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NHS BREAST SCREENING PROGRAMME

&

ASSOCIATION OF BREAST SURGERY AT BASO

AN AUDIT OF SCREEN DETECTED BREAST CANCERS FOR THE YEAR OF SCREENING APRIL 2004 TO MARCH 2005

DISTRIBUTED AT THE ASSOCIATION OF BREAST SURGERY AT BASO CONFERENCE

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EAST MIDLANDS CONFERENCE CENTRE, NOTTINGHAM

West Midlands
Cancer Intelligence Unit

Cancer Screening Programmes

West Midlands
Cancer Intelligence Unit

FOREWORDS

I am very pleased once more to introduce the NHSBSP/ABS at BASO audit of screen-detected breast cancers. This audit is now a regular and major part of the quality assurance initiative of the breast screening programme. We take the care of the women whose cancers we detect very seriously and this is why we have been delighted to work with the ABS at BASO to develop this audit. Originally we set out to look at the first treatment a woman received after her breast cancer was diagnosed in the screening programme. Now the audit extends into chemotherapy, radiotherapy and hormone therapy, with survival also audited.

Over the years some things have changed dramatically. Improved biopsy techniques mean that most women can have their breast cancers diagnosed without an operation. Lymph nodes are almost always investigated in order to get good prognostic information and to give the woman the most appropriate treatment for her. In general, the quality and completeness of information we have for each woman is much better than in the early days of the audit. And of course the outlook for each woman is much improved.

One thing that does not change is the tremendous effort that goes into compiling this audit. In each breast screening unit the surgeons and administrative staff collect and submit their individual data. This is then collated in the regional quality assurance reference centres and submitted to the West Midlands Cancer Intelligence Unit which brings everything together for the whole country. To all these people go my thanks. My gratitude also goes to the women we care for, since it is by the analysis of the sum of their individual data that we can learn how to improve our services for the next generation of women.

Julietta Patnick
Director for the NHS Cancer Screening Programmes
April 2006

The ABS at BASO surgical screening audit grows from strength to strength. The audit is now one of the best in the world. Why? Probably because over the years you, the contributors, feel your data are now of a quality that you have confidence in them. In a very battered NHS it is good to be part of something that one can be proud of. This is down to those who contribute the data, often with no support at all. We hear of one institution where clerical staff were re-assigned from breast cancer data collection to amassing data on such cutting edge subjects as the two week wait!

If it is the contributors who grow the data it is the West Midlands Cancer Intelligence Unit, who like a skilled *vigneron* transform it, year after year, into a product of 'Margaux' like quality. Thanks to Gill Lawrence, Olive Kearins, Shan Cheung and Helen Davis for all their hard work in producing under conditions of what the Department of Health likes to describe as "creative discomfort" a first class audit.

Once again, we are grateful to Julietta Patnick, who has bailed us out again financially this year, despite the pressures from the Department of Health on her. We are also very grateful to Professor Michael Kerin for coming over to the Annual General Meeting where this audit is being discussed and to lead the criticism of our current vintage, which I suggest is anything but pretentious!

Hugh Bishop
Chairman, Breast Audit Group, Association of Breast Surgery at BASO
April 2006

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The 2004/05 audit of screen detected breast cancers was designed and directed by the Breast Audit Group of the Association of Breast Surgery at the British Association of Surgical Oncology (BASO).

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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 2004/05 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.

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The Breast Audit Group would also like to thank the NHSBSP national office for its financial assistance in support of the 2004/05 audit of screen detected breast cancer.

CONTENTS

INTRODUCTION

AIMS AND OBJECTIVES

The 2004/05 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 1 April 2004 to 31 March 2005. 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 the Management of Symptomatic Breast Disease
  European Journal of Surgical Oncology, Volume 31, S1-521, May 2005

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
- waiting times
- surgical caseload
- repeat therapeutic operations
- adjuvant therapy

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 2004/05 screening year. The cohort of women included in this period was selected to be identical to that included in the statistical KC62 reports for 2004/05, 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 1 April 2003 to 31 March 2004 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 2003/04 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 1 April 1999 and 31 March 2000 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 31 March 2005.

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 6).

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 2004/05 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 14 June 2006.

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

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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 4 October 2006.

