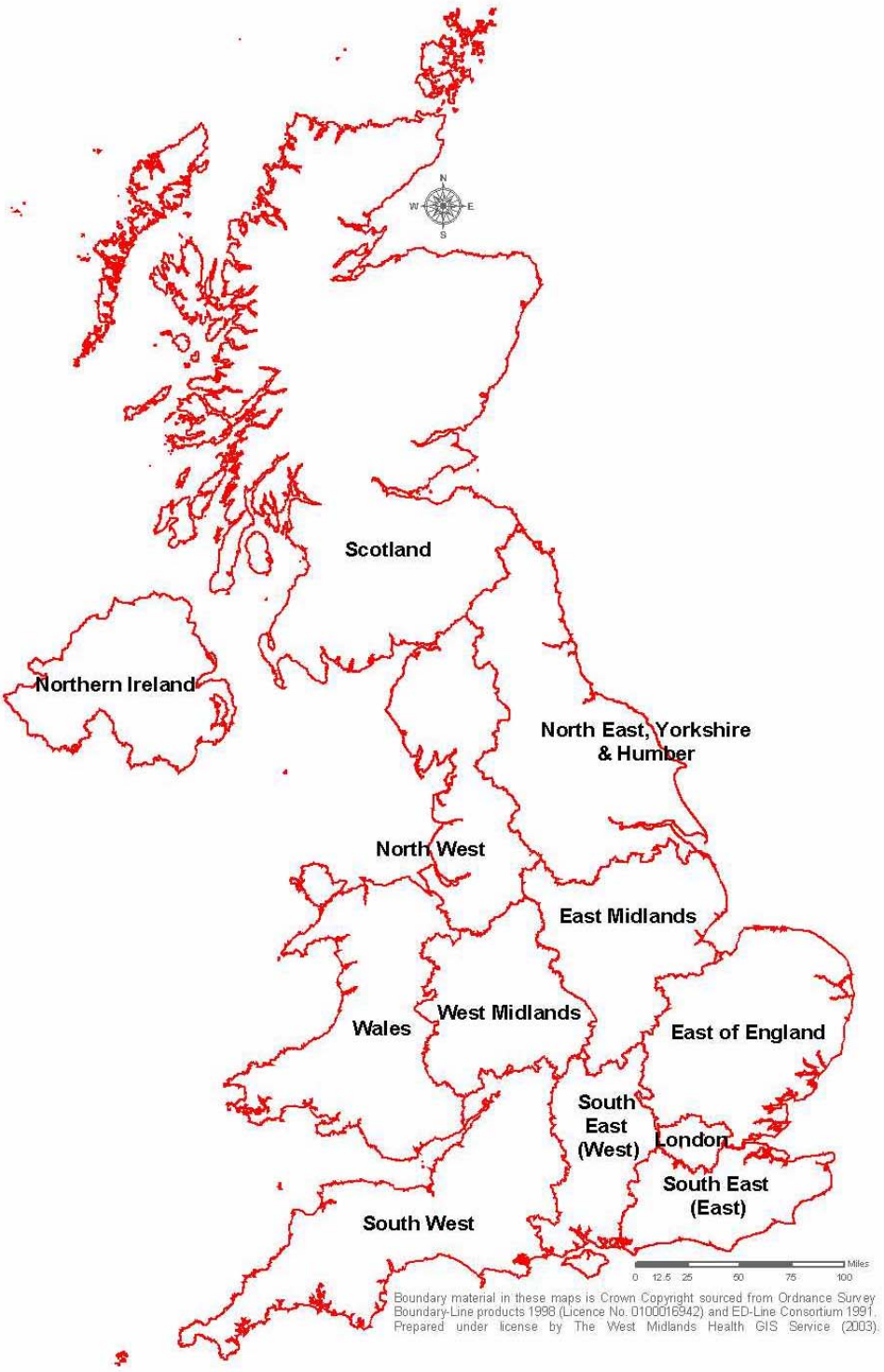
The ABS at BASO audit of screen detected breast cancer has developed over the years, with improvements in design and organisation resulting in improved data quality and increasingly useful audit results. To continue this development process your comments and suggestions are extremely useful. If you have any comments or suggestions about the 2004/05 audit, about this document or about the development of future ABS at BASO breast audits please put them in writing to:

ABS at BASO Breast Audit Group
Dr Gill Lawrence
Director of Breast Screening Quality Assurance
West Midlands Cancer Intelligence Unit
Public Health Building
The University of Birmingham
Birmingham B15 2TT

Tel: 0121 414 7713
Fax: 0121 414 7714
E-mail: qarc@wmciu.nhs.uk

PROVISION OF DATA FOR THE 2003/04 AUDIT

The map below shows the eight English NHS regions, Wales, Scotland and Northern Ireland for the boundaries revised on 1st April 2004. Data for the South East health region are subdivided into the two 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.



KEY FINDINGS AND RECOMMENDATIONS

CANCERS DETECTED BY SCREENING

1,685,661 women were screened by the UK NHSBSP in England, Wales, Northern Ireland and Scotland between 1st April 2003 and 31st March 2004. 13,290 cancers were detected in women of all ages. This equates to a cancer detection rate of 7.9 cancers per 1,000 women screened. 75% 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 compared with 81% in 2002/03. 18% of screen detected breast cancers were detected in women aged 65-70 compared with 13% in this age group in 2002/03.

PRE-OPERATIVE DIAGNOSIS

In 2003/04, 93% of cancers detected in the UK NHSBSP were diagnosed pre-operatively, exceeding the 90% target for the second time. The pre-operative diagnosis rates for invasive and non-invasive cancers were 96% and 81% respectively. 74 screening units met or exceeded the overall pre-operative diagnosis rate target of 90% and it is very good to see that all but one screening unit 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 93% in 2003/04 has been accompanied by a fall from 19% to 8% in the proportion of cancers diagnosed by C5 cytology alone. For non-invasive cancers, 4 regions failed to meet the 80% minimum standard for pre-operative diagnosis and no region met the 90% target.

For 22% of cancers with a B5a (Non-invasive) pre-operative diagnosis, invasive disease was found at surgery. This varied between 12% in East of England and 36% in Northern Ireland. For units which had 15 or more cancers diagnosed as B5 core biopsy, the proportion of B5a (Non-invasive) cancers found to be invasive after surgery varied from 0% to 98%. The regional QA reference centre for the latter unit should review these cases and ascertain the reasons behind this performance, implementing corrective action as appropriate. 95 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. 94% 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 88% of women with screen detected breast cancer had all attempts at core biopsy and/or cytology performed at one assessment clinic visit.

DIAGNOSTIC OPEN BIOPSIES

In the UK as a whole, 2,777 diagnostic open biopsies were performed in 2003/04. Of these 66% were benign and 34% were malignant. The benign open biopsy rate was 1.08 per 1,000 women screened and the malignant open biopsy rate was 0.56 per 1,000 women screened. The malignant open biopsy rate has fallen from 2.04 per 1,000 screened in 1996/97 to 0.56 per 1,000 screened in 2003/04 as the pre-operative diagnosis rate has increased from 63% to 93%. Of the 412 invasive cancers diagnosed by open biopsy, 25 (6%) had no pre-operative procedure recorded. Of the 523 non-invasive cancers diagnosed by open biopsy, 18 (3%) had no pre-operative procedure recorded. Regional QA reference centres and regional QA surgeons should audit these 43 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.

5% of invasive cancers and 41% of non-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. Throughout the four year period studied the

highest proportion of invasive cancers diagnosed by malignant open biopsy were those with C4 cytology or B4 core biopsy. The proportion of invasive cancers with C3 cytology or B3 core biopsy has increased over the four year period studied from 18% to 27% while the proportion with C1 cytology or B1 core biopsy has fallen from 22% to 13%.

SURGICAL TREATMENT

Overall, 69% of non-invasive and micro-invasive cancers were treated with conservation surgery, varying from 60% in Wales to 75% in South West and 78% in Northern Ireland. Data completeness of grade and size data has improved, with only 13% of cases having an unknown grade and size. 196 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 4% and 55% in individual screening units. 81% of 50+mm invasive cancers were treated with mastectomy compared with 18% of small (<15mm) invasive cancers. In most regions there was a clear variation in mastectomy rate with tumour size, but in Northern Ireland there was very little difference in the mastectomy rates for tumours with diameters below 50mm.

Only 13% of cancers with whole size <15mm were treated with mastectomy compared with 18% 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. Four units had a higher than 30% mastectomy rate for small tumours with whole size <15mm where no immediate reconstruction was recorded. Regional QA reference centres and regional QA surgeons should review the data for these cancers to ascertain the reason for these unusual clinical practices. 11% of cancers treated with mastectomy were recorded as having immediate reconstruction. Of these cancers, 231 (56%) were invasive, 18 (4%) were micro-invasive, and 162 (39%) were non-invasive.

LYMPH NODES AND INVASIVE GRADE

In the UK as a whole, 94% of invasive cancers had known nodal status. This varied between 86% in North West and 98% in South West. At 5 screening services nodal status was ascertained for 100% of invasive cancers. In 1 screening unit 86% of cases had unknown nodal status. The Regional QA reference centre should work with this unit to ascertain the reasons for these missing data which appear to be primarily for cases with negative nodal status. 11 cancers had their positive nodal status determined from a sentinel node 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. Regional QA reference centres and regional QA surgeons should follow up these cases to ensure that the appropriate nodal procedures have been undertaken.

Overall, 8.8% of invasive cancers had unknown nodal status, or had negative nodal status determined without a sentinel node procedure on the basis of fewer than 4 nodes. This varied from 4.3% in Scotland to 13.6% in London and 17.5% in North West. 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, 27% of non-invasive cancers had known nodal status. This varied from 15% in South West and 16% in Northern Ireland to 43% in Wales. 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 (77% and 12% respectively in the UK as a whole). 65% of

conservatively treated non-invasive cancers with known nodal status had non-invasive disease predicted by B5a core biopsy. Radiological or clinical factors may thus have influenced the decision to take nodes for these cases

Overall, 31% of invasive cancers were Grade I, 48% were Grade II and 18% were Grade III. Grade was not assessable for 81 cases (1%) and unknown for 206 cases (2%). In Scotland 24% of cancers were Grade III. The proportion of Grade I cancers varied between 11% and 55% in individual screening units, suggesting that there are local variations in the interpretation of invasive grade definitions which should be investigated by Regional QA reference centres and regional QA pathologists.

Data were available to calculate the Nottingham Prognostic Index (NPI) for 93% of invasive cancers. As expected with cancers detected by screening, the majority (60%) 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 56% in Northern Ireland and Scotland to 65% in East Midlands and Wales. The relatively low proportion of EPG and GPG cancers in Scotland is due to the high proportion of Grade III cancers compared with the UK as a whole.

SURGICAL CASELOAD

There were 481 consultant breast surgeons working in the UK NHSBSP in 2003/04, a rise of 15% from the 419 surgeons in 2000/01. 90% of women were seen by a surgeon with a screening caseload of at least 20 cases. Of the 161 surgeons with a screening caseload of less than 10 cases, 46% treated more than 30 symptomatic breast cancers during 2003/04. There was an improvement in obtaining information to explain low surgical caseload in 2003/04. Information was unavailable to explain the low caseload of only 15 surgeons treating a total of 26 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. This varied from 11% in East of England and North West to 18% in North East Yorkshire & Humber. 13% of invasive cancers and 18% of non-invasive cancers had more than one therapeutic operation. The proportion of invasive cancers having a repeat operation varied from 9% in North West to 16% in South West. The proportion of non-invasive cancers having a repeat operation varied from 12% in East of England and Northern Ireland to 29% in South East (West). Invasive cancers with B5b (Invasive) core biopsy had the smallest proportion of repeat operations (11%), followed by invasive cancers diagnosed by C5 cytology only (15%). Invasive cancers with a B5a (Non-invasive) core biopsy had the highest repeat operation rate (47%). Non-invasive and micro-invasive cancers with a B5a (Non-invasive) core biopsy had a repeat operation rate of 21%.

65% 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 these cancers had conservation surgery with an axillary procedure followed by conservation surgery, presumably to clear involved or close margins. 64% of invasive cancers diagnosed by C5 cytology only underwent a single therapeutic operation consisting of conservation surgery with an axillary procedure. A further 18% 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. Nevertheless, regional QA reference centres and regional QA surgeons should audit these cancers to ascertain the reasons for going straight to a mastectomy after C5 cytology. 20% of invasive cancers with a B5a (Non-invasive) core biopsy underwent a single operation consisting of conservation surgery with an axillary procedure and 24% had a mastectomy with an axillary procedure. Regional QA reference

centres and regional QA surgeons should again audit these cancers to ascertain the reason for performing surgery to the axilla for cancers with a non-invasive pre-operative diagnosis.

84 women with invasive cancers with a B5a (Non-invasive) core biopsy had a repeat operation solely to obtain nodes. These women would not have had to undergo additional surgery had the original core biopsy predicted the invasive status of the tumour correctly. Regional QA reference centres and regional QA pathologists should audit these cancers to ascertain the reason for the incorrect pre-operative diagnosis. 147 invasive cancers with a B5b (Invasive) core biopsy, 39 invasive cancers with C5 cytology and 63 invasive cancers with a B5a (Non-invasive) core biopsy had no axillary procedure recorded. 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 to ensure that the axilla has not been under-treated.

23% of non-invasive or micro-invasive cancers with a B5a (Non-invasive) core biopsy underwent axillary surgery at the first therapeutic operation. Currently, operating on the axilla when performing conservation surgery to the breast is not as easy to justify as when performing a mastectomy. This may well become more accepted practise as sentinel node biopsy is introduced. In the meantime, regional QA reference centres and regional QA surgeons should audit all non-invasive cancers with known nodal status to ascertain the number of nodes examined and the number of positive nodes, as clearance of the axilla for a non-invasive cancer could be viewed as an unnecessary procedure which may lead to treatment-related side effects.

In the UK as a whole, nodal status was known for 98% of invasive cancers with a B5b (Invasive) core biopsy. For 97% of these cancers, the nodal status was determined at the first operation. For 93% of invasive cancers diagnosed by C5 cytology only, the nodal status was determined at the first operation; with 3% having their nodal status determined at a repeat operation. In South East (East) only 82% of invasive cancers diagnosed by C5 cytology only had their nodal status determined on the basis of axillary surgery performed during the first operation. Repeat operations involving the axilla recorded increased the overall proportion of these cancers with known nodal status to only 86%. The QA reference centre and QA surgeon in this region should review the cases with unknown nodal status to ascertain whether this is a data collection issue or whether the data may truly reflect a sub-optimal nodal diagnostic work-up.

In the UK as a whole, 89% of invasive cancers with a B5a (Non-invasive) diagnosis had known nodal status. 77% of these cancers had their nodal status determined at the first operation, with repeat operations providing nodal data for the additional 12%. In South East (East) and South East (West) relatively fewer repeat nodal operations were recorded for invasive cancers with a B5a (Non-invasive) diagnosis, with the result that only 78% and 77% respectively of these cancers had known nodal status. Regional QA reference centres and regional QA surgeons should review all B5a (Non-invasive) cancers proved to be invasive after surgery with unknown nodal status to ascertain whether this is a data collection issue or whether the data may truly reflect a sub-optimal diagnostic nodal work-up.

ADJUVANT THERAPY

Complete radiotherapy, chemotherapy and hormonal therapy data were available for 8,309 cases (87%). Hormonal therapy was the main adjuvant treatment for women in all age groups. The proportion of women receiving hormonal therapy increased with age from 69% in women aged 50-52 to 78% in women aged 68-70. Chemotherapy was the least used adjuvant therapy. The proportion of women receiving chemotherapy decreased with age from 24% in women aged 50-52 to 8% in women aged 68-70. There was very little variation in the proportion of women in the age range 50-70 receiving radiotherapy. The most common treatment combination for screen detected breast cancers in the UK was surgery, hormonal therapy and radiotherapy. In the UK as a whole, 42% of women received this treatment.

ER status was unknown for 451 (6%) of invasive cancers. The availability of PgR status data has improved since 2001/02. However, it was only known for 70% of ER negative cancers. Cerb-B2/HER-2 status data were available for only 20% of cancers included in the audit. 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.

94% of cases had their first therapeutic operation within 60 days (approximate to 2 months) of assessment. All regions but South East (East) met the 90% national target. 94% of cases had their first therapeutic operation within 60 days (approximate to 2 months) of assessment. All regions but South East (East) met the 90% national target. It took longer for women without a pre-operative diagnosis to undergo an open biopsy than for women with pre-operative diagnosis of breast cancer to have their first surgery. Only 29% of cases received radiotherapy within 60 days of their final surgery. Women in London and South East (East) experienced the longest waits for radiotherapy.

89% of women with invasive cancers treated with conservation surgery received radiotherapy, compared to only 52% of women with conservatively treated non-invasive cancer. 57% of the 550 conservatively treated cancers without radiotherapy were small (<15mm diameter) 57% 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. 86% 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 women would benefit from chemotherapy. 84% of ER negative, node negative tumours given chemotherapy were Grade III.

The decision to give hormone therapy did depend to a large extent on ER and PgR status. However, 6% of ER positive, invasive cancers and 37% of ER negative, PgR positive invasive cancers did not receive hormone therapy and 11% of ER negative cancers did receive hormonal therapy. Given the potential side effects of hormone treatment, regional QA reference centres and regional QA surgeons should determine the reasons why hormone therapy was given to non-invasive cancers with unknown ER status. 59% of ER negative, invasive cancers with negative or unknown PgR status received chemotherapy. The number of cancers with known PgR status was, however, very small so these data should be treated with caution.

SURVIVAL

Of the 8,987 cancers with known invasive status submitted to the survival analysis for the period 1st April 1998 and 31st March 1999, 168 (2%) were excluded because they were not registered at the cancer registry. A further 185 cancers (2%) were excluded because the cancer registry could not confirm that the cancer detected by screening was the primary tumour. The survival analysis included 8,634 screen detected cancers. Data completeness has improved markedly in the 7-year history of this audit.

5 year relative survival for screen detected invasive cancers in 1998/99 was 95.8% (95%CI 95.1%-96.5%). Women with micro-invasive and non-invasive cancer have a relative survival higher than 100%, indicating that their chance of survival was no worse than that of the general UK female population. 5 year relative survival in women with <10 mm diameter cancers and Grade I cancers was no worse than that of the general UK population. 5 year relative survival in women with node negative cancers was 98.2% (95%CI 97.4%-98.9%). Tumours in the moderate and poor NPI prognostic groups (MPG1, MPG2 and PPG) have significantly lower survival rates at 3 and 5 years than those in the good and excellent prognostic groups (GPG and EPG).

RESULTS OF THE 2003/04 AUDIT OF SCREEN DETECTED BREAST CANCERS

Detailed tables giving full audit results are provided in Appendix E starting on Page 98

DATA RELATING TO BREAST CANCERS DETECTED IN WOMEN OF ALL AGES DURING THE PERIOD 1ST APRIL 2003 - 31ST MARCH 2004

1. ALL BREAST CANCERS DETECTED BY THE UK NHSBSP IN 2003/04

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

The 2003/04 BASO breast audit examined surgical screening activity undertaken for the 1,685,661 women screened in England, Wales, Northern Ireland and Scotland between 1st April 2003 and 31st March 2004. All 13,290 cancers detected by the UK NHSBSP in women of all ages were examined. This equates to a cancer detection rate of 7.9 cancers per 1,000 women screened. This varies from 6.4 in Northern Ireland to 9.0 in Wales. Figure 1 shows the invasive status of these 13,290 cancers. Overall, 10,400 (78%) were invasive, 2,708 (20%) non-invasive and 160 (1%) micro-invasive. The invasive status of 22 cancers was unknown.

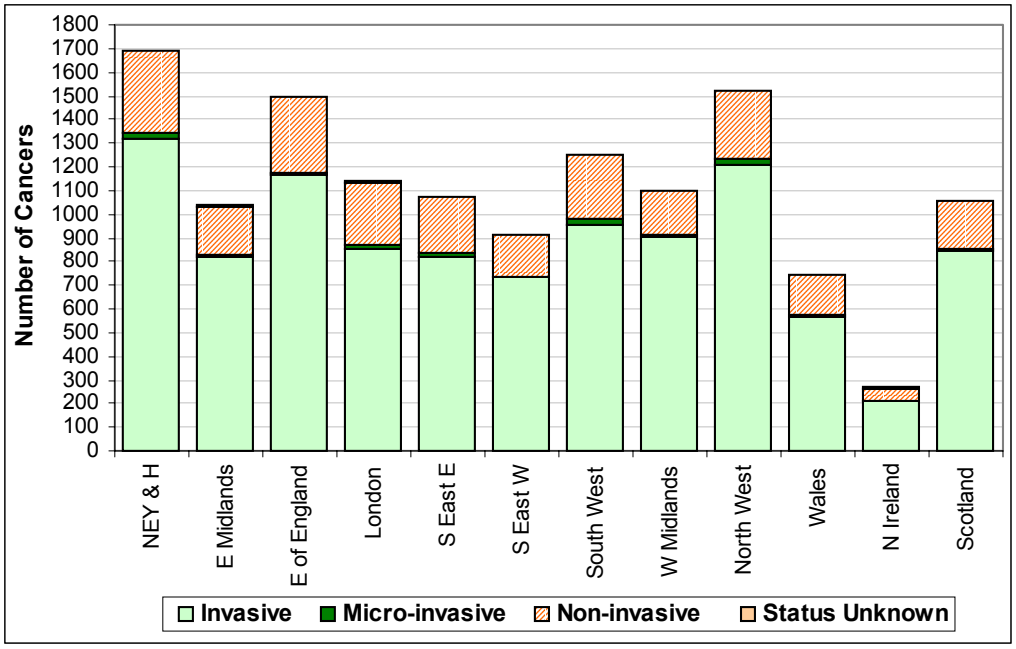


Figure 1 (Table 1): Variation in the number and invasive status of screen detected breast cancers in each region and country contributing to the 2003/04 ABS at BASO breast audit

The UK invasive cancer detection rate was 6.2 per 1,000 women screened, varying between 5.1 per 1000 in Northern Ireland and 6.9 per 1,000 in Wales. The UK non-invasive cancer detection rate of 1.7 per 1,000 screened includes both non-invasive and micro-invasive cancers. This rate varied from 1.2 per 1,000 screened in Northern Ireland to 2.1 per 1000 in Wales.

Figure 2 shows the cancer detection rates in each screening unit according to invasive status. As with all other figures depicting individual screening unit data, Scotland appears as one unit, and is not divided into 6 screening centres. The total cancer detection rate varied from 5.1 per 1,000 women screened in a unit screening 9,040 women to 11.2 per 1,000 women screened in a unit screening 13,516 women.

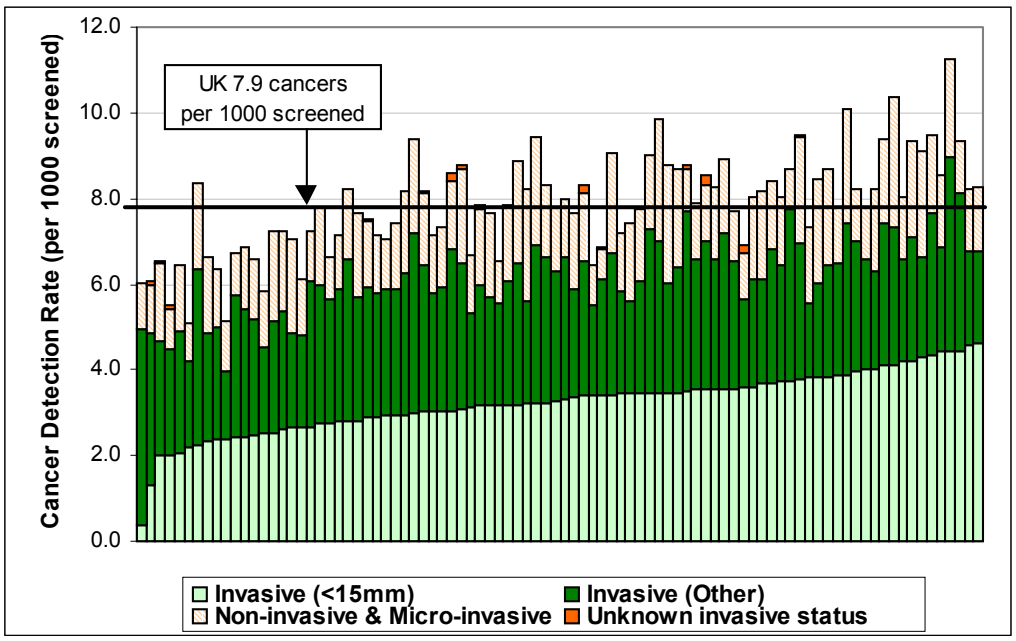


Figure 2: Variation with screening unit in the overall cancer detection rate expressed as the number of cancers detected per 1,000 women screened

The following summary table shows that invasive and non-invasive cancer detection rates have risen steadily since 1996/97. As the NHSBSP has started to expand the screening programme to invite women up to 70 years of age, the number of women screened has risen by more than 100,000. This and the implementation of two-view screening at every screen has had a marked effect on the number of cancers detected, with 1,697 more cancers diagnosed in 2003/04 compared with 2002/03. This effect will increase further as the full effect of these initiatives is realised.

8 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	*5,860*	*1,468*	*7,410*	*1,340,175*	*4.4*	*1.1*	*5.5*
1997/98	*6,427*	*1,726*	*8,215*	*1,419,287*	*4.5*	*1.2*	*5.8*
1998/99	*6,337*	*1,634*	*8,028*	*1,308,751*	*4.7*	*1.2*	*6.1*
1999/00	*7,675*	*2,076*	*9,797*	*1,550,285*	*5.0*	*1.3*	*6.3*
2000/01	*7,945*	*2,080*	*10,079*	*1,535,019*	*5.2*	*1.4*	*6.6*
2001/02	*7,911*	*2,218*	*10,191*	*1,507,987*	*5.2*	*1.5*	*6.8*
2002/03	*8,931*	*2,416*	*11,593*	*1,579,165*	*5.7*	*1.6*	*7.3*
2003/04	*10,400*	*2,868*	*13,290*	*1,685,661*	*6.2*	*1.7*	*7.9*

Data from Scotland are absent in 1998/99

1.2 Age Profile of Women with Screen Detected Breast Cancer

The majority (75%) 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. In the UK as a whole, 17% of screen detected breast cancers were detected in women aged 56-58 and 16% in women aged 59-61. 18% of screen detected breast cancers were detected in women aged 65-70 compared with 13% in this age group in 2002/03.

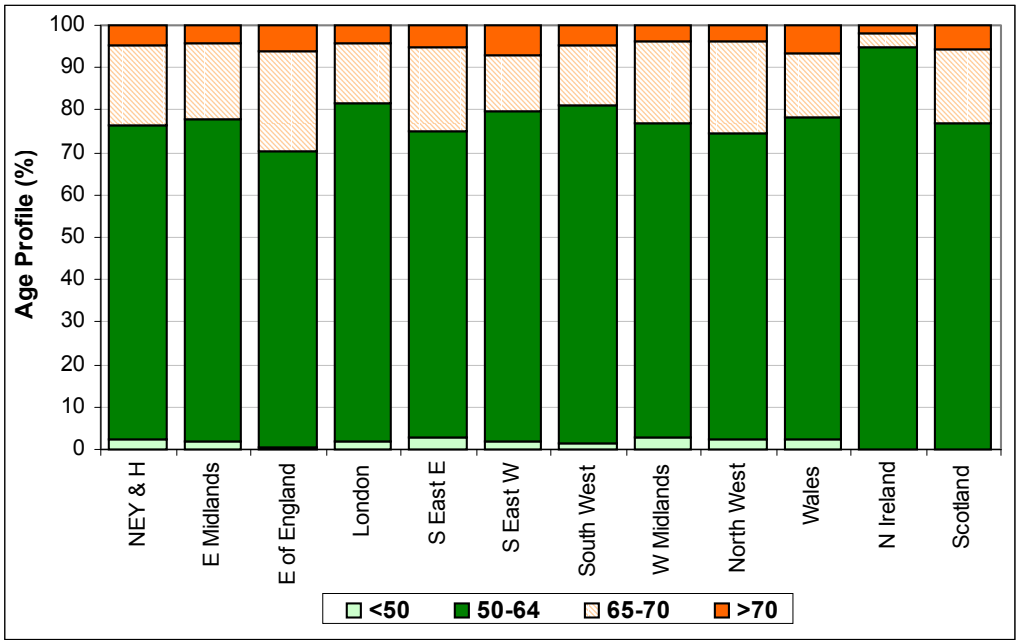


Figure 3 (Table 2): Age at screening appointment

The expansion of the NHSBSP to include women aged 50-70 is being rolled out across the country. At the start of this audit period, 24 of the 81 breast screening units in England had extended their programmes. This had increased to 38 units by April 2004. In the UK as a whole, 18% of screen detected breast cancers were detected in women aged 65-70, this ranged from 3% in Northern Ireland where the expansion was not implemented during the audit period, to 23% in East of England where 10 of the 11 units had expanded by the end of the audit period. The table below shows that there is a 6% overall increase from last year in the proportion of screen detected cancers in women aged 65 and above in the UK as a whole.

AGE OF SCREEN DETECTED BREAST CANCERS (%)		
Age	***2002/03***	***2003/04***
<50	*2*	*2*
50-52	*17*	*15*
53-55	*16*	*13*
56-58	*16*	*17*
59-61	*16*	*16*
62-64	*16*	*14*
65-67	*7*	*10*
68-70	*6*	*8*
70+	*4*	*5*
Total	***100***	***100***

COMMENT:

- 1,685,661 women were screened by the UK NHSBSP in England, Wales, Northern Ireland and Scotland between 1st April 2003 and 31st March 2004.
- 13,290 cancers were detected in women of all ages. This equates to a cancer detection rate of 7.9 cancers per 1,000 women screened.
- 75% 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 compared with 81% in 2002/03. 18% of screen detected breast cancers were detected in women aged 65-70 compared with 13% in this age group in 2002/03.

2. DIAGNOSIS OF CANCERS

2.1 Pre-operative Diagnosis

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 2003/04 audit documentation (see Appendix B) 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 5 such cancers in 2003/04, three of which were in London.

2.1.1 Pre-operative Diagnosis Rate for All Cancers

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

Minimum Standard: ≥80% of women who have a non-operative diagnosis by cytology or needle histology after a maximum of two attempts

Target Standard: ≥90% of women who have a non-operative diagnosis by cytology or needle histology after a maximum of two attempts

(Quality Assurance Guidelines for Breast Cancer Screening Radiology, NHSBSP Publication No 59, January 2005)

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 pre-operative pathological diagnosis

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

In 2003/04, 93% of cancers detected in the UK NHSBSP were diagnosed pre-operatively, again exceeding the 90% target. For the first time, all regions met the target of 90% pre-operative diagnosis rate with only 2% variation between regions. East Midlands, South East (West), Wales and Northern Ireland achieved the highest overall pre-operative diagnosis rate at 94%. 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. Northern Ireland had the highest proportion (31%) of cancers diagnosed by C5 cytology only. In Northern Ireland and Scotland, relatively high proportions of cancers were diagnosed by C5 cytology and B5 core biopsy (23% and 38% respectively).

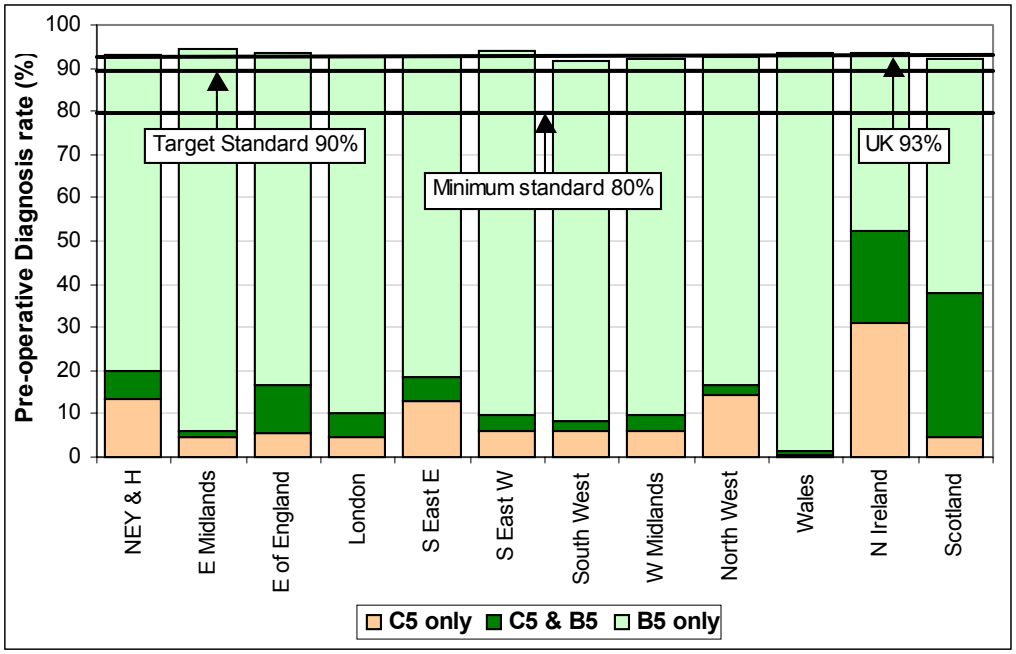


Figure 4 (Table 4): Variation in pre-operative diagnosis rate and the proportion of cancers detected by cytology alone, core biopsy alone or cytology and core biopsy, as a percentage of cancers detected

As demonstrated in the table below, over the last 8 years the pre-operative diagnosis rate for the UK as a whole has risen from 63% to 93%. This rise has been accompanied by an increase from 17% to 77% in the proportion of cancers diagnosed by B5 core biopsy alone.

8 YEAR COMPARISON: PRE-OPERATIVE DIAGNOSIS RATES							
Year of data collection	*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	*7,310*	*4,576*	*-*	*-*	*45*	*17*	*63*
1997/98	*8,215*	*5,866*	*-*	*-*	*42*	*29*	*71*
1998/99	*8,002*	*6,449*	*-*	*-*	*36*	*44*	*81*
1999/00	*8,906*	*7,590*	*-*	*-*	*31*	*54*	*85*
2000/01	*10,079*	*8,775*	*19*	*8*	*-*	*60*	*87*
2001/02	*10,191*	*9,043*	*13*	*9*	*-*	*66*	*89*
2002/03	*11,593*	*10,575*	*10*	*8*	*-*	*73*	*91*
2003/04	*13,290*	*12,338*	*8*	*7*	*-*	*77*	*93*

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 audit periods. It is clear from these data that, in the two regions with the lowest pre-operative diagnosis rates in 2001/02, increases in pre-operative diagnosis have been accompanied by large decreases in the proportion of cancers diagnosed by C5 cytology alone. Thus, in South East (West), as the pre-operative diagnosis rate has risen by 9% from 85% to 94%, the proportion of cancers diagnosed by C5 cytology alone has fallen by 60% since 2001/02. Similarly, in Scotland where the pre-operative diagnosis rate has risen from 86% to 92%, there has been 74% decrease in the proportion of cancers diagnosed by C5 cytology alone. In Northern Ireland where similar improvements in the pre-operative diagnosis rate have been achieved, the proportion of cancers being detected using cytology alone has remained constant.

3 YEAR SUMMARY: PRE-OPERATIVE DIAGNOSIS RATES								
	Pre-operative diagnosis rate (%)				Cancers diagnosed by C5 only (%)			
Region	2001/02	2002/03	2003/04	3 Year 2001-04	2001/02	2002/03	2003/04	3 Year 2001-04
N East, Yorks & Humber	88	92	93	91	16	15	13	15
East Midlands	91	94	94	93	10	10	4	8
East of England	90	91	93	91	12	11	6	10
London	89	91	93	91	7	5	5	6
South East (East)	91	90	93	91	8	12	13	11
South East (West)	85	90	94	90	15	12	6	11
South West	90	92	92	91	12	5	6	8
West Midlands	90	92	92	91	10	8	6	8
North West	87	89	92	89	21	16	14	17
Wales	92	92	94	93	7	2	1	3
Northern Ireland	85	89	94	89	30	30	31	30
Scotland	86	91	92	90	19	9	5	11
United Kingdom	**89**	**91**	**93**	**91**	**13**	**10**	**8**	**10**

Data reflect boundary changes

Figure 5 shows the pre-operative diagnosis rates achieved by individual screening units. 74 screening units met or exceeded the overall pre-operative diagnosis target of 90%. Pre-operative diagnosis rates varied from 79.5% in a screening unit with a total of 44 cancers to 100% in a screening unit with 47 cancers. It is very good to see that all but one screening unit met the 80% minimum standard for overall pre-operative diagnosis. The screening unit with the lowest pre-operative diagnosis rate in 2002/03 (63%) had a pre-operative diagnosis rate of 95% in 2003/04.

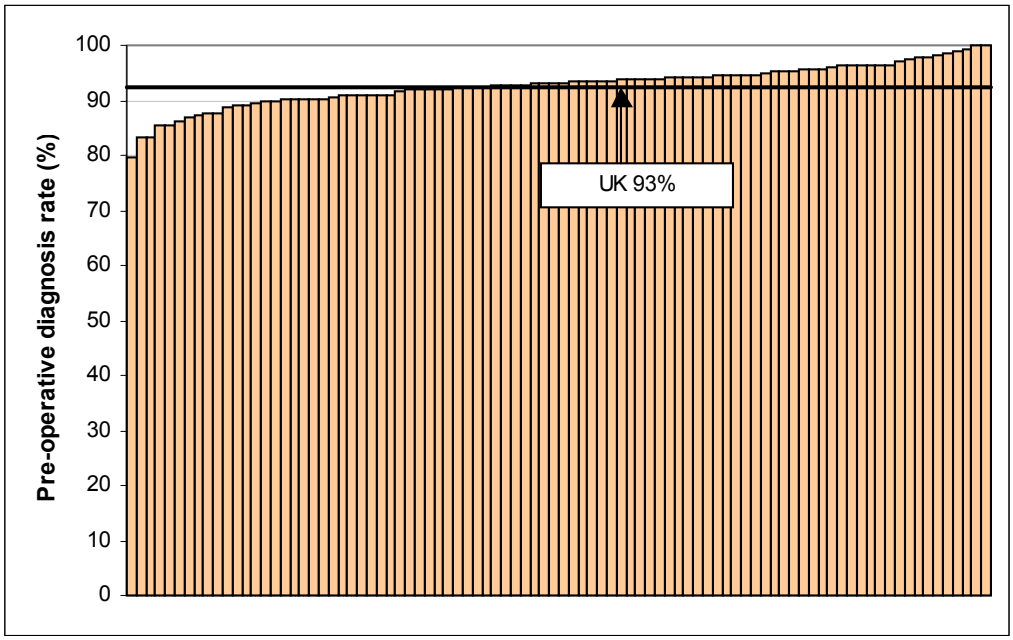


Figure 5: Variation in pre-operative diagnosis rate with screening unit, expressed as a proportion of cancers detected in each screening unit

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

Overall, the pre-operative diagnosis rates for invasive and non-invasive cancers were 96% and 81% respectively. Figure 6 shows the regional variation in these pre-operative diagnosis rates. The 90% target for pre-operative diagnosis which applies to all cancers was achieved by all regions for invasive cancers. The pre-operative diagnosis rate for non-invasive cancers varied from 77% in Scotland and West Midlands to 84% in London. Although the UK non-invasive pre-operative diagnosis rate has increased from 76% in 2002/03 to 81% in 2003/04, 4 regions still failed to meet

the 80% minimum standard and no region met the 90% pre-operative diagnosis rate target for non-invasive cancers.

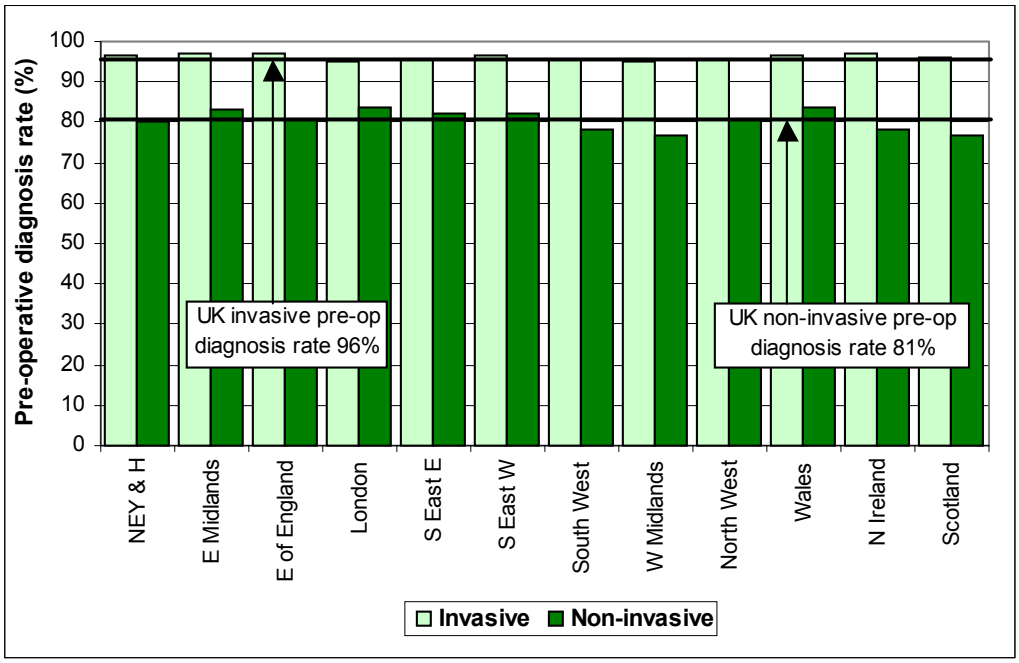


Figure 6 (Tables 5, 6): Variation in pre-operative diagnosis rates for invasive cancers and non-invasive cancers in each region

COMMENT:

- In 2003/04, 93% of cancers detected in the UK NHSBSP were diagnosed pre-operatively. For the second year running all regions met the 90% target. The pre-operative diagnosis rates for invasive and non-invasive cancers were 96% and 81% respectively.
- 74 screening units met or exceeded the overall pre-operative diagnosis rate target of 90%. Only 1 screening unit did not meet the 80% minimum standard.
- In the UK as a whole, the increase in the pre-operative diagnosis rate from 91% in 2002/03 to 93% in 2003/04 has been accompanied by a fall from 10% to 8% in the proportion of cancers diagnosed by C5 cytology alone.
- For non-invasive cancers, 4 regions failed to meet the 80% minimum standard for pre-operative diagnosis and no region met the 90% target.

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 11,239 cancers with a B5 diagnosis, 2,748 (24%) were B5a (Non-invasive), 8,357 (74%) were B5b (Invasive) and 134 cancers (1%) had invasive status B5c (Not Assessable or Unknown) at core biopsy. Of the latter cancers, 50 were in North East, Yorkshire and Humber.

Figure 7 shows the regional variation in the invasive status at core biopsy. Northern Ireland had the highest proportion of cancers with B5a (Non-invasive) diagnosis at core biopsy (34%). This may be related to the relatively high proportion of cancers diagnosed by C5 cytology alone in Northern Ireland (31%, Table 4) and is consistent with the preferential use of core biopsy to diagnose cancers suspected to be non-invasive on the basis of imaging.

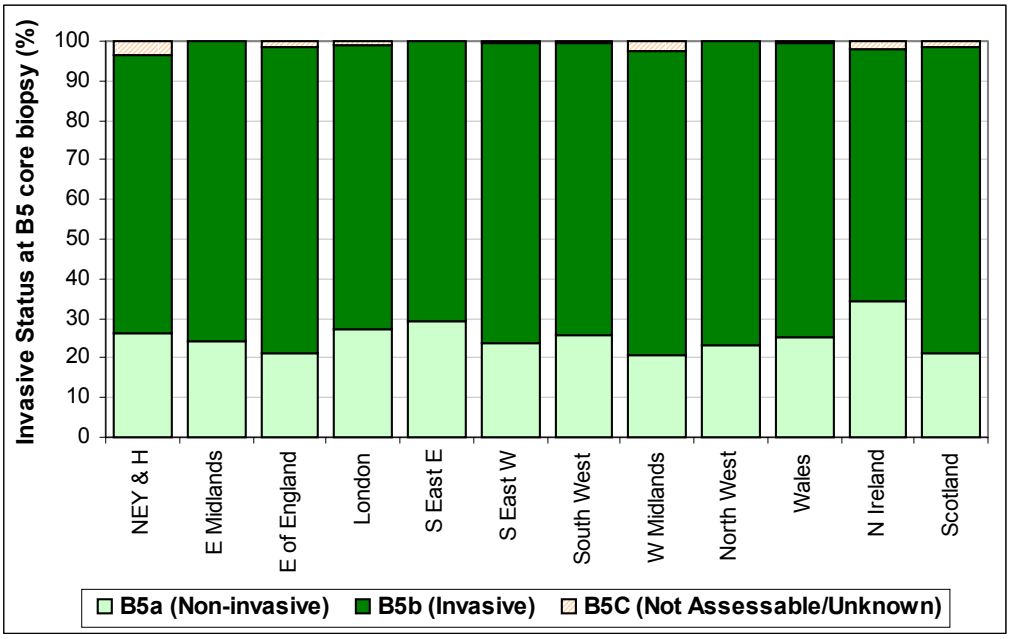


Figure 7 (Table 7): Variation in the proportion of cancers with B5a (Non-invasive), B5b (Invasive) and B5c (Not Assessable or Unknown) core biopsy diagnosis, expressed as a percentage of cancers diagnosed by core biopsy

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 2,748 cancers with a B5a (Non-invasive) pre-operative diagnosis, 2,001 (73%) had surgical confirmation of non-invasive cancer and 122 (4%) had a diagnosis of micro-invasive cancer following surgery. A further 28 cases (1%) had no surgery so the pre-operative diagnosis of non-invasive cancer was retained. For 2 cases with B5a (Non-invasive) core biopsy the invasive status after surgery was unknown. For 595 (22%) of the 2,748 cancers with a B5a (Non-invasive) pre-operative diagnosis, invasive disease was found at surgery. This varied from 12% in East of England to 36% in Northern Ireland.

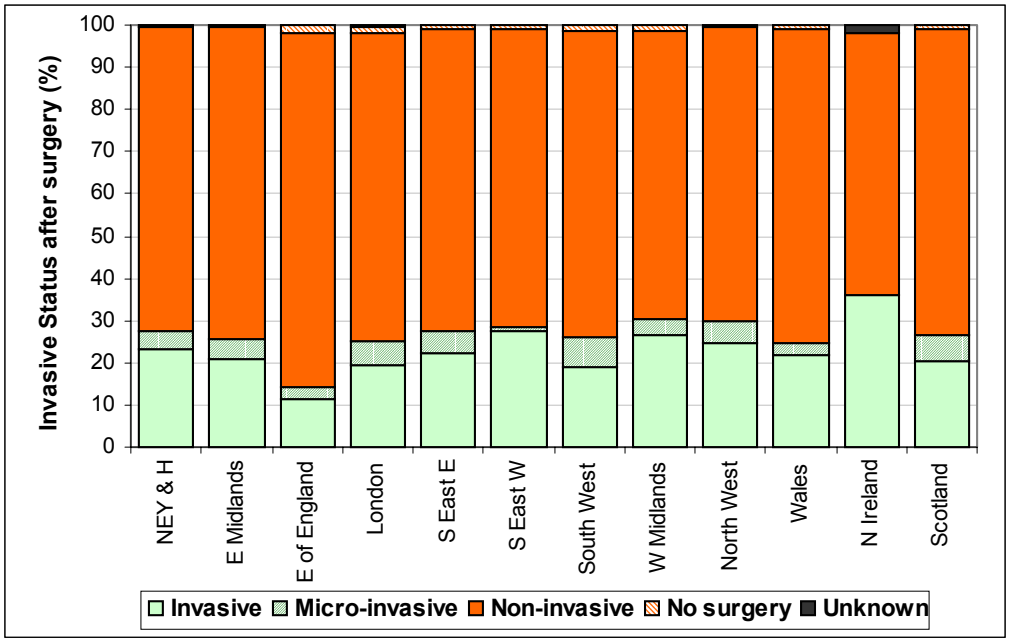


Figure 8 (Table 8): Variation in the invasive status after surgery of cases with B5a (Non-invasive), expressed as a percentage of cancers diagnosed with B5a

Figure 9 shows the variation with 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 as B5 core biopsy, the proportion of B5a (Non-invasive) cancers found to be invasive after surgery varied from 0% (0 out of 60 cases) to 98% (40 out of 41 cases). The regional QA reference centre for the latter unit should review these cases and ascertain the reasons behind this performance, implementing corrective action as appropriate.