- 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:

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PROVISION OF DATA FOR THE 2004/05 AUDIT

The map below shows the eight English NHS regions, Wales, Scotland and Northern Ireland for the boundaries revised on 1 April 2005. 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

1,748,997 women were screened by the UK NHSBSP in England, Wales, Northern Ireland and Scotland between 1 April 2004 and 31 March 2005. 14,040 cancers were detected in women of all ages. This equates to a cancer detection rate of 8.0 cancers per 1,000 women screened. 257 cancers from two units in the East of England region are not included in the audit.

72% 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 75% in 2003/04. 21% of screen detected breast cancers were detected in women aged 65-70 compared with 18% in this age group in 2003/04 and 13% in 2002/03.

NON-OPERATIVE DIAGNOSIS

In 2004/05, 93% of cancers detected in the UK NHSBSP were diagnosed non-operatively. All regions met the 90% target. The non-operative diagnosis rates for invasive and non-invasive cancers were 97% and 80% respectively. 77 screening units met or exceeded the overall non-operative diagnosis rate target of 90%. This is the first year that all screening units have met the 80% minimum standard.

In the UK as a whole, the overall non-operative diagnosis rate has been constant at 93% for the last 2 years, while the proportion of cancers diagnosed by C5 cytology alone fell from 8% in 2003/04 to 7% in 2004/05. For non-invasive cancers, no region met the 90% target for non-operative diagnosis and 6 regions failed to meet the 80% minimum standard. The proportion of non-invasive cancers without a non-operative diagnosis varied from 25% in South West to 15% in East Midlands.

For 20% of cancers with a B5a (Non-invasive) non-operative diagnosis, invasive disease was found at surgery. This varied between 10% in North West and 28% in London and Wales. For units which had 15 or more cancers diagnosed as B5a (Non-invasive) core biopsy, the proportion of B5a cancers found to be invasive after surgery varied from 0% in 3 units to 40% in a unit which had 30 B5a cases. In 6 screening units, more than 20% of B5a diagnosed cancers were found to be micro-invasive after surgery. The regional QA reference centre should review these cases and ascertain the reasons behind these results, implementing corrective action as appropriate. 46 cases (0.5%) with a B5b (Invasive) non-operative diagnosis were found to have non-invasive or micro-invasive cancer with no associated invasive disease following surgery. 96% of cancers diagnosed by C5 cytology alone were found to be invasive after surgery.

89% of women had all attempts at core biopsy and/or cytology performed at one assessment clinic visit. 22 screening units failed to achieve the 80% non-operative diagnosis minimum standard at one visit. Regional QA reference centres should liaise with their screening units in order to clarify their policies for recording visits to assessment clinics, so that more definitive data are available for this important area in future audits.

DIAGNOSTIC OPEN BIOPSIES

In the UK as a whole, 2,722 diagnostic open biopsies were performed in 2004/05. Of these 66% were benign and 34% were malignant. The benign open biopsy rate was 1.05 per 1,000 women screened in 2004/05. The malignant open biopsy rate has fallen from 2.04 per 1,000 screened in 1996/97 to 0.54 per

1,000 screened in 2004/05 as the non-operative diagnosis rate has increased from 63% to 93%. In the UK as a whole, there were 3 false positive cytology cases and 42 false positive core biopsy cases. Regional QA reference centres and their pathology QA co-ordinators should review these cases to ascertain the reasons behind these results.

21 cancers which were diagnosed by open surgical biopsy had a mastectomy as the first surgical operation. Regional QA reference centres should review these cases to ascertain the reasons behind these decisions. Of the 351 invasive cancers diagnosed by open biopsy, 17 (5%) had no non-operative procedure recorded. Of the 553 non-invasive cancers diagnosed by open biopsy, 11 (2%) had no non-operative procedure recorded. Regional QA reference centres and regional QA surgeons should audit these 28 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 non-operative diagnosis should be ascertained. 42% of invasive cancers and 35% 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. Regional QA reference centres in East of England and East Midlands should audit these cases to ascertain why they have particularly high proportions of open biopsies with a C4 and/or B4 non-operative result.

SURGICAL TREATMENT

Overall, 70% of non-invasive and micro-invasive cancers were treated with conservation surgery, varying from 61% in East Midlands to 77% in East of England. The completeness of grade and size data has improved, with only 7% of cases having an unknown grade or size. 176 potentially large high-grade non-invasive cancers were treated with conservation surgery. Regional QA reference centres and regional QA surgeons should review the data recorded for these cases to ensure that they were not under-treated.

In the UK as a whole, the mastectomy rate for invasive cancers was 27%. This varied between 12% and 50% in individual screening units. 84% 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 London and South West there was little difference in the mastectomy rates for tumours with diameters below 20mm. South East (West) and North West had relatively low mastectomy rates for cancers with whole size 50mm or above. The regional QA reference centres should investigate whether this reflects a data collection problem relating to second operations or whether the data do indeed represent clinical practice. Whole size was not provided for 744 (7%) invasive cancers. 204 of the cancers without a whole size were in London, 177 were in South East (West) and 131 were in North East, Yorkshire and Humber. Regional QA reference centres should ascertain why these important data were not available from their screening units.

Only 14% 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. Regional QA reference centres and regional QA surgeons should review the data for these cancers to ascertain the reason for this unusual clinical practice. 10% of cancers treated with mastectomy were recorded as having immediate reconstruction. Of these cancers, 229 (59%) were invasive, 13 (3%) were micro-invasive, and 145 (37%) were non-invasive. 7.8% of invasive cancers treated with mastectomy were recorded as having immediate reconstruction compared with 18.7% of micro-invasive and non-invasive cancers treated with mastectomy.

WAITING TIME

95% and 85% of the women had their first therapeutic treatment within 2 month and 1 month, respectively, of their first assessment visit. All regions except South East (East) met the minimum standard that 90% of

women should have their first therapeutic treatment within 2 months of their first assessment visit. 71% of women had their first therapeutic surgery within 2 months of their screening visit. This varied between 53% in South East (East) and 90% in Northern Ireland.

LYMPH NODES AND INVASIVE GRADE

In the UK as a whole, 97% of surgically treated invasive cancers had known nodal status. This varied between 89% in North West and 99% in East Midlands, West Midlands, Wales, Northern Ireland and North East Yorkshire and Humber. In 24 screening units nodal status was ascertained for 100% of surgically treated invasive cancers. In 1 screening unit 78% 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 and to ensure that this important information is recorded in future. 196 cancers had their positive nodal status determined from a sentinel lymph node procedure. However, only 80% of these cancers appear to have had subsequent axillary operations. It is believed that the axillary operations carried out during training on some of the remaining cases were sampling procedures with the sentinel lymph node technique. Regional QA reference centres and regional QA surgeons should follow up these cases to ensure that the appropriate nodal procedures have been undertaken and that the axilla has not been under-treated.

Overall, 7% 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 1% in Northern Ireland to 13% in London and 14% 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. The proportion of invasive cancers with positive nodal status has fallen slightly in the last two years. This may be related to the age expansion, as the proportion of cases with positive nodes decreases as age increases.

Although nodal assessment is not usually indicated for non-invasive cancers, 26% of non-invasive cancers had known nodal status. This varied from 16% in South West to 35% in Wales and 36% in East Midlands. 1% 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. Mastectomy treated non-invasive cancers are more likely to have lymph nodes removed in surgery than those with conservation surgery. 66% 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. For 19 cases (12%) a B5b (Invasive) core biopsy predicted invasive disease but the invasive status of the cancer was determined to be non-invasive after surgery.

Overall, 31% of invasive cancers were Grade I, 49% were Grade II and 18% were Grade III. Grade was not assessable for 84 cases (1%) and unknown for 67 cases (%). There appear to be 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 95% of surgically treated invasive cancers. As expected with cancers detected by screening, the majority (61%) of cancers fell into the two best prognostic groups, EPG (Excellent Prognostic Group) and GPG (Good Prognostic Group). The proportion of EPG and GPG cancers varied from 55% in Northern Ireland to 63% in East Midlands, South East (East), South West, North West 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. In Northern Ireland it reflects that relatively high proportion of node positive cancers. Regional QA reference centres and their regional QA pathologists and regional QA surgeons should investigate the reasons for the significant variations in the proportion of EPG, GPG and PGP cancers apparent for some screening units in the NPI control charts.

SURGICAL CASELOAD

There were 484 consultant breast surgeons working in the UK NHSBSP in 2004/05, a rise of 15% from the 419 surgeons in 2000/01. 89% of women were treated by a surgeon with a screening caseload of at least 20 cases. Of the 151 surgeons with screening caseload of less than 10 cases, 40% treated more than 30 other cases during 2004/05. Information was unavailable to explain the low caseload of 10 surgeons treating a total of 30 women, compared to 15 surgeons in 2003/04.