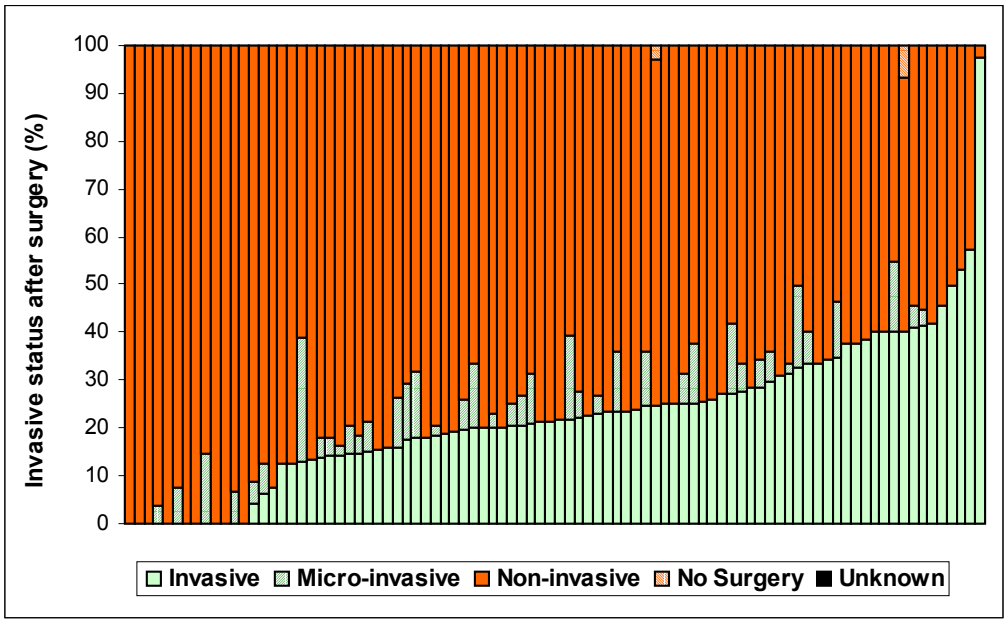


Figure 9: Variation with screening unit in the invasive status after surgery of cases with B5a (non-invasive), expressed as a percentage of cancers diagnosed with B5a

Of the 8,357 cancers with a B5b (Invasive) pre-operative diagnosis, 8,117 (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, 145 (2%) of these cases had no surgery recorded, so the invasive status of the core biopsy was retained. There were no unknown surgery cases for cancers with a B5b (Invasive) pre-operative diagnosis. 95 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.

The proportion of cancers that had a B5a (Non-invasive) pre-operative diagnosis but which were confirmed to be micro-invasive or invasive after surgery has fallen by 3% in the past 4 years. The proportion of cases with a B5b (Invasive) core biopsy which were later confirmed to be not invasive following surgery has remained stable for the last 4 years.

4 YEAR COMPARISON: INVASIVE STATUS FOLLOWING CORE BIOPSY						
Year of data collection	*B5a (Non-invasive)*			*B5b (Invasive)*		
	Total	*Not non-invasive after surgery*		*Total*	*Not invasive after surgery*	
		No.	*%*		*No.*	*%*
2000/01	*1,660*	*482*	*29*	*5,026*	*63*	*1*
2001/02	*1,881*	*542*	*29*	*5,405*	*45*	*1*
2002/03	*2,274*	*635*	*28*	*6,743*	*69*	*1*
2003/04	*2,748*	*717*	*26*	*8,357*	*95*	*1*

2.1.5 Invasive Status of Cancers Diagnosed by C5 Cytology Only

Table 10 shows the invasive status of the 1,099 cancers diagnosed by cytology only, not including cases diagnosed by both C5 cytology and B5 core biopsy. Overall, 94% of cancers diagnosed by C5 cytology alone were invasive, varying from 85% in London to 100% in Wales (4 cases). In the UK as a whole, 47 cancers (4%) diagnosed by C5 cytology alone were non-invasive and 8 (1%) were micro-invasive. The invasive status of 12 cancers (1%) was unknown.

COMMENT:

- For 22% of cancers with a B5a (Non-invasive) pre-operative diagnosis, invasive disease was found at surgery. This varied between 12% in East of England and 36% in Northern Ireland.
- For units which had 15 or more cancers diagnosed as B5 core biopsy, the proportion of B5a (Non-invasive) cancers found to be invasive after surgery varied from 0% (0 out of 60 cases) to 98% (40 out of 41 cases). The regional QA reference centre for the latter unit should review these cases and ascertain the reasons behind this performance, implementing corrective action as appropriate.
- 95 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.
- 94% of cancers diagnosed by C5 cytology alone were found to be invasive after surgery.

2.2 Number of Visits for Core Biopsy/Cytology Procedures

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, the number of visits at which a core biopsy/cytology procedure was undertaken in order to achieve a pre-operative diagnosis was requested. The majority (88%) of women with screen detected breast cancer had all attempts at core biopsy and/or cytology performed at one assessment clinic visit. Figure 10 shows how the pre-operative diagnosis rates in each region were affected by repeat visits to an assessment clinic. In the UK as a whole, 83% of the 13,290 cancers detected by the screening programme achieved a pre-operative diagnosis of cancer after one assessment clinic visit. 3 regions (South East (East), South East (West) and North West) had a pre-operative diagnosis rate below the 80% minimum standard after the first assessment clinic visit.

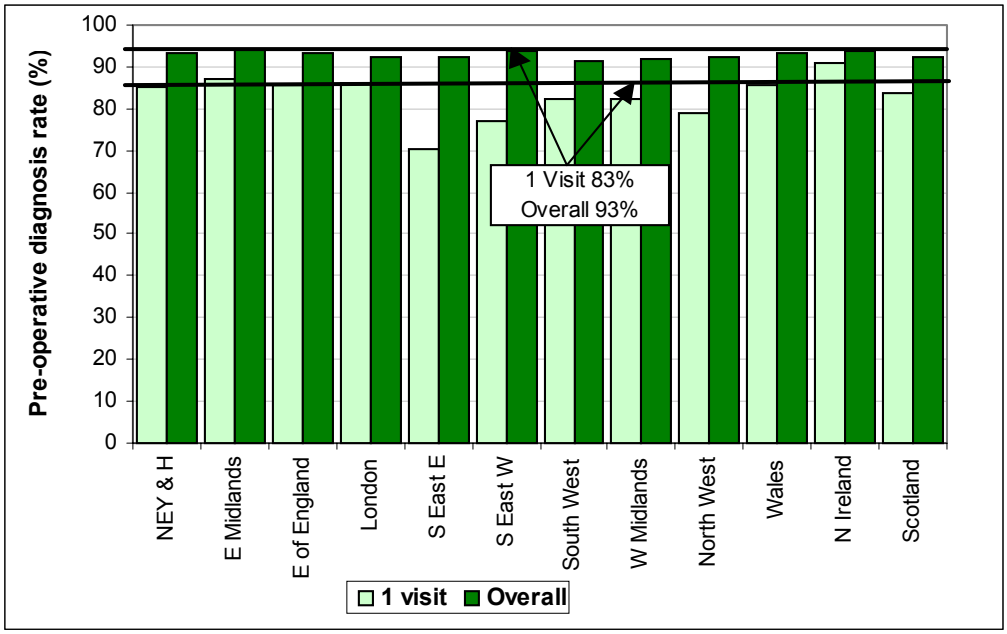


Figure 10 (Table 13): The proportion of cancers diagnosed by C5 cytology and/or B5 core biopsy at 1 visit, as a proportion of all screen detected cancers, compared to the overall pre-operative diagnosis rate

Figure 11 illustrates the ability of individual screening units to achieve a definitive pre-operative diagnosis at one assessment visit. 21 of the screening units failed to achieve the 80% standard at one visit, but of these only 1 unit failed to reach the minimum pre-operative diagnosis standard when all attempts were included. Caution must, however, be exercised when interpreting these data, as there may be inconsistencies between individual units as to what has been counted as an assessment visit. Some regional breast screening units do not, as a rule, undertake interventional procedures on the first assessment visit, preferring to call the woman back to another clinic with the pre-knowledge that she will be undergoing a procedure. It is uncertain in these instances if these units are counting the cases as requiring two assessment visits to achieve a diagnosis or only one visit for a core biopsy or an FNA. Clarification will be sought in next year's audit as to the precise definition of an assessment visit so that in future these data can be interpreted with more confidence.

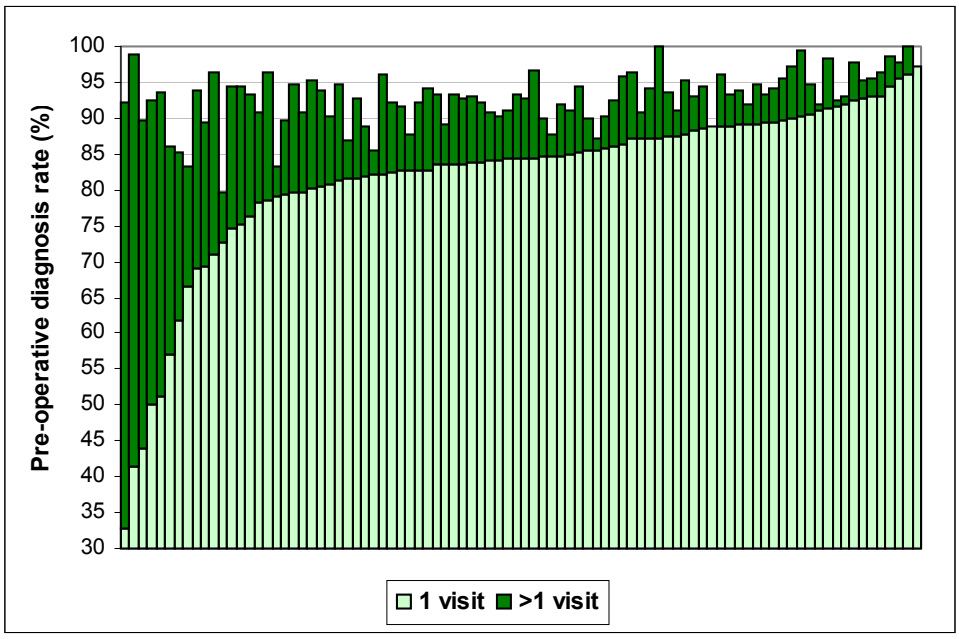


Figure 11: Variation in the proportion of cancers diagnosed by C5 cytology and/or B5 core biopsy at 1 visit and more than 1 visit, as a proportion of all screen detected cancers in each screening unit

2.3 Diagnostic Open Biopsies

2.3.1 Status of Diagnostic Open Biopsies

Quality Objective: To minimise unnecessary surgery, i.e. 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 in 2003/04, 2,777 diagnostic open biopsies were performed, compared to 2,919 in 2002/03. Of these, 1,825 (66%) were benign and 952 (34%) were malignant.

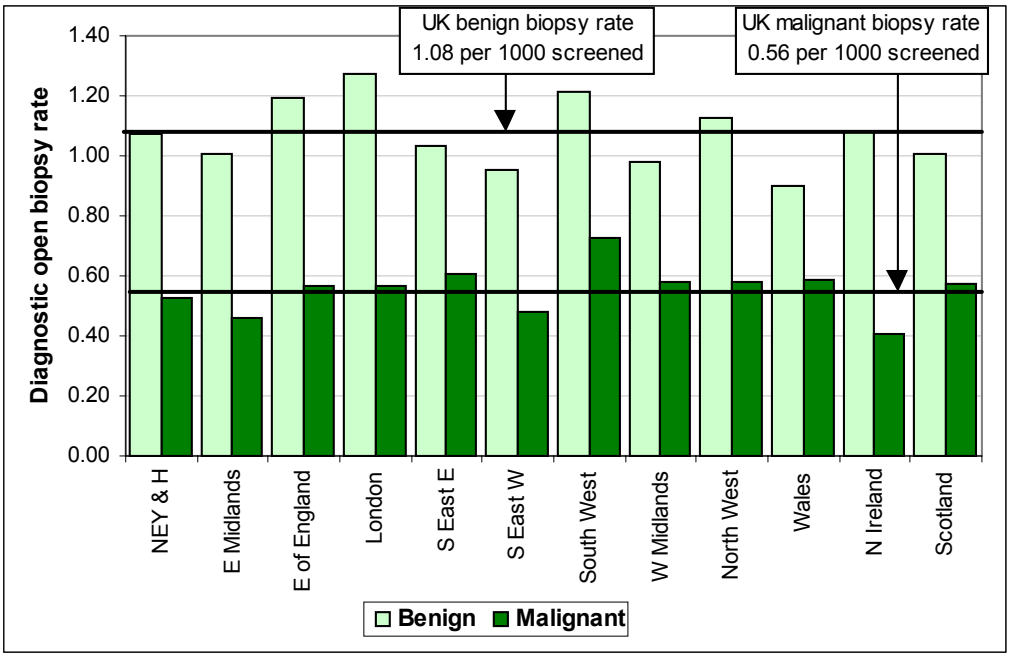


Figure 12 (Table 14): Variation in benign and malignant diagnostic open biopsy rates expressed as the number of diagnostic open biopsies undertaken per 1,000 women screened

The benign open biopsy rate was 1.08 per 1,000 women screened, varying from 0.9 per 1,000 in Wales to 1.28 per 1,000 in London. Overall, the malignant open biopsy rate was 0.56 per 1,000 women screened, varying from 0.41 per 1,000 in Northern Ireland to 0.73 per 1,000 in South West.

The following summary table shows that the benign open biopsy rate has fallen over 8 years from 1.50 per 1,000 women screened in 1996/97 to 1.08 per 1,000 women screened in 2003/04. Over the same period, the malignant open biopsy rate has fallen from 2.04 per 1,000 to 0.56 per 1,000 as the pre-operative diagnosis rate has increased from 63% to 93%.

8 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*	*2,015*	*2,734*	*1.50*	*2.04*
1997/98	*1,419,287*	*2,251*	*2,349*	*1.59*	*1.66*
1998/99	*1,308,751*	*1,830*	*1,553*	*1.40*	*1.19*
1999/00	*1,429,905*	*1,838*	*1,316*	*1.29*	*0.92*
2000/01	*1,535,019*	*2,042*	*1,304*	*1.33*	*0.85*
2001/02	*1,507,987*	*2,018*	*1,148*	*1.34*	*0.76*
2002/03	*1,582,269*	*1,901*	*1,018*	*1.20*	*0.64*
2003/04	*1,685,661*	*1,825*	*952*	*1.08*	*0.56*

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

Table 15 shows false positive cytology and core biopsy figures obtained from CQA and BQA reports for each region. In the UK as a whole, there were 19 false positive cytology cases and 31 false positive core biopsy cases. Regional QA reference centres with their pathology QA co-ordinators should review these cases and ascertain the reasons behind these results, implementing corrective action as appropriate.

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

The number of cancers diagnosed by open biopsy has fallen by 6.5% compared with 2002/03 to 952 cancers in 2003/04. Of these, 412 (43%) were invasive, 14 (1%) micro-invasive and 523 (55%) non-invasive (Table 16). Invasive status was unknown for 3 cases.

Tables 17 and 18 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 65% of invasive cancers diagnosed by open biopsy there had been unsuccessful attempts to obtain a pre-operative diagnosis using core biopsy alone (Table 17). For non-invasive cancers the proportion of cases where pre-operative diagnosis had been attempted with core biopsy alone was higher at 82% (Table 18).

Table 17 also shows that, of the 412 invasive cancers diagnosed by open biopsy, 25 (6%) had no pre-operative procedure recorded. Of the 523 non-invasive cancers diagnosed by open biopsy, 18 (3%) had no pre-operative procedure recorded. Regional QA reference centres and regional QA surgeons should audit these 43 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.

In line with the increased use of core biopsy since 2000/01, the proportion of cancers undergoing cytology as the only procedure prior to a diagnostic open biopsy has decreased from 31% to 14%, while the proportion undergoing core biopsy alone has risen from 36% to 65%.

4 YEAR COMPARISON :
PRE-OPERATIVE HISTORY OF INVASIVE CANCERS DIAGNOSED BY OPEN BIOPSY

Year of data collection	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	7,945	691	68	10	212	31	248	36	163	24
2001/02	7,911	558	50	9	129	23	240	43	139	25
2002/03	8,931	445	36	8	71	16	244	55	94	21
2003/04	10,400	412	25	6	56	14	268	65	63	15

Figure 13 shows the highest pre-operative result for cancers ultimately determined to be invasive. Overall, 12% of invasive cancers diagnosed by open biopsy (51 cases) had an inadequate (C1) cytology sample or a normal (B1) core biopsy sample, varying from 0% in East Midlands and Northern Ireland to 22% in South West (10 cases), 26% in the West Midlands (11 cases) and 50% in Wales (10 cases). 14% had a benign (C2/B2) result (57 cases), 26% were suspicious of benign disease (C3/B3) (106 cases) and 42% were suspicious of malignant disease (C4/B4) (173 cases). In all regions except Wales and East Midlands, the majority of cancers diagnosed by open biopsy had a B4 core biopsy or C4 cytology result indicating suspicion of malignancy prior to diagnostic surgery.

Figure 14 shows the highest pre-operative result for cancers ultimately determined to be non-invasive. In Wales, 18% (5 cases) of the 28 non-invasive cancers diagnosed by open biopsy had an inadequate (C1) cytology sample or a normal (B1) core biopsy sample, compared to 9% in the UK as a whole. In South East (East), 67% (28 cases) of the 42 non-invasive cancers diagnosed by open biopsy were suspicious of benign disease (C3/B3), compared to 39% in the UK as a whole. In East of England and South East (West), 53% (33 cases) and 55% (17 cases) of the non-invasive cancers diagnosed by open biopsy were suspicious of malignant disease (C4/B4), compared to 40% in the UK as a whole.

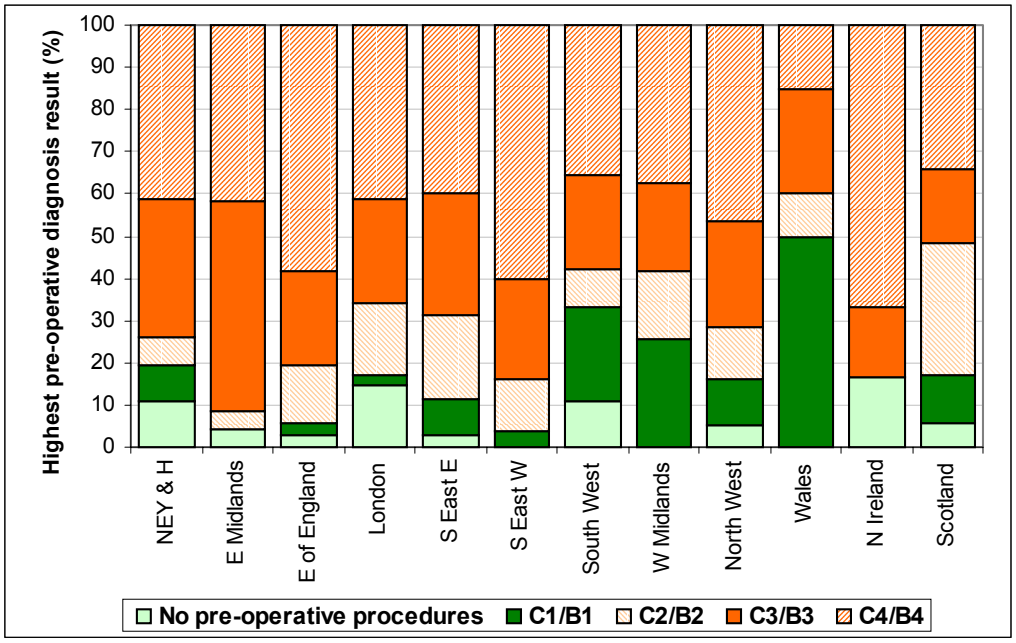


Figure 13 (Table 19): The highest pre-operative diagnosis result for invasive cancers diagnosed by open biopsy, expressed as a percentage of invasive malignant diagnostic open biopsies

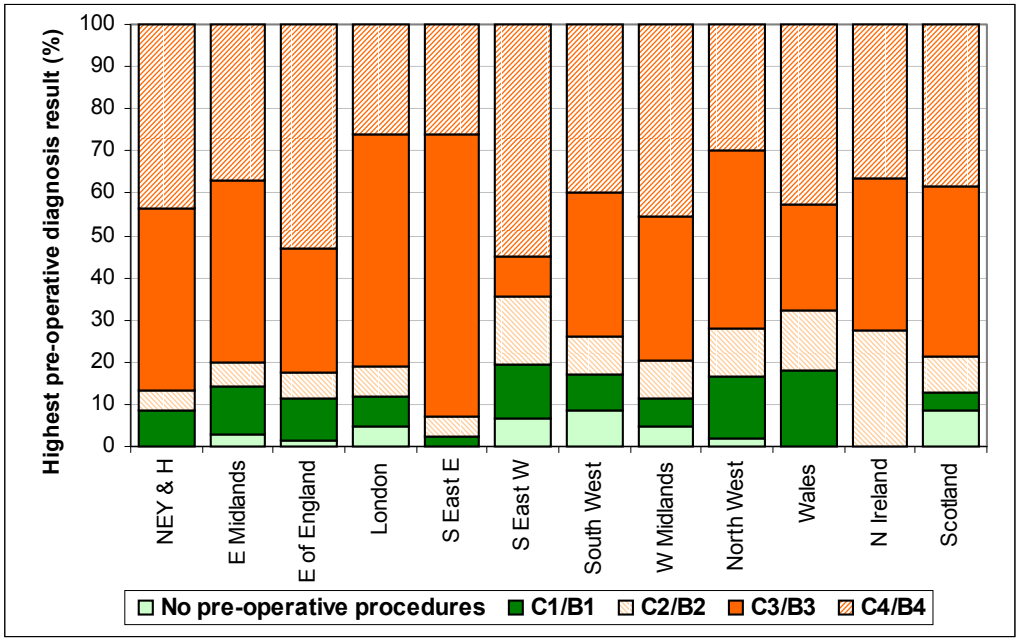


Figure 14 (Table 20): The highest pre-operative diagnosis result for non-invasive cancers diagnosed by open biopsy, as a percentage of non-invasive malignant diagnostic open biopsies

The following 4 year comparison table shows the changes that have occurred since 2000/01 in the highest pre-operative results for invasive cancers that had a core biopsy or cytology sample taken prior to a diagnostic open biopsy. Throughout the four year period studied the highest proportion (average 45%) of invasive cancers diagnosed by malignant open biopsy were those with C4 cytology or B4 core biopsy. The proportion of invasive cancers with C3 cytology or B3 core biopsy has increased over the four year period from 18% to 27% while the proportion with C1 cytology or B1 core biopsy has fallen from 22% to 13%.

4 YEAR COMPARISON : HIGHEST CYTOLOGY AND CORE BIOPSY FOR MALIGNANT OPEN BIOPSIES (INVASIVE)									
Year of data collection	Total with core biopsy/cytology	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
2003/04	387	51	13	57	15	106	27	173	45

The following 4 year comparison table shows the changes that have occurred since 2000/01 in the highest pre-operative results for non-invasive cancers that had a core biopsy or cytology sample taken prior to a diagnostic open biopsy. The proportion of non-invasive cancers with C4 cytology or B4 core biopsy has increased slightly over the four year period studied from 39% to 41% while the proportion with C1 cytology or B1 core biopsy has fallen sharply from 20% to 9%. As expected, there was a higher proportion of non-invasive cancers with a pre-operative C3 cytology or B3 core biopsy (41%) compared with invasive cancers (27%).

4 YEAR COMPARISON : HIGHEST CYTOLOGY AND CORE BIOPSY FOR MALIGNANT OPEN BIOPSIES (NON INVASIVE)									
Year of data collection	Total with core biopsy/cytology	C1/B1		C2/B2		C3/B3		C4/B4	
		No	%	No	%	No	%	No	%
2000/01	571	112	20	81	14	157	27	221	39
2001/02	543	81	15	70	13	181	33	211	39
2002/03	543	68	13	54	10	204	37	217	40
2003/04	505	47	9	45	9	205	41	208	41

COMMENT:

- In the UK as a whole, 2,777 diagnostic open biopsies were performed in 2003/04. Of these 66% were benign and 34% were malignant.
- The benign open biopsy rate was 1.08 per 1,000 women screened and the malignant open biopsy rate was 0.56 per 1,000 women screened. The malignant open biopsy rate has fallen from 2.04 per 1,000 screened in 1996/97 to 0.56 per 1,000 screened in 2003/04 as the pre-operative diagnosis rate has increased from 63% to 93%.
- Of the 412 invasive cancers diagnosed by open biopsy, 25 (6%) had no pre-operative procedure recorded. Of the 523 non-invasive cancers diagnosed by open biopsy, 18 (3%) had no pre-operative procedure recorded. Regional QA reference centres and regional QA surgeons should audit these 43 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.
- 45% of invasive cancers and 41% of non-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.
- Throughout the four year period studied, the highest proportion of invasive cancers diagnosed by malignant open biopsy were those with C4 cytology or B4 core biopsy. The proportion of invasive cancers with C3 cytology or B3 core biopsy has increased over the four year period from 18% to 27% while the proportion with C1 cytology or B1 core biopsy has fallen from 22% to 13%.
- The proportion of non-invasive cancers with C4 cytology or B4 core biopsy has increased slightly over the four year period studied from 39% to 41% while the proportion with C1 cytology or B1 core biopsy has fallen sharply from 20% to 9%.

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 in each region is shown in Figure 15. 28 cancers (1%) apparently received no surgery. Regional QA reference centres and regional QA surgeons should review the 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 60% in Wales to 75% in South West and 78% in Northern Ireland.

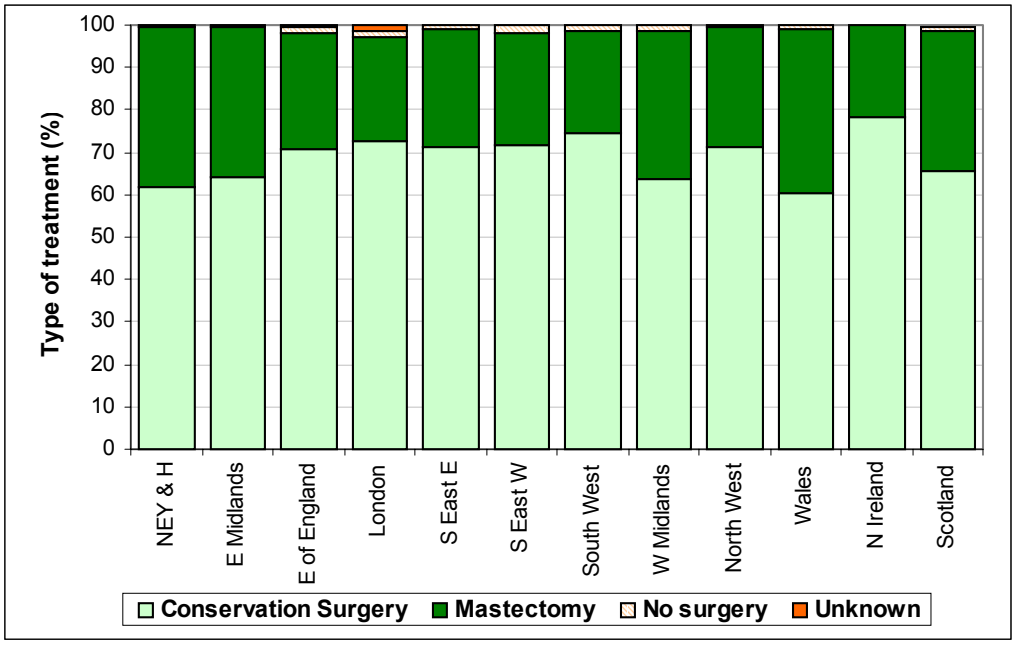


Figure 15 (Table 21): Variation in treatment for non-invasive and micro-invasive cancers

In Figure 16, the 20 smallest screening units are highlighted in white. Conservation surgery rates in individual screening units varied between 43% and 100%. Three of the 5 units with conservation surgery rates under 50% are small units which treated a total of 9, 18 and 19 non-invasive or micro-invasive cancers. The 2 small units with 100% conservation surgery treated a total of 4 and 12 non-invasive or micro-invasive cancers respectively in the audit period.

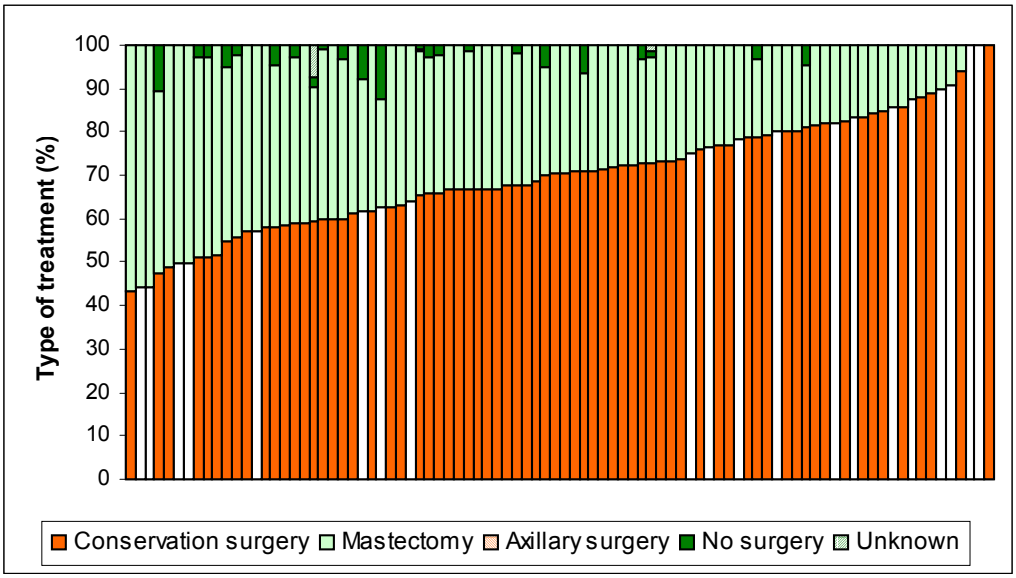


Figure 16: Variation in treatment for non-invasive and micro-invasive cancers in each screening unit. The 20 smallest units are highlighted in white

In the UK as a whole, 1,440 (53%) of the 2,708 non-invasive cancers were high grade, 1,139 (42%) other grade and for 32 (1%) nuclear grade was not assessable. Of the 97 non-invasive cancers (4%) with unknown nuclear grade, 36 were in London (Table 22). The variation in the nuclear grade of non-invasive cancers in each screening unit is shown in Figure 17. 50 screening units supplied grade for 100% of cases. In these 50 units, 56% of non-invasive cancers were high grade. The small unit with 100% of their non-invasive cancers classified as high grade had 6 cases recorded.

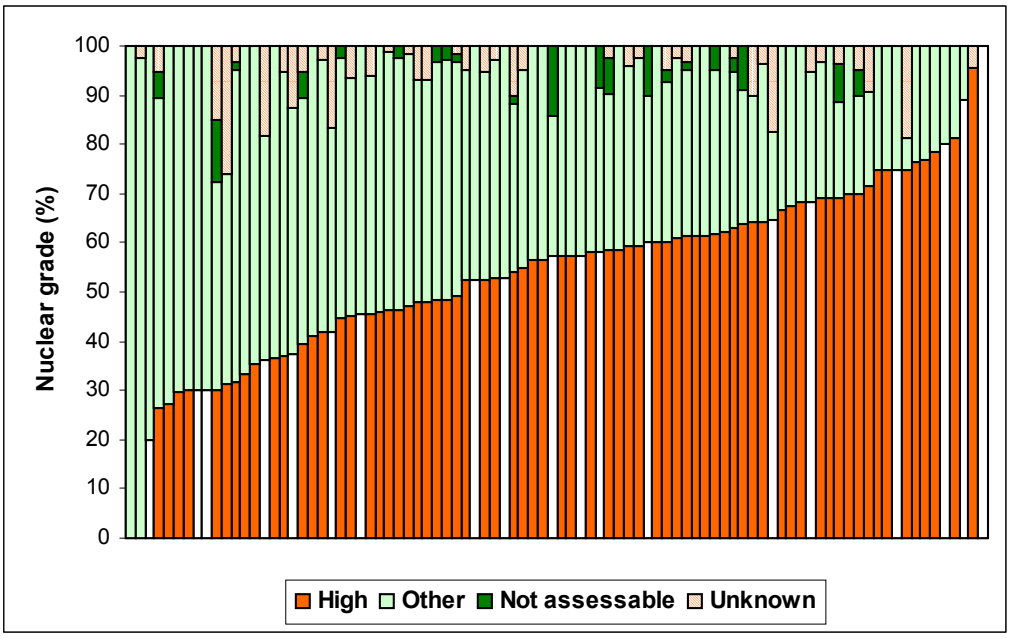


Figure 17: Variation in the nuclear grade of non-invasive cancers in each screening unit. Smaller units are highlighted in white

Figure 18 shows the data completeness for non-invasive cancers at each screening unit. This figure demonstrates that size information for non-invasive cancers is difficult to collect in many screening units. Only 21 screening units were able to provide both grade and size data for non-invasive cancers, compared to 32 units in last year's audit. However, in some units there is evidence that considerable improvements in data completeness have been achieved. Only one unit in East of England was not able to provide complete size and grade information for any of its 18 non-invasive cases. In 2002/03 there were 5 units in this position. In London, one unit failed to provide information for 94% of its 54 non-invasive cases.

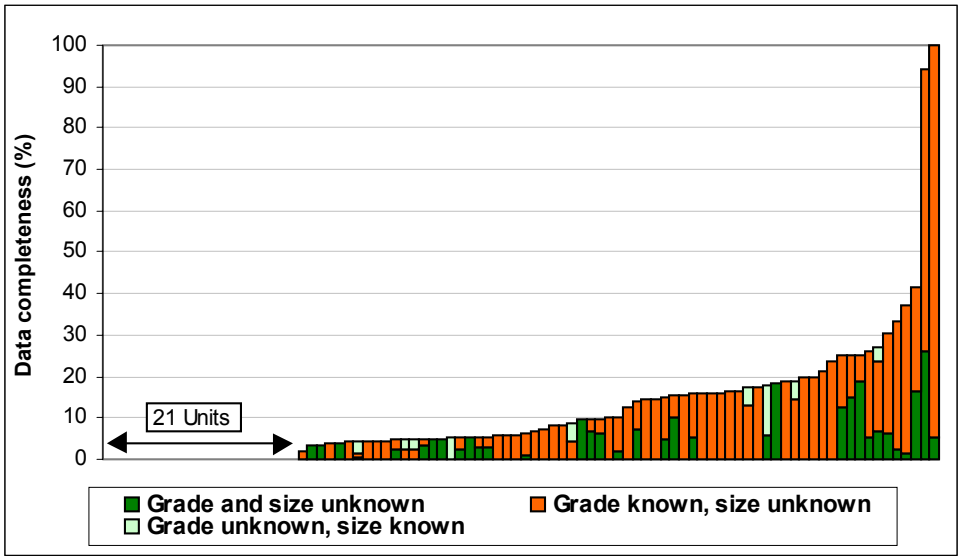


Figure 18: Variation in the data completeness of grade and size for non-invasive cancers in each screening unit

Overall, data were incomplete (unknown grade and/or size) for 345 (13%) of non-invasive cancers. Data completeness varied from 3% unknown in East Midlands and 4% in South West to 36% in London (Table 24). The following summary table shows that the proportion of incomplete data has improved greatly this year from 21% with unknown grade or size in 2002/03 to just 13%. It is hoped that this will continue to improve as screening units sign up to the Sloane Project which aims to record and audit the radiology, pathology and treatment for all non-invasive breast cancers detected by the NHSBSP.

6 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
2003/04	4	12	13

337 non-invasive cancers were recorded as large (30+mm) high grade lesions. Of these, 94 (28%) were treated with conservation surgery (Table 27). The following summary table shows that, in total, 196 potentially large high grade or unknown 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.

NUMBER OF NON-INVASIVE CANCERS IN EACH REGION TREATED WITH CONSERVATION SURGERY					
	30+mm		Unknown size		
Region	High grade (Table 27)	Unknown grade	High grade (Table 25)	Unknown grade (Table 26)	Total*
N East, Yorks & Humber	11	0	6	1	18
East Midlands	9	0	0	1	10
East of England	6	0	10	3	19
London	5	1	16	23	45
South East (East)	9	0	9	4	22
South East (West)	7	0	2	0	9
South West	11	0	0	0	11
West Midlands	7	0	3	1	11
North West	12	0	8	4	24
Wales	7	0	3	2	12
Northern Ireland	1	0	4	0	5
Scotland	9	0	0	1	10
United Kingdom	**94**	**1**	**61**	**40**	**196**

*counts each non-invasive cancer once only

COMMENT:

- Overall, 69% of non-invasive and micro-invasive cancers were treated with conservation surgery, varying from 60% in Wales to 75% in South West and 78% in Northern Ireland.
- Data completeness of grade and size data has improved, with only 13% of cases having an unknown grade and size.
- 196 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 10,400 invasive breast cancers detected by the UK NHSBSP in 2003/04, 7,457 (72%) underwent conservation surgery, 2,768 (27%) had a mastectomy and 147 cases (1%) had no surgery. Treatment information was unavailable for 16 cases, of which 11 (69%) were in Scotland. In Scotland, 12 invasive cases underwent axillary surgery only. The Scottish QA Reference Centre and the QA surgeon should audit these 12 cases to ascertain whether the data are a true reflection of clinical practice. Figure 19 shows the regional variation in invasive cancer mastectomy rates from 21% in London and South East (East) to 38% in Wales.

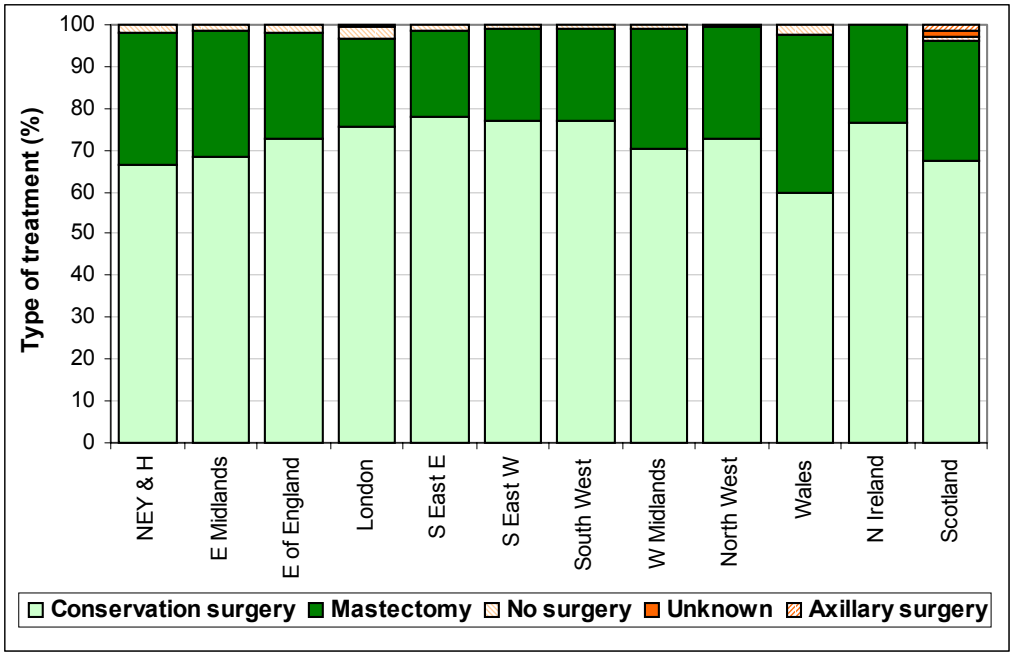


Figure 19 (Table 28): Variation in the type of treatment for invasive cancers (all sizes)

3.2.1 Treatment According to Invasive Size

Of the 10,400 invasive cancers, 2,550 (25%) measured less than 10mm, 2,939 (28%) were 10-<15mm in diameter, 2,115 (20%) were 15-<20mm in diameter and 2,361 (23%) were 20-<50mm. Only 188 cases (2%) were 50mm or more (Table 29). Size was unavailable for 247 cases (2%).

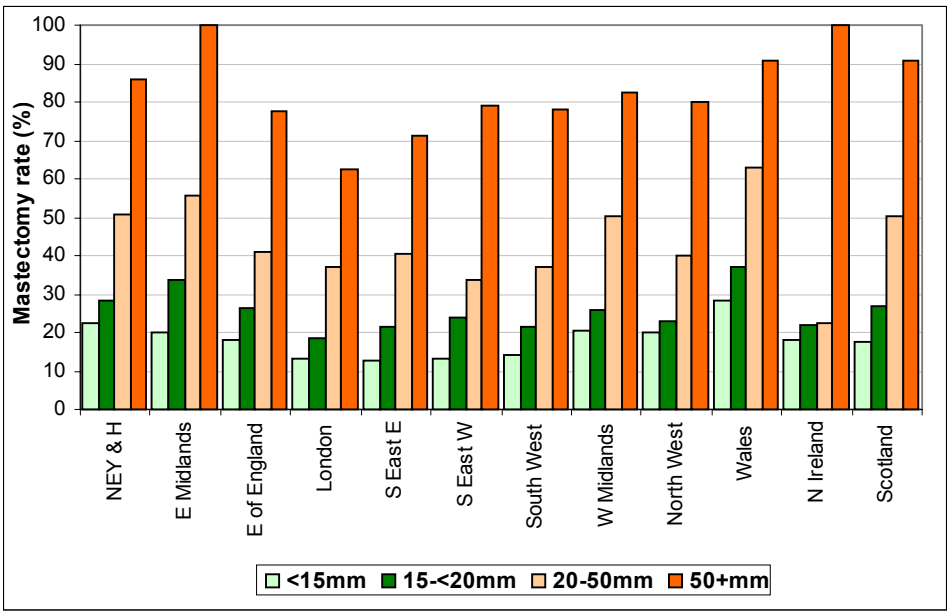


Figure 20 (Tables 32-35): Variation in mastectomy rates with invasive tumour size

In most regions there was a clear variation in mastectomy rate with tumour size, but in Northern Ireland there was very little difference in the mastectomy rates for tumours with diameters below 50mm.

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 cancers has remained fairly stable since 1996/97 varying between 18% and 21%. Table 32 shows that the highest mastectomy rates for small (<15mm) invasive cancers were seen in North East, Yorkshire & Humber (23%) and in Wales (28%) and the lowest rates (13%) in London, South East (East) and South East (West).

8 YEAR COMPARISON: TREATMENT FOR SMALL INVASIVE CANCERS (invasive size <15mm)					
Year of data collection	*Total invasive cases <15mm*	*Conservation surgery*		*Mastectomy*	
		No.	*%*	*No.*	*%*
1996/97	*3,135*	*2,449*	*78*	*601*	*19*
1997/98	*3,384*	*2,693*	*80*	*651*	*19*
1998/99	*3,344*	*2,697*	*81*	*618*	*18*
1999/00	*4,150*	*3,337*	*80*	*773*	*19*
2000/01	*4,189*	*3,363*	*80*	*796*	*19*
2001/02	*4,233*	*3,333*	*79*	*879*	*21*
2002/03	*4,878*	*3,950*	*81*	*918*	*19*
2003/04	*5,489*	*4,475*	*82*	*1,006*	*18*

Data from Scotland are absent in 1998/99

3.2.3 Treatment of Invasive Cancers According to Whole Tumour Size

Once again, screening units were asked to provide whole tumour size for invasive cancers (Table 36). The whole tumour size is the maximum diameter of the whole tumour, including any non-invasive component. The whole size was not provided for 247 (2%) of the 10,400 invasive cancers. This represents a significant improvement in data quality from last year when 1,242 invasive cancers (14%) did not have a whole size provided.

Table 37 shows the whole size of small (<15mm) invasive cancers. Of the 5,489 invasive cancers with invasive size <15mm, 4,041 (74%) had whole size <15mm, 448 (8%) had whole size 15-<20mm, 530 (10%) had whole size 20-<50mm and 103 (2%) had whole size 50+mm. Whole size was unknown for 367 cancers (7%). 105 of these cancers were in North West and 92 in North East, Yorkshire & Humber.

TREATMENT FOR INVASIVE CANCERS				
Size	*Invasive size mastectomy rates (Tables 32-35)*		*Whole size mastectomy rates for <15mm invasive cancers (Tables 38, 40-42)*	
	No.	*%*	*No.*	*%*
50+mm	*153/188*	*81*	*88/103*	*85*
20-<50mm	*1042/2361*	*44*	*224/530*	*42*
15-<20mm	*540/2115*	*26*	*88/448*	*20*
<15mm	*1006/5489*	*18*	*544/4041*	*13*

The summary table above 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 slightly lower than that for <15mm cancers with 50+mm whole size (85%). The mastectomy rates for invasive size 20-<50mm and 15-<20mm cancers were higher than for <15mm invasive cancers

with 20-<50mm and 15-<20mm whole size respectively. For small cancers, only 13% of tumours with whole size <15mm were treated with mastectomy compared with 18% 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 21 illustrates 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 East Midlands (20% compared to 12%), West Midlands (21% compared to 14%) and Northern Ireland (18% compared to 11%) and least in North West (20% compared to 19%).

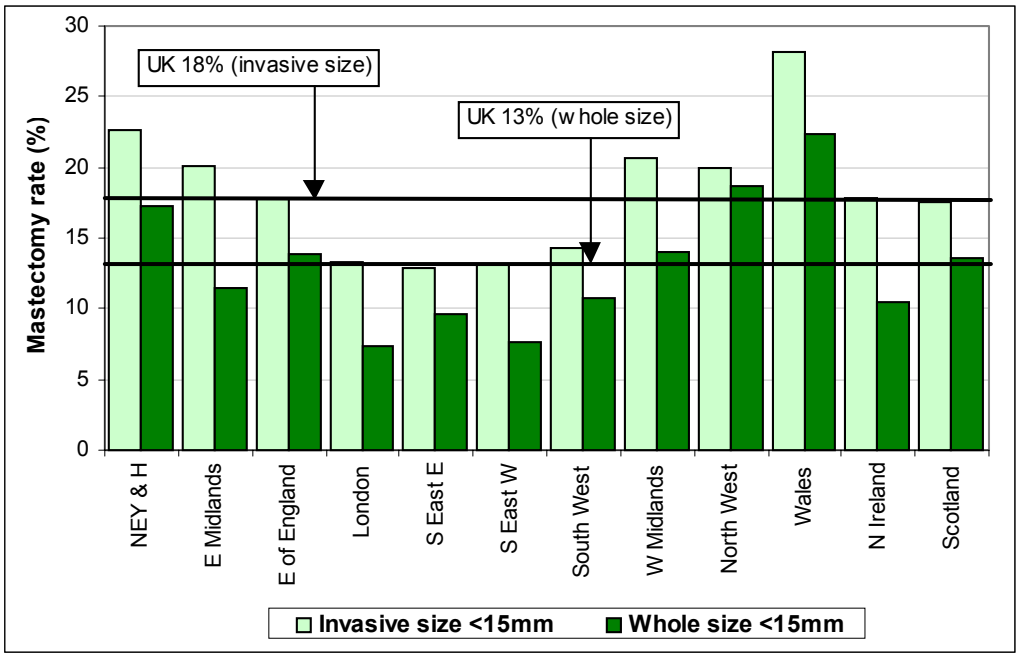


Figure 21 (Tables 32, 38): Variation in the mastectomy rates for cancers with <15mm invasive size and cancers with both whole size and invasive size <15mm

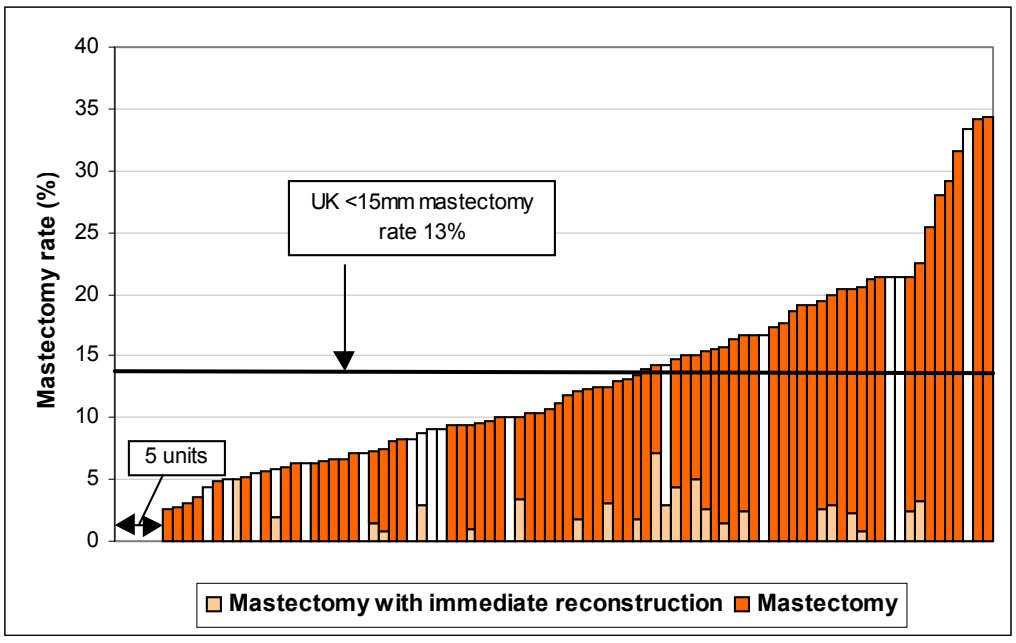


Figure 22: Variation in the mastectomy rates for <15mm whole size invasive tumours in each screening unit. Smaller units are highlighted in white

The variation with screening unit in the mastectomy rates for invasive tumours with whole size less than 15mm is shown in Figure 22. Four units which detected between 21 and 73 cancers had a higher than 30% mastectomy rate for small tumours with whole size <15mm where no immediate reconstruction was recorded. Regional QA reference centres and regional QA surgeons should review the data for these cancers to ascertain the reason for this unusual clinical practice.

3.3 Immediate Reconstruction Following Mastectomy

Overall, of the 13,290 cancers detected, 3,636 (27%) were treated with mastectomy. Of these, 411 (11%) were recorded as having immediate reconstruction. 2,368 (65%) cases had no immediate reconstruction recorded and for 857 (24%) cases it was unknown whether immediate reconstruction was performed. Table 44 shows that, of the 411 cases known to have had immediate reconstruction following mastectomy, 231 (56%) were invasive, 18 (4%) were micro-invasive, and 162 (39%) were non-invasive.

The regions with the highest proportion of cases without immediate reconstruction data recorded were North West (58%), South East (East) (41%), East of England (40%) and North East, Yorkshire & Humber (38%). The availability of immediate reconstruction may influence a woman's decision to choose mastectomy. Thus, in South East (East), where mastectomy rates for small tumours were not markedly influenced by the presence of *in situ* disease (Figure 21), at least 23% of the women undergoing mastectomy received immediate reconstruction.

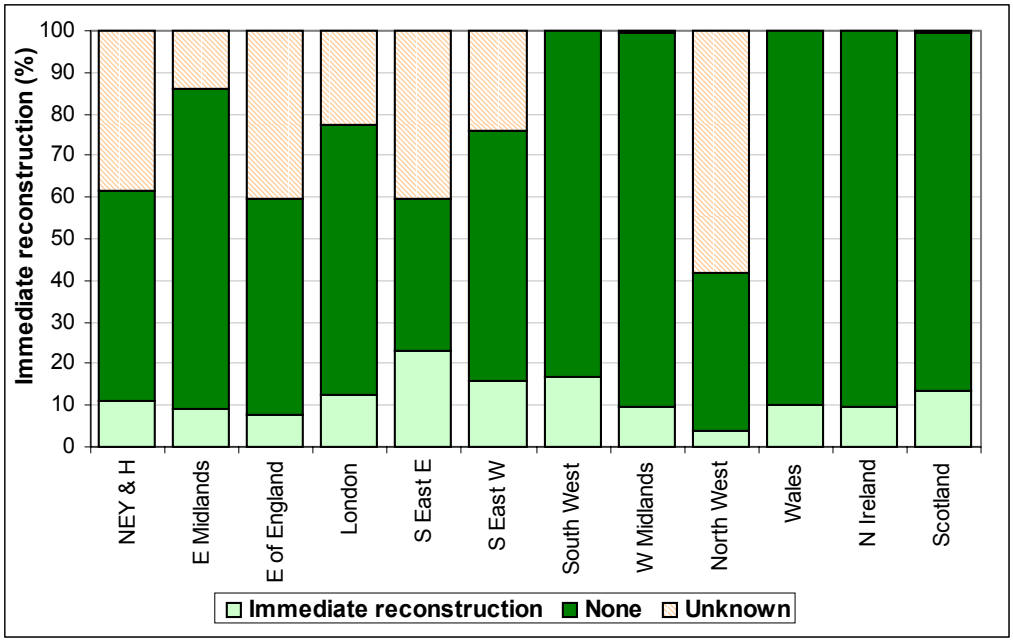


Figure 23 (Table 43): Proportion of immediate reconstruction (all cancers)

Figure 24 shows that immediate reconstruction rates varied widely in individual screening units. Immediate reconstruction data were not recorded in 30 screening units. The screening unit with a 100% immediate reconstruction rate had only one case with known immediate reconstruction.

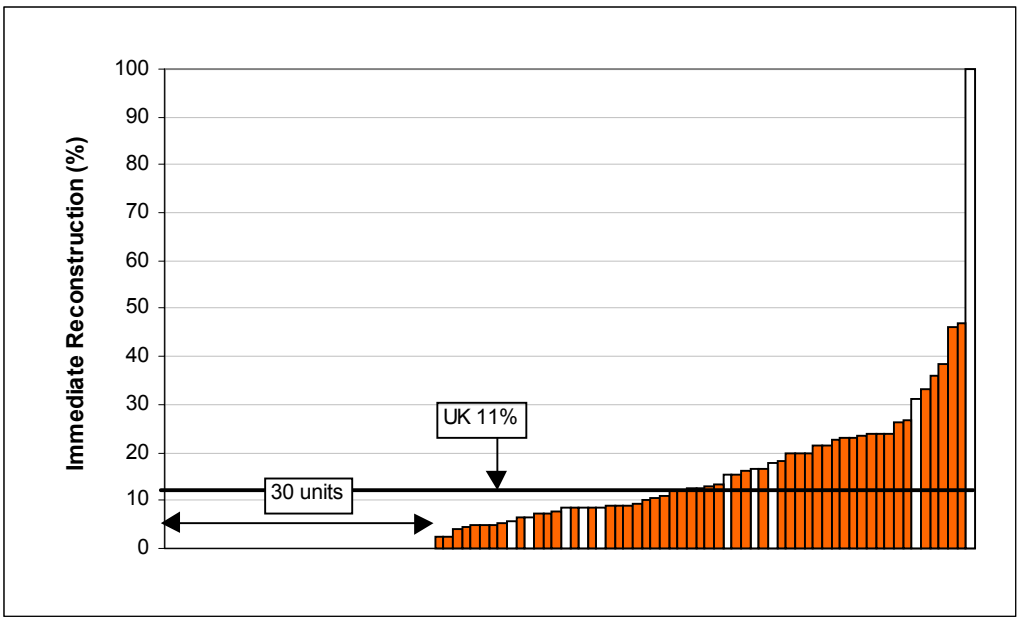


Figure 24: Variation in the proportion of immediate reconstruction in each screening unit. Smaller units are highlighted in white.

COMMENT:

- In the UK as a whole, the mastectomy rate for invasive cancers was 27%. This varied between 4% and 55% in individual screening units.
- 81% of 50+mm invasive cancers were treated with mastectomy compared with 18% of small (<15mm) invasive cancers. In most regions there was a clear variation in mastectomy rate with tumour size, but in Northern Ireland there was very little difference in the mastectomy rates for tumours with diameters below 50mm.
- Only 13% of cancers with whole size <15mm were treated with mastectomy compared with 18% 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.
- Four units had a higher than 30% mastectomy rate for small tumours with whole size <15mm where no immediate reconstruction was recorded. Regional QA reference centres and regional QA surgeons should review the data for these cancers to ascertain the reason for this unusual clinical practice.
- 11% of cancers treated with mastectomy were recorded as having immediate reconstruction. Of these cancers, 231 (56%) were invasive, 18 (4%) were micro-invasive, and 162 (39%) were non-invasive.

4. LYMPH NODE STATUS, INVASIVE GRADE AND NPI

4.1 Lymph Node Status for 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 94% of invasive cancers, varying from 86% in North West to 98% in South West (Table 45). In North West, it was unknown whether nodes were obtained for 29 invasive cancers and 91 cases had nodes taken but the number of positive nodes was not recorded.

The availability of nodal status for invasive cancers is shown for individual screening units in Figure 25. Where nodal status is unknown, this may be because no nodes were obtained or because it is not known whether nodes were obtained or whether there was positive node. At 5 screening units, nodal status was ascertained for 100% of invasive cancers. In 1 screening unit in North West, nodal status was unknown for 86% of cases. The regional QA reference centre should work with this unit to ascertain the reasons for these missing data.

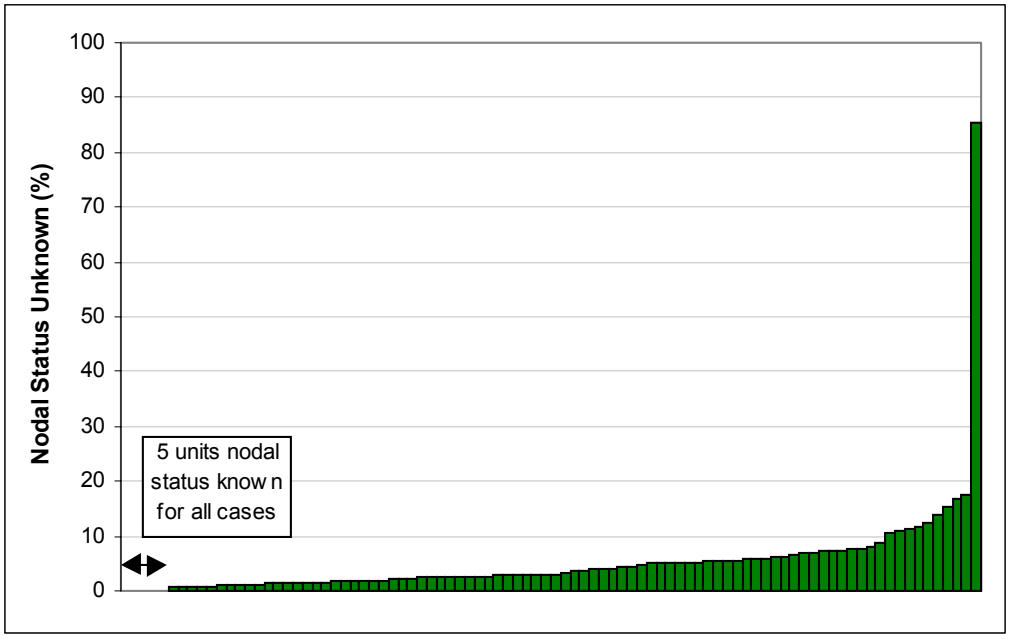


Figure 25: The availability of lymph node status for invasive breast cancers in each screening unit

Of the 9,811 invasive cancers with known nodal status, 2,374 (24%) had positive nodal status (Table 46). This is similar to the 1:3 ratio obtained in previous ABS at BASO audits as shown in the following table.

8 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	5,860	81	26	74
1997/98	6,427	87	25	75
1998/99	6,200	90	26	74
1999/00	7,675	93	25	75
2000/01	7,945	93	25	75
2001/02	7,911	94	25	75
2002/03	9,086	95	25	75
2003/04	10,400	94	24	76

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

There was little regional variation in lymph node status, with the proportion of node positive cancers varying from 22% in East of England and Northern Ireland to 27% in West Midlands (Table 46). The variation in nodal status in individual screening units is illustrated in Figure 26. The screening unit with 94% of cases with positive nodal status had 86% nodal status unknown. This suggests that the unit is selectively failing to record nodal data for node negative cancers.

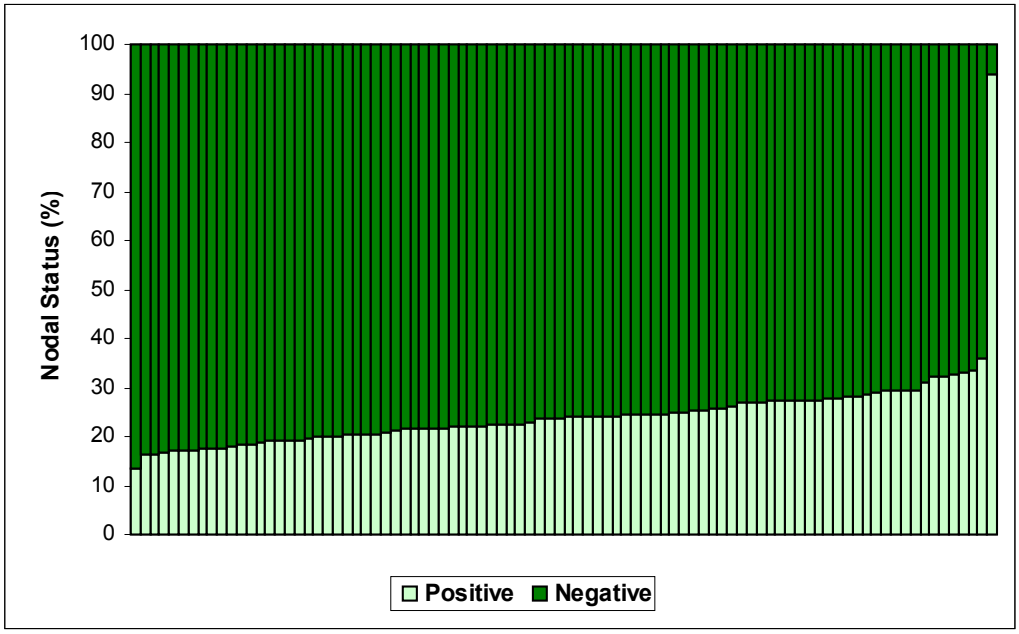


Figure 26: Variation in the lymph node status of invasive breast cancers in each screening unit

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 the 9,811 invasive cancers with known nodal status, the mean number of nodes examined was 11 nodes and the median 10 nodes (Table 47). The mean and median number of nodes examined were highest in Northern Ireland (mean and median 17) and lowest in East Midlands (mean 8, median 7).

The summary table below shows that the proportion of invasive cancers for which nodal status was recorded based on fewer than 4 nodes examined has decreased from 10.6% in 1996/97 to 4.8% in 2003/04 (Table 48). During the period audited, if a sentinel node procedure was performed as part of a trial (e.g. ALMANAC), it was acceptable to obtain fewer than 4 nodes. The use of this new technique was therefore taken into account when analysing the data for the proportion of cases with fewer than 4 nodes examined.

8 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	*4,773*	*10.6*
1997/98	*5,585*	*9.0*
1998/99	*5,574*	*6.7*
1999/00	*7,126*	*5.5*
2000/01	*7,379*	*5.0*
2001/02	*7,465*	*5.1*
2002/03	*8,607*	*5.2*
2003/04	*9,811*	*4.8*

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

Overall, 325 (3.3%) 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 27 shows that this varied from 6.6% (52 cancers) in London to 1.2% (10 cancers) in Scotland. A further 87 cancers (0.9%) had negative nodal status determined by a sentinel node procedure. 22 of these cases were in East of England, 19 in South East (East) and 18 in South West.

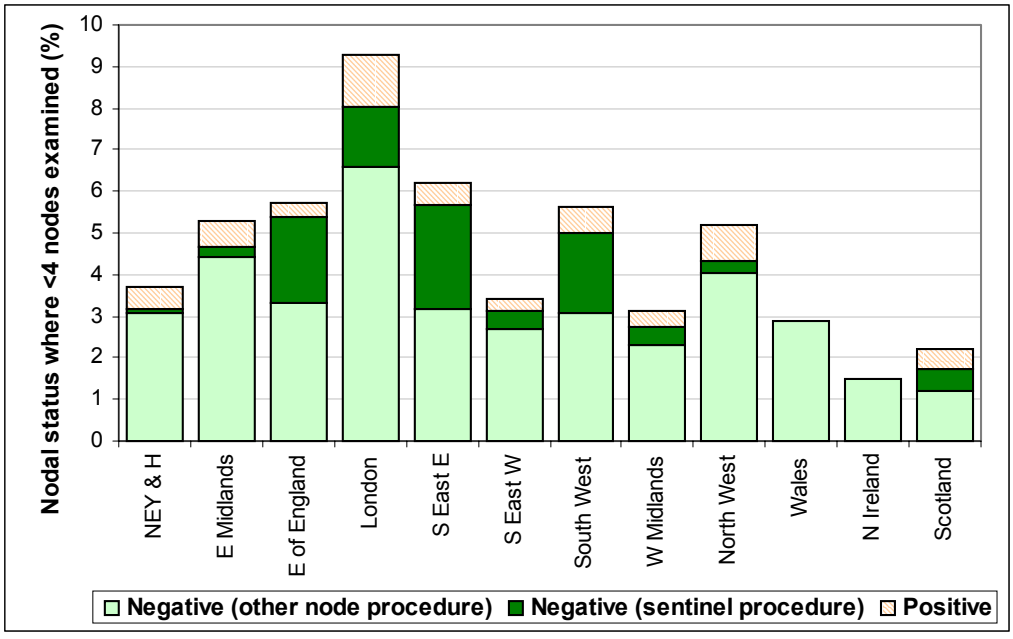


Figure 27 (Table 48): Nodal status for invasive cancers where nodal status was determined on the basis of <4 nodes, expressed as the percentage of invasive cancers with known nodal status

44 the invasive cancers (0.4%) had positive nodal status determined on the basis of fewer than 4 nodes without a sentinel node procedure. A further 11 cancers had their positive nodal status

determined from a sentinel node 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. Regional QA reference centres and regional QA surgeons should follow up these cases to ensure that the appropriate nodal procedures have been undertaken.

INVASIVE CANCERS WITH INSUFFICIENT NODAL INFORMATION						
	Total invasive cancers	Unknown nodal status (Table 45)		Negative <4 nodes (Other node procedure - Table 48)	Insufficient nodal information	
		With Surgery	No Surgery			
Region	No.	No.	No	No.	No.	%
N East, Yorks & Humber	1320	28	24	39	91	6.9
East Midlands	819	15	11	35	61	7.4
East of England	1163	59	23	36	118	10.1
London	852	39	25	52	116	13.6
South East (East)	819	48	11	24	83	10.1
South East (West)	734	25	7	19	51	6.9
South West	958	12	7	29	48	5.0
West Midlands	901	22	10	20	52	5.8
North West	1209	161	8	42	211	17.5
Wales	568	5	12	16	33	5.8
Northern Ireland	215	11	0	3	14	6.5
Scotland	842	17	9	10	36	4.3
UK	**10,400**	**442**	**147**	**325**	**914**	**8.8**

The table above shows that of the 10,400 invasive cancers detected, 589 (5.7%) had unknown nodal status. Of these, 147 cases had no surgery. 325 (3.3%) had their negative nodal status determined without a sentinel node procedure on the basis of 1, 2 or 3 nodes. Thus, 914 (8.8%) of the 10,400 invasive cancers detected appear to have insufficient nodal information to provide a satisfactory diagnostic work-up. This proportion varied from between 4.3% in Scotland (36 cases) to 13.6% in London (116 cases) and 17.5% in North West (211 cases). 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.

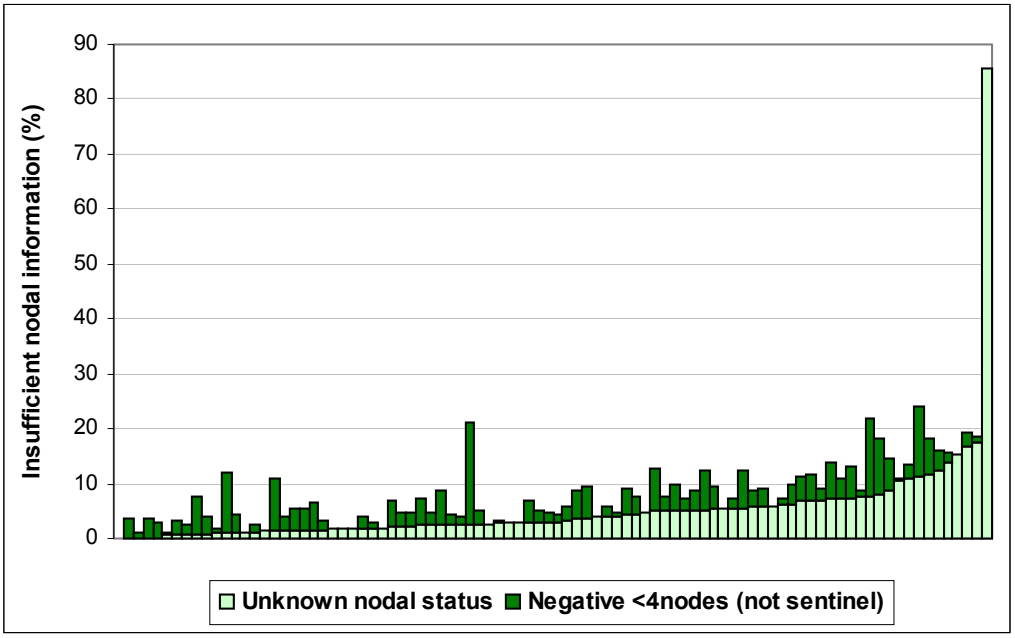


Figure 28: The proportion of invasive cancers with insufficient nodal information in each screening unit

Figure 28 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 node 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 24%, excluding the screening unit with 86% of cases with unknown nodal status. In 4 screening units, more than 10% of invasive cancers had negative nodal status determined on the basis of less than 4 nodes without a sentinel node procedure. These units treated between 38 and 195 invasive cancers.

COMMENT:

- In the UK as a whole, 94% of invasive cancers had known nodal status. This varied between 86% in North West and 98% in South West.
- At 5 screening units nodal status was ascertained for 100% of invasive cancers. In 1 screening unit 86% of cases had unknown nodal status. The regional QA reference centre should work with this unit to ascertain the reasons for these missing data which appear to be primarily for cases with negative nodal status.
- 11 cancers had their positive nodal status determined from a sentinel node 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. Regional QA reference centres and regional QA surgeons should follow up these cases to ensure that the appropriate nodal procedures have been undertaken.
- Overall, 8.8% of invasive cancers had unknown nodal status, or had negative nodal status determined without a sentinel node procedure on the basis of fewer than 4 nodes. This varied from 4.3% in Scotland to 13.6% in London and 17.5% in North West. 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 2,708 non-invasive cancers, 27% had nodal status known, varying from 15% in South West and 16% in Northern Ireland to 43% in Wales (Figure 29). For 66 non-invasive cancers (2%) it was unknown whether nodes were taken. 36 of these were in North West and 24 in East of England.

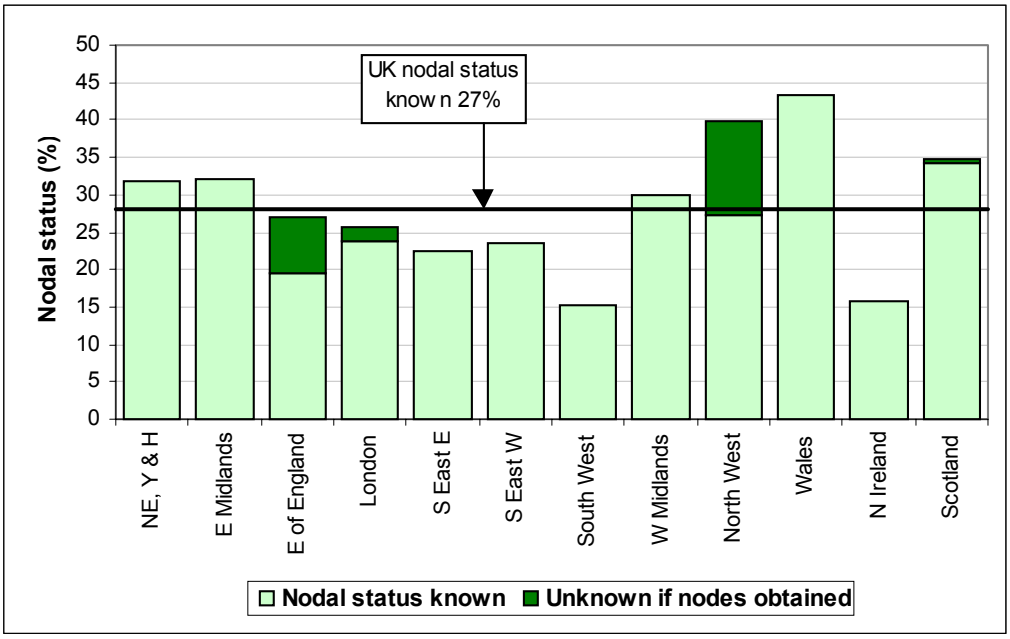


Figure 29 (Table 49): The proportion of non-invasive cancers with nodal status recorded

Of the 721 non-invasive cancers with known nodal status, 14 (2%) had positive nodal status recorded (Table 50). 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 51 shows that the mean number of nodes examined for non-invasive cancers with known nodal status was 6 and the median 5. In South East (West) the median was 7 nodes and in Northern Ireland the median was 6.5 nodes.

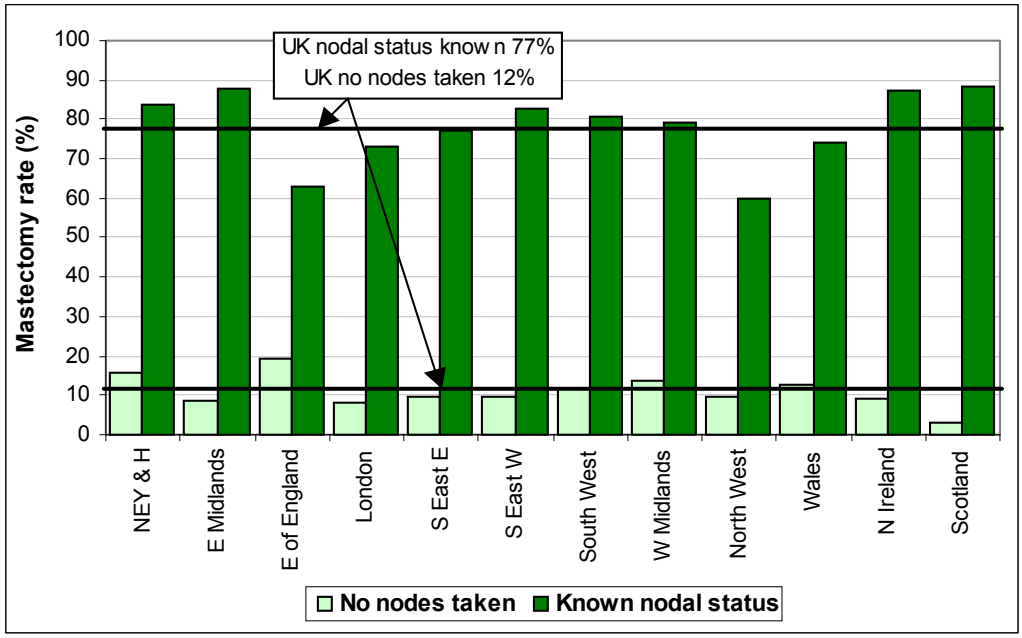


Figure 30 (Table 52, 54): Mastectomy rates for non-invasive cancers with known nodal status and with no nodes taken

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 30 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 (77% and 12% respectively). The lowest mastectomy rates for non-invasive cancers with known nodal status were in North West (60%) and East of England (63%). This suggests that in these regions, nodal assessment is being carried out when conservation surgery is performed.

Figure 31 shows the pre-operative history for the conservatively treated non-invasive cancers with known nodal status. In the UK as a whole, for 105 cancers (65%) non-invasive disease was predicted by core biopsy (B5a). Radiological or clinical factors may thus have influenced the decision to take nodes for these cases. For 29 cases (18%) 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. 13 cases (8%) had C5 cytology alone with no B5 core biopsy before proceeding to breast conservation with axillary surgery. A further 5 cases had not assessable or unknown malignancy type at core biopsy and 11 cases had neither a C5 cytology nor B5 core biopsy prior to surgery.

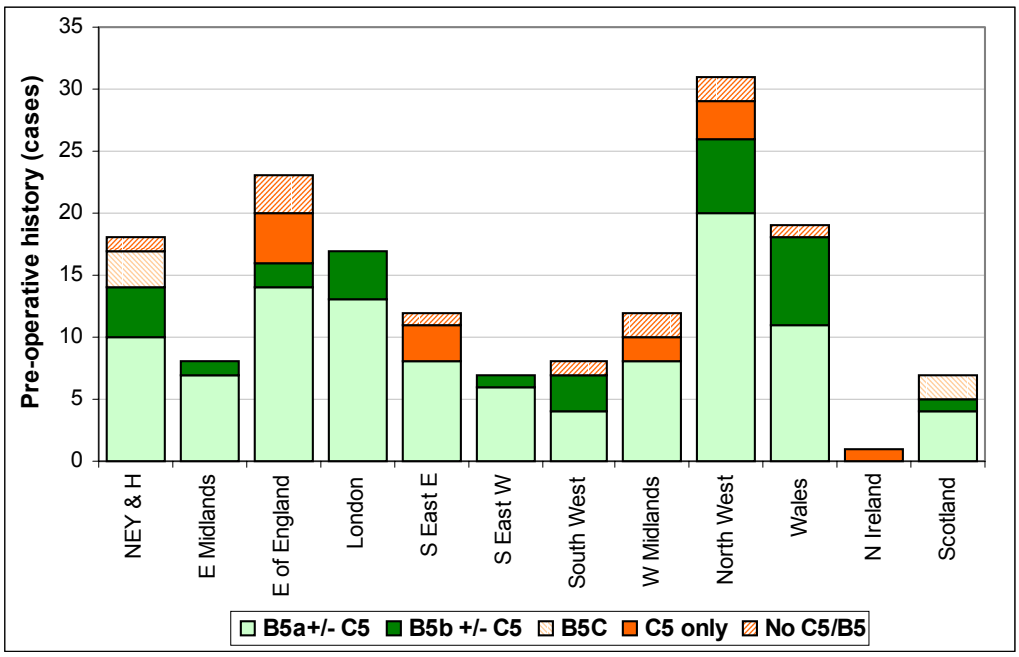


Figure 31 (Table 53): Pre-operative history for non-invasive cancers with known nodal status treated by conservation surgery

COMMENT:

- Although nodal assessment is not usually indicated for non-invasive cancers, 27% of non-invasive cancers had known nodal status. This varied from 15% in South West and 16% in Northern Ireland to 43% in Wales.
- 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 (77% and 12% respectively in the UK as a whole).
- 65% 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 thus influenced the decision to take nodes for these cases.

4.3 Grade of Invasive Cancers

Of the 10,400 invasive cancers detected, 3,259 (31%) were Grade I, 4,972 (48%) were Grade II and 1,882 (18%) were Grade III (Table 55). Grade was not assessable for 81 cases (1%). Grade was unknown for 206 cases (2%), varying from 1% in East Midlands, South East (West), South West, and West Midlands to 5% in London. In Scotland 24% of cancers were Grade III.

The variation in the proportions of Grade I, II and III cancers recorded for individual screening units is shown in Figure 32. The proportion of Grade I invasive cancers in individual screening units varied between 11% and 55%. The unit with fewer than 15% of cancers recorded as Grade I treated 35 invasive cancers. The unit with more than 50% of cancers recorded as Grade I treated 152 invasive cancers. This suggests that there are local variations in the interpretation of invasive grade definitions which should be investigated by Regional QA reference centres and their regional QA pathologists.

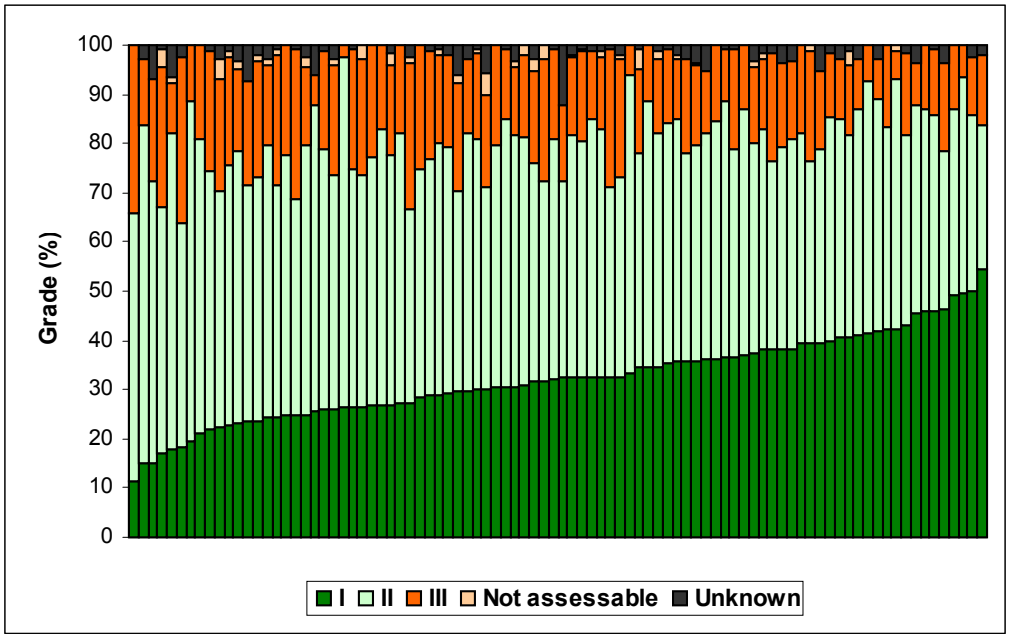


Figure 32: Variation in the grade of invasive cancers in each screening unit

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 have affected the NPI groupings.

NPI Group = 0.2 × 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. Overall, the NPI score was unknown for only 7% (740 cases) of the 10,400 invasive cancers. Figure 33 shows that the proportion of cancer with unknown NPI varied from 3% in East Midlands and South West to 11% in London and 16% in North West. In North West, the high proportion of cancers with an unknown NPI score was largely due to unknown nodal status.

Of the 9,660 invasive cancers with known NPI score, the highest proportion fell into the Good Prognostic Group (35%), with only 6% in the Poor Prognostic Group. As expected with cancers detected by screening, the majority (60%) of cancers fell into the two best prognostic groups, EPG (Excellent Prognostic Group) and GPG (Good Prognostic Group). This varied from 56% in Northern Ireland and Scotland to 65% in East Midlands and Wales (Table 57). The relatively low proportion of EPG and GPG cancers in Scotland is due to the high proportion of Grade III cancers compared with the UK as a whole (24% compared to 18%, Table 55).

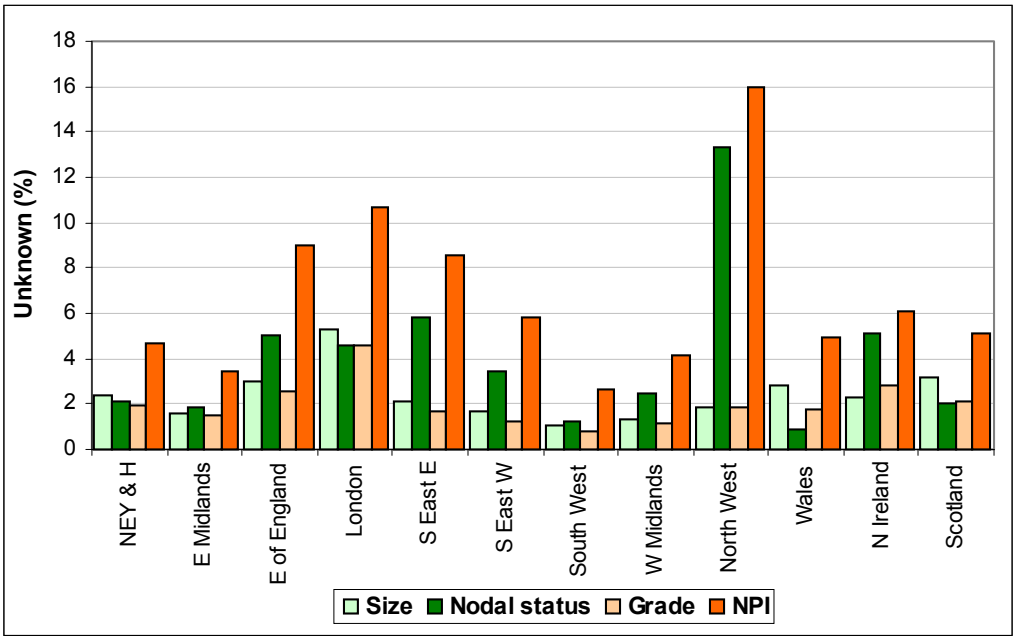


Figure 33 (Table 56): Data completeness of tumour characteristics of invasive cancers

Figure 34 shows the variation in the NPI group of invasive cancers in individual screening units. Excluding the unit with 86% of cancers with unknow NPI, the proportion of cancers in the best two prognostic groups (EPG, PPG) varied from 38% to 79%, compared to 57% in the UK as a whole. Three screening units, with between 36 and 44 invasive cancers with known NPI score, had no Poor Prognostic Group cancers. The screening unit with the highest proportion of Poor Prognostic Group cancers (14%) diagnosed 28 invasive cancers with known NPI score.

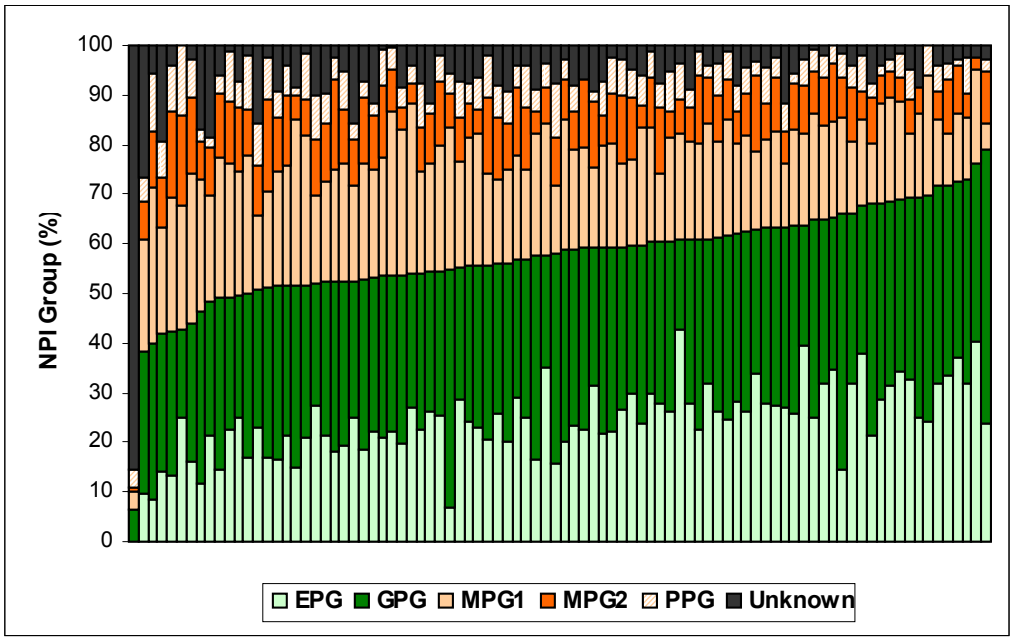


Figure 34: NPI Groups for invasive cancers in each screening unit

COMMENT:

- Overall, 31% of invasive cancers were Grade I, 48% were Grade II and 18% were Grade III. Grade was not assessable for 81 cases (1%) and unknown for 206 cases (2%). In Scotland 24% of cancers were Grade III.
- The proportion of Grade I cancers varied between 11% and 55% in individual screening units, suggesting that there are local variations in the interpretation of invasive grade definitions which should be investigated by Regional QA reference centres and regional QA pathologists.
- Data were available to calculate the Nottingham Prognostic Index (NPI) for 93% of invasive cancers.
- As expected with cancers detected by screening, the majority (60%) 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 56% in Northern Ireland and Scotland to 65% in East Midlands and Wales. The relatively low proportion of EPG and GPG cancers in Scotland is due to the high proportion of Grade III cancers compared with the UK as a whole.

5. SCREENING SURGICAL CASELOAD

There were 481 consultant breast surgeons working in the UK NHSBSP in 2003/04. This UK figure counts only once the 37 surgeons who worked in more than one region. Throughout this section, each surgeon is credited with their total UK screening caseload.

442 of the 481 consultant surgeons were identified by their unique GMC registration code. A code other than the GMC code was provided for a further 33 surgeons, including all 31 surgeons in Scotland. The remaining 6 surgeons have been assumed to be 6 individual surgeons.

The screening surgical caseload is shown for each region in Figure 35. The 37 surgeons working in more than 1 region appear in each region's figures. 187 surgeons (39%) treated 30-99 cases and 5 surgeons (1%) treated more than 100 cases. 60 surgeons (12%) treated 10-19 screening cases, 68 (14%) treated 20-29 cases, and 161 surgeons (33%) had a screening caseload of fewer than 10 cases.

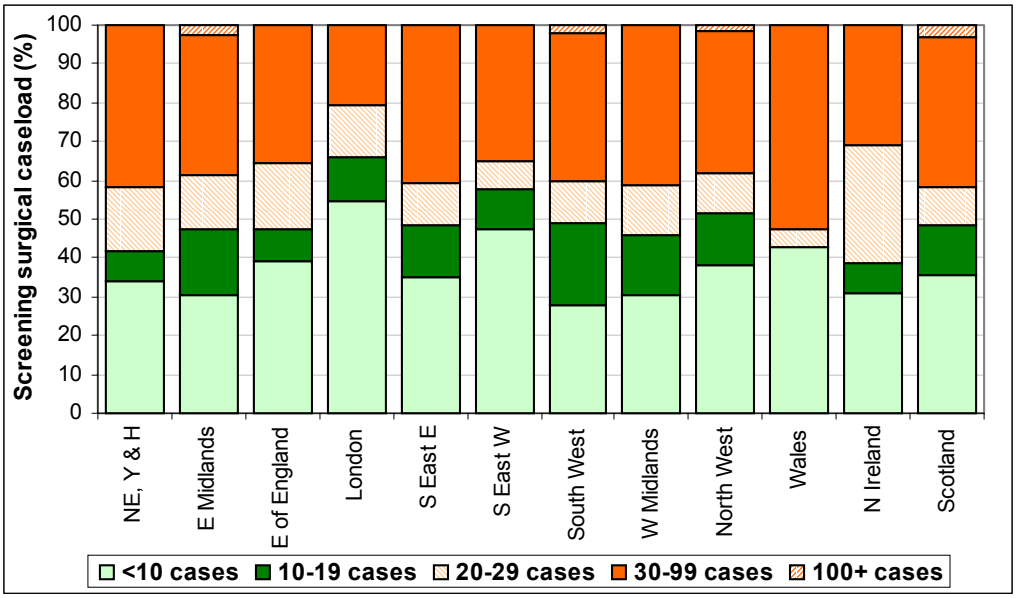


Figure 35 (Table 58): Variation in screening surgical caseload expressed as number of cases per surgeon

The highest proportions of surgeons with a screening caseload of fewer than 10 were in London (54%) (37 surgeons). Surgical specialisation was most advanced in South West where only 28% of surgeons (13 in total) treated fewer than 10 screening cases.

Overall the median caseload was 19 cases. Table 59 shows that the highest median was in Wales (39 cases) and the lowest in London (9 cases). The highest caseload for a single surgeon was in Scotland, where one surgeon was clinically responsible for 190 cases. Two surgeons in East Midlands and North West treated 103 cases and a surgeon in South West treated 101 cases in the audit period.

Table 60 shows the number of women treated by 1, 2, 3 or more surgeons and those with no referral. Of the 13,290 women with screen detected cancer in 2003/04, the majority (98%) were treated by 1 consultant surgeon, 112 (1%) were treated by 2 surgeons and 88 (1%) had no consultant surgeon recorded. Two women from East of England and 1 woman from North East, Yorkshire & Humber region were treated by 3 consultant surgeons. One woman from East of England was treated by 4 consultant surgeons.

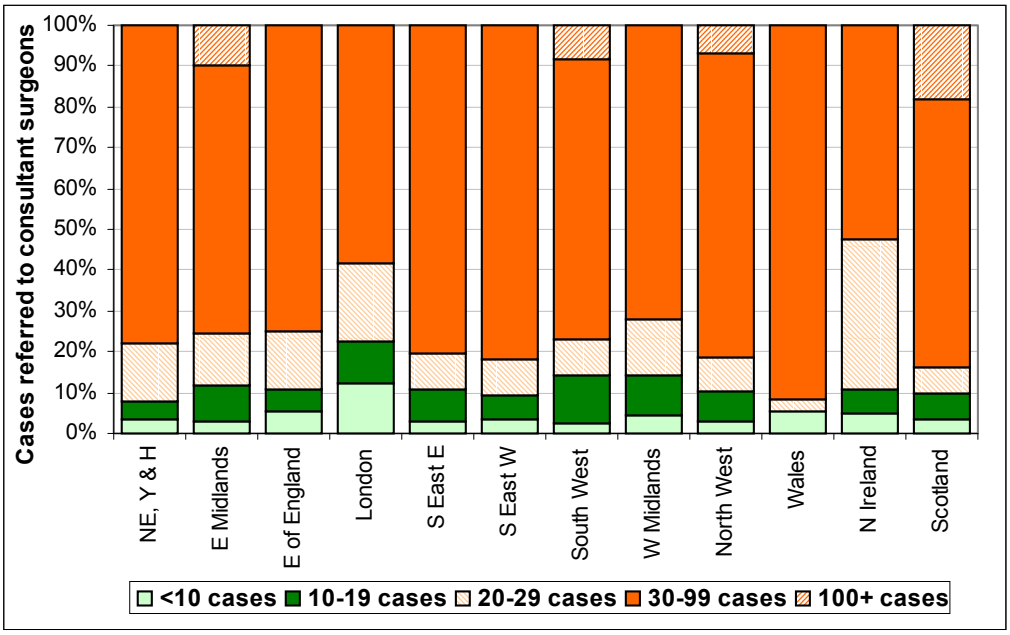


Figure 36 (Table 61): Variation in the proportion of women treated by surgeons with differing screening caseloads

Figure 36 shows the variation in the proportion of women treated by surgeons with differing screening caseloads. Of the 13,202 women who were under the care of a consultant surgeon, 9,685 (73%) were treated by a surgeon with a screening caseload of 30-99 cases. A further 616 women (5%) were treated by the 5 surgeons with screening caseload of 100 cases or more. For 1,622 women (12%) the treating surgeon had a screening caseload of 20-29 cases, and for 904 women (7%) the treating surgeon had a screening caseload of 10-19 cases. 487 women (4%) were treated by a surgeon with screening caseload of less than 10 cases. In London, 12% 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 B). 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 37.

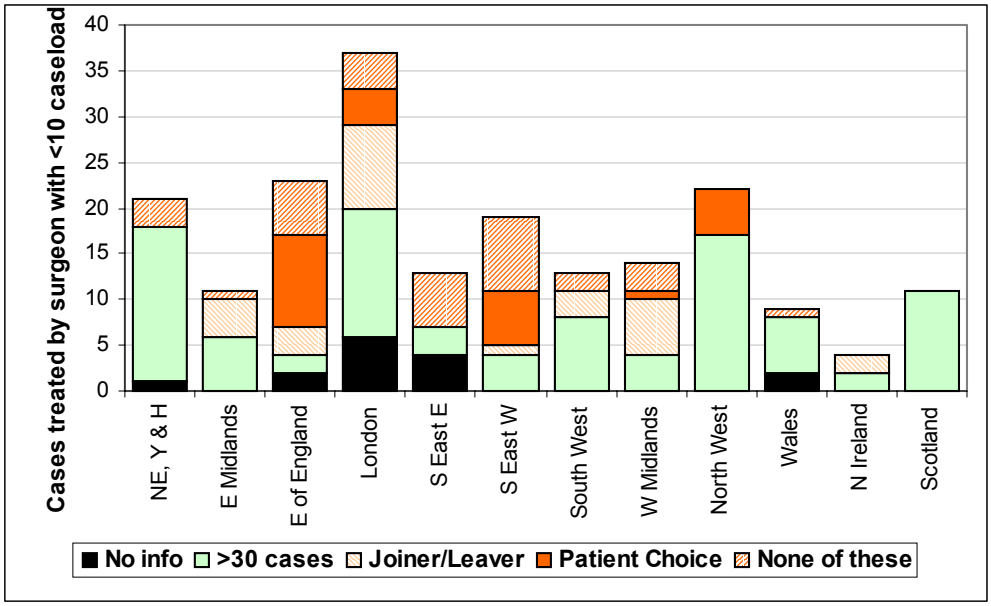


Figure 37 (Table 62): Explanations provided for surgeons treating less than 10 screening cases a year

Of the 161 surgeons in the UK with a screening caseload of less than 10 cases, 74 (46%) treated more than 30 symptomatic breast cancers during 2003/04. 25 (16%) either joined or left the NHSBSP during 2003/04. 19 (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 25 surgeons (16%). No information was available to explain the low screening caseload recorded for 15 surgeons (9%). These 15 surgeons treated a total of 26 women. For 3 surgeons a reason other than one of the 7 listed was provided. They treated a total of 3 women and the reasons provided were; military surgeon; locum surgeon and not a breast surgeon.

4 YEAR SUMMARY : SCREENING SURGICAL CASELOAD					
Year of data collection	***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*
2003/04	*481*	*19*	*89*	*161*	*15*

Since 2000/01, screening caseload data supplied by each screening unit 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 481 in 2003/04. The proportion of women treated by surgeons with a screening caseload of 20 or more has risen by 3% compared with last year. The number of surgeons with a screening caseload of fewer than 10 cases has fallen from 174 in 2002/03 to 161 and there has been a sharp drop in the number of surgeons with no reason for low caseload from 55 in 2002/03 to 15 in 2003/04 (164 and 26 women respectively). Despite the large improvement in obtaining information to explain low surgical caseload in most regions, London still had the most difficulty in identifying reasons for low caseload in 2003/04.

COMMENT:

- There were 481 consultant breast surgeons working in the UK NHSBSP in 2003/04, a rise of 15% from the 419 surgeons in 2000/01.
- 90% of women were seen by a surgeon with a screening caseload of at least 20 cases.
- Of the 161 surgeons with a screening caseload of less than 10 cases, 46% treated more than 30 symptomatic breast cancers during 2003/04.
- There was an improvement in obtaining information to explain low surgical caseload in 2003/04. Information was unavailable to explain the low caseload of only 15 surgeons treating a total of 26 women.

6. NUMBER AND SEQUENCE OF THERAPEUTIC OPERATIONS

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 & Mx, 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.

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. Regional variation in the most popular sequences is summarised in Tables 67, 69, 71 and 73 in Appendix E.

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)

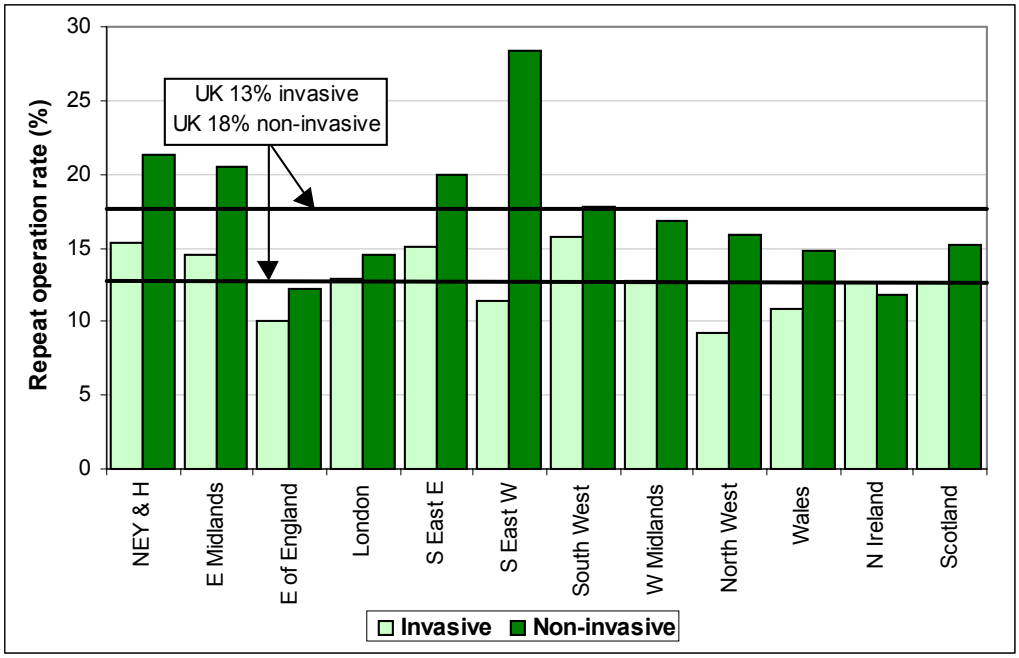


Figure 38 (Tables 64,65): Variation in the proportion of invasive and non-invasive cancers undergoing two or more therapeutic operations

In the UK as a whole, 1,807 cancers (15%) with a proven pre-operative diagnosis by C5 cytology and/or B5 core biopsy underwent more than one therapeutic operation (Table 63). This varied from

11% in East of England (156 cancers) and North West (161 cancers) to 18% (279 cancers) in North East, Yorkshire & Humber.

1,328 invasive cancers (13%) and 477 non-invasive cancers (18%) underwent more than one therapeutic operation (Tables 64 and 65). For invasive cancers the proportion having more than one operation varied from 9% in North West (111 cancers) to 16% (51 cancers) in South West. For non-invasive cancers the proportion having more than one operation varied from 12% in East of England (39 cancers) and Northern Ireland (6 cancers) to 29% in South East (West) (50 cancers).

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, 11% of invasive cancers with a B5b (Invasive) core biopsy required a repeat therapeutic operation. This varied from 8% in East of England (80 cancers) to 14% in East Midlands (95 cancers) (Table 66).

Table 67 and the flow chart in Figure 39 show that the majority (65%) of 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 common sequence of operations was conservation surgery with an axillary procedure as the first therapeutic operation followed by one repeat conservative operation (401 cases, 5%) or two repeat conservative operations (6 cases). These repeat operations were probably undertaken to clear involved or close margins.

26 cancers had repeat conservation surgery and additional axillary surgery and 31 cancers had additional axillary surgery alone after initial conservation surgery and axillary surgery. These operations were probably undertaken to clear the axilla when initial axillary sampling indicated the presence of positive nodes. 260 cancers (3%) had a mastectomy or a mastectomy with an axillary procedure following the initial conservation surgery and axillary procedure. A further 59 cancers went on to have a mastectomy or a mastectomy with additional axillary surgery after one or more repeat operations involving conservation surgery. For these cancers, DCIS was probably present at the margins.

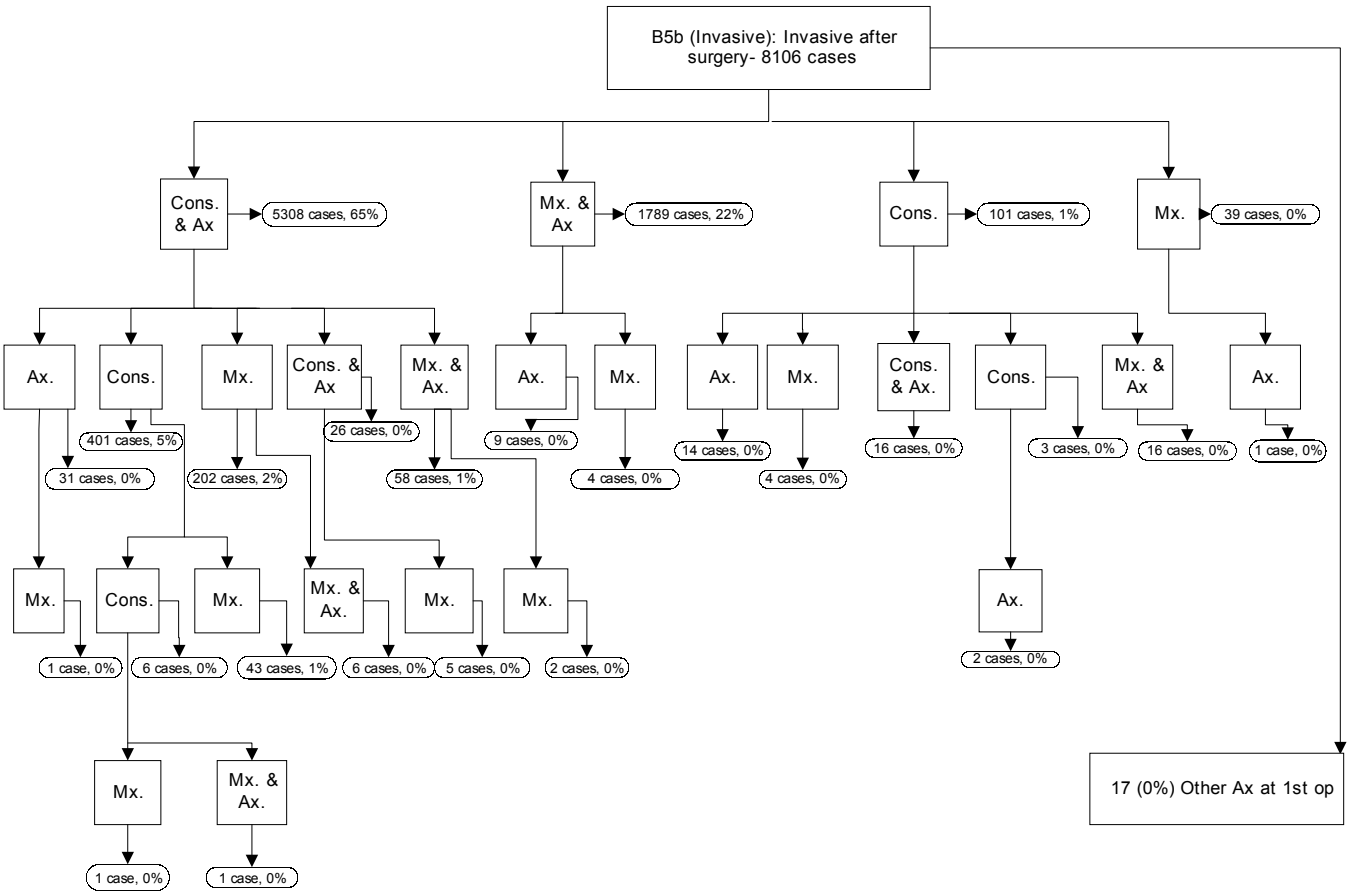


Figure 39 (Table 67): Sequence of operations for cancers with B5b (Invasive) core biopsy proved to be invasive after surgery

Overall, 7,096 cancers (88%) had an axillary procedure at the first operation. A further 49 cancers (1%) did not have nodes taken at the first operation but underwent a repeat operation to obtain nodes (Table 67). 9 of these cancers were in North East Yorkshire & Humber and 8 in East of England. 147 cancers (2%) had no axillary procedure recorded. 32 of these cancers were in East of England and 26 in North West. Regional QA reference centres and regional QA surgeons should audit these cancers to ensure that the axilla has not been under-treated.

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. Figure 40 and Table 69 show that the most common treatment, given to 64% of these cancers, was a single therapeutic operation consisting of conservation surgery and an axillary procedure. 184 cancers (18%) underwent a single therapeutic operation consisting of a mastectomy and an axillary procedure. 49 of these cancers (27%) were in North East Yorkshire & Humber and 39 (21%) in North West. A further 3 women had a mastectomy as their only operation or a mastectomy followed by axillary clearance. Presumably for these 188 cancers, the clinical and radiological signs were strongly supportive of the presence of invasive disease. Nevertheless, regional QA reference centres and regional QA surgeons should audit these cancers to ascertain the reasons for going straight to a mastectomy after C5 cytology.

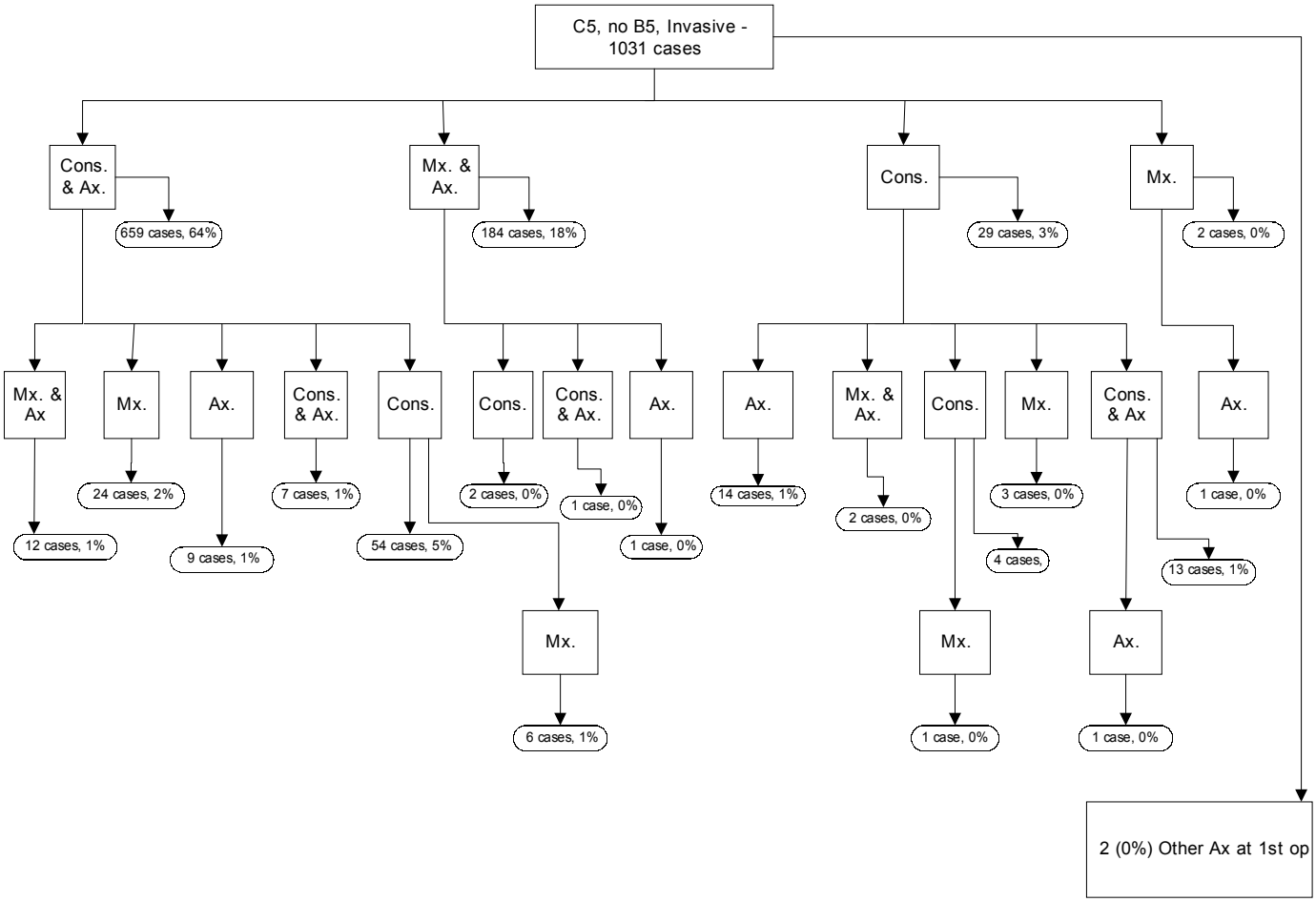


Figure 40 (Table 69): Sequence of operations for invasive cancers with C5 cytology only, no B5 core biopsy

In the UK as a whole, 157 (15%) of the 1,032 invasive cancers diagnosed by C5 cytology only underwent a repeat operation (Table 68). This varied from 4% in Northern Ireland (3 cancers) to 25% in North East, Yorkshire & Humber (53 cancers), 23% in London (10 cancers) and 22% in South West (17 cancers). Overall, 843 cancers (82%) had an axillary procedure at the first operation (Table 69). A further 31 cancers (3%) did not have nodes taken at the first operation but underwent a repeat operation to obtain nodes. 9 of these cancers were in London and 5 in Scotland. 39 cancers (4%) did not have any axillary procedure recorded. 18 of these (46%) were in South East (East) and 7 (18%) in North West. Regional QA reference centres and regional QA surgeons should audit these cancers to ensure that the axilla has not been under-treated.

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, 22% 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 15 or more cases diagnosed as B5 by core biopsy, the proportion of B5a (Non-invasive) cancers found to be invasive after surgery varied from 0% (0 out of 60 cancers) to 98% (40 out of 41 cancers). 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. These are summarised in Figure 41 and Table 71.

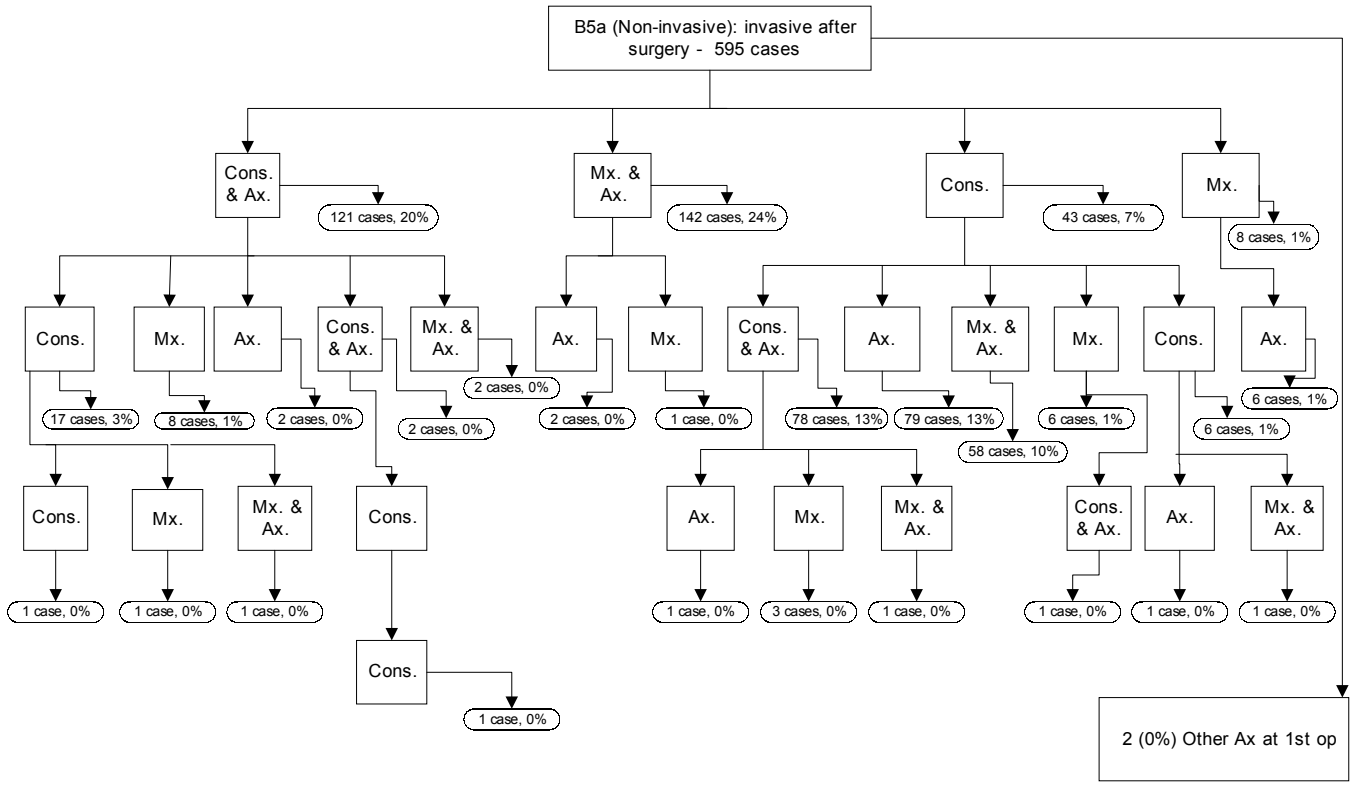


Figure 41 (Table 71): Sequence of operations for cancers with B5a (Non-invasive) core biopsy determined to be invasive after surgery

The most common treatment for B5a (Non-invasive) cancers found to be invasive after surgery was a single operation consisting of mastectomy with an axillary procedure (142 cases, 24%) or a single operation consisting of conservation surgery with an axillary procedure (121 cases, 20%). The proportion of these cancers which had surgery to the axilla at the first operation varied from 29% in East of England (9 cancers) to 67% in North West (45 cancers) (Table 71). 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. Regional QA reference centres and regional QA surgeons should, however, audit these cancers to ascertain the reason for performing surgery to the axilla for cancers with a non-invasive pre-operative diagnosis.

279 (47%) of the 595 cancers with a B5a (Non-invasive) core biopsy determined to be invasive after surgery underwent a repeat operation (Table 70). This varied from 31% in North West to 66% in South West and 60% in West Midlands. The low proportion of repeat operations in the North West reflects the relatively high number of cancers where axillary surgery was carried out at the

first operation. 12 cancers initially treated with conservation surgery and axillary surgery were converted to mastectomies after one or more further operations. A further 69 cancers initially treated with conservation surgery alone were converted to mastectomies after one or more further operations. For these 81 cancers, DCIS was probably present at the margins. All but 5 of these cases, had surgery to the axilla during their repeat operations. 7 cancers initially treated with conservation surgery and axillary surgery and 2 cancers initially treated with mastectomy and axillary surgery had a repeat operations to the axilla. In the majority of these cases, positive nodes were found where fewer than 4 nodes had been taken at the first operation.

215 women who had conservation surgery alone as the first therapeutic operation had a repeat operation to obtain axillary lymph nodes. Of these, 78 (36%) had further conservation surgery and 58 (27%) a mastectomy in addition to their axillary surgery, presumably to clear involved margins. 79 of these women (37%) had a repeat operation involving axillary surgery alone (Table 71). A further 6 women who had a mastectomy without nodal surgery at their first operation, also had a repeat operation involving axillary surgery alone. These 84 women who had a repeat operation solely to obtain nodes would not have had to undergo additional surgery had the original core biopsy predicted the invasive status of the tumour correctly. Regional QA reference centres and regional QA pathologists should audit these cancers to ascertain the reason for the incorrect pre-operative diagnosis.

Overall, 63 B5a (Non-invasive) cancers found to be invasive after surgery (11%) did not have any axillary procedure recorded. 12 of these cancers (19%) were in South East (East) and 12 (19%) were in South East (West). Regional QA reference centres and regional QA surgeons should audit these cancers to ensure that the axilla has not been under-treated.

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, 77% of cancers with a B5a (Non-invasive) core biopsy result were confirmed to be non-invasive or micro-invasive following surgery (Table 8). Figure 42 and Table 73 show that the majority of these cancers had a single operation to the breast consisting of conservation surgery (1,032 cancers, 49%) or a mastectomy (131 cancers, 6%).

409 B5a (Non-invasive) cancers (19%) had a single operation involving a mastectomy and surgery to the axilla and 92 (4%) had a single conservative operation which included surgery to the axilla. It is good practice to sample nodes for non-invasive cancers treated with mastectomy to reduce the chances of having to perform a second operation if unexpected invasive disease is found in the mastectomy specimen. Currently, operating on the axilla when performing conservative surgery to the breast is not as easy to justify but this may well become more accepted practise as sentinel node biopsy is introduced. In the meantime, regional QA reference centres and regional QA surgeons should audit all non-invasive cancers with known nodal status to ascertain the number of nodes examined and the number of positive nodes, as clearance of the axilla for a non-invasive cancer could be viewed as an unnecessary procedure which may lead to treatment-related side effects.

Overall, 454 (21%) of the 1,665 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 72). The repeat operation rate varied from 11% in Northern Ireland to 34% in South East (West). 162 B5a (Non-invasive) cancers initially treated with conservation surgery alone were converted to mastectomies after one or more further operations. A further 18 cancers initially treated with conservation surgery and axillary surgery were converted to mastectomies after one or more further operations. For these 180 cancers, DCIS was probably still present at the margins after the conservation surgery. 90 (56%) of the 162 cancers initially treated with

conservation surgery had surgery to the axilla during their repeat operations. The remaining 72 B5a (Non-invasive) cancers that were eventually treated with mastectomy did not have any surgery to the axilla recorded.

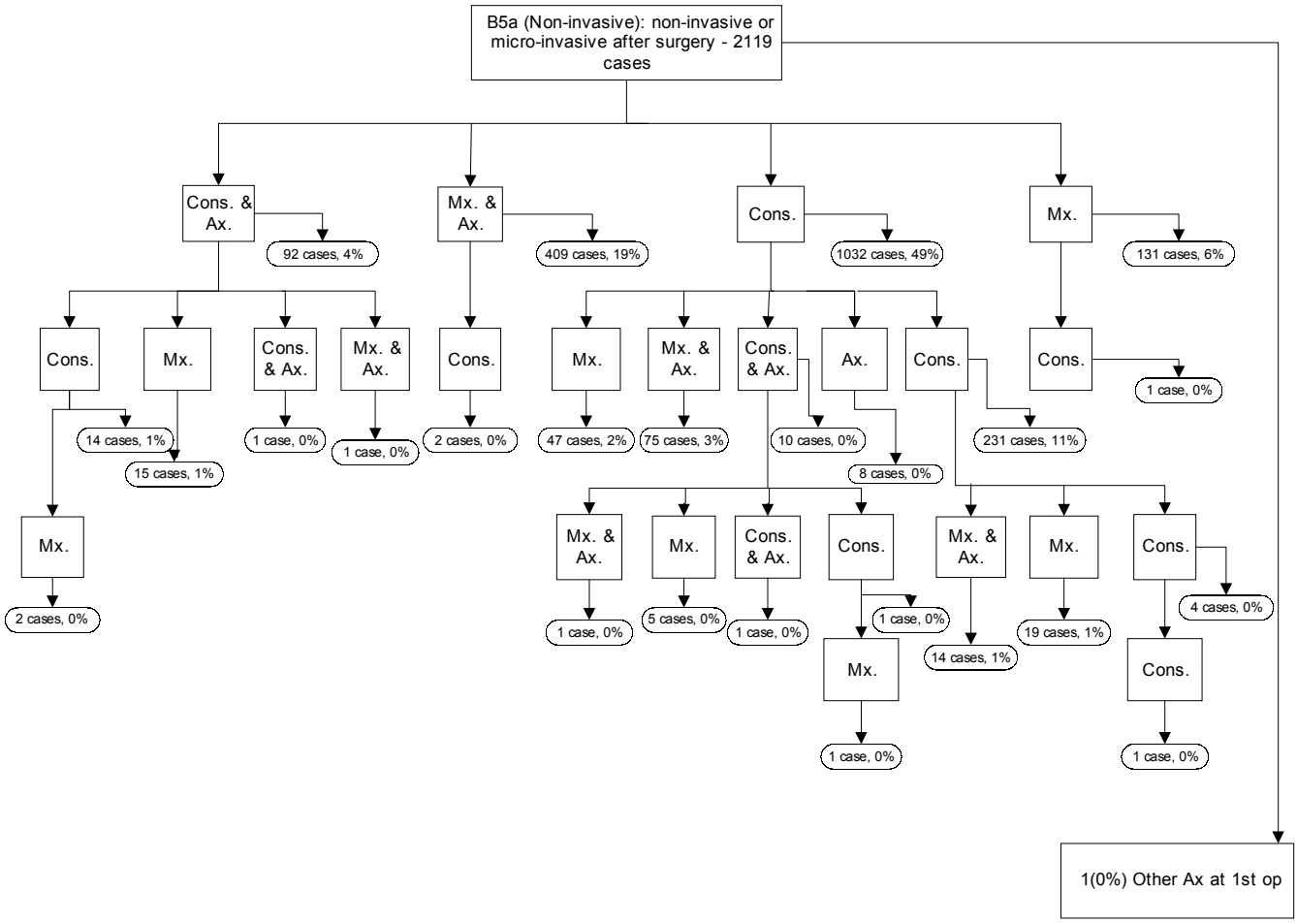


Figure 42 (Table 73): Sequence of operations for cancers with B5a (Non-invasive) core biopsy proved to be non-invasive or micro-invasive after surgery

6.6 Summary of Repeat Operation Rates

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 (11%), followed by invasive cancers diagnosed by C5 cytology only (15%). As expected, invasive cancers with a B5a (Non-invasive) core biopsy had the highest repeat operation rate (47%). Non-invasive or micro-invasive cancers with a B5a (Non-invasive) core biopsy had a repeat operation rate of 21%.

One reason for undertaking repeat operations for invasive cancers is to ascertain the nodal status where axillary surgery has not been performed at the first operation. As expected, this was rare when the core biopsy predicted invasive disease (49 cases, 1%) (Table 67). Most cases diagnosed on the basis of C5 cytology only had axillary surgery at the first operation, with only 31 cases (3%) undergoing a repeat operation to obtain nodes (Table 69). However, for invasive cancers with a B5a (Non-invasive) core biopsy, where the invasive disease was not predicted, 72 cancers (12%) had an axillary procedure at a repeat operation (Table 71).

TABLE 6.6A : REPEAT THERAPEUTIC OPERATION RATES								
	Invasive cancers						Non-invasive or micro-invasive cancers	
	B5b (Table 66)		C5 only, no B5 (Table 68)		B5a (Table 70)		B5a (Table 72)	
Region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
N East, Yorks & Humber	*96/914*	*11*	*53/216*	*25*	*44/82*	*54*	*70/268*	*26*
East Midlands	*95/693*	*14*	*3/45*	*7*	*18/47*	*38*	*41/177*	*23*
East of England	*80/978*	*8*	*14/76*	*18*	*19/32*	*59*	*35/240*	*15*
London	*77/685*	*11*	*10/44*	*23*	*20/53*	*38*	*37/214*	*17*
South East (East)	*74/586*	*13*	*25/131*	*19*	*22/55*	*40*	*49/192*	*26*
South East (West)	*55/597*	*9*	*4/51*	*8*	*24/52*	*46*	*46/136*	*34*
South West	*96/775*	*12*	*17/76*	*22*	*35/53*	*66*	*50/220*	*23*
West Midlands	*76/715*	*11*	*5/61*	*8*	*32/53*	*60*	*25/142*	*18*
North West	*75/869*	*9*	*15/208*	*7*	*21/68*	*31*	*41/208*	*20*
Wales	*44/492*	*9*	*1/4*	*25*	*15/38*	*39*	*23/134*	*17*
Northern Ireland	*12/108*	*11*	*3/78*	*4*	*8/21*	*38*	*4/36*	*11*
Scotland	*76/705*	*11*	*7/42*	*17*	*21/41*	*51*	*33/156*	*21*
United Kingdom	***856/ 8,117***	***11***	***157/ 1,032***	***15***	***279/ 595***	***47***	***454/ 2,123***	***21***

Table 6.6B shows the proportion of invasive cancers with no axillary surgery. Overall, 249 invasive cancers had no surgery to the axilla recorded. This scenario occurred for 11% of invasive cancers with a B5a (Non-invasive) core biopsy, varying from 1 cancer in Wales (3%) to 12 cancers (22% and 23% respectively) in South East (East) and South East (West). 2% of invasive cancers with a B5b (Invasive) core biopsy and 4% of invasive cancers with C5 cytology only had no axillary procedure recorded. These 249 cancers should be reviewed by regional QA reference centres and regional QA surgeons to ascertain if the data do correctly reflect clinical practice, as the cancers may have had insufficient diagnostic work-up.

TABLE 6.6B : PROPORTION OF INVASIVE CANCERS WITH NO AXILLARY OPERATION						
	B5b (Table 67)		C5 only, no B5 (Table 69)		B5a (Table 71)	
Region	**No.**	**%**	**No.**	**%**	**No.**	**%**
N East, Yorks & Humber	*11/914*	*1*	*3/216*	*1*	*4/82*	*5*
East Midlands	*6/693*	*1*	*2/44*	*5*	*4/47*	*9*
East of England	*32/978*	*3*	*4/76*	*5*	*5/32*	*16*
London	*19/685*	*3*	*0/44*	*0*	*8/53*	*15*
South East (East)	*18/586*	*3*	*18/131*	*14*	*12/55*	*22*
South East (West)	*5/597*	*1*	*1/51*	*2*	*12/52*	*23*
South West	*7/775*	*1*	*1/76*	*1*	*3/53*	*6*
West Midlands	*15/715*	*2*	*0/61*	*0*	*3/53*	*6*
North West	*26/869*	*3*	*7/208*	*3*	*4/68*	*6*
Wales	*1/492*	*0*	*0/4*	*0*	*1/38*	*3*
Northern Ireland	*1/108*	*1*	*1/78*	*1*	*3/21*	*14*
Scotland	*6/705*	*1*	*2/42*	*5*	*4/41*	*10*
United Kingdom	***147/ 8,117***	***2***	***39/ 1,031***	***4***	***63/ 595***	***11***

Table 6.6C shows how the proportion of invasive cancers with known nodal status and the proportion with nodal status determined at the first operation or at repeat operations varied with pre-operative diagnosis. In the UK as a whole, nodal status was known for 98% of invasive cancers with a B5b (Invasive) core biopsy. For 97% of these cancers, the nodal status was determined at the first operation.

TABLE 6.6C : PROPORTION OF INVASIVE CANCERS WITH AXILLARY SURGERY AT 1ST AND REPEAT OPERATIONS									
	B5b (Table 67)			C5 (Table 69)			B5a (Table 71)		
Region	Total	1st Op	Repeat Op	Total	1st Op	Repeat Op	Total	1st Op	Repeat Op
N East, Yorks & Humber	99	98	1	99	97	2	95	51	44
East Midlands	99	99	0	95	93	2	91	55	36
East of England	97	96	1	95	91	4	84	38	46
London	96	96	1	100	80	20	85	57	28
South East (East)	97	96	1	86	82	5	78	45	33
South East (West)	99	98	1	98	98	0	77	37	40
South West	99	99	1	99	97	1	94	36	58
West Midlands	98	98	0	100	100	0	94	43	51
North West	97	97	0	97	96	0	94	74	20
Wales	100	99	1	100	75	25	97	66	31
Northern Ireland	99	98	1	99	99	0	86	58	28
Scotland	98	98	0	95	83	12	90	49	41
United Kingdom	**98**	**97**	**1**	**96**	**93**	**3**	**89**	**51**	**38**

A similar picture was apparent for invasive cancers diagnosed by C5 cytology only, with 96% having known nodal status. For 93% of these cancers, the nodal status was determined at the first operation, with 3% having their nodal status determined at a repeat operation. In Wales, London, South East (East) and Scotland, nodal status was determined for less than 90% of cancers at the first operation. In Wales and London the proportion of these cancers with known nodal status was increased to 100% via repeat operations and in Scotland the proportion of these cancers with known nodal status was increased to 95% via repeat operations. In South East (East) only a further 5% of invasive cancers diagnosed by C5 cytology only had repeat operations involving the axilla recorded; bringing the overall proportion of these cancers with known nodal status to only 86%. The QA reference centre and QA surgeon in this region should review the cases with unknown nodal status to ascertain whether this is a data collection issue or whether the data may truly reflect a sub-optimal nodal diagnostic work-up.

In the UK as a whole, 89% of invasive cancers with a B5a (Non-invasive) diagnosis had known nodal status. This varied from 97% in Wales to 77% in South East (West) and 78% in South East (East). Overall, 51% of invasive cancers with a B5a (Non-invasive) diagnosis had their nodal status determined at the first operation with repeat operations providing nodal data for the remaining 38%. The proportion of these cancers which had their nodal status determined at the first operation was highest in North West (74%) and Wales (66%) and lowest in South West (36%), South East (West) (37%) and East of England (38%). In seven regions, repeat operations to the axilla increased the proportion of invasive cancers with a B5a (Non-invasive) diagnosis with known nodal status to above 90%. However, in London and Northern Ireland, repeat operations involving the axilla were only recorded for 28% of these cancers, resulting in only 85% and 86% respectively of cancers having their nodal status recorded. In South East (East) and South East (West), where a relatively small proportion of invasive cancers with a B5a (Non-invasive) diagnosis had their nodal status determined at the first operation, repeat operations to the axilla were recorded for 33% and 40% of cancers respectively. This means that in these regions, only 78% and 77% respectively of invasive cancers with a B5a (Non-invasive) diagnosis had nodal status recorded. Regional QA reference centres and regional QA surgeons should review all invasive cancers with a B5a (Non-invasive) diagnosis with unknown nodal status to ascertain whether this is a data collection issue or whether the data may truly reflect a sub-optimal diagnostic nodal work-up.

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. This varied from 11% in East of England and North West to 18% in North East, Yorkshire & Humber.
- 13% of invasive cancers and 18% of non-invasive cancers had more than one therapeutic operation. The proportion of invasive cancers having a repeat operation varied from 9% in North West to 16% in South West. The proportion of non-invasive cancers having a repeat operation varied from 12% in East of England and Northern Ireland to 29% in South East (West).
- Invasive cancers with B5b (Invasive) core biopsy had the smallest proportion of repeat operations (11%), followed by invasive cancers diagnosed by C5 cytology only (15%). Invasive cancers with a B5a (Non-invasive) core biopsy had the highest repeat operation rate (47%). Non-invasive and micro-invasive cancers with a B5a (Non-invasive) core biopsy had a repeat operation rate of 21%.
- 65% 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 these cancers had conservation surgery with an axillary procedure followed by conservation surgery, presumably to clear involved or close margins.
- 64% of invasive cancers diagnosed by C5 cytology only underwent a single therapeutic operation consisting of conservation surgery with an axillary procedure.
- A further 18% 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. Nevertheless, regional QA reference centres and regional QA surgeons should audit these cancers to ascertain the reasons for going straight to a mastectomy after C5 cytology.
- 20% of invasive cancers with a B5a (Non-invasive) core biopsy underwent a single operation consisting of conservation surgery with an axillary procedure and 24% had a mastectomy with an axillary procedure. Regional QA reference centres and regional QA surgeons should audit these cancers to ascertain the reason for performing surgery to the axilla for cancers with a non-invasive pre-operative diagnosis.
- 84 women with invasive cancers with a B5a (Non-invasive) core biopsy had a repeat operation solely to obtain nodes. These women would not have had to undergo additional surgery had the original core biopsy predicted the invasive status of the tumour correctly. Regional QA reference centres and regional QA pathologists should audit these cancers to ascertain the reason for the incorrect pre-operative diagnosis.
- 147 invasive cancers with a B5b (Invasive) core biopsy, 39 invasive cancers with C5 cytology and 63 invasive cancers with a B5a (Non-invasive) core biopsy had no axillary procedure recorded. 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 to ensure that the axilla has not been under-treated.
- 23% of non-invasive or micro-invasive cancers with a B5a (Non-invasive) core biopsy underwent axillary surgery at the first therapeutic operation. Currently, operating on the axilla when performing conservative surgery to the breast is not as easy to justify as when performing a mastectomy. This may well become more accepted practise as sentinel node biopsy is introduced. In the meantime, regional QA reference centres and regional QA surgeons should audit all non-invasive cancers with known nodal status to ascertain the number of nodes examined and the number of positive nodes, as clearance of the axilla for a non-invasive cancer could be viewed as an unnecessary procedure which may lead to treatment-related side effects.

COMMENT:

- In the UK as a whole, nodal status was known for 98% of invasive cancers with a B5b (Invasive) core biopsy. For 97% of these cancers, the nodal status was determined at the first operation.
- For 93% of invasive cancers diagnosed by C5 cytology only, the nodal status was determined at the first operation with 3% having their nodal status determined at a repeat operation.
- In South East (East) only 82% of invasive cancers diagnosed by C5 cytology only had their nodal status determined on the basis of axillary surgery performed during the first operation. Repeat operations involving the axilla recorded increased the overall proportion of cancers with known nodal status to only 86%. The QA reference centre and QA surgeon in this region should review the cases with unknown nodal status to ascertain whether this is a data collection issue or whether the data may truly reflect a sub-optimal nodal diagnostic work-up.
- In the UK as a whole, 89% of invasive cancers with a B5a (Non-invasive) diagnosis had known nodal status. 77% of these cancers had their nodal status determined at the first operation with repeat operations providing nodal data for the additional 12%.
- In South East (East) and South East (West) relatively fewer repeat nodal operations were recorded for invasive cancers with a B5a (Non-invasive) diagnosis, with the result that only 78% and 77% respectively of these cancers had known nodal status. Regional QA reference centres and regional QA surgeons should review all invasive cancers with a B5a (Non-invasive) diagnosis with unknown nodal status to ascertain whether this is a data collection issue or whether the data may truly reflect a sub-optimal diagnostic nodal work-up.

7. ADJUVANT THERAPY

Detailed tables giving full audit results are provided in Appendix F starting on Page 123

Surgeons were asked to supply radiotherapy, chemotherapy and hormonal therapy information for cancers detected through screening between 1st April 2002 and 31st March 2003, 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 2004, allowing a minimum of 12 months follow up for each case.

Note: 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 2002/03 ABS at BASO audit reported tumour characteristics and primary treatment data for 11,598 screen detected breast cancers. Of these, 1,902 (16%) had no adjuvant data supplied and 162 (1%) were excluded from the audit due to incomplete surgery data or cases with a previous cancer. Following these exclusions, 9,534 cases (82%) were included in the adjuvant therapy audit (Table 74). Figure 43 shows the variation of data completeness of all regions. East Midlands and Scotland have the highest proportion of eligible cases with complete data (100% and 94% respectively). North East, Yorkshire & Humber and West Midlands have the lowest (53% and 57% respectively). In Wales, 94% of the adjuvant data submitted were eligible, but only 61% were completed.

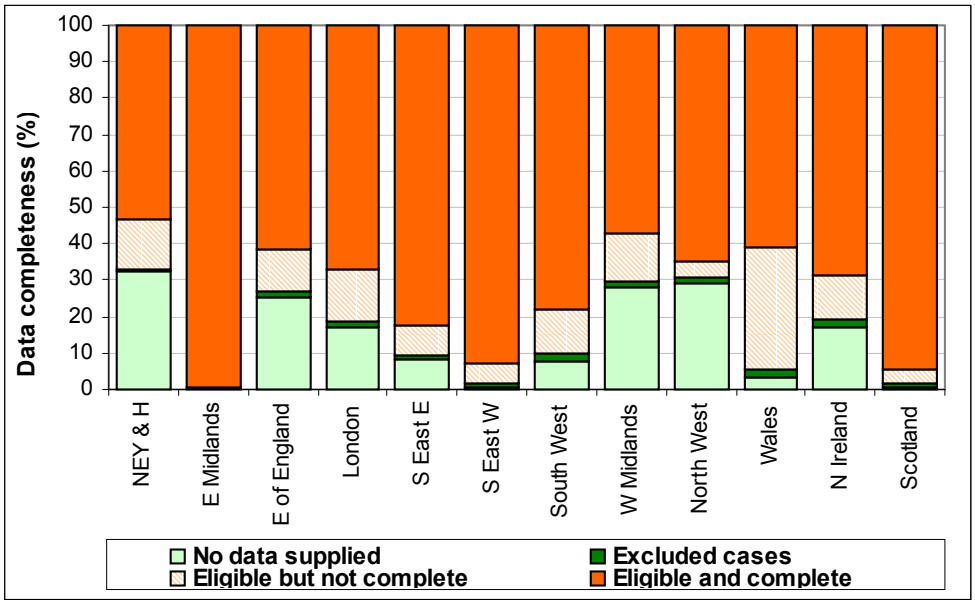


Figure 43 (Table 74): Data completeness of adjuvant analysis data

In the UK as a whole, data completeness for radiotherapy, chemotherapy and hormonal therapy was 92%, 96% and 96% respectively for the 9,534 eligible cases included in the audit. Complete radiotherapy, chemotherapy and hormonal therapy data were available for 8,309 cases (87%). The completeness of radiotherapy, chemotherapy and hormonal therapy for the eligible cases varied from 64% in Wales to 100% in East Midlands. In North East, Yorkshire & Humber and West Midlands where data were only available for just over 50% of the total cancers, 79% and 81% respectively of the eligible cases that could be included in the audit had complete radiotherapy, chemotherapy and hormonal therapy data.

7.2 Adjuvant Treatment

Tables 78, 79 and 80 show that, of those with known adjuvant data, 5,805 (66%) cases had started radiotherapy, 1,747 (19%) had started chemotherapy and 6,774 (74%) had started hormonal therapy before the audit cut off date.

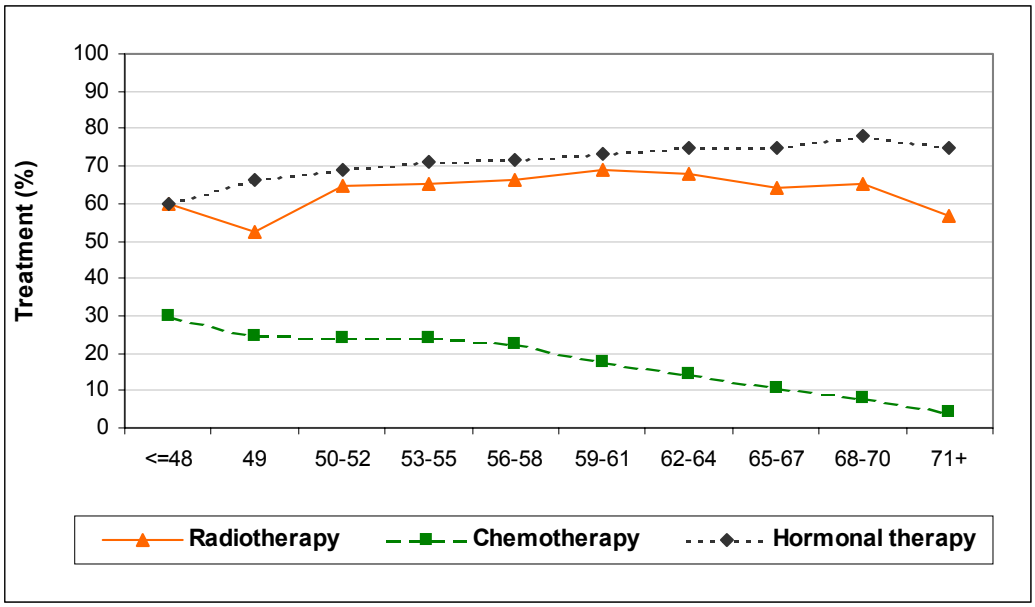


Figure 44 (Table 77): Percentage of women in each age group who had radiotherapy, chemotherapy and hormonal therapy, for cases with complete adjuvant data

Hormonal therapy was the main adjuvant treatment for women in all age groups. The proportion of women receiving hormonal therapy increased with age from 69% in women aged 50-52 to 78% in women aged 68-70. Chemotherapy was the least used adjuvant therapy. The proportion of women receiving chemotherapy decreased with age from 24% in women aged 50-52 to 8% in women aged 68-70. There was very little variation in the proportion of women in the age range 50-70 receiving radiotherapy.

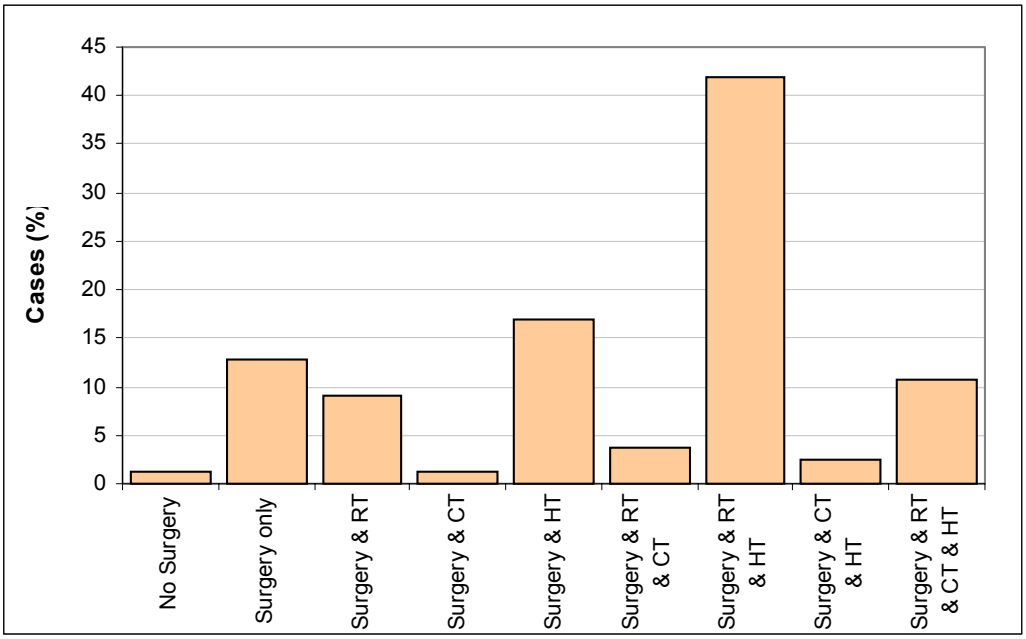


Figure 45 (Table76): Combinations of treatment, expressed as a percentage of cases with completed adjuvant data

7,604 (80%) of the 9,534 cancers included in the audit had one surgical operation (diagnostic or therapeutic), 1,825 (19%) had more than one surgical operation and 105 cases (1%) had no surgery

(Table 81). The first operation was diagnostic for 830 (9%) of the 9,429 women who had surgery. For 8,599 women (91%) the first operation was therapeutic following a malignant core biopsy or cytology result (Table 82). Surgery, hormonal therapy and radiotherapy as a combination of treatment was the most common treatment pattern. In the UK as a whole, 42% of women (3,481 cases) received this treatment (Figure 45). Of the 5,805 women given radiotherapy, 4,783 (82%) had one operation and 998 (17%) had more than one operation (Table 83). Of the 1,747 women given chemotherapy, 29 (2%) had no surgery, 1,408 (81%) had one operation and 310 (18%) had more than one operation (Table 84).

ER status was unknown for 451 (6%) of the 7,615 invasive cancers (Table 86). 85% of invasive cancers were classified as ER positive, and 6% as ER negative. 29% of non-invasive cancers with known ER status were classified as ER positive. PgR status data were available for 42% of all cancers (Table 88). 2,906 cancers were PgR positive and 1,177 were PgR negative, giving a ratio of PgR positive to PgR negative cases of 2.5:1. PgR status was known for 70% of the ER negative cancers, suggesting that PgR status was preferentially requested when the ER status was negative (Table 89). Overall, Cerb-B2/HER-2 status data were available for only 20% of the cancers included in the audit. The proportion of cases with known Cerb-B2/HER-2 status varied from 1% in East Midlands to 41% in North West and 42% in South West (Table 90). 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:

- Hormonal therapy was the main adjuvant treatment for women in all age groups. The proportion of women receiving hormonal therapy increased with age from 69% in women aged 50-52 to 78% in women aged 68-70.
- Chemotherapy was the least used adjuvant therapy. The proportion of women receiving chemotherapy decreased with age from 24% in women aged 50-52 to 8% in women aged 68-70.
- There was very little variation in the proportion of women in the age range 50-70 receiving radiotherapy.
- The most common treatment combination for screen detected breast cancers in the UK was surgery, hormonal therapy and radiotherapy. 42% of women received this treatment.
- ER status was unknown for 451 (6%) of invasive cancers
- The availability of PgR status data has improved since 2001/02. However, it was only known for 70% of ER negative cancers.
- Cerb-B2/HER-2 status data were available for only 20% of cancers included in the audit. 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.

7.3 Time Between Assessment, Surgery and Radiotherapy

Quality Objective: **To minimise any delay for women who require treatment for screen detected breast cancer**

Minimum Standard: **≥90% of women should be admitted for treatment within two months of the first assessment visit**

Target Standard: **100% of women should be admitted for treatment within two months of the first assessment visit**

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

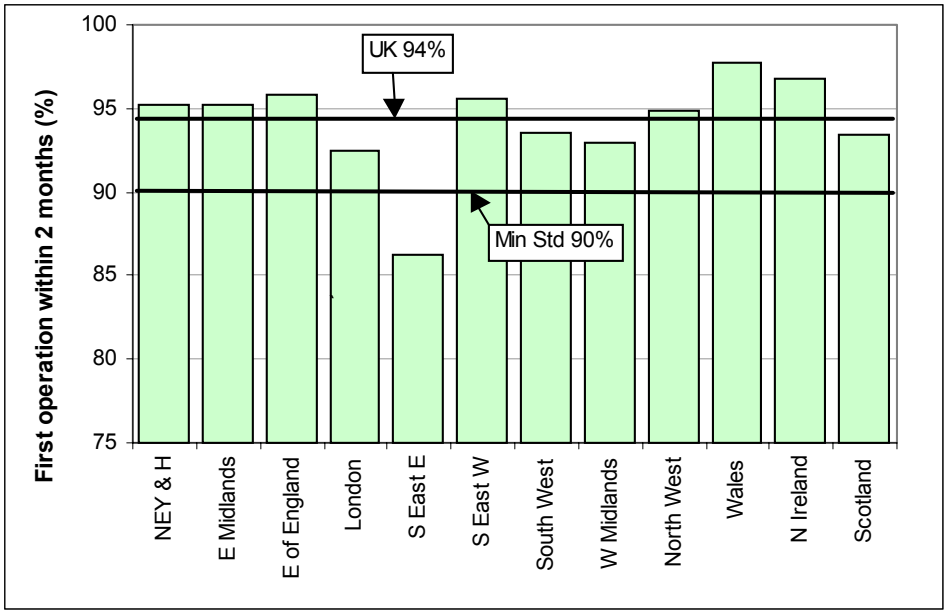


Figure 46 (Table 92): The proportion of cases with therapeutic surgery within 60 days of assessment

Figure 46 shows that 94% of cases with complete surgery and assessment dates had their first therapeutic treatment within 60 days which approximates to 2 months. All regions except South East (East) met the 2 month national standard. South East (East) also had the longest waiting time (median – 49 days) from assessment to diagnostic surgery (Table 91). Overall, only 84% of women who had diagnostic surgery had their open biopsy within 2 months, but 94% of women with a pre-operative diagnosis had their therapeutic surgery within 2 months (Figure 47). The overall median waits for the former and the latter women were 33 and 28 days respectively. This shows that it takes longer on average for a woman to have her first surgery when it is diagnostic in intent than to have a first operation that is therapeutic. This is probably because cases without a pre-operative diagnosis are often more complex and therefore will usually have a longer period during which attempts to obtain a pre-operative diagnostic are made.

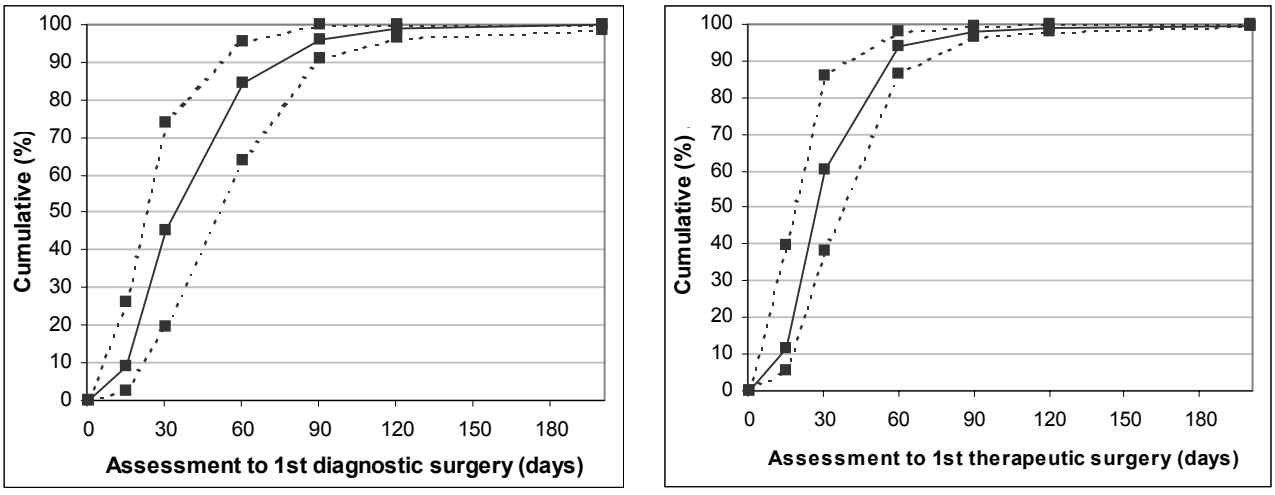


Figure 47 (Tables 91 & 92): The cumulative percentage of cases with diagnostic surgery and those cases with a pre-operative diagnosis that had therapeutic surgery up to 200 days after assessment

Tables 91 to 94 show the regional variation in the cumulative percentage of cases having various therapies within 14, 30, 60, 90, 120 and 200 days. In Figures 47, 48 and 49 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 percentages at each point.

Figure 48 shows the time taken from final surgery to radiotherapy, excluding those cases with neo-adjuvant radiotherapy. As start dates of chemotherapy and hormonal therapy were not collected in the 2003/04 audit, cases with chemotherapy before radiotherapy are not excluded in this analysis. In the UK as a whole, only 29% of women received radiotherapy within 60 days from their final surgery and just 57% of cases within 90 days. 10% of women had not received radiotherapy 200 days after their final surgery. Regional QA reference centres should review these cases. The median number of days between final surgery and radiotherapy varied from 56 days in East Midlands and 59 days in Scotland to over 106 days in London and 113 days in South East (East).

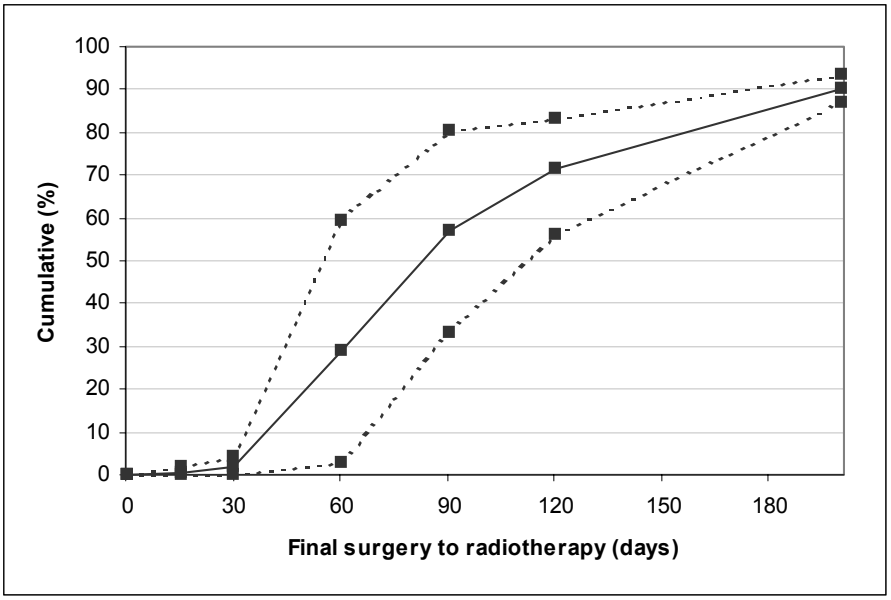


Figure 48 (Table 93): The cumulative percentage of cases with surgery and adjuvant radiotherapy, up to 200 days after final surgery

Figure 49 shows that only 26% of the women who had radiotherapy had started treatment within 90 days of their first assessment. 18% of women had not started radiotherapy even 200 days after their first assessment. In the UK as a whole, the median number of days from assessment to radiotherapy was 119. This varied from 93 days in East Midlands to 168 days in South East (East). Comparison of Figures 47 to 49 shows that radiotherapy waiting time is the main factor determining the time taken from assessment and final surgery to radiotherapy.

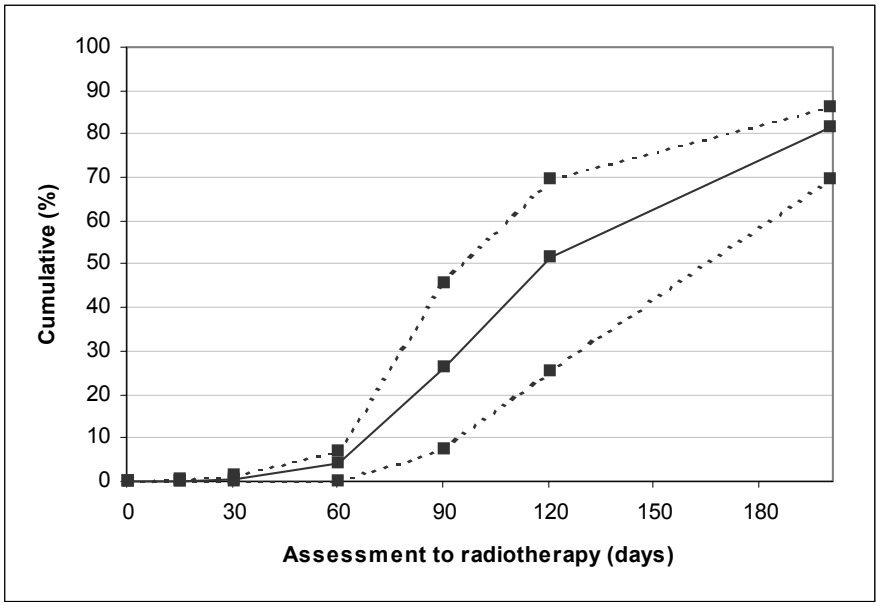


Figure 49 (Table 94): The cumulative % of cases with surgery and adjuvant radiotherapy, up to 200 days after first assessment

COMMENT:

- 94% of cases had their first therapeutic operation within 60 days (approximate to 2 months) of assessment. All regions but South East (East) met the 90% national target.
- It took longer for women without a pre-operative diagnosis to undergo an open biopsy than for women with pre-operative diagnosis of breast cancer to have their first surgery.
- Only 29% of cases received radiotherapy within 60 days of their final surgery. Women in London and South East (East) experienced the longest waits for radiotherapy.

7.4 Combinations of Treatment According to Tumour Characteristics

This section examines the combinations of treatment 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 8,798 cases with radiotherapy data available, 80% were invasive and 19% were non-invasive (Table 95). 5,080 (72%) of the invasive cancers were treated with conservation surgery (Table 96). Of these, 550 (11%) did not have radiotherapy (Table 97). This varied from 3% in Wales to 23% in South East (West). Of the 1,172 non-invasive cancers treated by conservation surgery (Table 99), 607 (52%) did not have radiotherapy (Table 100). This varied from 28% in Scotland to 72% in South East (West).

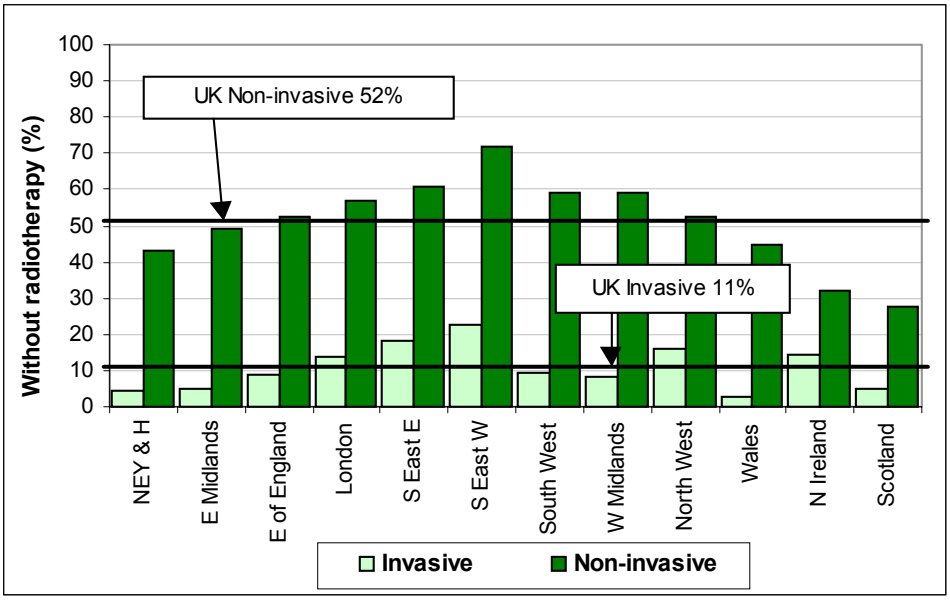


Figure 50 (Tables 97 &100): The proportion of conservatively treated invasive cancers and non-invasive cancers that did not receive radiotherapy

Figure 50 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 98). However, a total of 97 cancers were at least 20mm in diameter, of which 24 were in

South East (West). Regional QA reference centres and regional QA surgeons should determine the reasons why these larger conservatively treated invasive cancers did not receive radiotherapy.

In the UK as a whole, 57% of the 607 conservatively treated non-invasive cancers not given radiotherapy were other (low or intermediate) grade (Table 101) and 57% were small (<15mm diameter) (Table 102). In West Midlands and South East (West) 47% (21 cases) and 46% (28 cases) of women not given radiotherapy were high grade and 40% (18 cases) and 35% (21 cases) respectively were at least 15mm in diameter. Provided that the tumour margins were adequate, it may be acceptable for conservatively treated cancers to 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 cancer treated with conservation surgery received radiotherapy, compared to only 52% of women with conservatively treated non-invasive cancer. 65% of the 550 conservatively treated cancers without radiotherapy were small (<15mm) tumours and 57% were other (low or medium) grade.

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

Of the 9,128 cancers with known chemotherapy data, 195 (2%) were recorded as ER negative, node positive invasive cancers and 464 (5%) were recorded as ER negative, node negative invasive cancers (Table 103). Of the 195 ER negative, node positive invasive cancers, 168 (86%) received chemotherapy. This varied from 68% in London to 100% in West Midlands and Northern Ireland (Table 104). In the UK as a whole, only 27 cancers in this group did not receive chemotherapy. Of the 464 ER negative, node negative invasive cancers, 226 (49%) received chemotherapy. This varied from 33% in Wales to 85% in Northern Ireland. Thus, in most regions, nodal status was taken into account when deciding whether ER negative cancers received chemotherapy. Nodal status made the least difference in Northern Ireland and Scotland.

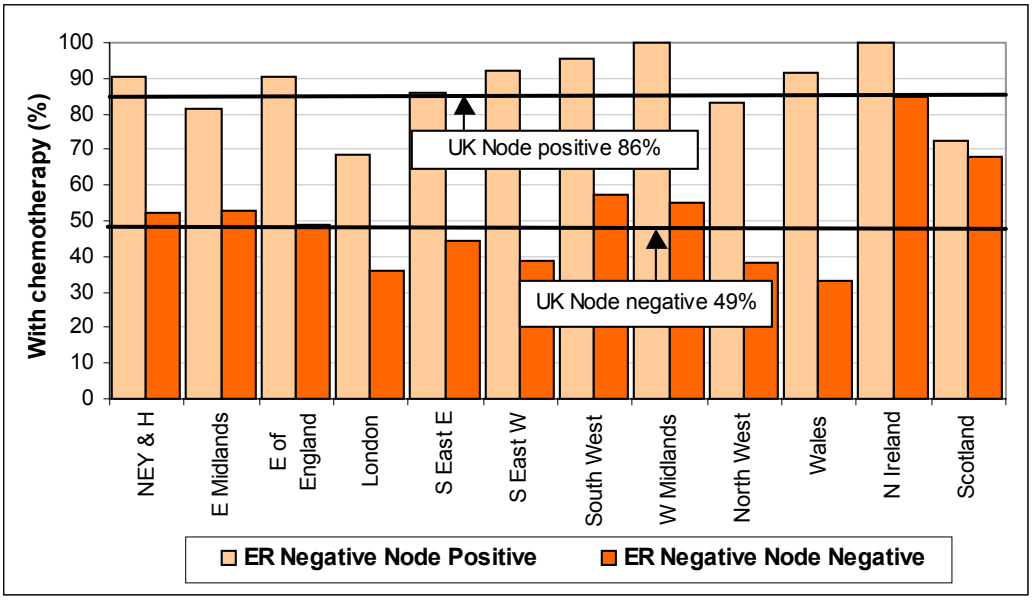


Figure 51 (Tables 103, 104): The proportion of ER negative, node positive and ER negative, node negative invasive cancers that received chemotherapy

84% of the 226 ER negative, node negative invasive cancers given chemotherapy were Grade III (Table 106). Only 3 cancers were Grade I and 27 (12%) were Grade II. In East of England only (67%) of cancers receiving chemotherapy appeared to be Grade III, but in this region the grade of 19% of the ER negative, node negative invasive cancers as unknown.

Conclusion 2 :	86% 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 women would benefit from chemotherapy. 84% of the 226 ER negative, node negative invasive cancers given chemotherapy were Grade III.

Proposition 3 :	**Hormonal therapy (e.g. Tamoxifen) is only beneficial to women with ER positive cancers or with ER negative, PgR positive cancers and chemotherapy *should* be considered as a treatment for ER negative, PgR negative invasive cancers.**

ER status was either unknown or not done for 6% of invasive cancers and for 63% of non-invasive cancers (Table 86). The proportion of invasive cancers with no ER status varied from 2% in East Midlands to 13% in Wales. The proportion of non-invasive cancers with no ER status varied from 18% in Northern Ireland to 81% in East of England and 78% in North East, Yorkshire & Humber.

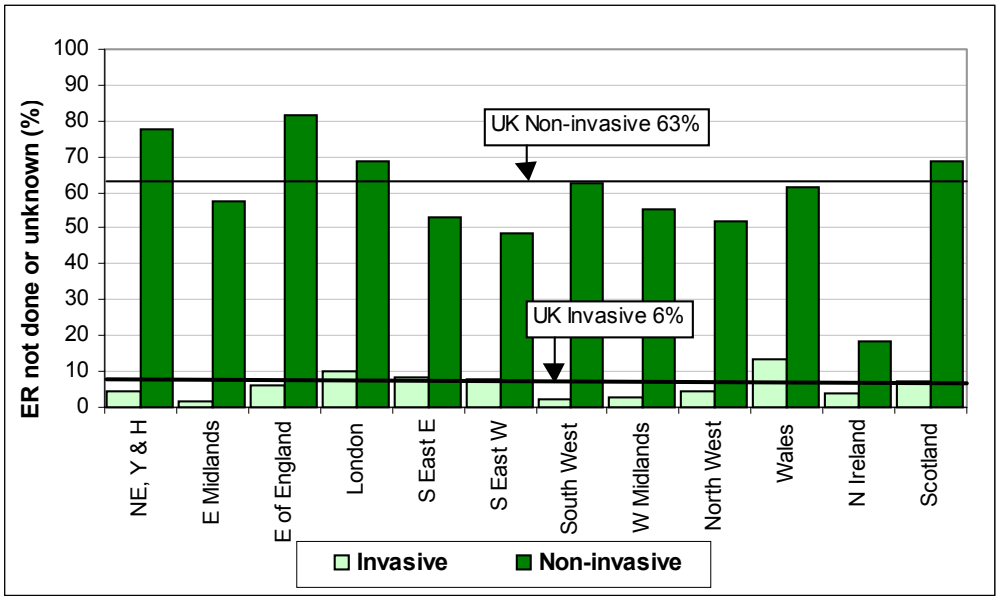


Figure 52 (Table 86): Variation in the proportion of invasive and non-invasive cancers with no ER status information provided

Of the 9,197 invasive and non-invasive cancers with complete hormone therapy data included in the adjuvant therapy analysis, 6,828 (74%) were ER positive, 841 (9%) ER negative and 1,528 (17%) either did not have ER status performed or the ER status was unknown (Table 107). 92% of the ER positive cancers with known hormone therapy data were invasive and 7% non-invasive (Table 109).

In the UK as a whole, 6% of ER positive, invasive cancers did not receive hormone therapy (Table 112). This varied from 0% (0 out of 109 cancers) in Northern Ireland to 11% (68 out of 633

cancers) in East Midlands and Wales 18% (72 out of 407 cancers) (Figure 53). In the UK as a whole, 37% (15 cases) of ER negative, PgR positive invasive cancers did not receive hormone therapy (Table 117). Regional QA reference centres and regional QA surgeons should determine the reasons why hormone therapy was not given to ER positive or ER negative, PgR positive cancers.

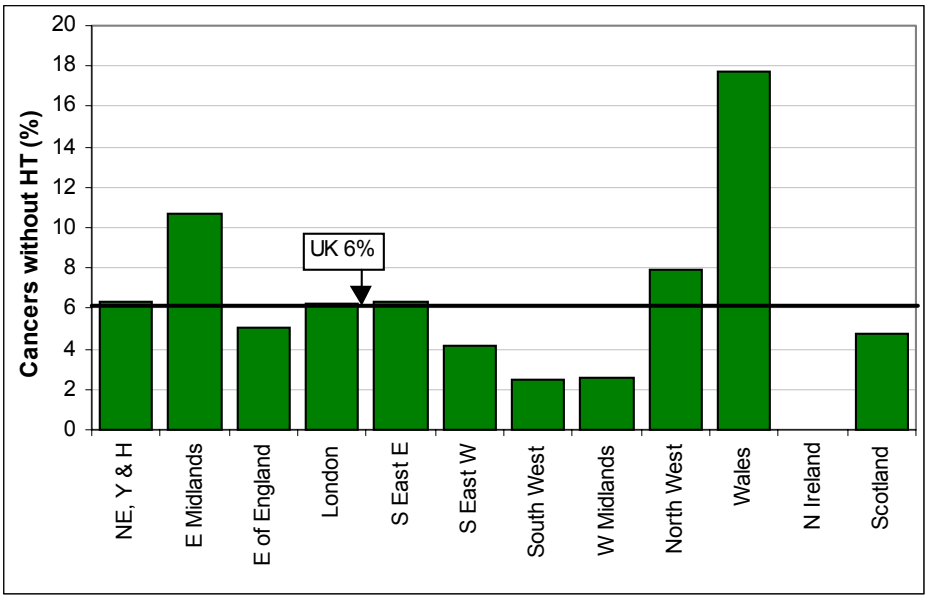


Figure 53 (Tables 112): Variation in the proportion of ER positive, invasive cancers that did not receive hormone therapy

In the UK as a whole, 59% of ER negative, invasive cancers with negative or unknown PgR status received chemotherapy (Figure 54). This varied between 48% (39 out of 81 cancers) in North West and 49% (33 out of 67 cancers) in London to 81% (17 out of 21 cancers) in Northern Ireland (Figure 54). Regional QA reference centres and regional QA surgeons should determine the reasons why hormone therapy was not given to these cancers.

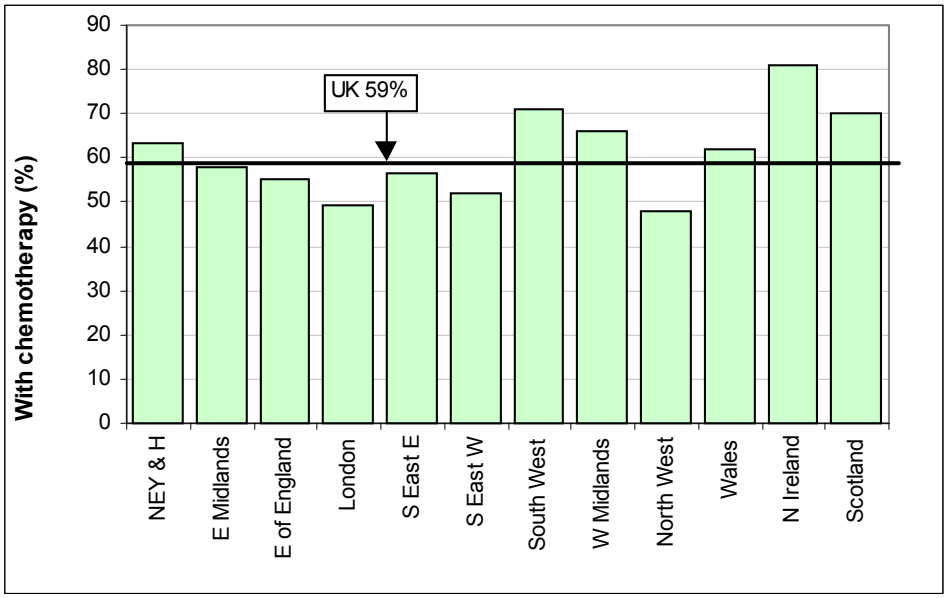


Figure 54 (Table 119): Chemotherapy given to ER negative, invasive cancers with PgR status negative or unknown

In the UK as a whole, 96 ER negative cancers (11%) received hormone therapy. The proportion of ER negative cancers treated with hormone therapy varied between 0% (0 out of 28 cancers) in Northern Ireland to 32% (9 out of 28 cancers) in Wales (Table 114). Given the potential side

effects of hormone treatment, regional QA reference centres and regional QA surgeons should determine the reasons why hormone therapy was given to these cancers.

Of the 6,828 ER positive cancers, 501 (7%) were non-invasive (Table 108). 69% of these cancers received hormone therapy (Table 113). This varied between 21% in Wales to 88% in Northern Ireland and 98% in East Midlands. In the UK as a whole, 157 ER positive, non-invasive cancers (31%) did not receive hormone therapy (Table 113). This varied between 2% (1 out of 59 cases) in East Midlands to 79% (31 out of 39 cases) in Wales. Thus, in Wales, where only 39% of the 109 non-invasive cancers detected had known ER status (Table 86), and only 17% of the 109 non-invasive cancers received hormone therapy (Figure 55).

Of the 361 non-invasive cancers with known ER status treated with hormone therapy (20%), 344 were ER positive and 17 were ER negative (Tables 113 and 115). A further 117 non-invasive cancers with unknown ER status were also treated with hormone therapy (Table 115). The proportion of non-invasive cancers treated with hormone therapy varied markedly between regions from 13% in East of England and 17% in Wales to 63% in Northern Ireland. In North West and East Midlands 14% and 11% respectively of the non-invasive cancers treated with hormone therapy had unknown ER status. Given the potential side effects of hormone treatment, regional QA reference centres and regional QA surgeons should determine the reasons why hormone therapy was given to non-invasive cancers with unknown ER status.

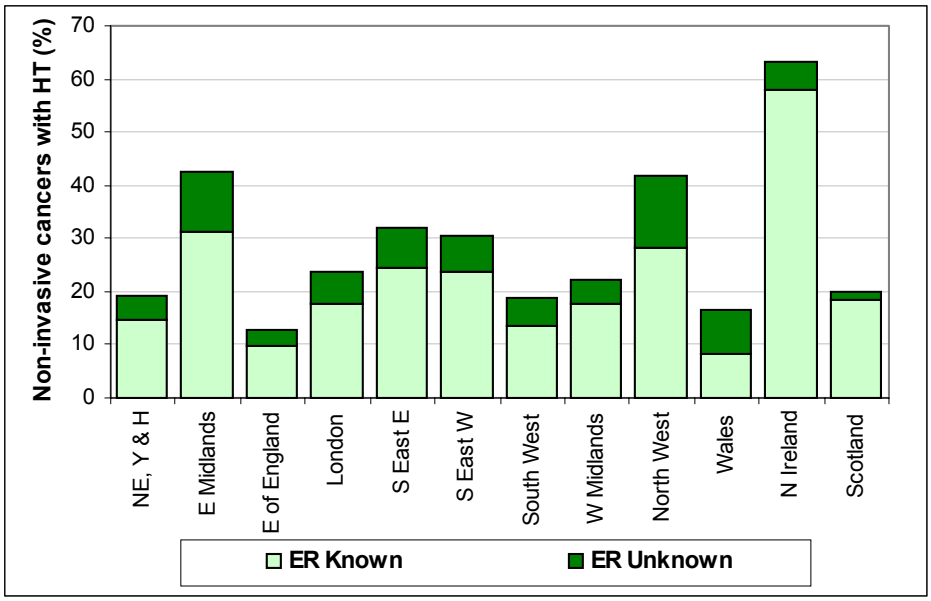


Figure 55 (Tables 115): Variation in ER status for non-invasive cancers that received hormone therapy, expressed as the percentage of non-invasive cancers

Conclusion 3 : The decision to give hormone therapy did depend to a large extent on ER and PgR status. However, 6% of ER positive, invasive cancers and 37% of ER negative, PgR positive invasive cancers did not receive hormone therapy and 11% of ER negative cancers did receive hormonal therapy. Given the potential side effects of hormone treatment, regional QA reference centres and regional QA surgeons should determine the reasons why hormone therapy was given to non-invasive cancers with unknown ER status.
59% of ER negative, invasive cancers with negative or unknown PgR status received chemotherapy. The number of cancers with known PgR status was, however, very small so these data should be treated with caution.

The following table 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. Regions where the proportion of cancers treated in a manner inconsistent with each proposition was more than 5% higher than the UK average are shaded and the numbers of cancers affected in each region are provided in brackets.

SUMMARY OF PROPOSITIONS 1, 2 AND 3						
	Proposition 1 Conservation surgery, no RT		***Proposition 2 ER negative node positive invasive no CT*** *(Table 104)*	***Proposition 3***		
Region	***Invasive*** *(Table 97)*	***Non-invasive*** *(Table 100)*		***ER positive invasive no HT*** *(Table 112)*	***ER negative with HT*** *(Table 114)*	***ER negative PgR negative /unknown no CT*** *(Table 119)*
N East, Yorks & Humber	*5% (20/429)*	*43% (48/111)*	*10% (2/21)*	*6% (41/647)*	*5% (4/85)*	*37% (25/68)*
East Midlands	*5% (25/491)*	*49% (63/128)*	*19% (3/16)*	*11% (68/633)*	*18% (17/97)*	*42% (29/69)*
East of England	*9% (43/496)*	*52% (69/132)*	*10% (2/21)*	*5% (29/579)*	*18% (14/79)*	*45% (26/58)*
London	*14% (77/562)*	*57% (48/84)*	*32% (6/19)*	*6% (37/592)*	*11% (8/73)*	*51% (34/67)*
South East (East)	*18% (70/389)*	*61% (82/135)*	*14% (2/14)*	*6% (30/472)*	*13% (10/80)*	*43% (23/53)*
South East (West)	*23% (100/438)*	*72% (61/85)*	*8% (1/13)*	*4% (20/476)*	*11% (7/64)*	*48% (23/48)*
South West	*10% (55/574)*	*59% (73/123)*	*5% (1/22)*	*3% (16/640)*	*8% (6/71)*	*29% (17/59)*
West Midlands	*8% (32/388)*	*59% (45/76)*	*0% (0/14)*	*3% (13/505)*	*11% (8/72)*	*34% (18/53)*
North West	*16% (88/553)*	*52% (58/111)*	*17% (3/18)*	*8% (53/671)*	*5% (5/100)*	*52% (42/81)*
Wales	*3% (6/231)*	*45% (18/40)*	*8% (1/12)*	*18% (72/407)*	*32% (9/28)*	*38% (8/21)*
Northern Ireland	*15% (13/89)*	*32% (9/28)*	*0% (0/3)*	*0% (0/109)*	*0% (0/28)*	*19% (4/21)*
Scotland	*5% (21/440)*	*28% (33/119)*	*27% (6/22)*	*5% (27/563)*	*13% (8/64)*	*30% (15/30)*
UK	***11% (550/5,080)***	***52% (607/1,172)***	***14% (27/195)***	***6% (406/6,294)***	***11% (96/841)***	***41% (264/648)***

Shaded if 5% above the value for the UK as a whole

8. SURVIVAL ANALYSIS

Detailed tables giving full audit results are provided in Appendix G starting on Page 139

UK NHS Breast Screening Programme data for women with breast cancers detected by screening between 1st April 1998 and 31st March 1999 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 2004, enabling survival for a period of up to 5 years post diagnosis to be calculated. By liaising with the cancer registries serving their population, this is the first year that all 12 regional QA reference centres were able to provide data for this analysis.

Age at diagnosis, invasive grade, invasive tumour size and nodal status were requested from the screening services for cases detected in 1998/99. 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 likelihood ratio tests for inequality. Full details can be found in the Surv2 software manual.

8.2 Eligibility and Data Completeness of Cases Included in the Survival Analysis

Details of 9,026 breast cancers detected by screening between 1st April 1998 and 31st March 1999 were submitted to the survival audit. Of these, 392 cancers (4%) were excluded if one of the following reasons applied.

- Unknown invasive status (39 cases)
- Case not registered at the regional cancer registry, or registered with an unknown diagnosis date (168 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 (185 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 a death certificate.

Data completeness for the 1998/99 Survival Audit									
	Not registered		Cases not confirmed to be primary breast cancers**		Incomplete size, grade or nodal status for invasive cancers		Eligible cases		Total number of cases
Region	No.	%	No.	%	No.	%	No.	%	
N East, Yorks & Humber	15	1	19	2	73	6	1,083	96	1,125
East Midlands	28	4	10	1	23	3	695	94	736
East of England	32	4	27	3	93	10	841	93	904
London	19	2	26	3	142	16	810	94	861
South East (East)	12	2	19	2	98	13	732	95	767
South East (West)	0	0	19	3	84	12	699	97	718
South West	0	0	24	3	108	12	865	97	892
West Midlands	0	0	9	1	19	3	667	98	680
North West	16	2	14	1	200	21	938	96	973
Wales	33	6	1	0	10	2	474	93	510
Northern Ireland	0	0	0	0	19	11	170	100	170
Scotland	13	2	17	2	35	5	660	96	690
United Kingdom	**168**	**2**	**185**	**2**	**904**	**10**	**8,634**	**96**	**9,026**

** Flagged as a recurrence, or with cancer registry diagnosis date more than 3 months after screening surgery

Data completeness has improved greatly this year. Not only has the completeness of surgical data provided by QA reference centres and screening units reached a new high in most regions, but the majority of cancer registries had almost 100% of the cases registered. The proportion of invasive cancers with unknown size has fallen from 7% in 1992/93 to 1% in 1998/99 and the proportion with unknown grade has decreased from 21% to 3%. 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 1998/99 only 11% 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 14% in 1998/99.

7 YEAR COMPARISON: DATA COMPLETENESS FOR INVASIVE CANCERS (%)							
	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99
Unknown size	7	5	3	2	2	2	1
Unknown grade	21	20	14	11	5	5	3
Unknown nodal status	43	40	31	28	20	16	11
Unknown NPI	54	51	40	35	25	20	14

8.3 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 2004) together with text from the death certificate to give the exact cause of death.

Table 121 shows that there were a total of 4 deaths recorded amongst the 143 women with micro-invasive cancer detected by screening. One of these was a non cancer death and 3 were from a cancer other than the screen detected breast cancer. Of the 41 deaths in women with non-invasive cancer, 6 (15%) were attributed to the tumour detected by screening, 18 (44%) were from a cancer other than the screen detected breast cancer and 17 (41%) were non cancer deaths (Table 122).

Overall, 67% of deaths among women with invasive cancer were recorded as being due to the screen detected breast cancer, 12% were due to a cancer other than the screen detected breast cancer and 20% due to non-cancer related causes. Death cause was unknown for 9 women (1%). 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 South East (West) only 49% of the deaths in women with invasive cancer were attributed to the screen detected breast cancer, compared to 80% in North East, Yorkshire & Humber (Table 120). 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.

8.4 5 year Relative Survival Rates for Cancers Diagnosed in 1998/99

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. Figure 56 shows the regional variation in 5 year survival compared to the UK figure of 95.8% (95%CI 95.1%-96.5%). Northern Ireland had the lowest relative survival at 92.1%, and South West the highest at 97.6%. However, differences between regional survival rates are not statistically significant.

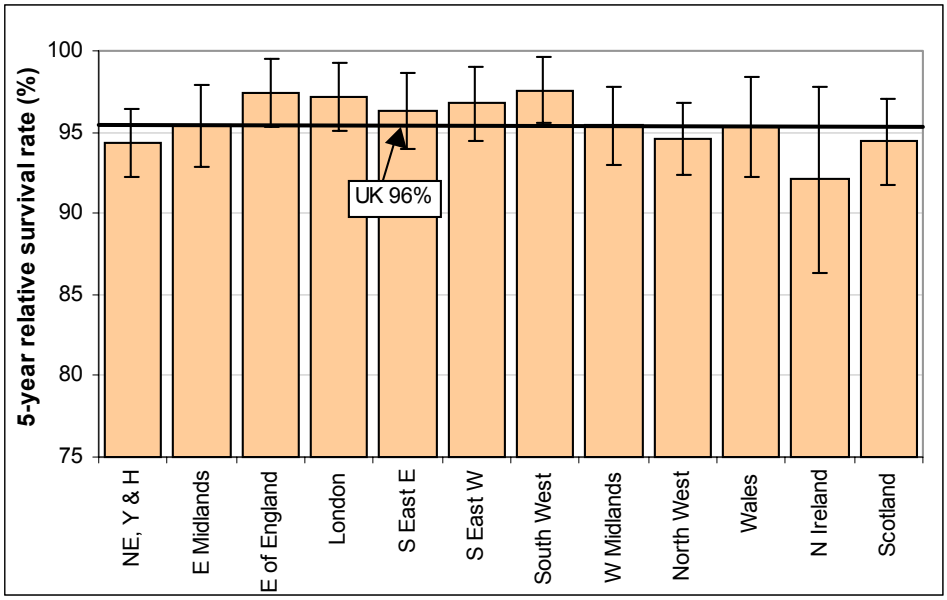


Figure 56 (Table 123): 5 year relative survival for women with screen detected invasive breast cancer diagnosed in 1998/99

8.5 Variation in Relative Survival with Tumour Characteristics

8.5.1 Variation in Relative Survival with Invasive Status

Relative Survival by Invasive Status			
	1 year	***3 year***	***5 year***
Invasive	*99.9 (99.7,100.1)*	*97.9 (97.4,98.4)*	*95.8 (95.1,96.5)*
Micro-invasive	*100.6 (100.6,100.6)*	*100.6 (98.6,102.6)*	*100.7 (97.8,103.7)*
Non-invasive	*100.5 (100.2,100.7)*	*101.1 (100.6,101.6)*	*101.3 (100.5,102.1)*

The table above shows that the relative survival at 1, 3 and 5 years of women with non-invasive and micro-invasive cancers was higher than 100%. Moreover, the lower limits of the 95% confidence intervals for women with non-invasive cancers are over 100%. This indicates that their chance of survival was no worse than that of the general UK female population.

8.5.2 Variation in Relative Survival of Invasive Cancers with Age Group

Table 124 shows the variation with age at diagnosis in the relative survival rates of women with invasive cancer. The survival rates were statistically significantly different between age bands. For women in the screening age range, the 5 year relative survival rate for 1998/99 was highest for women aged over 65. This can be explained by the overall health deterioration of older people and the rise in awareness of health care for those who were diagnosed with breast cancer.

8.5.3 Variation in Relative Survival of Invasive Cancers with Tumour Size, Grade and Nodal Status

Figure 57 shows the variation in 5 year relative survival rate with tumour size, grade and nodal status. 5 year relative survival in women with <10 mm diameter cancers and Grade I cancers was no worse than that of the general UK population. 5 year relative survival in women with node negative cancers was 98.2% (95%CI 97.4%-98.9%) compared with 89.3% (95% CI 87.5%-91.2%) in those with positive nodes.

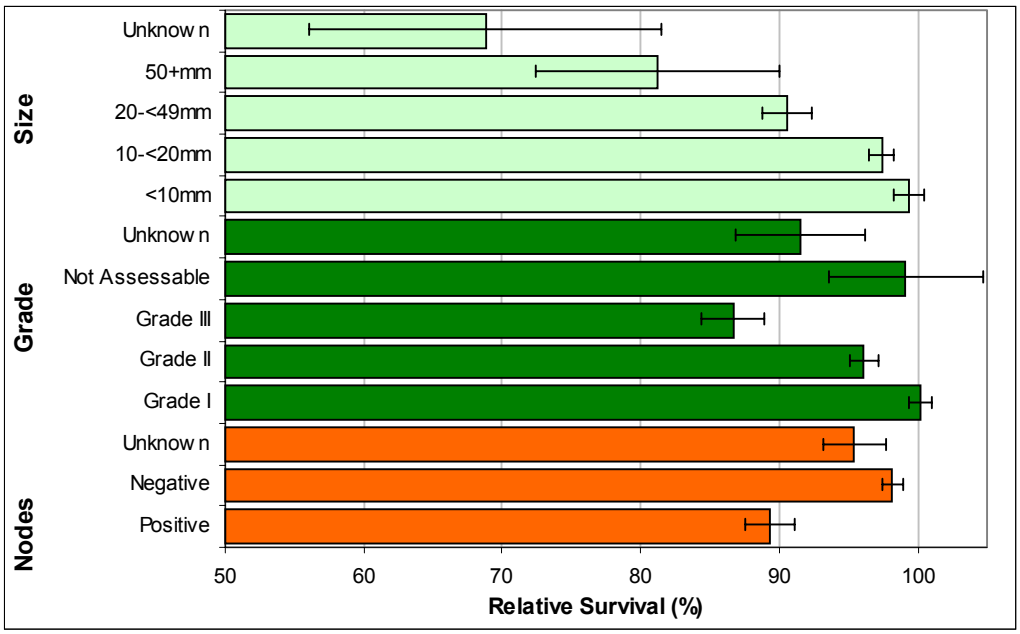


Figure 57 (Table 125, 126 & 127): Variation in 5 year relative survival with nodal status, grade and size for women with screen detected invasive breast cancer

8.5.4 Variation in Relative Survival of Invasive Cancers with NPI Group

The Nottingham Prognostic Index (NPI) is a combined score of tumour size, grade and nodal status of invasive cancers. Figure 58 shows how relative survival rates varied with NPI group at 1, 3 and 5 years. The 5 year relative survival rate for cancers in the excellent prognostic group (EPG) was 100.4% (95%CI 99.4%-101.3%), and for cancers in the good prognostic group (GPG) and moderate prognostic group 1 (MPG1) was 98.7% (95%CI 97.7%-99.8%) and 94.7% (95%CI 93.1%-96.4%) respectively. The 5 year survival rates for moderate prognostic group 2 (MPG2) and the poor prognostic group were significantly worse (89.3% (95%CI 86.3%-92.2%) and 74.8% (95%CI 70.7%-79.6%) respectively). Tumours in the moderate and poor NPI prognostic groups (MPG1, MPG2 and PPG) have significantly lower survival rates at 3 and 5 years than those in the good and excellent prognostic groups (GPG and EPG).

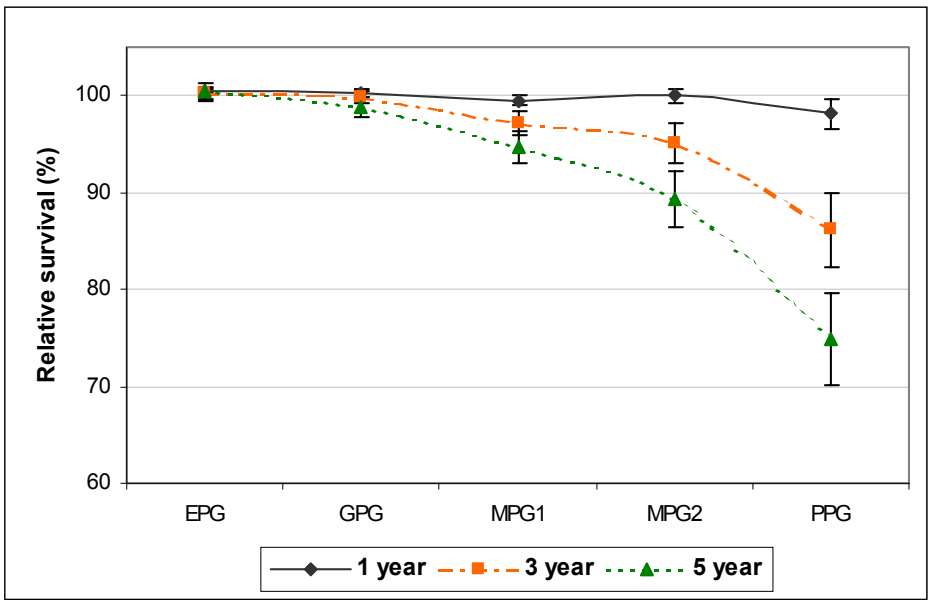


Figure 58 (Table 128): Variation in relative survival with NPI group for women with screen detected invasive breast cancer

COMMENT:

- Of the 8,987 cancers with known invasive status submitted to the survival analysis for the period 1st April 1998 and 31st March 1999, 168 (2%) were excluded because they were not registered at the cancer registry. A further 185 cancers (2%) were excluded because the cancer registry could not confirm that the cancer detected by screening was the primary tumour.
- The survival analysis included 8,634 screen detected cancers. Data completeness has improved markedly in the 7-year history of this audit.
- 5 year relative survival for screen detected invasive cancers in 1998/99 was 95.8% (95%CI 95.1%-96.5%). Women with micro-invasive and non-invasive cancer have a relative survival higher than 100%, indicating that their chance of survival was no worse than that of the general UK female population.
- 5 year relative survival in women with <10 mm diameter cancers and Grade I cancers was no worse than that of the general UK population.
- 5 year relative survival in women with node negative cancers was 98.2% (95%CI 97.4%-98.9%).
- Tumours in the moderate and poor NPI prognostic groups (MPG1, MPG2 and PPG) have significantly lower survival rates at 3 and 5 years than those in the good and excellent prognostic groups (GPG and EPG).

APPENDIX A

ABS AT BASO AUDIT OF SCREEN DETECTED BREAST CANCERS FOR THE YEAR OF SCREENING 1ST APRIL 2003 - 31ST MARCH 2004

REVISED AUDIT TIMETABLE	
Date	**Event**
27th May 04	Audit group meet to plan the 2003/04 audit. Proposed data items emailed to QA Co-ordinators as soon as possible after the meeting.
21st June 04	Draft audit documents emailed to QA Reference Centres (QARCs) for comment. Draft survival documents emailed to Cancer Registry Directors for comment.
21st June – 1st July 04	QA Co-ordinators discuss draft audit documents with their QA Surgeon, QA Director and QA Data Managers. Return comments to the West Midlands Cancer Intelligence Unit (WMCIU).
1st July 04	Audit to be discussed at QA Directors meeting
14th July 04	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 2003/04.
27th Aug 04	Deadline for QARCs to request survival audit data from Cancer Registries.
24th Sept 04	Deadline for Cancer Registries to provide data to the QARCs for the survival audit.
28th Sept 04	Survival audit to be discussed at Cancer Registry Directors meeting
6th Oct 04	Audit to be discussed at the ABS at BASO Screening Representatives meeting
29th Oct 04	**Deadline for receipt of survival data from QARCs at the WMCIU.**
1st – 5th Nov 04	All QARCs to ensure that an appropriate member of staff is available to respond to any queries from the WMCIU regarding the survival audit.
26th Nov 04	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. QA Team requirements.*
29th Nov – 13th Dec	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.
14th Dec	**All QARCs to ensure that an appropriate member of staff attends a data quality day at the NBSS Training Centre, Coventry to validate the completed audit spreadsheets.**
15th –24th Dec	QARCs make final adjustments to the audit spreadsheets.
4th Jan 05	**Deadline for receipt of main and adjuvant audit data from QARCs at the WMCIU.**
4th –14th Jan 05	All QARCs to ensure that an appropriate member of staff is available to respond to 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.
18th Feb 05	Data tables sent to the Audit Group in advance of the first draft meeting.
23rd Feb 05	Audit Group meet to discuss the first draft and to discuss the possible issues to be raised during the ABS at BASO meeting presentation.
3rd March 05	Audit booklet first draft to be taken to the ABS at BASO Screening Representatives meeting. *All draft data should be marked "Not for circulation" to avoid unpublished data getting into the public domain.*
14th March 05	First Draft booklet emailed to QA Reference Centres for information.
4th April 05	Audit booklet final draft sent to the Audit Group to act as scrutinisers/editors.
13th April 05	Deadline for receipt of the audit booklet at the printers.
18th – 22nd April 05	Advance copies of booklet to be sent to speakers and QARCs for the information of QA Directors, QA Co-ordinators and QA Data Managers.
11th May 05	**Audit booklet distributed at the 2005 ABS at BASO Meeting.**

APPENDIX B

ABS AT BASO AUDIT OF WOMEN WITH SCREEN DETECTED BREAST CANCERS DETECTED BETWEEN 1ST APRIL 2003 AND 31ST MARCH 2004

PLEASE SUPPLY DATA FOR WOMEN OF ALL AGES WITH SCREEN DETECTED BREAST CANCERS WITH FIRST OFFERED APPOINTMENT FROM 1ST APRIL 2003 - 31ST MARCH 2004 INCLUSIVE ACCORDING TO THE REGIONAL BOUNDARIES EXTANT FROM 1ST APRIL 2004

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 4th January 2005

****

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 2003/04. If bilateral or multiple cancers have been detected the KC62 software selects the worst prognosis cancer. The same rules should be applied for this audit. All data for bilateral cases should be taken from the cancer included in the KC62.

Cancers removed at core biopsy: Cancers removed at core biopsy should be included on the KC62 report and therefore on the ABS at BASO 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. Enter the total number of such cancers in the preliminary data table.

Number of clients in 2003/04 with C5 cytology but benign histology (ie. false positive C5): from CQA report (based on date of test not DOFOA) routinely collected and verified by QARC.

Number of clients in 2003/04 with B5 core biopsy but benign histology (ie. false positive B5): from BQA report (based on date of test not DOFOA) routinely collected and verified by QARC.

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: Codes 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.

Invasive Status: A cancer with no surgery has the invasive status taken from the core biopsy (B5A non-invasive, B5B invasive)

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 surgical referral 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 2003/04. 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 to the primary tumour (up to a maximum of 5) according to whether conservation surgery or mastectomy was carried out, with or without an axillary procedure. Exclude reconstruction alone. 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) and the number of these which are found to be positive is requested. The number of nodes obtained will be 0 in many cases. In instances where an axillary procedure has been undertaken but no nodes obtained, the number of nodes obtained should be recorded as zero. It is recommended that these cases are reviewed by the QARC and the classification confirmed with the responsible surgeon. 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. Indicate Yes, No or Unknown if a sentinel procedure was undertaken.

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 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

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

Checks 4 - 5 — If the number of days from screen or 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 screen or assessment. All such cases should be checked.

Check 6 — 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 7 — The invasive size of tumour should be less than or equal to the whole size.

Checks 8-17 — 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 diagnosis, 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. the total number of nodes in Check 11 should be greater than or equal to the number of positive nodes in Check 12.

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 surgical referral 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:

Miss Helen Davis
Breast Screening QA Information Assistant
West Midlands Cancer Intelligence Unit
Public Health Building
The University of Birmingham
Birmingham
B15 2TT

Tel: 0121 414 7713
Fax: 0121 414 7714
Helen.Davis@wmciu.nhs.uk
qarc@wmciu.nhs.uk

ABS AT BASO BREAST AUDIT 2003/04

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)	Number of clients in 2003/04 with C5 cytology but benign histology (ie. false positive C5) (CQA report)	Number of clients in 2003/04 with B5 core biopsy but benign histology (ie. false positive B5) (BQA report)

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

GMC Code (enter GMC code of the consultant surgeon or NoRef=No surgical referral).
If the woman was treated by more than one consultant surgeon enter all GMC codes, separated by semicolons.
Enter dates in dd/mm/yyyy format. EC=Early Recall. U=Unknown
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}* **Screen date** *(dd/mm/yyyy, EC)*	*{H}* **First assessment date** *(dd/mm/yyyy,U)*	*{I}* **Worst cytology** *(see above)*	*{J}* **Worst core biopsy** *(see above)*	*{K}* **Number of visits for cytology/core biopsy** *(exclude results clinic) (U,0,1,2,.)*	*{L}* **Type of treat-ment** *(C,M,NS,U)*	*{M}* **Immediate recon-struction** *(only for M =Mastectomy) (Y,N,U,X)*	*{N}* **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**	*{o}* **First surgery date** *(diag or therapeutic)* *(dd/mm/yyyy,NS,U)*	*{P}* **Final surgery date** *(excl reconstruction only)* *(dd/mm/yyyy,NS,U)*	*{Q}* **First operation type** *(diag or therapeutic)* *(C,M,AX, C+AX,M+AX, NS,U)*	*{R}* **Second operation type** *(C,M,AX, C+AX,M+AX, NS,U)*	*{S}* **Third operation type** *(C,M,AX, C+AX,M+AX, NS,U)*	*{T}* **Fourth operation type** *(C,M,AX, C+AX,M+AX, NS,U)*	*{U}* **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 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).

Any sentinel procedure? (Y/N/U) Enter Y if any of the axillary procedures were sentinel procedures.

	1st operation (diagnostic or therapeutic)		**2nd operation**		**3rd operation**		**4th operation**		**5th operation**		
{C} **Sx Number**	*{V}* **Total nodes obtained** *(NS,U, 0,1,2,..)*	*{W}* **Number nodes positive** *(NS,U, 0,1,2,..)*	*{X}* **Total nodes obtained** *(NS,U, 0,1,2,..)*	*{Y}* **Number nodes positive** *(NS,U, 0,1,2,..)*	*{Z}* **Total nodes obtained** *(NS,U, 0,1,2,..)*	*{AA}* **Number nodes positive** *(NS,U, 0,1,2,..)*	*{AB}* **Total nodes obtained** *(NS,U, 0,1,2,..)*	*{AC}* **Number nodes positive** *(NS,U, 0,1,2,..)*	*{AD}* **Total nodes obtained** *(NS,U, 0,1,2,..)*	*{AE}* **Number nodes positive** *(NS,U, 0,1,2,..)*	*{AF}* **Any Sentinel Procedure** *(Y/N/U)*

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 – Bloom & Richardson (I, II, III, NA=Not assessable or U=Unknown. Enter X if not invasive)

{C} **Sx Number**	*{AI}* **Invasive size of tumour**	*{AJ}* **Whole size of tumour** *(including surrounding DCIS)*	*{AK}* **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)
Pathological size (enter size in millimetres, NA = Not assessable, U = Unknown)

{C} **Sx Number**	*{AN}* **Grade** (H,O,NA,U)	*{AO}* **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 still usually be assigned to a consultant surgeon.
In rare cases where there is no surgeon, the GMC code for the case should be coded as "NoRef" in Part A, and counted 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 2003/04**	**Left NHSBSP 2003/04**	**Surgeon operated on patient request**	**Surgeon is a plastic surgeon**	**Surgeon operated in private practice**	**Not screening in area 2003/04**	**No information available for surgeon**	**Other reason (text)**
NoRef										

APPENDIX C

ABS AT BASO ADJUVANT AUDIT FOR WOMEN WITH SCREEN DETECTED BREAST CANCERS DETECTED BETWEEN 1ST APRIL 2002 AND 31ST MARCH 2003

PLEASE SUPPLY DATA FOR WOMEN OF ALL AGES WITH SCREEN DETECTED BREAST CANCERS WITH FIRST OFFERED APPOINTMENT FROM 1ST APRIL 2002 TO 31ST MARCH 2003 INCLUSIVE ACCORDING TO THE REGIONAL BOUNDARIES EXTANT FROM 1ST APRIL 2004

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 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 4th January 2005

DEFINITIONS AND GUIDANCE NOTES

Audit cut-off date: If a woman has not received radiotherapy or chemotherapy or hormonal therapy before 31st March 2004 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 cohort of cases required for the adjuvant audit is the same as the most recent ABS at BASO 2002/03 main audit presented on 26th May 2004 (11, 593 UK NHSBSP cancers in total). To aid data collection, coded identifiers and screening dates already collected in the 2002/03 main audit have been prefilled in the regional data collection spreadsheets. The adjuvant data collected in this audit will be matched by the WMCIU to previously collected tumour data by linking on the unique identifier "UniqueMain" assigned by the WMCIU and given in the data collection spreadsheet. 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 1-3 (Assessment to surgery)	If the number of days from assessment to first surgery, assessment to final surgery or first to final surgery cannot be calculated, #VALUE! will appear. For cases with only one surgery, first to final surgery (so first surgery equals final surgery) should display 0. All cases where the number of days is negative should be checked.
Check 4 (Assessment to radiotherapy)	If the number of days from assessment to radiotherapy cannot be calculated, #VALUE! will appear. If the number of days is negative, the date of radiotherapy has been entered as before the date of assessment. All such cases should be checked to confirm that the patient received radiotherapy for a previous cancer.
Data check summary	Minima, maxima, averages 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:

Miss Helen Davis
Breast Screening QA Information Assistant
West Midlands Cancer Intelligence Unit
Public Health Building
The University of Birmingham
Birmingham
B15 2TT

Tel: 0121 414 7713
Fax: 0121 414 7714
Helen.Davis@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 2002 TO 31ST MARCH 2003 INCLUSIVE

UNIT:

Enter dates in dd/mm/yyyy format (e.g. 01/04/2002) or U=Unknown, NS=No surgery, NRT=No radiotherapy,
Chemotherapy. Hormonal therapy : Y = therapy given before 31/03/04, N = No therapy given before 31/03/04, U=Unknown
ER Status, PgR Status, Cerb-B2/HER-2 (P = Positive, N = Negative, U = Unknown) to be completed according to local definitions.
(Cerb-B2/Her-2+ if immunohistochemistry 3+ or fish +)
Previous cancer? : Y if the patient has a previous cancer affecting adjuvant treatment decisions (eg. already on CT for another cancer)

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

ADJUVANT THERAPY AUDIT - TO BE COMPLETED FOR ALL CANCERS WITH DATE OF FIRST OFFERED APPOINTMENT FROM 1ST APRIL 2002 TO 31ST MARCH 2003 INCLUSIVE

Enter dates in dd/mm/yyyy format (e.g. 01/04/2002) or U=Unknown, NS=No surgery, NRT=No radiotherapy,
Chemotherapy. Hormonal therapy : Y = therapy given before 31/03/04, N = No therapy given before 31/03/04, U=Unknown
ER Status, PgR Status, Cerb-B2/HER-2 (P = Positive, N = Negative, U = Unknown) to be completed according to local definitions.
(Cerb-B2/Her-2+ if immunohistochemistry 3+ or fish +)
Previous cancer? : Y if the patient has a previous cancer affecting adjuvant treatment decisions (eg. already on CT for another cancer)

	To aid data collection by the consultant surgeon. Do not send to WMCIU			*See above for coding – to be completed according to local definitions*						
{D} **Sx Number**	*{K}* **Name**	*{L}* **NHS Number**	*{M}* **Hospital Number**	*{N}* **RT start date** (dd/mm/yyyy, NRT,U)	*{O}* **CT** (Y,N,U)	*{P}* **HT (eg. Tamoxifen)** (Y,N,U)	*{Q}* **ER Status** *(P,N,U)*	*{R}* **PgR Status** *(P,N,U)*	*{S}* **Cerb-B2/ HER-2** *(P,N,U)*	*{T}* **Previous cancer?** *(Y)*

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

APPENDIX D

ABS AT BASO SURVIVAL AUDIT FOR WOMEN WITH SCREEN DETECTED BREAST CANCERS DETECTED BETWEEN 1ST APRIL 1998 AND 31ST MARCH 1999

Aim: To combine NHS Breast Screening Programme (NHSBSP) data for women with breast cancers detected by screening between 1st April 1998 – 31st March 1999 with data recorded by regional cancer registries to enable analysis of breast cancer survival for a period of up to 5 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 cancers detected at screening between 1st April 1998 and 31st March 1999 should be included in the audit.

Core patient and tumour data for women detected at screening between 1st April 1998 and 31st March 1999 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.

Cancer registries should identify deaths in women with breast cancers detected on screening between 1st April 1998 and 31st March 1999 prior to the end of study censor date of 31st March 2004. Each cancer registry should confirm that death data are complete to 31st March 2004, or provide an alternative date to which survival can be calculated.

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

A paper representation of the format used in the spreadsheets is provided and may be used as the basis for a data collection form. Crystal 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 29th October 2004.

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

For cases screen detected in 1998/99 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, to help match cases at the cancer registry and to identify possible recurrences.
- 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
- 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 1998/99 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). Cancer registries have been asked to supply the date of diagnosis of the tumour with which they have matched the patient and tumour details provided by the QARC. This is because we have discovered that, in previous years, it has not been apparent when screen detected cancers have been matched to recurrences rather than to primary breast tumours. Clearly this is very important when carrying out survival analyses as we aim to include only screen detected primary breast cancers and not recurrences. We have therefore provided a recurrence flag which should be used to indicate that the screen detected cancer was not the primary breast cancer. QARCs have been asked to supply to cancer registries the date of first surgery recorded at the screening service. Comparison of this date with the date of diagnosis recorded at the cancer registry should enable recurrences and multiple primary tumours to be identified amongst the screen detected cancers. QARCs can also supply dates of first surgery recorded by screening services for breast cancers detected in earlier years; this would help to identify matches to multiple primaries and recurrences in these cases. Further details may be requested from QARC(s) if a breast cancer is registered from the death certificate alone. If a woman has more than one primary cancer, ensure that the cause of death field is accurately recorded, so that it clearly states the site of the tumour causing the death if this is known.
Overall responsibility for regional data collection remains with the QA Co-ordinator.

All requests for data should be submitted to the Cancer Registry by 27th August 2004.

The following data items are required from the cancer registry for all breast tumours screen detected between 1st April 1998 and 31st March 1999.

- Registration number — the unique registration number for the breast tumour should be added.
- Not registered — For cases not registered indicate NR in the appropriate column.
- Recurrence — Where the screening episode is recorded as a recurrence of a previous breast primary, enter the primary cancer 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 2004**. The cancer registry should confirm to the QA Reference Centre that death data are complete to 31st March 2004, 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 24th September 2004.

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 prompt will appear. All such cases should be checked.
Check 6 (Invasive Size Band)	The invasive size, if known, is divided into 5 size bands. If the size is unknown for invasive cancer "U" will appear. All such cases should be checked.
Check 7 (Recurrence)	If the interval between Date of diagnosis and Date of 1st surgery is more than 6 months, a prompt will appear. All such cases should be checked to see if the screen detected cancer is a recurrence.

QUERIES

Any queries about the survival audit should be directed to:

Miss Helen Davis
Breast Screening QA Information Assistant
West Midlands Cancer Intelligence Unit
Public Health Building
The University of Birmingham
Birmingham
B15 2TT

Tel: 0121 414 7713
Fax: 0121 414 7714
helen.davis@wmciu.nhs.uk
qarc@wmciu.nhs.uk

SURVIVAL AUDIT: SCREENING OFFICE DATA FOR CASES DETECTED IN 1998/99

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)
Invasive Size (size in mm, U = unknown. Enter X if not invasive)
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,M,N,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 1998/99

Region:
Screening Unit:
Cancer Registry: **Data complete to : 31/03/2004 (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 the screen detected 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 E

DATA FROM THE 2003/04 AUDIT OF SCREEN DETECTED BREAST CANCERS IN WOMEN ALL AGES FOR THE PERIOD 1ST APRIL 2003 – 31ST MARCH 2004

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	1320	78	23	1	348	21	1	0	1692	100	219884	1.7	6.0
East Midlands	819	79	11	1	205	20	1	0	1036	100	129153	1.7	6.3
East of England	1163	78	11	1	319	21	1	0	1494	100	175062	1.9	6.6
London	852	75	18	2	260	23	7	1	1137	100	149784	1.9	5.7
South East (East)	819	76	17	2	235	22	2	0	1073	100	131923	1.9	6.2
South East (West)	734	80	3	0	175	19	3	0	915	100	118420	1.5	6.2
South West	958	77	24	2	269	22	0	0	1251	100	146119	2.0	6.6
West Midlands	901	82	9	1	190	17	1	0	1101	100	151219	1.3	6.0
North West	1209	80	25	2	283	19	3	0	1520	100	197262	1.6	6.1
Wales	568	77	5	1	169	23	0	0	742	100	82212	2.1	6.9
Northern Ireland	215	80	0	0	51	19	3	1	269	100	41748	1.2	5.1
Scotland	842	79	14	1	204	19	0	0	1060	100	142875	1.5	5.9
United Kingdom	**10400**	**78**	**160**	**1**	**2708**	**20**	**22**	**0**	**13290**	**100**	**1685661**	**1.7**	**6.2**

Table 2 : Age at first offered appointment

Region	<50		50-64		65-70		>70		Total
	No.	%	No.	%	No.	%	No.	%	
N East, Yorks & Humber	36	2	1255	74	322	19	79	5	1692
East Midlands	21	2	785	76	188	18	42	4	1036
East of England	7	0	1044	70	351	23	92	6	1494
London	20	2	909	80	160	14	48	4	1137
South East (East)	28	3	779	73	210	20	56	5	1073
South East (West)	19	2	710	78	122	13	64	7	915
South West	18	1	995	80	181	14	57	5	1251
West Midlands	29	3	820	74	211	19	41	4	1101
North West	37	2	1098	72	326	21	59	4	1520
Wales	17	2	564	76	113	15	48	6	742
Northern Ireland	0	0	255	95	9	3	5	2	269
Scotland	0	0	813	77	189	18	58	5	1060
United Kingdom	**232**	**2**	**10027**	**75**	**2382**	**18**	**649**	**5**	**13290**

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	1693	1	0.06
East Midlands	1036	0	0.00
East of England	1495	1	0.07
London	1140	3	0.26
South East (East)	1073	0	0.00
South East (West)	915	0	0.00
South West	1251	0	0.00
West Midlands	1101	0	0.00
North West	1520	0	0.00
Wales	742	0	0.00
Northern Ireland	269	0	0.00
Scotland	1060	0	0.00
United Kingdom	**13295**	**5**	**0.04**

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	1692	228	13	107	6	1241	73	1576	93
East Midlands	1036	46	4	16	2	915	88	977	94
East of England	1494	85	6	162	11	1148	77	1395	93
London	1137	52	5	66	6	934	82	1052	93
South East (East)	1073	139	13	61	6	793	74	993	93
South East (West)	915	53	6	36	4	769	84	858	94
South West	1251	78	6	28	2	1039	83	1145	92
West Midlands	1101	66	6	40	4	907	82	1013	92
North West	1520	217	14	33	2	1155	76	1405	92
Wales	742	4	1	5	1	685	92	694	94
Northern Ireland	269	83	31	58	22	111	41	252	94
Scotland	1060	48	5	355	33	575	54	978	92
United Kingdom	**13290**	**1099**	**8**	**967**	**7**	**10272**	**77**	**12338**	**93**

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	1320	216	16	82	6	976	74	1274	97
East Midlands	819	45	5	15	2	735	90	795	97
East of England	1163	76	7	140	12	911	78	1127	97
London	852	44	5	61	7	706	83	811	95
South East (East)	819	131	16	58	7	595	73	784	96
South East (West)	734	51	7	34	5	624	85	709	97
South West	958	76	8	27	3	810	85	913	95
West Midlands	901	61	7	34	4	763	85	858	95
North West	1209	208	17	31	3	914	76	1153	95
Wales	568	4	1	5	1	539	95	548	96
Northern Ireland	215	78	36	50	23	81	38	209	97
Scotland	842	42	5	318	38	447	53	807	96
United Kingdom	**10400**	**1032**	**10**	**855**	**8**	**8101**	**78**	**9988**	**96**

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	348	9	3	23	7	247	71	279	80
East Midlands	205	0	0	1	0	169	82	170	83
East of England	319	8	3	22	7	227	71	257	81
London	260	4	2	4	2	210	81	218	84
South East (East)	235	7	3	3	1	183	78	193	82
South East (West)	175	1	1	2	1	141	81	144	82
South West	269	1	0	0	0	210	78	211	78
West Midlands	190	4	2	5	3	137	72	146	77
North West	283	5	2	2	1	222	78	229	81
Wales	169	0	0	0	0	141	83	141	83
Northern Ireland	51	3	6	8	16	29	57	40	78
Scotland	204	5	2	31	15	121	59	157	77
United Kingdom	**2708**	**47**	**2**	**101**	**4**	**2037**	**75**	**2185**	**81**

Table 7 : Invasive status of the diagnostic core biopsy							
	Total	B5a (Non-invasive)		B5b (Invasive)		B5c (Not Assessable or Unknown)	
Region		No.	%	No.	%	No.	%
N East, Yorks & Humber	1348	352	26	946	70	50	4
East Midlands	931	225	24	706	76	0	0
East of England	1310	277	21	1010	77	23	2
London	1000	272	27	720	72	8	1
South East (East)	854	249	29	604	71	1	0
South East (West)	805	190	24	611	76	4	0
South West	1067	277	26	787	74	3	0
West Midlands	947	198	21	726	77	23	2
North West	1188	277	23	909	77	2	0
Wales	690	174	25	514	74	2	0
Northern Ireland	169	58	34	108	64	3	2
Scotland	930	199	21	716	77	15	2
United Kingdom	**11239**	**2748**	**24**	**8357**	**74**	**134**	**1**

Table 8 : B5a (Non-invasive) core biopsy: histological invasive status after surgery												
	Invasive		Micro-invasive		Non-invasive		No surgery		Unknown surgery		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	82	23	15	4	253	72	2	1	0	0	352	100
East Midlands	47	21	11	5	166	74	1	0	0	0	225	100
East of England	32	12	7	3	233	84	5	2	0	0	277	100
London	53	19	15	6	199	73	4	1	1	0	272	100
South East (East)	55	22	14	6	178	71	2	1	0	0	249	100
South East (West)	52	27	2	1	134	71	2	1	0	0	190	100
South West	53	19	19	7	201	73	4	1	0	0	277	100
West Midlands	53	27	7	4	135	68	3	2	0	0	198	100
North West	68	25	15	5	193	70	1	0	0	0	277	100
Wales	38	22	5	3	129	74	2	1	0	0	174	100
Northern Ireland	21	36	0	0	36	62	0	0	1	2	58	100
Scotland	41	21	12	6	144	72	2	1	0	0	199	100
United Kingdom	**595**	**22**	**122**	**4**	**2001**	**73**	**28**	**1**	**2**	**0**	**2748**	**100**

Table 9 : B5b (Invasive) core biopsy: histological invasive status after surgery												
	Invasive		Micro-invasive		Non-invasive		No surgery		Unknown surgery		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	914	97	3	0	5	1	24	3	0	0	946	100
East Midlands	693	98	0	0	3	0	10	1	0	0	706	100
East of England	978	97	2	0	7	1	23	2	0	0	1010	100
London	685	95	0	0	10	1	25	3	0	0	720	100
South East (East)	586	97	1	0	6	1	11	2	0	0	604	100
South East (West)	597	98	0	0	7	1	7	1	0	0	611	100
South West	775	98	1	0	4	1	7	1	0	0	787	100
West Midlands	715	98	0	0	1	0	10	1	0	0	726	100
North West	869	96	3	0	30	3	7	1	0	0	909	100
Wales	492	96	0	0	10	2	12	2	0	0	514	100
Northern Ireland	108	100	0	0	0	0	0	0	0	0	108	100
Scotland	705	98	1	0	1	0	9	1	0	0	716	100
United Kingdom	**8117**	**97**	**11**	**0**	**84**	**1**	**145**	**2**	**0**	**0**	**8357**	**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	228	216	95	3	1	9	4	0	0
East Midlands	46	45	98	0	0	0	0	1	2
East of England	85	76	89	0	0	8	9	1	1
London	52	44	85	2	4	4	8	2	4
South East (East)	139	131	94	0	0	7	5	1	1
South East (West)	53	51	96	0	0	1	2	1	2
South West	78	76	97	1	1	1	1	0	0
West Midlands	66	61	92	0	0	4	6	1	2
North West	217	208	96	1	0	5	2	3	1
Wales	4	4	100	0	0	0	0	0	0
Northern Ireland	83	78	94	0	0	3	4	2	2
Scotland	48	42	88	1	2	5	10	0	0
United Kingdom	**1099**	**1032**	**94**	**8**	**1**	**47**	**4**	**12**	**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	5	0	1525	90	150	9	12	1	0	0	1692	100	162	10
East Midlands	2	0	946	91	86	8	2	0	0	0	1036	100	88	8
East of England	1	0	1366	91	119	8	8	1	0	0	1494	100	127	9
London	8	1	1051	92	75	7	1	0	2	0	1137	100	76	7
South East (East)	2	0	796	74	267	25	8	1	0	0	1073	100	275	26
South East (West)	1	0	745	81	155	17	14	2	0	0	915	100	169	18
South West	10	1	1113	89	122	10	6	0	0	0	1251	100	128	10
West Midlands	2	0	970	88	124	11	5	0	0	0	1101	100	129	12
North West	5	0	1272	84	233	15	10	1	0	0	1520	100	243	16
Wales	0	0	669	90	69	9	4	1	0	0	742	100	73	10
Northern Ireland	1	0	260	97	8	3	0	0	0	0	269	100	8	3
Scotland	6	1	950	90	99	9	5	0	0	0	1060	100	104	10
United Kingdom	**43**	**0**	**11663**	**88**	**1507**	**11**	**75**	**1**	**2**	**0**	**13290**	**100**	**1582**	**12**

Table 12 : Average number of visits					
Region	Total	Mean	Min.	Median	Max.
N East, Yorks & Humber	1692	1.1	0	1	3
East Midlands	1036	1.1	0	1	3
East of England	1494	1.1	0	1	3
London	1137	1.1	0	1	3
South East (East)	1073	1.3	0	1	3
South East (West)	915	1.2	0	1	4
South West	1251	1.1	0	1	3
West Midlands	1101	1.1	0	1	3
North West	1520	1.2	0	1	3
Wales	742	1.1	1	1	4
Northern Ireland	269	1.0	0	1	2
Scotland	1060	1.1	0	1	3
United Kingdom	**13290**	**1.1**	**0**	**1**	**4**

Table 13 : All cancers versus C5 and/or B5 at first visit						
	1 C5/B5		Pre-operative diagnosis rate		All cancers	
Region	**No.**	**%**	**No.**	**%**	**No.**	**%**
N East, Yorks & Humber	1439	85	1576	93	1692	100
East Midlands	904	87	977	94	1036	100
East of England	1282	86	1395	93	1494	100
London	977	86	1052	93	1137	100
South East (East)	754	70	993	93	1073	100
South East (West)	707	77	858	94	915	100
South West	1031	82	1145	92	1251	100
West Midlands	906	82	1013	92	1101	100
North West	1198	79	1405	92	1520	100
Wales	636	86	694	94	742	100
Northern Ireland	244	91	252	94	269	100
Scotland	890	84	978	92	1060	100
United Kingdom	**10968**	**83**	**12338**	**93**	**13290**	**100**

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	236	67	116	33	352	100	219884	1.07	0.53
East Midlands	130	69	59	31	189	100	129153	1.01	0.46
East of England	209	68	99	32	308	100	175062	1.19	0.57
London	191	69	85	31	276	100	149784	1.28	0.57
South East (East)	136	63	80	37	216	100	131923	1.03	0.61
South East (West)	113	66	57	34	170	100	118420	0.95	0.48
South West	177	63	106	37	283	100	146119	1.21	0.73
West Midlands	148	63	88	37	236	100	151219	0.98	0.58
North West	222	66	115	34	337	100	197262	1.13	0.58
Wales	74	61	48	39	122	100	82212	0.90	0.58
Northern Ireland	45	73	17	27	62	100	41748	1.08	0.41
Scotland	144	64	82	36	226	100	142875	1.01	0.57
United Kingdom	**1825**	**66**	**952**	**34**	**2777**	**100**	**1685661**	**1.08**	**0.56**

Table 15 : Number of Clients in 2003/04 with C5 or B5 but benign histology				
	False positive C5 (CQA Report)		False positive B5 (BQA Report)	
Region	**No.**	**Per 100,000 screened**	**No.**	**per100,000 screened**
N East, Yorks & Humber	2	0.86	3	1.18
East Midlands	0	0.00	2	1.55
East of England	3	1.71	2	1.14
London	1	0.67	8	5.34
South East (East)	0	0.00	0	0.00
South East (West)	2	1.69	4	3.38
South West	1	0.68	8	5.47
West Midlands	2	1.32	0	0.00
North West	2	1.01	4	2.03
Wales	0	0.00	0	0.00
Northern Ireland	0	0.00	0	0.00
Scotland	6	4.20	0	0.00
United Kingdom	**19**	**1.12**	**31**	**1.82**

Table 16 : Invasive status of malignant diagnostic open biopsies									
Region	Total malignant open biopsies	Invasive		Micro-invasive		Non-invasive		Status unknown	
		No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	116	46	40	1	1	69	59	0	0
East Midlands	59	24	41	0	0	35	59	0	0
East of England	99	36	36	1	1	62	63	0	0
London	85	41	48	1	1	42	49	1	1
South East (East)	80	35	44	2	3	42	53	1	1
South East (West)	57	25	44	0	0	31	54	1	2
South West	106	45	42	3	3	58	55	0	0
West Midlands	88	43	49	1	1	44	50	0	0
North West	115	56	49	5	4	54	47	0	0
Wales	48	20	42	0	0	28	58	0	0
Northern Ireland	17	6	35	0	0	11	65	0	0
Scotland	82	35	43	0	0	47	57	0	0
United Kingdom	**952**	**412**	**43**	**14**	**1**	**523**	**55**	**3**	**0**

Table 17 : Pre-operative history for invasive cancers with malignant 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	46	5	11	4	9	28	61	9	20
East Midlands	24	1	4	2	8	20	83	1	4
East of England	36	1	3	5	14	20	56	10	28
London	41	6	15	6	15	28	68	1	2
South East (East)	35	1	3	4	11	22	63	8	23
South East (West)	25	0	0	2	8	19	76	4	16
South West	45	5	11	10	22	28	62	2	4
West Midlands	43	0	0	5	12	32	74	6	14
North West	56	3	5	11	20	33	59	9	16
Wales	20	0	0	3	15	17	85	0	0
Northern Ireland	6	1	17	0	0	3	50	2	33
Scotland	35	2	6	4	11	18	51	11	31
United Kingdom	**412**	**25**	**6**	**56**	**14**	**268**	**65**	**63**	**15**

Table 18 : Pre-operative history for non-invasive cancers with malignant 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	69	0	0	0	0	53	77	16	23
East Midlands	35	1	3	1	3	33	94	0	0
East of England	62	1	2	3	5	44	71	14	23
London	42	2	5	1	2	39	93	0	0
South East (East)	42	0	0	0	0	36	86	6	14
South East (West)	31	2	6	0	0	28	90	1	3
South West	58	5	9	0	0	50	86	3	5
West Midlands	44	2	5	0	0	37	84	5	11
North West	54	1	2	2	4	46	85	5	9
Wales	28	0	0	0	0	27	96	1	4
Northern Ireland	11	0	0	0	0	5	45	6	55
Scotland	47	4	9	0	0	33	70	10	21
United Kingdom	**523**	**18**	**3**	**7**	**1**	**431**	**82**	**67**	**13**

Table 19 : Highest cytology and core biopsy score prior to malignant diagnostic open biopsies (invasive cancers)											
	Total malignant open biopsies	No pre-operative procedures		C4, B4 or both		C3, B3 or both		C2, B2 or both		C1, B1 or both	
Region		No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	46	5	11	19	41	15	33	3	7	4	9
East Midlands	24	1	4	10	42	12	50	1	4	0	0
East of England	36	1	3	21	58	8	22	5	14	1	3
London	41	6	15	17	41	10	24	7	17	1	2
South East (East)	35	1	3	14	40	10	29	7	20	3	9
South East (West)	25	0	0	15	60	6	24	3	12	1	4
South West	45	5	11	16	36	10	22	4	9	10	22
West Midlands	43	0	0	16	37	9	21	7	16	11	26
North West	56	3	5	26	46	14	25	7	13	6	11
Wales	20	0	0	3	15	5	25	2	10	10	50
Northern Ireland	6	1	17	4	67	1	17	0	0	0	0
Scotland	35	2	6	12	34	6	17	11	31	4	11
United Kingdom	**412**	**25**	**6**	**173**	**42**	**106**	**26**	**57**	**14**	**51**	**12**

Table 20 : Highest cytology and core biopsy score prior to malignant diagnostic open biopsies (non-invasive)											
	Total malignant open biopsies	No pre-operative procedures		C4, B4 or both		C3, B3 or both		C2, B2 or both		C1, B1 or both	
Region		No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	69	0	0	30	43	30	43	3	4	6	9
East Midlands	35	1	3	13	37	15	43	2	6	4	11
East of England	62	1	2	33	53	18	29	4	6	6	10
London	42	2	5	11	26	23	55	3	7	3	7
South East (East)	42	0	0	11	26	28	67	2	5	1	2
South East (West)	31	2	6	17	55	3	10	5	16	4	13
South West	58	5	9	23	40	20	34	5	9	5	9
West Midlands	44	2	5	20	45	15	34	4	9	3	7
North West	54	1	2	16	30	23	43	6	11	8	15
Wales	28	0	0	12	43	7	25	4	14	5	18
Northern Ireland	11	0	0	4	36	4	36	3	27	0	0
Scotland	47	4	9	18	38	19	40	4	9	2	4
United Kingdom	**523**	**18**	**3**	**208**	**40**	**205**	**39**	**45**	**9**	**47**	**9**

Table 21 : Treatment for non-invasive and micro-invasive breast cancers												
	Conservation surgery		Mastectomy		No surgery		Axillary		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	230	62	139	37	2	1	0	0	0	0	371	100
East Midlands	139	64	76	35	1	0	0	0	0	0	216	100
East of England	235	71	90	27	5	2	0	0	0	0	330	100
London	202	73	68	24	4	1	0	0	4	1	278	100
South East (East)	180	71	70	28	2	1	0	0	0	0	252	100
South East (West)	128	72	48	27	2	1	0	0	0	0	178	100
South West	219	75	70	24	4	1	0	0	0	0	293	100
West Midlands	127	64	69	35	3	2	0	0	0	0	199	100
North West	220	71	87	28	1	0	0	0	0	0	308	100
Wales	105	60	67	39	2	1	0	0	0	0	174	100
Northern Ireland	40	78	11	22	0	0	0	0	0	0	51	100
Scotland	143	66	72	33	2	1	1	0	0	0	218	100
United Kingdom	**1968**	**69**	**867**	**30**	**28**	**1**	**1**	**0**	**4**	**0**	**2868**	**100**

Table 22 : Nuclear grade of non-invasive cancers										
	High		Other		Not assessable		Unknown		Total non-invasive	
Region	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	174	50	167	48	1	0	6	2	348	100
East Midlands	117	57	82	40	4	2	2	1	205	100
East of England	143	45	162	51	3	1	11	3	319	100
London	114	44	104	40	6	2	36	14	260	100
South East (East)	130	55	95	40	0	0	10	4	235	100
South East (West)	113	65	56	32	3	2	3	2	175	100
South West	151	56	107	40	7	3	4	1	269	100
West Midlands	114	60	69	36	1	1	6	3	190	100
North West	143	51	133	47	2	1	5	2	283	100
Wales	84	50	80	47	0	0	5	3	169	100
Northern Ireland	34	67	15	29	2	4	0	0	51	100
Scotland	123	60	69	34	3	1	9	4	204	100
United Kingdom	**1440**	**53**	**1139**	**42**	**32**	**1**	**97**	**4**	**2708**	**100**

Table 23 : Size of non-invasive cancers												
	<15mm		15-<30mm		30+ mm		Size not assessable		Size unknown		Total non-invasive	
Region	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	135	39	89	26	82	24	0	0	42	12	348	100
East Midlands	89	43	56	27	49	24	4	2	7	3	205	100
East of England	127	40	77	24	41	13	29	9	45	14	319	100
London	88	34	42	16	32	12	7	3	91	35	260	100
South East (East)	103	44	68	29	40	17	0	0	24	10	235	100
South East (West)	76	43	48	27	36	21	8	5	7	4	175	100
South West	123	46	89	33	33	12	12	4	12	4	269	100
West Midlands	83	44	54	28	35	18	4	2	14	7	190	100
North West	110	39	72	25	44	16	3	1	54	19	283	100
Wales	68	40	47	28	33	20	3	2	18	11	169	100
Northern Ireland	18	35	14	27	10	20	2	4	7	14	51	100
Scotland	82	40	66	32	51	25	0	0	5	2	204	100
United Kingdom	**1102**	**41**	**722**	**27**	**486**	**18**	**72**	**3**	**326**	**12**	**2708**	**100**

Table 24: Data completeness for non-invasive cancers							
	Unknown nuclear grade		Unknown size		Unknown grade or size		Total
Region	No.	%	No.	%	No.	%	No.
N East, Yorks & Humber	6	2	42	12	45	13	348
East Midlands	2	1	7	3	7	3	205
East of England	11	3	45	14	46	14	319
London	36	14	91	35	93	36	260
South East (East)	10	4	24	10	28	12	235
South East (West)	3	2	7	4	8	5	175
South West	4	1	12	4	12	4	269
West Midlands	6	3	14	7	15	8	190
North West	5	2	54	19	54	19	283
Wales	5	3	18	11	19	11	169
Northern Ireland	0	0	7	14	7	14	51
Scotland	9	4	5	2	11	5	204
United Kingdom	**97**	**4**	**326**	**12**	**345**	**13**	**2708**

Table 25 : Treatment of non-invasive cases with high grade and unknown size								
	Conservation surgery		Mastectomy		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	6	38	10	63	0	0	16	100
East Midlands	0	0	3	100	0	0	3	100
East of England	10	53	9	47	0	0	19	100
London	16	62	10	38	0	0	26	100
South East (East)	9	75	3	25	0	0	12	100
South East (West)	2	50	2	50	0	0	4	100
South West	0	0	4	100	0	0	4	100
West Midlands	3	100	0	0	0	0	3	100
North West	8	38	13	62	0	0	21	100
Wales	3	75	1	25	0	0	4	100
Northern Ireland	4	100	0	0	0	0	4	100
Scotland	0	0	1	100	0	0	1	100
United Kingdom	**61**	**52**	**56**	**48**	**0**	**0**	**117**	**100**

Table 26 : 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	33	0	0	2	67	0	0	3	100
East Midlands	1	50	0	0	1	50	0	0	2	100
East of England	3	30	2	20	5	50	0	0	10	100
London	23	68	3	9	4	12	4	12	34	100
South East (East)	4	67	0	0	2	33	0	0	6	100
South East (West)	0	0	0	0	2	100	0	0	2	100
South West	0	0	0	0	4	100	0	0	4	100
West Midlands	1	20	1	20	3	60	0	0	5	100
North West	4	80	0	0	1	20	0	0	5	100
Wales	2	50	0	0	2	50	0	0	4	100
Northern Ireland	0	-	0	-	0	-	0	-	0	-
Scotland	1	33	0	0	2	67	0	0	3	100
United Kingdom	**40**	**51**	**6**	**8**	**28**	**36**	**4**	**5**	**78**	**100**

Table 27 : Treatment of high grade non-invasive cancers (30+mm)								
	Conservation surgery		Mastectomy		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	11	23	37	77	0	0	48	100
East Midlands	9	26	25	74	0	0	34	100
East of England	6	24	19	76	0	0	25	100
London	5	23	17	77	0	0	22	100
South East (East)	9	36	16	64	0	0	25	100
South East (West)	7	25	21	75	0	0	28	100
South West	11	46	13	54	0	0	24	100
West Midlands	7	26	20	74	0	0	27	100
North West	12	39	19	61	0	0	31	100
Wales	7	29	17	71	0	0	24	100
Northern Ireland	1	14	6	86	0	0	7	100
Scotland	9	21	33	79	0	0	42	100
United Kingdom	**94**	**28**	**243**	**72**	**0**	**0**	**337**	**100**

Table 28 : Treatment for invasive breast cancers												
	Conservation surgery		Mastectomy		Axillary		No Surgery		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	881	67	415	31	0	0	24	2	0	0	1320	100
East Midlands	561	68	247	30	0	0	11	1	0	0	819	100
East of England	847	73	293	25	0	0	23	2	0	0	1163	100
London	644	76	179	21	0	0	25	3	4	0	852	100
South East (East)	639	78	169	21	0	0	11	1	0	0	819	100
South East (West)	563	77	164	22	0	0	7	1	0	0	734	100
South West	737	77	214	22	0	0	7	1	0	0	958	100
West Midlands	632	70	259	29	0	0	10	1	0	0	901	100
North West	880	73	321	27	0	0	8	1	0	0	1209	100
Wales	340	60	215	38	0	0	12	2	1	0	568	100
Northern Ireland	165	77	50	23	0	0	0	0	0	0	215	100
Scotland	568	67	242	29	12	1	9	1	11	1	842	100
United Kingdom	**7457**	**72**	**2768**	**27**	**12**	**0**	**147**	**1**	**16**	**0**	**10400**	**100**

Table 29 : Invasive 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	316	24	372	28	254	19	319	24	28	2	31	2	1320	100
East Midlands	225	27	252	31	158	19	165	20	6	1	13	2	819	100
East of England	290	25	326	28	241	21	253	22	18	2	35	3	1163	100
London	211	25	209	25	153	18	217	25	16	2	46	5	852	100
South East (East)	196	24	255	31	174	21	170	21	7	1	17	2	819	100
South East (West)	186	25	185	25	154	21	177	24	19	3	13	2	734	100
South West	237	25	265	28	206	22	217	23	23	2	10	1	958	100
West Midlands	218	24	284	32	185	21	185	21	17	2	12	1	901	100
North West	296	24	339	28	251	21	276	23	25	2	22	2	1209	100
Wales	146	26	163	29	114	20	118	21	11	2	16	3	568	100
Northern Ireland	48	22	47	22	50	23	58	27	7	3	5	2	215	100
Scotland	181	21	242	29	175	21	206	24	11	1	27	3	842	100
United Kingdom	**2550**	**25**	**2939**	**28**	**2115**	**20**	**2361**	**23**	**188**	**2**	**247**	**2**	**10400**	**100**

Table 30 : Treatment for invasive breast cancers (invasive size <10mm)										
	Conservation surgery		Mastectomy		Axillary		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	246	78	70	22	0	0	0	0	316	100
East Midlands	187	83	38	17	0	0	0	0	225	100
East of England	237	82	53	18	0	0	0	0	290	100
London	184	87	27	13	0	0	0	0	211	100
South East (East)	173	88	23	12	0	0	0	0	196	100
South East (West)	159	85	27	15	0	0	0	0	186	100
South West	194	82	43	18	0	0	0	0	237	100
West Midlands	170	78	48	22	0	0	0	0	218	100
North West	236	80	60	20	0	0	0	0	296	100
Wales	110	75	36	25	0	0	0	0	146	100
Northern Ireland	36	75	12	25	0	0	0	0	48	100
Scotland	147	81	31	17	2	1	1	1	181	100
United Kingdom	**2079**	**82**	**468**	**18**	**2**	**0**	**1**	**0**	**2550**	**100**

Table 31 : Treatment for invasive breast cancers (invasive size 10-<15mm)										
	Conservation surgery		Mastectomy		Axillary		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	286	77	86	23	0	0	0	0	372	100
East Midlands	194	77	58	23	0	0	0	0	252	100
East of England	269	83	57	17	0	0	0	0	326	100
London	180	86	29	14	0	0	0	0	209	100
South East (East)	220	86	35	14	0	0	0	0	255	100
South East (West)	163	88	22	12	0	0	0	0	185	100
South West	236	89	29	11	0	0	0	0	265	100
West Midlands	228	80	56	20	0	0	0	0	284	100
North West	272	80	67	20	0	0	0	0	339	100
Wales	112	69	51	31	0	0	0	0	163	100
Northern Ireland	42	89	5	11	0	0	0	0	47	100
Scotland	194	80	43	18	3	1	2	1	242	100
United Kingdom	**2396**	**82**	**538**	**18**	**3**	**0**	**2**	**0**	**2939**	**100**

Table 32 : Treatment for invasive breast cancers (invasive size <15mm)										
	Conservation surgery		Mastectomy		Axillary		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	532	77	156	23	0	0	0	0	688	100
East Midlands	381	80	96	20	0	0	0	0	477	100
East of England	506	82	110	18	0	0	0	0	616	100
London	364	87	56	13	0	0	0	0	420	100
South East (East)	393	87	58	13	0	0	0	0	451	100
South East (West)	322	87	49	13	0	0	0	0	371	100
South West	430	86	72	14	0	0	0	0	502	100
West Midlands	398	79	104	21	0	0	0	0	502	100
North West	508	80	127	20	0	0	0	0	635	100
Wales	222	72	87	28	0	0	0	0	309	100
Northern Ireland	78	82	17	18	0	0	0	0	95	100
Scotland	341	81	74	17	5	1	3	1	423	100
United Kingdom	**4475**	**82**	**1006**	**18**	**5**	**0**	**3**	**0**	**5489**	**100**

Table 33 : Treatment for invasive breast cancers (invasive size 15-<20mm)										
	Conservation surgery		Mastectomy		Axillary		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	182	72	72	28	0	0	0	0	254	100
East Midlands	105	66	53	34	0	0	0	0	158	100
East of England	177	73	64	27	0	0	0	0	241	100
London	125	82	28	18	0	0	0	0	153	100
South East (East)	137	79	37	21	0	0	0	0	174	100
South East (West)	117	76	37	24	0	0	0	0	154	100
South West	162	79	44	21	0	0	0	0	206	100
West Midlands	137	74	48	26	0	0	0	0	185	100
North West	194	77	57	23	0	0	0	0	251	100
Wales	72	63	42	37	0	0	0	0	114	100
Northern Ireland	39	78	11	22	0	0	0	0	50	100
Scotland	124	71	47	27	1	1	3	2	175	100
United Kingdom	**1571**	**74**	**540**	**26**	**1**	**0**	**3**	**0**	**2115**	**100**

Table 34 : Treatment for invasive breast cancers (invasive size 20-<50mm)										
	Conservation surgery		Mastectomy		Axillary		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	157	49	162	51	0	0	0	0	319	100
East Midlands	73	44	92	56	0	0	0	0	165	100
East of England	149	59	104	41	0	0	0	0	253	100
London	137	63	80	37	0	0	0	0	217	100
South East (East)	101	59	69	41	0	0	0	0	170	100
South East (West)	117	66	60	34	0	0	0	0	177	100
South West	137	63	80	37	0	0	0	0	217	100
West Midlands	92	50	93	50	0	0	0	0	185	100
North West	165	60	111	40	0	0	0	0	276	100
Wales	44	37	74	63	0	0	0	0	118	100
Northern Ireland	45	78	13	22	0	0	0	0	58	100
Scotland	98	48	104	50	2	1	2	1	206	100
United Kingdom	**1315**	**56**	**1042**	**44**	**2**	**0**	**2**	**0**	**2361**	**100**

Table 35 : Treatment for invasive breast cancers (invasive size 50+mm)										
	Conservation surgery		Mastectomy		Axillary		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	4	14	24	86	0	0	0	0	28	100
East Midlands	0	0	6	100	0	0	0	0	6	100
East of England	4	22	14	78	0	0	0	0	18	100
London	6	38	10	63	0	0	0	0	16	100
South East (East)	2	29	5	71	0	0	0	0	7	100
South East (West)	4	21	15	79	0	0	0	0	19	100
South West	5	22	18	78	0	0	0	0	23	100
West Midlands	3	18	14	82	0	0	0	0	17	100
North West	5	20	20	80	0	0	0	0	25	100
Wales	1	9	10	91	0	0	0	0	11	100
Northern Ireland	0	0	7	100	0	0	0	0	7	100
Scotland	0	0	10	91	0	0	1	9	11	100
United Kingdom	**34**	**18**	**153**	**81**	**0**	**0**	**1**	**1**	**188**	**100**

Table 36 : 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	316	24	372	28	254	19	319	24	28	2	31	2	1320	100
East Midlands	225	27	252	31	158	19	165	20	6	1	13	2	819	100
East of England	290	25	326	28	241	21	253	22	18	2	35	3	1163	100
London	211	25	209	25	153	18	217	25	16	2	46	5	852	100
South East (East)	196	24	255	31	174	21	170	21	7	1	17	2	819	100
South East (West)	186	25	185	25	154	21	177	24	19	3	13	2	734	100
South West	237	25	265	28	206	22	217	23	23	2	10	1	958	100
West Midlands	218	24	284	32	185	21	185	21	17	2	12	1	901	100
North West	296	24	339	28	251	21	276	23	25	2	22	2	1209	100
Wales	146	26	163	29	114	20	118	21	11	2	16	3	568	100
Northern Ireland	48	22	47	22	50	23	58	27	7	3	5	2	215	100
Scotland	181	21	242	29	175	21	206	24	11	1	27	3	842	100
United Kingdom	**2550**	**25**	**2939**	**28**	**2115**	**20**	**2361**	**23**	**188**	**2**	**247**	**2**	**10400**	**100**

Table 37 : Whole size of invasive cancers with invasive size <15mm												
	Whole size <15mm		Whole size 15-19mm		Whole size 20-49mm		Whole size 50+mm		Whole size unknown		Total	
Region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
N East, Yorks & Humber	453	66	49	7	75	11	19	3	92	13	688	100
East Midlands	356	75	62	13	46	10	13	3	0	0	477	100
East of England	485	79	49	8	53	9	6	1	23	4	616	100
London	311	74	29	7	39	9	11	3	30	7	420	100
South East (East)	382	85	30	7	37	8	2	0	0	0	451	100
South East (West)	211	57	35	9	42	11	6	2	77	21	371	100
South West	383	76	41	8	66	13	7	1	5	1	502	100
West Midlands	394	78	37	7	61	12	9	2	1	0	502	100
North West	445	70	39	6	43	7	3	0	105	17	635	100
Wales	232	75	22	7	25	8	11	4	19	6	309	100
Northern Ireland	57	60	14	15	5	5	5	5	14	15	95	100
Scotland	332	78	41	10	38	9	11	3	1	0	423	100
United Kingdom	**4041**	**74**	**448**	**8**	**530**	**10**	**103**	**2**	**367**	**7**	**5489**	**100**

Table 38 : Treatment for invasive breast cancers <15mm with whole size <15mm										
	Conservation surgery		Mastectomy		Axillary		Unknown		Total	
Region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
N East, Yorks & Humber	375	83	78	17	0	0	0	0	453	100
East Midlands	315	88	41	12	0	0	0	0	356	100
East of England	418	86	67	14	0	0	0	0	485	100
London	288	93	23	7	0	0	0	0	311	100
South East (East)	345	90	37	10	0	0	0	0	382	100
South East (West)	195	92	16	8	0	0	0	0	211	100
South West	342	89	41	11	0	0	0	0	383	100
West Midlands	339	86	55	14	0	0	0	0	394	100
North West	362	81	83	19	0	0	0	0	445	100
Wales	180	78	52	22	0	0	0	0	232	100
Northern Ireland	51	89	6	11	0	0	0	0	57	100
Scotland	279	84	45	14	5	2	3	1	332	100
United Kingdom	**3489**	**86**	**544**	**13**	**5**	**0**	**3**	**0**	**4041**	**100**

Table 39 : Treatment for invasive breast cancers <15mm with whole size <15mm or whole size unknown										
	Conservation surgery		Mastectomy		Axillary		Unknown		Total	
Region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
N East, Yorks & Humber	449	82	96	18	0	0	0	0	545	100
East Midlands	315	88	41	12	0	0	0	0	356	100
East of England	438	86	70	14	0	0	0	0	508	100
London	313	92	28	8	0	0	0	0	341	100
South East (East)	345	90	37	10	0	0	0	0	382	100
South East (West)	262	91	26	9	0	0	0	0	288	100
South West	347	89	41	11	0	0	0	0	388	100
West Midlands	339	86	56	14	0	0	0	0	395	100
North West	449	82	101	18	0	0	0	0	550	100
Wales	193	77	58	23	0	0	0	0	251	100
Northern Ireland	64	90	7	10	0	0	0	0	71	100
Scotland	280	84	45	14	5	2	3	1	333	100
United Kingdom	**3794**	**86**	**606**	**14**	**5**	**0**	**3**	**0**	**4408**	**100**

Table 40 : Treatment for invasive breast cancers <15mm with whole size 15-<20mm										
	Conservation surgery		Mastectomy		Axillary		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	37	76	12	24	0	0	0	0	49	100
East Midlands	42	68	20	32	0	0	0	0	62	100
East of England	41	84	8	16	0	0	0	0	49	100
London	24	83	5	17	0	0	0	0	29	100
South East (East)	25	83	5	17	0	0	0	0	30	100
South East (West)	31	89	4	11	0	0	0	0	35	100
South West	36	88	5	12	0	0	0	0	41	100
West Midlands	28	76	9	24	0	0	0	0	37	100
North West	33	85	6	15	0	0	0	0	39	100
Wales	17	77	5	23	0	0	0	0	22	100
Northern Ireland	11	79	3	21	0	0	0	0	14	100
Scotland	35	85	6	15	0	0	0	0	41	100
United Kingdom	**360**	**80**	**88**	**20**	**0**	**0**	**0**	**0**	**448**	**100**

Table 41 : Treatment for invasive breast cancers <15mm with whole size 20-49mm										
	Conservation surgery		Mastectomy		Axillary		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	45	60	30	40	0	0	0	0	75	100
East Midlands	22	48	24	52	0	0	0	0	46	100
East of England	27	51	26	49	0	0	0	0	53	100
London	23	59	16	41	0	0	0	0	39	100
South East (East)	23	62	14	38	0	0	0	0	37	100
South East (West)	29	69	13	31	0	0	0	0	42	100
South West	47	71	19	29	0	0	0	0	66	100
West Midlands	28	46	33	54	0	0	0	0	61	100
North West	25	58	18	42	0	0	0	0	43	100
Wales	11	44	14	56	0	0	0	0	25	100
Northern Ireland	2	40	3	60	0	0	0	0	5	100
Scotland	24	63	14	37	0	0	0	0	38	100
United Kingdom	**306**	**58**	**224**	**42**	**0**	**0**	**0**	**0**	**530**	**100**

Table 42 : Treatment for invasive breast cancers <15mm with whole size 50+mm										
	Conservation surgery		Mastectomy		Axillary		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	1	5	18	95	0	0	0	0	19	100
East Midlands	2	15	11	85	0	0	0	0	13	100
East of England	0	0	6	100	0	0	0	0	6	100
London	4	36	7	64	0	0	0	0	11	100
South East (East)	0	0	2	100	0	0	0	0	2	100
South East (West)	0	0	6	100	0	0	0	0	6	100
South West	0	0	7	100	0	0	0	0	7	100
West Midlands	3	33	6	67	0	0	0	0	9	100
North West	1	33	2	67	0	0	0	0	3	100
Wales	1	9	10	91	0	0	0	0	11	100
Northern Ireland	1	20	4	80	0	0	0	0	5	100
Scotland	2	18	9	82	0	0	0	0	11	100
United Kingdom	**15**	**15**	**88**	**85**	**0**	**0**	**0**	**0**	**103**	**100**

Table 43 : Immediate reconstruction with mastectomy (all cancers)								
	Immediate reconstruction		No immediate reconstruction		Unknown		Total mastectomies	
Region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
N East, Yorks & Humber	60	11	282	51	212	38	554	100
East Midlands	29	9	249	77	45	14	323	100
East of England	30	8	199	52	154	40	383	100
London	31	13	161	65	56	23	248	100
South East (East)	55	23	87	36	97	41	239	100
South East (West)	34	16	127	60	51	24	212	100
South West	48	17	236	83	0	0	284	100
West Midlands	31	9	295	90	2	1	328	100
North West	16	4	154	38	238	58	408	100
Wales	29	10	253	90	0	0	282	100
Northern Ireland	6	10	55	90	0	0	61	100
Scotland	42	13	270	86	2	1	314	100
United Kingdom	**411**	**11**	**2368**	**65**	**857**	**24**	**3636**	**100**

Table 44 : Invasive status of immediate reconstruction with mastectomy								
	Invasive		Micro-invasive		Non-invasive		Total	
Region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
N East, Yorks & Humber	31	52	5	8	24	40	60	100
East Midlands	17	59	1	3	11	38	29	100
East of England	16	53	0	0	14	47	30	100
London	17	55	2	6	12	39	31	100
South East (East)	31	56	2	4	22	40	55	100
South East (West)	20	59	1	3	13	38	34	100
South West	28	58	4	8	16	33	48	100
West Midlands	16	52	0	0	15	48	31	100
North West	9	56	2	13	5	31	16	100
Wales	14	48	1	3	14	48	29	100
Northern Ireland	3	50	0	0	3	50	6	100
Scotland	29	69	0	0	13	31	42	100
United Kingdom	**231**	**56**	**18**	**4**	**162**	**39**	**411**	**100**

Table 45: Availability of lymph node status for invasive cancers												
	Total invasive cancers	Nodal status known		Nodes obtained but status unknown		No nodes obtained		No nodes obtained (No surgery)		Unknown if nodes obtained	
Region		**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
N East, Yorks & Humber	1320	1268	96	0	0	23	2	24	2	5	0
East Midlands	819	793	97	0	0	15	2	11	1	0	0
East of England	1163	1081	93	0	0	51	4	23	2	8	1
London	852	788	92	0	0	31	4	25	3	8	1
South East (East)	819	760	93	0	0	48	6	11	1	0	0
South East (West)	734	702	96	0	0	25	3	7	1	0	0
South West	958	939	98	0	0	12	1	7	1	0	0
West Midlands	901	869	96	0	0	22	2	10	1	0	0
North West	1209	1040	86	91	8	41	3	8	1	29	2
Wales	568	551	97	0	0	4	1	12	2	1	0
Northern Ireland	215	204	95	0	0	5	2	0	0	6	3
Scotland	842	816	97	0	0	17	2	9	1	0	0
United Kingdom	**10400**	**9811**	**94**	**91**	**1**	**294**	**3**	**147**	**1**	**57**	**0.5**

Table 46 : Nodal status of invasive cancers with known status					
Region	Total known nodal status	Positive		Negative	
		No.	%	No.	%
N East, Yorks & Humber	1268	301	24	967	76
East Midlands	793	182	23	611	77
East of England	1081	235	22	846	78
London	788	205	26	583	74
South East (East)	760	175	23	585	77
South East (West)	702	161	23	541	77
South West	939	220	23	719	77
West Midlands	869	235	27	634	73
North West	1040	266	26	774	74
Wales	551	136	25	415	75
Northern Ireland	204	45	22	159	78
Scotland	816	213	26	603	74
United Kingdom	**9811**	**2374**	**24**	**7437**	**76**

Table 47 : Average number of nodes obtained - invasive cancers			
Region	Total with known nodal status	Mean number of nodes examined	Median number of nodes examined
N East, Yorks & Humber	1268	11	9
East Midlands	793	8	7
East of England	1081	11	10
London	788	12	11
South East (East)	760	11	10
South East (West)	702	11	10
South West	939	11	10
West Midlands	869	10	9
North West	1040	11	10
Wales	551	11	9
Northern Ireland	204	17	17
Scotland	816	11	10
United Kingdom	**9811**	**11**	**10**

Table 48 : Status of cases with <4 nodes obtained													
Region	Total with nodal status known	Nodal status determined on basis of <4 nodes		Positive				Negative				Unknown status	
				Sentinel node procedure		Other		Sentinel node procedure		Other			
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	1268	47	3.7	1	0.1	6	0.5	1	0.1	39	3.1	0	0.0
East Midlands	793	42	5.3	0	0.0	5	0.6	2	0.3	35	4.4	0	0.0
East of England	1081	62	5.7	0	0.0	4	0.4	22	2.0	36	3.3	0	0.0
London	788	74	9.4	1	0.1	10	1.3	11	1.4	52	6.6	0	0.0
South East (East)	760	47	6.2	4	0.5	0	0.0	19	2.5	24	3.2	0	0.0
South East (West)	702	24	3.4	1	0.1	1	0.1	3	0.4	19	2.7	0	0.0
South West	939	53	5.6	3	0.3	3	0.3	18	1.9	29	3.1	0	0.0
West Midlands	869	27	3.1	0	0.0	3	0.3	4	0.5	20	2.3	0	0.0
North West	1040	58	5.6	0	0.0	9	0.9	3	0.3	42	4.0	4	0.4
Wales	551	16	2.9	0	0.0	0	0.0	0	0.0	16	2.9	0	0.0
Northern Ireland	204	3	1.5	0	0.0	0	0.0	0	0.0	3	1.5	0	0.0
Scotland	816	18	2.2	1	0.1	3	0.4	4	0.5	10	1.2	0	0.0
United Kingdom	**9811**	**471**	**4.8**	**11**	**0.1**	**44**	**0.4**	**87**	**0.9**	**325**	**3.3**	**4**	**0.0**

Table 49 : 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		No nodes obtained (No surgery)		Unknown if nodes obtained	
		No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	348	111	32	0	0	235	68	2	1	0	0
East Midlands	205	66	32	0	0	138	67	1	0	0	0
East of England	319	62	19	0	0	228	71	5	2	24	8
London	260	62	24	0	0	189	73	4	2	5	2
South East (East)	235	53	23	0	0	180	77	2	1	0	0
South East (West)	175	41	23	0	0	132	75	2	1	0	0
South West	269	41	15	0	0	224	83	4	1	0	0
West Midlands	190	57	30	0	0	130	68	3	2	0	0
North West	283	77	27	18	6	151	53	1	0	36	13
Wales	169	73	43	0	0	94	56	2	1	0	0
Northern Ireland	51	8	16	0	0	43	84	0	0	0	0
Scotland	204	70	34	0	0	131	64	2	1	1	0
United Kingdom	**2708**	**721**	**27**	**18**	**1**	**1875**	**69**	**28**	**1**	**66**	**2**

Table 50 : Nodal status of nodes with status known for non-invasive cancers					
Region	Total known nodal status	Positive		Negative	
		No.	%	No.	%
N East, Yorks & Humber	111	0	0	111	100
East Midlands	66	0	0	66	100
East of England	62	2	3	60	97
London	62	1	2	61	98
South East (East)	53	1	2	52	98
South East (West)	41	3	7	38	93
South West	41	0	0	41	100
West Midlands	57	1	2	56	98
North West	77	5	6	72	94
Wales	73	0	0	73	100
Northern Ireland	8	0	0	8	100
Scotland	70	1	1	69	99
United Kingdom	**721**	**14**	**2**	**707**	**98**

Table 51 : Average number of nodes obtained - non-invasive cancers			
Region	Total with known nodal status	Mean number of nodes examined	Median number of nodes examined
N East, Yorks & Humber	111	7	6
East Midlands	66	6	5
East of England	62	7	6
London	62	5	4
South East (East)	53	6	5
South East (West)	41	8	7
South West	41	6	4
West Midlands	57	7	6
North West	77	6	5
Wales	73	6	5
Northern Ireland	8	10	6.5
Scotland	70	5	4
United Kingdom	**721**	**6**	**5**

Table 52 : Treatment for non-invasive cancers with known nodal status							
Region	Total	Conservation		Mastectomy		Axillary	
		No.	%	No.	%	No.	%
N East, Yorks & Humber	111	18	16	93	84	0	0
East Midlands	66	8	12	58	88	0	0
East of England	62	23	37	39	63	0	0
London	62	16	26	46	74	0	0
South East (East)	53	12	23	41	77	0	0
South East (West)	41	7	17	34	83	0	0
South West	41	8	20	33	80	0	0
West Midlands	57	12	21	45	79	0	0
North West	77	31	40	46	60	0	0
Wales	73	19	26	54	74	0	0
Northern Ireland	8	1	13	7	88	0	0
Scotland	70	7	10	62	89	1	1
United Kingdom	**721**	**162**	**22**	**558**	**77**	**1**	**0**

Table 53 : Pre-operative history for non-invasive cancers with known nodal status treated by conservation											
Region	Total	B5A		B5B		B5C		C5 only		No C5/B5	
		No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	18	10	56	4	22	3	17	0	0	1	6
East Midlands	8	7	88	1	13	0	0	0	0	0	0
East of England	23	14	61	2	9	0	0	4	17	3	13
London	16	13	81	4	25	0	0	0	0	0	0
South East (East)	12	8	67	0	0	0	0	3	25	1	8
South East (West)	7	6	86	1	14	0	0	0	0	0	0
South West	8	4	50	3	38	0	0	0	0	1	13
West Midlands	12	8	67	0	0	0	0	2	17	2	17
North West	31	20	65	6	19	0	0	3	10	2	6
Wales	19	11	58	7	37	0	0	0	0	1	5
Northern Ireland	1	0	0	0	0	0	0	1	100	0	0
Scotland	7	4	57	1	14	2	29	0	0	0	0
United Kingdom	**162**	**105**	**65**	**29**	**18**	**5**	**3**	**13**	**8**	**11**	**7**

Table 54 : Treatment for non-invasive cancers with no nodes obtained							
Region	Total	Conservation surgery		Mastectomy		No surgery	
		No.	%	No.	%	No.	%
N East, Yorks & Humber	237	198	84	37	16	2	1
East Midlands	139	126	91	12	9	1	1
East of England	233	183	79	45	19	5	2
London	193	173	90	16	8	4	2
South East (East)	182	162	89	18	10	2	1
South East (West)	134	119	89	13	10	2	1
South West	228	197	86	27	12	4	2
West Midlands	133	112	84	18	14	3	2
North West	152	136	89	15	10	1	1
Wales	96	82	85	12	13	2	2
Northern Ireland	43	39	91	4	9	0	0
Scotland	133	127	95	4	3	2	0
United Kingdom	**1903**	**1654**	**87**	**221**	**12**	**28**	**1**

Table 55 : 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	471	36	592	45	225	17	6	0	26	2	1320	100
East Midlands	254	31	413	50	140	17	0	0	12	1	819	100
East of England	306	26	593	51	222	19	12	1	30	3	1163	100
London	256	30	379	44	163	19	14	2	40	5	852	100
South East (East)	273	33	379	46	143	17	10	1	14	2	819	100
South East (West)	254	35	341	46	118	16	11	1	10	1	734	100
South West	307	32	469	49	168	18	6	1	8	1	958	100
West Midlands	287	32	428	48	172	19	4	0	10	1	901	100
North West	411	34	554	46	214	18	8	1	22	2	1209	100
Wales	196	35	280	49	82	14	0	0	10	2	568	100
Northern Ireland	45	21	127	59	36	17	1	0	6	3	215	100
Scotland	199	24	417	50	199	24	9	1	18	2	842	100
United Kingdom	**3259**	**31**	**4972**	**48**	**1882**	**18**	**81**	**1**	**206**	**2**	**10400**	**100**

Table 56 : Data completeness for invasive cancers									
	Unknown invasive size		Unknown nodal status		Unknown grade		Unknown NPI		Total invasive
Region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	
N East, Yorks & Humber	31	2	28	2	26	2	62	5	1320
East Midlands	13	2	15	2	12	1	28	3	819
East of England	35	3	59	5	30	3	105	9	1163
London	46	5	39	5	40	5	92	11	852
South East (East)	17	2	48	6	14	2	70	9	819
South East (West)	13	2	25	3	10	1	44	6	734
South West	10	1	12	1	8	1	25	3	958
West Midlands	12	1	22	2	10	1	37	4	901
North West	22	2	161	13	22	2	193	16	1209
Wales	16	3	5	1	10	2	28	5	568
Northern Ireland	5	2	11	5	6	3	13	6	215
Scotland	27	3	17	2	18	2	43	5	842
United Kingdom	**247**	**2**	442	**4**	**206**	**2**	**740**	**7**	**10400**

Table 57 : NPI Group of invasive cancers												
	EPG		GPG		MPG1		MPG2		PPG		Total	
Region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
N East, Yorks & Humber	364	29	428	34	269	21	137	11	60	5	1258	100
East Midlands	199	25	319	40	155	20	74	9	44	6	791	100
East of England	230	22	406	38	263	25	107	10	52	5	1058	100
London	187	25	256	34	176	23	89	12	52	7	760	100
South East (East)	206	28	259	35	162	22	87	12	35	5	749	100
South East (West)	189	27	233	34	163	24	70	10	35	5	690	100
South West	249	27	330	35	212	23	90	10	52	6	933	100
West Midlands	218	25	305	35	179	21	105	12	57	7	864	100
North West	264	26	341	34	244	24	100	10	67	7	1016	100
Wales	155	29	196	36	109	20	50	9	30	6	540	100
Northern Ireland	37	18	77	38	55	27	19	9	14	7	202	100
Scotland	164	21	277	35	202	25	89	11	67	8	799	100
United Kingdom	**2462**	**25**	**3427**	**35**	**2189**	**23**	**1017**	**11**	**565**	**6**	**9660**	**100**

Table 58 : 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	62	21	34	5	8	10	16	26	42	0	0
East Midlands	36	11	31	6	17	5	14	13	36	1	3
East of England	59	23	39	5	8	10	17	21	36	0	0
London	68	37	54	8	12	9	13	14	21	0	0
South East (East)	37	13	35	5	14	4	11	15	41	0	0
South East (West)	40	19	48	4	10	3	8	14	35	0	0
South West	47	13	28	10	21	5	11	18	38	1	2
West Midlands	46	14	30	7	15	6	13	19	41	0	0
North West	58	22	38	8	14	6	10	21	36	1	2
Wales	21	9	43	0	0	1	5	11	52	0	0
Northern Ireland	13	4	31	1	8	4	31	4	31	0	0
Scotland	31	11	35	4	13	3	10	12	39	1	3
United Kingdom	**481**	**161**	**33**	**60**	**12**	**68**	**14**	**187**	**39**	**5**	**1**

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 Regions' figures.

Table 59 : Screening cases per surgeon					
Region	Total surgeons	Mean	Min.	Median	Max.
N East, Yorks & Humber	62	27.4	1	24	78
East Midlands	36	28.7	1	23	103
East of England	59	25.5	1	21	95
London	68	16.6	1	9	64
South East (East)	37	28.8	1	20	94
South East (West)	40	23.0	1	12	95
South West	47	26.4	1	20	101
West Midlands	46	24.0	1	24	68
North West	58	26.8	1	18	103
Wales	21	35.0	1	39	77
Northern Ireland	13	20.9	1	26	39
Scotland	31	34.1	1	21	190
United Kingdom	**481**	**27.7**	**1**	**19**	**190**

Table 60 : Number of surgeons treating each woman									
Region	Total cancers	Number of women treated by…							
		No referral		1 surgeon		2 surgeons		3+ surgeons	
N East, Yorks & Humber	1692	1	0	1682	99	8	0	1	0
East Midlands	1036	2	0	1034	100	0	0	0	0
East of England	1494	17	1	1456	97	18	1	3	0
London	1137	16	1	1115	98	6	1	0	0
South East (East)	1073	8	1	1065	99	0	0	0	0
South East (West)	915	7	1	895	98	13	1	0	0
South West	1251	11	1	1240	99	0	0	0	0
West Midlands	1101	1	0	1094	99	6	1	0	0
North West	1520	9	1	1460	96	51	3	0	0
Wales	742	13	2	722	97	7	1	0	0
Northern Ireland	269	0	0	266	99	3	1	0	0
Scotland	1060	3	0	1057	100	0	0	0	0
United Kingdom	**13290**	**88**	**1**	**13086**	**98**	**112**	**1**	**4**	**0**

Table 61 : Proportion of women referred to consultant surgeons according to annual caseload of surgeon											
Region	Total (referred)	<10 cases		10-19 cases		20-29 cases		30-99 cases		100+ cases	
		No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	1691	59	3	74	4	242	14	1326	78	0	0
East Midlands	1034	28	3	94	9	129	12	680	66	103	10
East of England	1477	71	5	66	4	236	16	1129	75	0	0
London	1121	137	12	118	10	214	19	658	58	0	0
South East (East)	1065	29	3	87	8	91	9	858	81	0	0
South East (West)	908	31	3	57	6	78	8	755	82	0	0
South West	1240	30	2	144	12	109	9	856	69	101	8
West Midlands	1100	49	4	107	10	154	14	796	72	0	0
North West	1511	45	3	117	8	130	8	1158	75	103	7
Wales	729	40	5	0	0	23	3	673	91	0	0
Northern Ireland	269	13	5	17	6	99	36	143	53	0	0
Scotland	1057	38	4	64	6	68	6	697	66	190	18
United Kingdom	**13202**	**570**	**4**	**945**	**7**	**1573**	**12**	**9729**	**73**	**497**	**4**

Table 62 : Explanations for surgeons treating less than 10 screening cases in 2003/04										
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	21	17	0	0	0	0	3	0	1	0
East Midlands	11	6	4	0	0	1	0	0	0	0
East of England	23	2	1	2	10	3	1	0	2	2
London	37	14	6	3	4	0	4	0	6	0
South East (East)	13	3	0	0	0	0	1	4	4	1
South East (West)	19	4	0	1	6	5	0	0	0	3
South West	13	8	2	1	0	0	0	2	0	0
West Midlands	14	4	5	1	1	2	1	0	0	0
North West	22	17	0	0	5	0	0	0	0	0
Wales	9	6	0	0	0	1	0	0	2	0
Northern Ireland	4	2	0	2	0	0	0	0	0	0
Scotland	11	11	0	0	0	0	0	0	0	0
United Kingdom	**161**	**74**	**16**	**9**	**19**	**12**	**8**	**5**	**15**	**3**

Table 63 : Number of therapeutic operations for cancers with a pre-operative diagnosis (C5 and/or B5)														
Region	0		1		2		3+		Unknown		Total		Repeat (2+) rate	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	27	2	1270	81	257	16	22	1	0	0	1576	100	279	18
East Midlands	13	1	806	82	146	15	12	1	0	0	977	100	158	16
East of England	29	2	1210	87	144	10	12	1	0	0	1395	100	156	11
London	32	3	862	82	139	13	10	1	9	1	1052	100	149	14
South East (East)	14	1	807	81	160	16	12	1	0	0	993	100	172	17
South East (West)	10	1	715	83	120	14	13	2	0	0	858	100	133	16
South West	11	1	935	82	184	16	15	1	0	0	1145	100	199	17
West Midlands	14	1	858	85	125	12	16	2	0	0	1013	100	141	14
North West	12	1	1232	88	150	11	11	1	0	0	1405	100	161	11
Wales	14	2	594	86	75	11	10	1	1	0	694	100	85	12
Northern Ireland	2	1	220	87	27	11	3	1	0	0	252	100	30	12
Scotland	11	1	816	83	135	14	9	1	7	1	978	100	144	15
United Kingdom	**189**	**2**	**10325**	**84**	**1662**	**13**	**145**	**1**	**17**	**0**	**12338**	**100**	**1807**	**15**

Table 64 : 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	35	3	1082	82	190	14	13	1	0	0	1320	100	203	15
East Midlands	14	2	686	84	111	14	8	1	0	0	819	100	119	15
East of England	45	4	1001	86	107	9	10	1	0	0	1163	100	117	10
London	42	5	696	82	102	12	8	1	4	0	852	100	110	13
South East (East)	19	2	677	83	117	14	6	1	0	0	819	100	123	15
South East (West)	15	2	635	87	78	11	6	1	0	0	734	100	84	11
South West	17	2	790	82	143	15	8	1	0	0	958	100	151	16
West Midlands	22	2	764	85	103	11	12	1	0	0	901	100	115	13
North West	38	3	1060	88	106	9	5	0	0	0	1209	100	111	9
Wales	13	2	492	87	57	10	5	1	1	0	568	100	62	11
Northern Ireland	3	1	185	86	24	11	3	1	0	0	215	100	27	13
Scotland	21	2	704	84	100	12	6	1	11	1	842	100	106	13
United Kingdom	**284**	**3**	**8772**	**84**	**1238**	**12**	**90**	**1**	**16**	**0**	**10400**	**100**	**1328**	**13**

Table 65 : 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	29	8	245	70	66	19	8	2	0	0	348	100	74	21
East Midlands	18	9	145	71	39	19	3	1	0	0	205	100	42	20
East of England	50	16	230	72	38	12	1	0	0	0	319	100	39	12
London	38	15	180	69	36	14	2	1	4	2	260	100	38	15
South East (East)	28	12	160	68	41	17	6	3	0	0	235	100	47	20
South East (West)	27	15	98	56	44	25	6	3	0	0	175	100	50	29
South West	36	13	185	69	43	16	5	2	0	0	269	100	48	18
West Midlands	25	13	133	70	28	15	4	2	0	0	190	100	32	17
North West	35	12	203	72	39	14	6	2	0	0	283	100	45	16
Wales	10	6	134	79	20	12	5	3	0	0	169	100	25	15
Northern Ireland	9	18	36	71	6	12	0	0	0	0	51	100	6	12
Scotland	34	17	139	68	28	14	3	1	0	0	204	100	31	15
United Kingdom	**339**	**13**	**1888**	**70**	**428**	**16**	**49**	**2**	**4**	**0**	**2708**	**100**	**477**	**18**

Table 66 : 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	818	89	89	10	7	1	0	0	914	100	96	11
East Midlands	598	86	88	13	7	1	0	0	693	100	95	14
East of England	898	92	73	7	7	1	0	0	978	100	80	8
London	604	88	71	10	6	1	4	1	685	100	77	11
South East (East)	512	87	70	12	4	1	0	0	586	100	74	13
South East (West)	542	91	49	8	6	1	0	0	597	100	55	9
South West	679	88	91	12	5	1	0	0	775	100	96	12
West Midlands	639	89	68	10	8	1	0	0	715	100	76	11
North West	794	91	70	8	5	1	0	0	869	100	75	9
Wales	447	91	40	8	4	1	1	0	492	100	44	9
Northern Ireland	96	89	10	9	2	2	0	0	108	100	12	11
Scotland	623	88	70	10	6	1	6	1	705	100	76	11
United Kingdom	**7250**	**89**	**789**	**10**	**67**	**1**	**11**	**0**	**8117**	**100**	**856**	**11**

Table 67 : 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	587	64	220	24	37	4	28	3	22	2	9	1	11	1	0	0	914	100
East Midlands	417	60	174	25	55	8	17	2	23	3	1	0	6	1	0	0	693	100
East of England	654	67	213	22	29	3	20	2	22	2	8	1	32	3	0	0	978	100
London	475	69	109	16	36	5	19	3	16	2	6	1	19	3	4	1	685	100
South East (East)	387	66	105	18	41	7	12	2	18	3	5	1	18	3	0	0	586	100
South East (West)	434	73	102	17	24	4	11	2	16	3	5	1	5	1	0	0	597	100
South West	534	69	139	18	49	6	18	2	24	3	4	1	7	1	0	0	775	100
West Midlands	458	64	167	23	39	5	19	3	16	2	1	0	15	2	0	0	715	100
North West	564	65	205	24	33	4	25	3	12	1	4	0	26	3	0	0	869	100
Wales	277	56	169	34	13	3	12	2	15	3	4	1	1	0	1	0	492	100
Northern Ireland	78	72	17	16	3	3	6	6	2	2	1	1	1	1	0	0	108	100
Scotland	442	63	169	24	42	6	15	2	24	3	1	0	6	1	6	1	705	100
United Kingdom	**5308**	**65**	**1789**	**22**	**401**	**5**	**202**	**2**	**210**	**3**	**49**	**1**	**147**	**2**	**11**	**0**	**8117**	**100**

Table 68 : 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	163	75	50	23	3	1	0	0	216	100	53	25
East Midlands	1	2	41	91	3	7	0	0	0	0	45	100	3	7
East of England	0	0	62	82	13	17	1	1	0	0	76	100	14	18
London	0	0	34	77	9	20	1	2	0	0	44	100	10	23
South East (East)	0	0	106	81	24	18	1	1	0	0	131	100	25	19
South East (West)	0	0	47	92	4	8	0	0	0	0	51	100	4	8
South West	0	0	59	78	16	21	1	1	0	0	76	100	17	22
West Midlands	0	0	56	92	4	7	1	2	0	0	61	100	5	8
North West	0	0	193	93	15	7	0	0	0	0	208	100	15	7
Wales	0	0	3	75	1	25	0	0	0	0	4	100	1	25
Northern Ireland	0	0	75	96	2	3	1	1	0	0	78	100	3	4
Scotland	0	0	35	83	7	17	0	0	0	0	42	100	7	17
United Kingdom	**1**	**0**	**874**	**85**	**148**	**14**	**9**	**1**	**0**	**0**	**1032**	**100**	**157**	**15**

Table 69 : 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		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	113	52	49	23	23	11	11	5	13	6	4	2	3	1	216	100
East Midlands	34	77	5	11	1	2	1	2	0	0	1	2	2	5	44	100
East of England	49	64	11	14	5	7	2	3	2	3	3	4	4	5	76	100
London	25	57	9	20	0	0	0	0	1	2	9	20	0	0	44	100
South East (East)	80	61	11	8	13	10	0	0	3	2	6	5	18	14	131	100
South East (West)	33	65	13	25	2	4	1	2	1	2	0	0	1	2	51	100
South West	50	66	8	11	5	7	1	1	10	13	1	1	1	1	76	100
West Midlands	40	66	16	26	1	2	2	3	2	3	0	0	0	0	61	100
North West	148	71	39	19	4	2	2	1	7	3	1	0	7	3	208	100
Wales	0	0	3	75	0	0	0	0	0	0	1	25	0	0	4	100
Northern Ireland	62	79	12	15	0	0	2	3	1	1	0	0	1	1	78	100
Scotland	25	60	8	19	0	0	2	5	0	0	5	12	2	5	42	100
United Kingdom	**659**	**64**	**184**	**18**	**54**	**5**	**24**	**2**	**40**	**4**	**31**	**3**	**39**	**4**	**1031**	**100**

Table 70 : 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	38	46	42	51	2	2	0	0	82	100	44	54
East Midlands	29	62	17	36	1	2	0	0	47	100	18	38
East of England	13	41	18	56	1	3	0	0	32	100	19	59
London	33	62	19	36	1	2	0	0	53	100	20	38
South East (East)	33	60	21	38	1	2	0	0	55	100	22	40
South East (West)	28	54	24	46	0	0	0	0	52	100	24	46
South West	18	34	33	62	2	4	0	0	53	100	35	66
West Midlands	21	40	29	55	3	6	0	0	53	100	32	60
North West	47	69	21	31	0	0	0	0	68	100	21	31
Wales	23	61	14	37	1	3	0	0	38	100	15	39
Northern Ireland	13	62	8	38	0	0	0	0	21	100	8	38
Scotland	20	49	21	51	0	0	0	0	41	100	21	51
United Kingdom	**316**	**53**	**267**	**45**	**12**	**2**	**0**	**0**	**595**	**100**	**279**	**47**

Table 71 : 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		Total	
Region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
N East, Yorks & Humber	20	24	14	17	11	13	9	11	8	10	16	20	4	5	82	100
East Midlands	17	36	8	17	6	13	6	13	1	2	5	11	4	9	47	100
East of England	4	13	5	16	4	13	7	22	3	9	4	13	5	16	32	100
London	9	17	18	34	5	9	9	17	3	6	1	2	8	15	53	100
South East (East)	13	24	9	16	9	16	6	11	3	5	3	5	12	22	55	100
South East (West)	12	23	5	10	3	6	10	19	2	4	8	15	12	23	52	100
South West	8	15	8	15	13	25	8	15	3	6	10	19	3	6	53	100
West Midlands	15	28	3	6	8	15	6	11	5	9	13	25	3	6	53	100
North West	16	24	29	43	6	9	5	7	5	7	3	4	4	6	68	100
Wales	13	34	9	24	5	13	5	13	3	8	2	5	1	3	38	100
Northern Ireland	2	10	10	48		0	1	5		0	5	24	3	14	21	100
Scotland	13	32	3	7	8	20	7	17	4	10	2	5	4	10	41	100
United Kingdom	**142**	**24**	**121**	**20**	**78**	**13**	**79**	**13**	**40**	**7**	**72**	**12**	**63**	**11**	**595**	**100**

Table 72 : 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	198	74	61	23	9	3	0	0	268	100	70	26
East Midlands	136	77	37	21	4	2	0	0	177	100	41	23
East of England	205	85	33	14	2	1	0	0	240	100	35	15
London	173	81	36	17	1	0	4	2	214	100	37	17
South East (East)	143	74	43	22	6	3	0	0	192	100	49	26
South East (West)	90	66	40	29	6	4	0	0	136	100	46	34
South West	170	77	43	20	7	3	0	0	220	100	50	23
West Midlands	117	82	21	15	4	3	0	0	142	100	25	18
North West	167	80	36	17	5	2	0	0	208	100	41	20
Wales	111	83	19	14	4	3	0	0	134	100	23	17
Northern Ireland	32	89	4	11	0	0	0	0	36	100	4	11
Scotland	123	79	32	21	1	1	0	0	156	100	33	21
United Kingdom	**1665**	**78**	**405**	**19**	**49**	**2**	**4**	**0**	**2123**	**100**	**454**	**21**

Table 73 : 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	114	43	57	21	28	10	19	7	11	4	24	9	15	6	0	0	268	100
East Midlands	80	45	44	25	20	11	6	3	9	5	13	7	5	3	0	0	177	100
East of England	124	52	34	14	23	10	32	13	15	6	5	2	7	3	0	0	240	100
London	123	57	30	14	18	8	9	4	13	6	15	7	2	1	4	2	214	100
South East (East)	92	48	32	17	25	13	14	7	13	7	7	4	9	5	0	0	192	100
South East (West)	66	49	18	13	24	18	5	4	4	3	13	10	6	4	0	0	136	100
South West	120	55	31	14	33	15	14	6	7	3	5	2	10	5	0	0	220	100
West Midlands	68	48	30	21	14	10	11	8	9	6	6	4	4	3	0	0	142	100
North West	89	43	47	23	15	7	8	4	32	15	13	6	4	2	0	0	208	100
Wales	56	42	41	31	11	8	7	5	9	7	3	2	7	5	0	0	134	100
Northern Ireland	27	75	4	11	2	6	1	3	0	0	1	3	1	3	0	0	36	100
Scotland	73	47	41	26	18	12	5	3	6	4	11	7	2	1	0	0	156	100
United Kingdom	**1032**	**49**	**409**	**19**	**231**	**11**	**131**	**6**	**128**	**6**	**116**	**5**	**72**	**3**	**4**	**0**	**2123**	**100**

APPENDIX F

ADJUVANT THERAPY AUDIT FOR 1ST APRIL 2002 – 31ST MARCH 2003 WITH TUMOUR DATA FROM THE 2002/03 AUDIT OF SCREEN DETECTED BREAST CANCERS

Table 74 : 2002/03 cases supplied to the ABS at BASO adjuvant audit

Region	Total Cancers	No data supplied		Excluded cases		Total Eligible		Complete Data	
		No.	%	No.	%	No.	%	No.	%
North, Yorks & Humber	1457	474	33	5	0	978	67	777	53
East Midlands	930	0	0	4	0	926	100	926	100
East of England	1245	315	25	20	2	910	73	768	62
London	1139	194	17	21	2	924	81	766	67
South East (East)	863	69	8	13	2	781	90	709	82
South East (West)	738	3	0	9	1	726	98	684	93
South West	1053	82	8	22	2	949	90	824	78
West Midlands	1039	293	28	15	1	731	70	593	57
North West	1403	408	29	23	2	972	69	906	65
Wales	660	22	3	16	2	622	94	401	61
Northern Ireland	216	37	17	4	2	175	81	148	69
Scotland	855	5	1	10	1	840	98	807	94
United Kingdom	**11598**	**1902**	**16**	**162**	**1**	**9534**	**82**	**8309**	**72**

Table 75 : Data completeness for adjuvant therapy

Region	Total	Complete RT		Complete CT		Complete HT		Complete RT,CT & HT	
		No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	978	871	89	848	87	969	99	777	79
East Midlands	926	926	100	926	100	926	100	926	100
East of England	910	818	90	862	95	862	95	768	84
London	924	831	90	896	97	865	94	766	83
South East (East)	781	733	94	780	100	756	97	709	91
South East (West)	726	721	99	715	98	689	95	684	94
South West	949	931	98	912	96	859	91	824	87
West Midlands	731	659	90	657	90	707	97	593	81
North West	972	942	97	964	99	938	97	906	93
Wales	622	403	65	563	91	613	99	401	64
Northern Ireland	175	150	86	171	98	173	99	148	85
Scotland	840	813	97	834	99	840	100	807	96
United Kingdom	**9534**	**8798**	**92**	**9128**	**96**	**9197**	**96**	**8309**	**87**

Table 76: Adjuvant therapy for cases with complete data

Region	No surgery		Surgery only		Surgery & RT		Surgery & CT		Surgery & HT		Surgery & RT & CT		Surgery & RT & HT		Surgery & CT & HT		Surgery & RT & CT & HT		Total
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
NEYH	19	2	124	16	84	11	16	2	129	17	49	6	259	33	28	4	69	9	777
East Midlands	19	2	115	12	90	10	5	1	157	17	31	3	390	42	13	1	106	11	926
East of England	4	1	115	15	94	12	3	0	85	11	32	4	345	45	17	2	73	10	768
London	15	2	84	11	67	9	9	1	119	16	28	4	330	43	17	2	97	13	766
South East (E)	3	0	119	17	52	7	8	1	149	21	23	3	264	37	16	2	75	11	709
South East (W)	2	0	91	13	42	6	9	1	159	23	18	3	288	42	15	2	59	9	683
South West	4	0	95	12	47	6	12	1	129	16	27	3	394	48	12	1	104	13	824
West Midlands	6	1	83	14	40	7	9	2	88	15	24	4	256	43	16	3	71	12	593
North West	9	1	94	10	77	8	14	2	203	22	35	4	376	42	29	3	69	8	906
Wales	2	0	54	13	71	18	5	1	55	14	5	1	147	37	10	2	52	13	401
Northern Ireland	0	0	7	5	9	6	6	4	17	11	10	7	76	51	4	3	19	13	148
Scotland	12	1	88	11	89	11	8	1	108	13	33	4	356	44	22	3	91	11	807
UnitedKingdom	**95**	**1**	**1069**	**13**	**762**	**9**	**104**	**1**	**1398**	**17**	**315**	**4**	**3481**	**42**	**199**	**2**	**885**	**11**	**8308**

Table 77 : Cases with adjuvant therapy by age								
	Radiotherapy		Chemotherapy		Hormone Therapy		Total	
Age group	No.	%	No.	%	No.	%	No.	%
0-48	6	60	3	30	6	60	10	100
49	70	52	33	25	89	66	134	100
50-52	892	65	332	24	952	69	1378	100
53-55	843	65	311	24	915	71	1288	100
56-58	880	67	298	23	946	72	1323	100
59-61	963	69	243	17	1021	73	1396	100
62-64	895	68	188	14	991	75	1319	100
65-67	391	64	65	11	456	75	608	100
68-70	308	65	38	8	367	78	471	100
71+	216	57	17	4	285	75	382	100
Total	**5464**	**66**	**1528**	**18**	**6028**	**73**	**8309**	**100**

Table 78 : Radiotherapy start date						
	Radiotherapy		No radiotherapy		Total	
Region	No.	%	No.	%	No.	%
N East, Yorks & Humber	550	63	321	37	871	100
East Midlands	622	67	304	33	926	100
East of England	580	71	238	29	818	100
London	585	70	246	30	831	100
South East (East)	425	58	308	42	733	100
South East (West)	421	58	300	42	721	100
South West	635	68	296	32	931	100
West Midlands	448	68	211	32	659	100
North West	575	61	367	39	942	100
Wales	276	68	127	32	403	100
Northern Ireland	114	76	36	24	150	100
Scotland	574	71	239	29	813	100
United Kingdom	**5805**	**66**	**2993**	**34**	**8798**	**100**

Table 79 : Chemotherapy						
	Chemotherapy		No chemotherapy		Total	
Region	No.	%	No.	%	No.	%
N East, Yorks & Humber	197	23	651	77	848	100
East Midlands	161	17	765	83	926	100
East of England	150	17	712	83	862	100
London	183	20	713	80	896	100
South East (East)	143	18	637	82	780	100
South East (West)	108	15	607	85	715	100
South West	173	19	739	81	912	100
West Midlands	140	21	517	79	657	100
North West	166	17	798	83	964	100
Wales	119	21	444	79	563	100
Northern Ireland	42	25	129	75	171	100
Scotland	165	20	669	80	834	100
United Kingdom	**1747**	**19**	**7381**	**81**	**9128**	**100**

Table 80 : Hormonal therapy						
	Hormonal therapy		No hormonal therapy		Total	
Region	No.	%	No.	%	No.	%
N East, Yorks & Humber	665	69	304	31	969	100
East Midlands	681	74	245	26	926	100
East of England	609	71	253	29	862	100
London	656	76	209	24	865	100
South East (East)	545	72	211	28	756	100
South East (West)	527	76	162	24	689	100
South West	673	78	186	22	859	100
West Midlands	533	75	174	25	707	100
North West	709	76	229	24	938	100
Wales	422	69	191	31	613	100
Northern Ireland	138	80	35	20	173	100
Scotland	616	73	224	27	840	100
United Kingdom	**6774**	**74**	**2423**	**26**	**9197**	**100**

Table 81 : Surgery for included cases								
	No surgery		1 operation		>1 operation		Total	
Region	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	19	2	760	78	199	20	978	100
East Midlands	19	2	730	79	177	19	926	100
East of England	9	1	754	83	147	16	910	100
London	15	2	746	81	163	18	924	100
South East (East)	4	1	602	77	175	22	781	100
South East (West)	3	0	596	82	127	17	726	100
South West	5	1	702	74	242	26	949	100
West Midlands	6	1	610	83	115	16	731	100
North West	10	1	776	80	186	19	972	100
Wales	3	0	500	80	119	19	622	100
Northern Ireland	0	0	151	86	24	14	175	100
Scotland	12	1	677	81	151	18	840	100
United Kingdom	**105**	**1**	**7604**	**80**	**1825**	**19**	**9534**	**100**

Table 82 : First surgery						
	Diagnostic (no pre-operative diagnosis)		Therapeutic		Total	
Region	No.	%	No.	%	No.	%
N East, Yorks & Humber	71	7	888	93	959	100
East Midlands	54	6	853	94	907	100
East of England	88	10	813	90	901	100
London	79	9	830	91	909	100
South East (East)	77	10	700	90	777	100
South East (West)	73	10	650	90	723	100
South West	78	8	866	92	944	100
West Midlands	60	8	665	92	725	100
North West	113	12	849	88	962	100
Wales	44	7	575	93	619	100
Northern Ireland	19	11	156	89	175	100
Scotland	74	9	754	91	828	100
United Kingdom	**830**	**9**	**8599**	**91**	**9429**	**100**

Table 83 : Surgery for cases with radiotherapy								
	No surgery		1 operation		>1 operation		Total	
Region	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	1	0	449	82	100	18	550	100
East Midlands	5	1	501	81	116	19	622	100
East of England	4	1	494	85	82	14	580	100
London	6	1	480	82	99	17	585	100
South East (East)	2	0	325	76	98	23	425	100
South East (West)	0	0	352	84	69	16	421	100
South West	1	0	498	78	136	21	635	100
West Midlands	1	0	379	85	68	15	448	100
North West	0	0	492	86	83	14	575	100
Wales	0	0	234	85	42	15	276	100
Northern Ireland	0	0	97	85	17	15	114	100
Scotland	4	1	482	84	88	15	574	100
United Kingdom	**24**	**0**	**4783**	**82**	**998**	**17**	**5805**	**100**

Table 84 : Surgery for cases with chemotherapy								
	No surgery		1 operation		>1 operation		Total	
Region	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	6	3	153	78	38	19	197	100
East Midlands	6	4	127	79	28	17	161	100
East of England	3	2	125	83	22	15	150	100
London	4	2	143	78	36	20	183	100
South East (East)	2	1	117	82	24	17	143	100
South East (West)	1	1	95	88	12	11	108	100
South West	2	1	125	72	46	27	173	100
West Midlands	0	0	123	88	17	12	140	100
North West	1	1	139	84	26	16	166	100
Wales	0	0	101	85	18	15	119	100
Northern Ireland	0	0	35	83	7	17	42	100
Scotland	4	2	125	76	36	22	165	100
United Kingdom	**29**	**2**	**1408**	**81**	**310**	**18**	**1747**	**100**

Table 85 : Invasive status of included cases										
	Invasive		Micro-invasive		Non-invasive		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	758	78	6	1	212	22	2	0	978	100
East Midlands	716	77	17	2	192	21	1	0	926	100
East of England	710	78	2	0	194	21	4	0	910	100
London	785	85	8	1	131	14	0	0	924	100
South East (East)	585	75	11	1	185	24	0	0	781	100
South East (West)	588	81	7	1	131	18	0	0	726	100
South West	775	82	2	0	171	18	1	0	949	100
West Midlands	587	80	7	1	136	19	1	0	731	100
North West	809	83	14	1	148	15	1	0	972	100
Wales	506	81	7	1	109	18	0	0	622	100
Northern Ireland	135	77	2	1	38	22	0	0	175	100
Scotland	661	79	7	1	172	20	0	0	840	100
United Kingdom	**7615**	**80**	**90**	**1**	**1819**	**19**	**10**	**0**	**9534**	**100**

Table 86 : ER status of included cases														
	Invasive							Non-invasive						
	ER Positive		ER negative		Not done or unknown		Total Invasive	ER Positive		ER negative		Not done or unknown		Total non-invasive
Region	No.	%	No.	%	No.	%		No.	%	No.	%	No.	%	
N East, Yorks &Humber	649	86	77	10	32	4	758	38	18	9	4	165	78	212
East Midlands	633	88	70	10	13	2	716	59	31	22	11	111	58	192
East of England	593	84	73	10	44	6	710	26	13	10	5	158	81	194
London	633	81	75	10	77	10	785	34	26	7	5	90	69	131
South East (East)	479	82	57	10	49	8	585	63	34	24	13	98	53	185
South East (West)	492	84	50	9	46	8	588	51	39	16	12	64	49	131
South West	692	89	65	8	18	2	775	51	30	13	8	107	63	171
West Midlands	516	88	56	10	15	3	587	41	30	20	15	75	55	136
North West	688	85	83	10	38	5	809	56	38	15	10	77	52	148
Wales	411	81	28	6	67	13	506	39	36	3	3	67	61	109
Northern Ireland	109	81	21	16	5	4	135	25	66	6	16	7	18	38
Scotland	563	85	51	8	47	7	661	43	25	11	6	118	69	172
United Kingdom	**6458**	**85**	**706**	**9**	**451**	**6**	**7615**	**526**	**29**	**156**	**9**	**1137**	**63**	**1819**

Table 87 : Cases with ER status not done or unknown according to invasive status										
	Invasive		Micro-invasive		Non-invasive		Unknown		Total cases	
Region	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	32	16	3	1	165	82	1	0	201	100
East Midlands	13	10	8	6	111	83	1	1	133	100
East of England	44	22	1	0	158	78	0	0	203	100
London	77	45	4	2	90	53	0	0	171	100
South East (East)	49	32	6	4	98	64	0	0	153	100
South East (West)	46	41	3	3	64	57	0	0	113	100
South West	18	14	0	0	107	85	1	1	126	100
West Midlands	15	16	2	2	75	82	0	0	92	100
North West	38	32	5	4	77	64	0	0	120	100
Wales	67	48	5	4	67	48	0	0	139	100
Northern Ireland	5	38	1	8	7	54	0	0	13	100
Scotland	47	28	4	2	118	70	0	0	169	100
United Kingdom	**451**	**28**	**42**	**3**	**1137**	**70**	**3**	**0**	**1633**	**100**

Table 88 : PgR status of included cases								
	Positive		Negative		Not Done or Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	255	26	216	22	507	52	978	100
East Midlands	146	16	67	7	713	77	926	100
East of England	269	30	82	9	559	61	910	100
London	459	50	141	15	324	35	924	100
South East (East)	214	27	87	11	480	61	781	100
South East (West)	282	39	97	13	347	48	726	100
South West	414	44	129	14	406	43	949	100
West Midlands	232	32	80	11	419	57	731	100
North West	415	43	168	17	389	40	972	100
Wales	55	9	23	4	544	87	622	100
Northern Ireland	9	5	15	9	151	86	175	100
Scotland	156	19	72	9	612	73	840	100
United Kingdom	**2906**	**30**	**1177**	**12**	**5451**	**57**	**9534**	**100**

Table 89 : PgR status of ER negative cases								
	Positive		Negative		Not Done or Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	4	5	56	64	27	31	87	100
East Midlands	1	1	48	49	48	49	97	100
East of England	14	17	48	57	22	26	84	100
London	6	7	68	81	10	12	84	100
South East (East)	4	5	55	67	23	28	82	100
South East (West)	2	3	47	69	19	28	68	100
South West	6	8	56	71	17	22	79	100
West Midlands	3	4	50	64	25	32	78	100
North West	1	1	74	73	27	26	102	100
Wales	6	19	15	48	10	32	31	100
Northern Ireland	0	0	9	32	19	68	28	100
Scotland	2	3	37	58	25	39	64	100
United Kingdom	**49**	**6**	**563**	**64**	**272**	**31**	**884**	**100**

Table 90 : Cerb-B2/HER-2 status								
	Positive		Negative		Not Done or Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	15	2	177	18	786	80	978	100
East Midlands	2	0	5	1	919	99	926	100
East of England	15	2	92	10	803	88	910	100
London	33	4	133	14	758	82	924	100
South East (East)	21	3	57	7	703	90	781	100
South East (West)	44	6	159	22	523	72	726	100
South West	72	8	327	34	550	58	949	100
West Midlands	6	1	107	15	618	85	731	100
North West	73	8	322	33	577	59	972	100
Wales	6	1	18	3	598	96	622	100
Northern Ireland	4	2	6	3	165	94	175	100
Scotland	73	9	122	15	645	77	840	100
United Kingdom	**364**	**4**	**1525**	**16**	**7645**	**80**	**9534**	**100**

Table 91 : Time from assessment to first diagnostic surgery (cases with no pre-operative diagnosis)													
	≤14 days		≤30 days		≤60 days		≤90 days		≤120 days		≤200 days		Median
Region	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
N East, Yorks & Humber	5	7	28	39	54	76	68	96	71	100	71	100	35
East Midlands	3	6	20	37	48	89	52	96	54	100	54	100	39
East of England	7	8	47	54	77	89	86	99	86	99	87	100	29
London	5	6	36	46	68	86	77	97	79	100	79	100	32
South East (East)	3	4	15	19	49	64	70	91	75	97	76	99	49
South East (West)	9	12	42	58	65	89	70	96	73	100	73	100	28
South West	2	3	25	32	65	83	75	96	76	97	78	100	38
West Midlands	5	8	34	57	55	92	58	97	58	97	60	100	28
North West	11	10	53	47	96	85	107	95	112	99	113	100	32
Wales	9	20	32	73	42	95	42	95	44	100	44	100	22
Northern Ireland	5	26	14	74	17	89	18	95	19	100	19	100	21
Scotland	10	14	29	39	64	86	74	100	74	100	74	100	35
United Kingdom	**74**	**9**	**375**	**45**	**700**	**84**	**797**	**96**	**821**	**99**	**828**	**100**	**33**

Table 92 : Time from assessment to first therapeutic surgery (cases with pre-operative diagnosis)													
	≤14 days		≤30 days		≤60 days		≤90 days		≤120 days		≤200 days		Median
Region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	
N East, Yorks & Humber	85	10	588	66	846	95	874	98	881	99	886	100	27
East Midlands	92	11	487	57	812	95	835	98	836	98	847	99	28
East of England	117	14	545	67	779	96	799	98	803	99	808	99	26
London	56	7	447	54	766	93	808	98	816	99	824	100	30
South East (East)	38	5	268	38	604	86	674	96	688	98	699	100	36
South East (West)	93	14	447	69	621	96	640	98	645	99	648	100	24
South West	48	6	399	46	810	94	848	98	855	99	863	100	32
West Midlands	77	12	470	71	618	93	650	98	660	99	664	100	24
North West	83	10	496	58	805	95	829	98	837	99	844	99	28
Wales	113	20	484	84	562	98	573	100	574	100	575	100	22
Northern Ireland	62	40	134	86	151	97	153	98	154	99	156	100	18
Scotland	122	16	426	56	704	93	741	98	746	99	752	100	29
United Kingdom	**986**	**11**	**5191**	**60**	**8078**	**94**	**8424**	**98**	**8495**	**99**	**8566**	**100**	**28**

Table 93 : Time from final surgery to radiotherapy													
	≤14 days		≤30 days		≤60 days		≤90 days		≤120 days		≤200 days		Median
Region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	
N East, Yorks & Humber	1	0	12	2	184	34	340	63	399	74	481	89	75
East Midlands	0	0	14	2	367	59	495	80	512	83	578	94	56
East of England	2	0	11	2	116	20	251	44	378	66	508	89	97
London	6	1	23	4	102	18	240	42	331	58	510	89	106
South East (East)	3	1	5	1	48	11	140	33	237	56	379	90	113
South East (West)	3	1	10	2	59	14	178	42	291	69	388	93	97
South West	1	0	4	1	154	24	396	63	469	74	573	91	76
West Midlands	1	0	14	3	143	32	303	68	354	79	392	88	74
North West	10	2	15	3	108	19	267	47	396	70	495	87	94
Wales	0	0	3	1	87	32	196	71	217	79	249	90	71
Northern Ireland	0	0	0	0	3	3	38	33	81	71	99	87	99
Scotland	0	0	8	1	296	52	428	75	457	80	522	92	59
United Kingdom	**27**	**0**	**119**	**2**	**1667**	**29**	**3272**	**57**	**4122**	**72**	**5174**	**90**	**81**

Table 94 : Time from assessment to radiotherapy													
	≤14 days		≤30 days		≤60 days		≤90 days		≤120 days		≤200 days		Median
Region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	
N East, Yorks & Humber	2	0	4	1	25	5	167	30	329	60	450	82	110
East Midlands	0	0	0	0	43	7	285	46	432	69	536	86	93
East of England	0	0	1	0	24	4	126	22	262	45	474	82	127
London	1	0	5	1	29	5	104	18	214	37	437	75	145
South East (East)	0	0	1	0	8	2	32	8	107	25	296	70	168
South East (West)	0	0	1	0	14	3	67	16	179	43	359	85	127
South West	0	0	0	0	6	1	120	19	327	51	513	81	119
West Midlands	0	0	1	0	31	7	154	34	273	61	382	85	107
North West	2	0	7	1	20	3	107	19	243	42	474	82	131
Wales	0	0	0	0	17	6	115	42	190	69	236	86	98
Northern Ireland	0	0	0	0	0	0	10	9	49	43	95	83	125
Scotland	0	0	0	0	26	5	238	41	388	68	492	86	97
United Kingdom	**5**	**0**	**20**	**0**	**243**	**4**	**1525**	**26**	**2993**	**52**	**4744**	**82**	**119**

Table 95 : 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	681	78	5	1	183	21	2	0	871	100
East Midlands	716	77	17	2	192	21	1	0	926	100
East of England	634	78	2	0	179	22	3	0	818	100
London	707	85	5	1	119	14	0	0	831	100
South East (East)	537	73	11	2	185	25	0	0	733	100
South East (West)	584	81	7	1	130	18	0	0	721	100
South West	759	82	2	0	169	18	1	0	931	100
West Midlands	531	81	6	1	121	18	1	0	659	100
North West	780	83	14	1	147	16	1	0	942	100
Wales	335	83	6	1	62	15	0	0	403	100
Northern Ireland	116	77	2	1	32	21	0	0	150	100
Scotland	635	78	7	1	171	21	0	0	813	100
United Kingdom	**7015**	**80**	**84**	**1**	**1690**	**19**	**9**	**0**	**8798**	**100**

Table 96 : 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	429	63	238	35	14	2	0	0	681	100
East Midlands	491	69	209	29	16	2	0	0	716	100
East of England	496	78	131	21	5	1	2	0	634	100
London	562	79	135	19	9	1	1	0	707	100
South East (East)	389	72	142	26	4	1	2	0	537	100
South East (West)	438	75	143	24	2	0	1	0	584	100
South West	574	76	183	24	2	0	0	0	759	100
West Midlands	388	73	138	26	5	1	0	0	531	100
North West	553	71	217	28	9	1	1	0	780	100
Wales	231	69	102	30	2	1	0	0	335	100
Northern Ireland	89	77	27	23	0	0	0	0	116	100
Scotland	440	69	182	29	13	2	0	0	635	100
United Kingdom	**5080**	**72**	**1847**	**26**	**81**	**1**	**7**	**0**	**7015**	**100**

Table 97 : Radiotherapy for invasive cancers treated by conservation surgery						
	Radiotherapy		No radiotherapy		Total	
Region	No.	%	No.	%	No.	%
N East, Yorks & Humber	409	95	20	5	429	100
East Midlands	466	95	25	5	491	100
East of England	453	91	43	9	496	100
London	485	86	77	14	562	100
South East (East)	319	82	70	18	389	100
South East (West)	338	77	100	23	438	100
South West	519	90	55	10	574	100
West Midlands	356	92	32	8	388	100
North West	465	84	88	16	553	100
Wales	225	97	6	3	231	100
Northern Ireland	76	85	13	15	89	100
Scotland	419	95	21	5	440	100
United Kingdom	**4530**	**89**	**550**	**11**	**5080**	**100**

Table 98 : Invasive size of invasive cases treated by conservation without radiotherapy												
	<15mm		15-<20mm		20-<50mm		50+mm		Unknown		Total	
Region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
N East, Yorks & Humber	12	60	1	5	7	35	0	0	0	0	20	100
East Midlands	22	88	1	4	2	8	0	0	0	0	25	100
East of England	22	51	3	7	8	19	1	2	9	21	43	100
London	51	66	14	18	9	12	0	0	3	4	77	100
South East (East)	56	80	10	14	4	6	0	0	0	0	70	100
South East (West)	62	62	13	13	22	22	2	2	1	1	100	100
South West	39	71	9	16	7	13	0	0	0	0	55	100
West Midlands	16	50	5	16	10	31	0	0	1	3	32	100
North West	59	67	13	15	15	17	0	0	1	1	88	100
Wales	6	100	0	0	0	0	0	0	0	0	6	100
Northern Ireland	7	54	3	23	3	23	0	0	0	0	13	100
Scotland	8	38	5	24	7	33	0	0	1	5	21	100
United Kingdom	**360**	**65**	**77**	**14**	**94**	**17**	**3**	**1**	**16**	**3**	**550**	**100**

Table 99 : 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	111	61	69	38	3	2	0	0	183	100
East Midlands	128	67	62	32	2	1	0	0	192	100
East of England	132	74	45	25	2	1	0	0	179	100
London	84	71	26	22	9	8	0	0	119	100
South East (East)	135	73	47	25	3	2	0	0	185	100
South East (West)	85	65	44	34	1	1	0	0	130	100
South West	123	73	44	26	2	1	0	0	169	100
West Midlands	76	63	45	37	0	0	0	0	121	100
North West	111	76	36	24	0	0	0	0	147	100
Wales	40	65	22	35	0	0	0	0	62	100
Northern Ireland	28	88	4	13	0	0	0	0	32	100
Scotland	119	70	52	30	0	0	0	0	171	100
United Kingdom	**1172**	**69**	**496**	**29**	**22**	**1**	**0**	**0**	**1690**	**100**

Table 100 : Radiotherapy for non-invasive cancers treated by conservation surgery						
	Radiotherapy		No radiotherapy		Total	
Region	**No.**	**%**	**No.**	**%**	**No.**	**%**
N East, Yorks & Humber	63	57	48	43	111	100
East Midlands	65	51	63	49	128	100
East of England	63	48	69	52	132	100
London	36	43	48	57	84	100
South East (East)	53	39	82	61	135	100
South East (West)	24	28	61	72	85	100
South West	50	41	73	59	123	100
West Midlands	31	41	45	59	76	100
North West	53	48	58	52	111	100
Wales	22	55	18	45	40	100
Northern Ireland	19	68	9	32	28	100
Scotland	86	72	33	28	119	100
United Kingdom	**565**	**48**	**607**	**52**	**1172**	**100**

Table 101 : 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	8	17	37	77	3	6	0	0	48	100
East Midlands	22	35	39	62	2	3	0	0	63	100
East of England	21	30	33	48	3	4	12	17	69	100
London	9	19	26	54	5	10	8	17	48	100
South East (East)	24	29	54	66	0	0	4	5	82	100
South East (West)	28	46	30	49	0	0	3	5	61	100
South West	32	44	38	52	2	3	1	1	73	100
West Midlands	21	47	21	47	3	7	0	0	45	100
North West	14	24	35	60	3	5	6	10	58	100
Wales	0	0	15	83	2	11	1	6	18	100
Northern Ireland	4	44	3	33	0	0	2	22	9	100
Scotland	1	3	12	36	3	9	17	52	33	100
United Kingdom	**184**	**30**	**343**	**57**	**26**	**4**	**54**	**9**	**607**	**100**

Table 102 : 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.	%	No.	%
N East, Yorks & Humber	33	69	7	15	2	4	1	2	5	10	48	100
East Midlands	49	78	9	14	3	5	2	3	0	0	63	100
East of England	24	35	7	10	7	10	6	9	25	36	69	100
London	25	52	2	4	3	6	5	10	13	27	48	100
South East (East)	47	57	13	16	5	6	0	0	17	21	82	100
South East (West)	32	52	17	28	4	7	0	0	8	13	61	100
South West	41	56	16	22	3	4	1	1	12	16	73	100
West Midlands	22	49	15	33	3	7	4	9	1	2	45	100
North West	35	60	11	19	3	5	0	0	9	16	58	100
Wales	12	67	3	17	1	6	1	6	1	6	18	100
Northern Ireland	3	33	1	11	2	22	0	0	3	33	9	100
Scotland	25	76	5	15	0	0	0	0	3	9	33	100
United Kingdom	**348**	**57**	**106**	**17**	**36**	**6**	**20**	**3**	**97**	**16**	**607**	**100**

Table 103 : 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	48	6	21	2	586	69	4	0	187	22	2	0	848	100
East Midlands	53	6	16	2	647	70	17	2	192	21	1	0	926	100
East of England	43	5	21	2	605	70	2	0	188	22	3	0	862	100
London	42	5	19	2	697	78	8	1	130	15	0	0	896	100
South East (East)	43	6	14	2	527	68	11	1	185	24	0	0	780	100
South East (West)	36	5	13	2	529	74	7	1	130	18	0	0	715	100
South West	40	4	22	2	683	75	2	0	164	18	1	0	912	100
West Midlands	40	6	14	2	468	71	5	1	129	20	1	0	657	100
North West	63	7	18	2	721	75	14	1	147	15	1	0	964	100
Wales	15	3	12	2	429	76	7	1	100	18	0	0	563	100
Northern Ireland	13	8	3	2	117	68	2	1	36	21	0	0	171	100
Scotland	28	3	22	3	606	73	7	1	171	21	0	0	834	100
United Kingdom	**464**	**5**	**195**	**2**	**6615**	**72**	**86**	**1**	**1759**	**19**	**9**	**0**	**9128**	**100**

Table 104 : Chemotherapy for ER negative node positive invasive cancers						
	Chemotherapy		No chemotherapy		Total	
Region	No.	%	No.	%	No.	%
N East, Yorks & Humber	19	90	2	10	21	100
East Midlands	13	81	3	19	16	100
East of England	19	90	2	10	21	100
London	13	68	6	32	19	100
South East (East)	12	86	2	14	14	100
South East (West)	12	92	1	8	13	100
South West	21	95	1	5	22	100
West Midlands	14	100	0	0	14	100
North West	15	83	3	17	18	100
Wales	11	92	1	8	12	100
Northern Ireland	3	100	0	0	3	100
Scotland	16	73	6	27	22	100
United Kingdom	**168**	**86**	**27**	**14**	**195**	**100**

Table 105 : Chemotherapy for ER negative node negative invasive cancers						
	Chemotherapy		No chemotherapy		Total	
Region	No.	%	No.	%	No.	%
N East, Yorks & Humber	25	52	23	48	48	100
East Midlands	28	53	25	47	53	100
East of England	21	49	22	51	43	100
London	15	36	27	64	42	100
South East (East)	19	44	24	56	43	100
South East (West)	14	39	22	61	36	100
South West	23	58	17	43	40	100
West Midlands	22	55	18	45	40	100
North West	24	38	39	62	63	100
Wales	5	33	10	67	15	100
Northern Ireland	11	85	2	15	13	100
Scotland	19	68	9	32	28	100
United Kingdom	**226**	**49**	**238**	**51**	**464**	**100**

Table 106 : Grade of ER negative node negative invasive cancers given chemotherapy										
	Grade I		Grade II		Grade III		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	0	0	3	12	22	88	0	0	25	100
East Midlands	0	0	2	7	26	93	0	0	28	100
East of England	0	0	3	14	14	67	4	19	21	100
London	0	0	1	7	14	93	0	0	15	100
South East (East)	1	5	0	0	18	95	0	0	19	100
South East (West)	1	7	3	21	10	71	0	0	14	100
South West	0	0	3	13	20	87	0	0	23	100
West Midlands	0	0	4	18	18	82	0	0	22	100
North West	1	4	3	13	20	83	0	0	24	100
Wales	0	0	0	0	5	100	0	0	5	100
Northern Ireland	0	0	2	18	8	73	1	9	11	100
Scotland	0	0	3	16	15	79	1	5	19	100
United Kingdom	**3**	**1**	**27**	**12**	**190**	**84**	**6**	**3**	**226**	**100**

Table 107 : ER status of cases with complete hormonal therapy data								
	Positive		Negative		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	688	71	85	9	196	20	969	100
East Midlands	696	75	97	10	133	14	926	100
East of England	606	70	79	9	177	21	862	100
London	628	73	73	8	164	19	865	100
South East (East)	539	71	80	11	137	18	756	100
South East (West)	522	76	64	9	103	15	689	100
South West	682	79	71	8	106	12	859	100
West Midlands	547	77	72	10	88	12	707	100
North West	731	78	100	11	107	11	938	100
Wales	448	73	28	5	137	22	613	100
Northern Ireland	134	77	28	16	11	6	173	100
Scotland	607	72	64	8	169	20	840	100
United Kingdom	**6828**	**74**	**841**	**9**	**1528**	**17**	**9197**	**100**

Table 108 : Hormonal therapy for cases with ER not done or unknown						
	Hormonal therapy		No hormonal therapy		Total	
Region	No.	%	No.	%	No.	%
N East, Yorks & Humber	22	11	174	89	196	100
East Midlands	37	28	96	72	133	100
East of England	24	14	153	86	177	100
London	68	41	96	59	164	100
South East (East)	45	33	92	67	137	100
South East (West)	35	34	68	66	103	100
South West	19	18	87	82	106	100
West Midlands	10	11	78	89	88	100
North West	42	39	65	61	107	100
Wales	68	50	69	50	137	100
Northern Ireland	7	64	4	36	11	100
Scotland	40	24	129	76	169	100
United Kingdom	**417**	**27**	**1111**	**73**	**1528**	**100**

Table 109 : 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	647	94	2	0	38	6	1	0	688	100
East Midlands	633	91	4	1	59	8	0	0	696	100
East of England	579	96	0	0	23	4	4	1	606	100
London	592	94	2	0	34	5	0	0	628	100
South East (East)	472	88	4	1	63	12	0	0	539	100
South East (West)	476	91	2	0	44	8	0	0	522	100
South West	640	94	1	0	41	6	0	0	682	100
West Midlands	505	92	3	1	38	7	1	0	547	100
North West	671	92	5	1	54	7	1	0	731	100
Wales	407	91	2	0	39	9	0	0	448	100
Northern Ireland	109	81	0	0	25	19	0	0	134	100
Scotland	563	93	1	0	43	7	0	0	607	100
United Kingdom	**6294**	**92**	**26**	**0**	**501**	**7**	**7**	**0**	**6828**	**100**

Table 110 : 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	75	88	1	1	9	11	0	0	85	100
East Midlands	70	72	5	5	22	23	0	0	97	100
East of England	68	86	1	1	10	13	0	0	79	100
London	64	88	2	3	7	10	0	0	73	100
South East (East)	56	70	1	1	23	29	0	0	80	100
South East (West)	48	75	1	2	15	23	0	0	64	100
South West	59	83	1	1	11	15	0	0	71	100
West Midlands	52	72	1	1	19	26	0	0	72	100
North West	82	82	3	3	15	15	0	0	100	100
Wales	25	89	0	0	3	11	0	0	28	100
Northern Ireland	21	75	1	4	6	21	0	0	28	100
Scotland	51	80	2	3	11	17	0	0	64	100
United Kingdom	**671**	**80**	**19**	**2**	**151**	**18**	**0**	**0**	**841**	**100**

Table 111 : Hormonal therapy for ER positive cancers						
	Hormonal therapy		No hormonal therapy		Total	
Region	No.	%	No.	%	No.	%
N East, Yorks & Humber	639	93	49	7	688	100
East Midlands	627	90	69	10	696	100
East of England	571	94	35	6	606	100
London	580	92	48	8	628	100
South East (East)	490	91	49	9	539	100
South East (West)	485	93	37	7	522	100
South West	648	95	34	5	682	100
West Midlands	515	94	32	6	547	100
North West	662	91	69	9	731	100
Wales	345	77	103	23	448	100
Northern Ireland	131	98	3	2	134	100
Scotland	568	94	39	6	607	100
United Kingdom	**6261**	**92**	**567**	**8**	**6828**	**100**

Table 112 : Hormonal therapy for ER positive invasive cancers						
	Hormonal therapy		No hormonal therapy		Total	
Region	No.	%	No.	%	No.	%
N East, Yorks & Humber	606	94	41	6	647	100
East Midlands	565	89	68	11	633	100
East of England	550	95	29	5	579	100
London	555	94	37	6	592	100
South East (East)	442	94	30	6	472	100
South East (West)	456	96	20	4	476	100
South West	624	98	16	3	640	100
West Midlands	492	97	13	3	505	100
North West	618	92	53	8	671	100
Wales	335	82	72	18	407	100
Northern Ireland	109	100	0	0	109	100
Scotland	536	95	27	5	563	100
United Kingdom	**5888**	**94**	**406**	**6**	**6294**	**100**

Table 113 : Hormonal therapy for ER positive non-invasive cancers						
	Hormonal therapy		No hormonal therapy		Total	
Region	**No.**	**%**	**No.**	**%**	**No.**	**%**
N East, Yorks & Humber	30	79	8	21	38	100
East Midlands	58	98	1	2	59	100
East of England	17	74	6	26	23	100
London	23	68	11	32	34	100
South East (East)	44	70	19	30	63	100
South East (West)	28	64	16	36	44	100
South West	23	56	18	44	41	100
West Midlands	20	53	18	47	38	100
North West	40	74	14	26	54	100
Wales	8	21	31	79	39	100
Northern Ireland	22	88	3	12	25	100
Scotland	31	72	12	28	43	100
United Kingdom	**344**	**69**	**157**	**31**	**501**	**100**

Table 114 : Hormonal therapy for ER negative cancers						
	Hormonal therapy		No hormonal therapy		Total	
Region	**No.**	**%**	**No.**	**%**	**No.**	**%**
N East, Yorks & Humber	4	5	81	95	85	100
East Midlands	17	18	80	82	97	100
East of England	14	18	65	82	79	100
London	8	11	65	89	73	100
South East (East)	10	13	70	88	80	100
South East (West)	7	11	57	89	64	100
South West	6	8	65	92	71	100
West Midlands	8	11	64	89	72	100
North West	5	5	95	95	100	100
Wales	9	32	19	68	28	100
Northern Ireland	0	0	28	100	28	100
Scotland	8	13	56	88	64	100
United Kingdom	**96**	**11**	**745**	**89**	**841**	**100**

Table 115 : Completeness of ER status for non-invasive cancers with hormone therapy						
	ER Known		ER Unknown		Total	
Region	**No**	**%**	**No**	**%**	**No**	**%**
North, Yorks & Humber	31	15	10	5	41	19
East Midlands	60	31	22	11	82	43
East of England	19	10	6	3	25	13
London	23	18	8	6	31	24
South East (East)	45	24	14	8	59	32
South East (West)	31	24	9	7	40	31
South West	23	13	9	5	32	19
West Midlands	24	18	6	4	30	22
North West	42	28	20	14	62	42
Wales	9	8	9	8	18	17
Northern Ireland	22	58	2	5	24	63
Scotland	32	19	2	1	34	20
United Kingdom	**361**	**20**	**117**	**6**	**478**	**26**

Table 116 : PgR status of ER negative cancers with known hormonal therapy data								
	Positive		Negative		Not Done or unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	4	5	54	64	27	32	85	100
East Midlands	1	1	48	49	48	49	97	100
East of England	13	16	48	61	18	23	79	100
London	6	8	60	82	7	10	73	100
South East (East)	4	5	53	66	23	29	80	100
South East (West)	2	3	46	72	16	25	64	100
South West	5	7	51	72	15	21	71	100
West Midlands	3	4	48	67	21	29	72	100
North West	1	1	73	73	26	26	100	100
Wales	6	21	12	43	10	36	28	100
Northern Ireland	0	0	9	32	19	68	28	100
Scotland	2	3	37	58	25	39	64	100
United Kingdom	**47**	**6**	**539**	**64**	**255**	**30**	**841**	**100**

Table 117 : Hormonal therapy for ER negative, PgR positive invasive cancers						
	Hormonal therapy		No hormonal therapy		Total	
Region	No.	%	No.	%	No.	%
N East, Yorks & Humber	2	50	2	50	4	100
East Midlands	0	0	1	100	1	100
East of England	10	91	1	9	11	100
London	2	33	4	67	6	100
South East (East)	3	75	1	25	4	100
South East (West)	2	100	0	0	2	100
South West	3	75	1	25	4	100
West Midlands	0	0	1	100	1	100
North West	0	0	1	100	1	100
Wales	3	50	3	50	6	100
Northern Ireland	0	-	0	-	0	-
Scotland	1	100	0	0	1	100
United Kingdom	**26**	**63**	**15**	**37**	41	**100**

Table 118 : Hormonal therapy for ER negative invasive cancers with PgR negative or unknown						
	Hormonal therapy		No hormonal therapy		Total	
Region	No.	%	No.	%	No.	%
N East, Yorks & Humber	1	1	70	99	71	100
East Midlands	15	22	54	78	69	100
East of England	2	4	55	96	57	100
London	5	9	53	91	58	100
South East (East)	6	12	46	88	52	100
South East (West)	2	4	44	96	46	100
South West	3	5	52	95	55	100
West Midlands	4	8	47	92	51	100
North West	2	2	79	98	81	100
Wales	5	26	14	74	19	100
Northern Ireland	0	0	21	100	21	100
Scotland	6	12	44	88	50	100
United Kingdom	**51**	**8**	**579**	**92**	**630**	**100**

Table 119 : Chemotherapy for ER negative invasive cancers with PgR negative or unknown						
	Chemotherapy		No Chemotherapy		Total	
Region	**No.**	**%**	**No.**	**%**	**No.**	**%**
N East, Yorks & Humber	43	63	25	37	68	100
East Midlands	40	58	29	42	69	100
East of England	32	55	26	45	58	100
London	33	49	34	51	67	100
South East (East)	30	57	23	43	53	100
South East (West)	25	52	23	48	48	100
South West	42	71	17	29	59	100
West Midlands	35	66	18	34	53	100
North West	39	48	42	52	81	100
Wales	13	62	8	38	21	100
Northern Ireland	17	81	4	19	21	100
Scotland	35	70	15	30	50	100
United Kingdom	**384**	**59**	**264**	**41**	**648**	**100**

APPENDIX G

DATA OBTAINED FROM THE SURVIVAL AUDIT OF SCREEN DETECTED BREAST CANCERS FOR CANCERS DIAGNOSED BETWEEN 1ST APRIL 1998 AND 31ST MARCH 1999

Table 120 : Cause of death of eligible invasive cancers with death before 31/03/2004

Region	Breast Cancer*		Other cancer		Non-cancer		Not Collected		Unknown		Total deaths		Total cancers
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
N East, Yorks & Humber	67	80	4	5	11	13	0	0	2	2	84	10	842
East Midlands	28	55	7	14	16	31	0	0	0	0	51	9	542
East of England	32	65	4	8	12	24	0	0	1	2	49	7	655
London	36	73	5	10	8	16	0	0	0	0	49	7	655
South East (East)	36	69	4	8	12	23	0	0	0	0	52	9	585
South East (West)	22	49	10	22	10	22	0	0	3	7	45	8	561
South West	30	65	7	15	8	17	0	0	1	2	46	7	680
West Midlands	35	69	6	12	10	20	0	0	0	0	51	9	577
North West	50	63	10	13	19	24	0	0	1	1	80	11	745
Wales	23	70	6	18	4	12	0	0	0	0	33	9	372
Northern Ireland	11	65	3	18	2	12	0	0	1	6	17	12	138
Scotland	40	69	6	10	12	21	0	0	0	0	58	11	546
United Kingdom	**410**	**67**	**72**	**12**	**124**	**20**	**0**	**0**	**9**	**1**	**615**	**9**	**6898**

* Death from the screen detected breast cancer

Table 121 : Cause of death of eligible micro-invasive cancers with death before 31/03/2004

Region	Breast Cancer*		Other cancer		Non-cancer		Not Collected		Unknown		Total deaths		Total cancers
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
N East, Yorks & Humber	0	-	0	-	0	-	0	-	0	-	0	-	23
East Midlands	0	-	0	-	0	-	0	-	0	-	0	-	10
East of England	0	-	0	-	0	-	0	-	0	-	0	-	13
London	0	-	0	-	0	-	0	-	0	-	0	-	0
South East (East)	0	0	1	100	0	0	0	0	0	0	1	7	15
South East (West)	0	-	0	-	0	-	0	-	0	-	0	-	11
South West	0	0	0	0	1	100	0	0	0	0	1	5	22
West Midlands	0	-	0	-	0	-	0	-	0	-	0	-	7
North West	0	0	2	100	0	0	0	0	0	0	2	10	21
Wales	0	-	0	-	0	-	0	-	0	-	0	-	6
Northern Ireland	0	-	0	-	0	-	0	-	0	-	0	-	4
Scotland	0	--	0	-	0	-	0	-	0	-	0	-	11
United Kingdom	**0**	**0**	**3**	**75**	**1**	**25**	**0**	**0**	**0**	**0**	**4**	**100**	**143**

* Death from the screen detected breast cancer

Table 122 : Cause of death of eligible non-invasive cancers with death before 31/03/2004

Region	Breast Cancer*		Other cancer		Non-cancer		Not Collected		Unknown		Total deaths		Total cancers
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
N East, Yorks & Humber	2	17	7	58	3	25	0	0	0	0	12	6	218
East Midlands	1	25	0	0	3	75	0	0	0	0	4	3	143
East of England	0	0	1	100	0	0	0	0	0	0	1	1	173
London	0	-	0	-	0	-	0	-	0	-	0	-	155
South East (East)	2	50	0	0	2	50	0	0	0	0	4	3	132
South East (West)	1	20	2	40	2	40	0	0	0	0	5	4	127
South West	0	0	3	75	1	25	0	0	0	0	4	2	163
West Midlands	0	0	1	100	0	0	0	0	0	0	1	1	83
North West	0	0	2	67	1	33	0	0	0	0	3	2	172
Wales	0	0	0	0	3	100	0	0	0	0	3	3	96
Northern Ireland	0	0	1	100	0	0	0	0	0	0	1	4	28
Scotland	0	0	1	33	2	67	0	0	0	0	3	3	103
United Kingdom	**6**	**15**	**18**	**44**	**17**	**41**	**0**	**0**	**0**	**0**	**41**	**100**	**1593**

* Death from the screen detected breast cancer

Table 123 : Relative survival by region – primary invasive cancers diagnosed 1998/99			
Region	**1 year**	**3 year**	**5 year**
N East, Yorks & Humber	99.5 (98.7,100.2)	97.4 (96.0,98.9)	94.3 (92.3,96.4)
East Midlands	99.9 (99.0,100.7)	96.7 (94.7,98.8)	95.4 (92.8,98.0)
East of England	100.5 (100.0,100.9)	99.4 (98.0,100.8)	97.4 (95.3,99.5)
London	100 (99.3,100.7)	99.8 (98.5,101.1)	97.2 (95.1,99.3)
South East (East)	99.4 (98.4,100.4)	97.1 (95.2,99.0)	96.4 (94.0,98.7)
South East (West)	99.8 (99.0,100.6)	98.7 (97.1,100.3)	96.7 (94.5,99.0)
South West	100.3 (99.8,100.9)	99.2 (97.9,100.6)	97.6 (95.6,99.6)
West Midlands	100.4 (99.9,100.9)	97.9 (96.1,99.6)	95.4 (93.0,97.8)
North West	99.6 (98.9,100.4)	96.1 (94.3,97.9)	94.6 (92.4,96.8)
Wales	99.9 (99.0,100.9)	97.2 (94.8,99.5)	95.3 (92.2,98.4)
Northern Ireland	99.3 (97.2,101.3)	94.9 (90.4,99.5)	92.1 (86.3,97.8)
Scotland	99.7 (98.8,100.6)	97.4 (95.5,99.4)	94.4 (91.8,97.1)
United Kingdom	**99.9 (99.7,100.1)**	**97.9 (97.4,98.4)**	**95.8 (95.1,96.5)**

Table 124 : Relative survival by age for primary invasive cancers			
Age	**1 year**	**3 year**	**5 year**
<50	99.6 (98.2,100.9)	98.1 (95.5,100.7)	93.1 (88.5,97.7)
50-52	99.9 (99.6,100.2)	98.3 (97.4,99.1)	96.4 (95.2,97.6)
53-55	99.9 (99.5,100.3)	96.4 (95.0,97.8)	92.9 (91.1,94.8)
56-58	99.9 (99.4,100.4)	97.2 (95.9,98.5)	93.8 (92.0,95.7)
59-61	99.7 (99.1,100.3)	97.4 (96.1,98.7)	95.7 (94.1,97.4)
62-64	99.8 (99.2,100.4)	98 (96.6,99.3)	96 (94.2,97.8)
65+	100.3 (99.5,101.2)	100.3 (98.6,101.9)	100.9 (98.7,103.2)
All invasive cancers	**99.9 (99.7,100.1)**	**97.9 (97.4,98.4)**	**95.8 (95.1,96.5)**

Table 125 : Relative survival by invasive size for primary invasive cancers			
Size	**1 year**	**3 year**	**5 year**
<10mm	100.3 (99.9,100.6)	99.6 (98.7,100.4)	99.4 (98.3,100.5)
10-<20mm	100 (99.7,100.3)	98.8 (98.2,99.5)	97.4 (96.5,98.3)
20-<49mm	99.6 (99.0,100.1)	95.4 (94.1,96.7)	90.5 (88.7,92.3)
50+mm	98.6 (95.7,101.5)	89.5 (82.6,96.4)	81.2 (72.4,90.0)
Unknown	93.4 (86.7,100.1)	76.6 (65.3,87.9)	68.8 (56.1,81.4)
All invasive cancers	**99.9 (99.7,100.1)**	**97.9 (97.4,98.4)**	**95.8 (95.1,96.5)**

Table 126 : Relative survival by grade for primary invasive cancers			
Grade	**1 year**	**3 year**	**5 year**
I	100.4 (100.1,100.6)	100.1 (99.5,100.8)	100.2 (99.4,101.0)
II	99.8 (99.5,100.2)	98.5 (97.8,99.2)	96.1 (95.1,97.1)
III	99.2 (98.4,99.9)	92.5 (90.7,94.3)	86.7 (84.4,89.0)
Unknown	99.1 (95.9,102.3)	99 (94.5,103.5)	99.1 (93.5,104.7)
All invasive cancers	**99.9 (99.7,100.1)**	**97.9 (97.4,98.4)**	**95.8 (95.1,96.5)**

Table 127 : Relative survival by nodal status for primary invasive cancers			
Nodal status	**1 year**	**3 year**	**5 year**
Positive	99.4 (98.8,100.0)	94.3 (93.0,95.7)	89.3 (87.5,91.2)
Negative	100.2 (99.9,100.4)	99.3 (98.8,99.8)	98.2 (97.4,98.9)
Unknown	99.3 (98.4,100.2)	96.6 (94.8,98.5)	95.4 (93.2,97.7)
All invasive cancers	**99.9 (99.7,100.1)**	**97.9 (97.4,98.4)**	**95.8 (95.1,96.5)**

Table 138 : Relative survival by NPI prognostic group for primary invasive cancers			
NPI group	**1 year**	**3 year**	**5 year**
EPG	100.4 (100.2,100.7)	100.3 (99.6,101)	100.4 (99.4,101.3)
GPG	100.2 (99.9,100.5)	99.9 (99.2,100.6)	98.7 (97.7,99.8)
MPG1	99.5 (98.9,100.1)	97.2 (95.9,98.4)	94.7 (93.1,96.4)
MPG2	100 (99.3,100.7)	95.2 (93.1,97.2)	89.3 (86.3,92.2)
PPG	98.1 (96.5,99.7)	86.1 (82.3,89.9)	74.8 (70.0,79.6)
Unknown	99.2 (98.2,100.2)	95.9 (93.9,98)	95.1 (92.7,97.6)
All invasive cancers	**99.9 (99.7,100.1)**	**97.9 (97.4,98.4)**	**95.8 (95.1,96.5)**