NUMBER AND SEQUENCE OF OPERATIONS

In the UK as a whole, 16% of cancers with a proven non-operative diagnosis by C5 cytology and/or B5 core biopsy underwent more than one therapeutic operation. This varied from 11% in North West to 20% in South West. 14% of invasive cancers and 17% of non-invasive cancers had more than one therapeutic operation. The proportion of invasive cancers having a repeat operation varied from 10% in North West to 18% in South West. The proportion of non-invasive cancers having a repeat operation varied from 11% in North West to 23% in South East (West). Invasive cancers with B5b (Invasive) core biopsy had the smallest proportion of repeat operations (12%), followed by invasive cancers diagnosed by C5 cytology only (16%). Invasive cancers with a B5a (Non-invasive) core biopsy had the highest repeat operation rate (56%). Non-invasive and micro-invasive cancers with a B5a (Non-invasive) core biopsy had a repeat operation rate of 21%.

63% of invasive cancers with a B5b (invasive) core biopsy underwent a single therapeutic operation consisting of conservation surgery with an axillary procedure. A further 6% of these cancers had conservation surgery with an axillary procedure followed by conservation surgery, presumably to clear involved or close margins. 66% of invasive cancers diagnosed by C5 cytology only underwent a single therapeutic operation consisting of conservation surgery with an axillary procedure. A further 16% of these cancers underwent a single therapeutic operation consisting of a mastectomy and an axillary procedure. Presumably in these cases, the clinical and radiological signs were strongly supportive of the presence of invasive disease. 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. 11% of invasive cancers with a B5a (Non-invasive) core biopsy underwent a single operation consisting of conservation surgery with an axillary procedure and 23% 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 non-operative diagnosis.

In the UK as a whole, axillary surgery was performed for 98% of invasive cancers with a B5b (Invasive) core biopsy. For 98% of these cancers, the nodal status was determined at the first operation. For 96% of invasive cancers diagnosed by C5 cytology only, axillary surgery was performed at the first operation with 2% having their axillary surgery at a repeat operation. 89% of invasive cancers with a B5a (Non-invasive) diagnosis had axillary surgery. 42% of these cancers had their axillary surgery at the first operation, with repeat operations providing nodal data for the additional 47%. 148 invasive cancers with a B5b (Invasive) core biopsy, 18 invasive cancers with C5 cytology and 60 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 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.

ADJUVANT THERAPY

Hormone therapy and radiotherapy were the main adjuvant treatments used for women in all age groups. The proportion of women receiving hormone therapy increased in women over 64 year old and the proportion receiving radiotherapy decreased. Chemotherapy was the least used adjuvant therapy. The proportion of women receiving chemotherapy decreased with age from 24% in women aged 50-52 to 7% in women aged 68-70. The most common treatment for screen detected breast cancer in the UK was

surgery, hormone therapy and radiotherapy. 43% of women received this treatment combination. ER status was unknown for 484 (6%) of invasive cancers and 53% of non-invasive cancers. 84% of invasive cancers were ER positive. PgR status was available for 75% of ER negative invasive cancers. Cerb-B2/HER-2 status data were available for only 22% of the invasive cancers included in the audit. Of the 1,891 invasive cancers with known Cerb-B2/HER-2 status, 27% were positive. 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.

It took longer for women without a non-operative diagnosis to undergo an open biopsy than for women with non-operative diagnosis of breast cancer to have their first surgery. Only 31% of cases received radiotherapy within 60 days of their final surgery. Women in South East (East) and South East (West) experienced the longest waits for radiotherapy.

91% of women with invasive cancer treated with conservation surgery received adjuvant radiotherapy, compared to only 52% of women with conservatively treated non-invasive cancer. 67% of the 492 conservatively treated invasive cancers without adjuvant radiotherapy were small (<15mm) tumours. 63% of the conservatively treated non-invasive cancers without radiotherapy were other (low or medium) grade and 59% were small (<15mm) in diameter. Regional QA reference centres and QA surgeons should audit the cancers in their regions to determine the reasons that some invasive cancers treated with conservation surgery did not receive radiotherapy. 17% of women with ER negative, node positive invasive cancers did not receive chemotherapy compared to 52% of ER negative, node negative invasive cancers. This indicates that nodal status was taken into account when deciding whether women would benefit from chemotherapy. 87% of the 271 ER negative, node negative invasive cancers given chemotherapy were Grade III. Regional QA reference centres and QA surgeons should audit the cancers in their regions to determine the reasons that some women with ER negative, node positive invasive cancers did not receive chemotherapy.

The decision to give hormone therapy did depend to a large extent on ER and PgR status. However, 8% of ER positive, invasive cancers and 44% of ER negative, PgR positive invasive cancers did not receive hormone therapy and 8% of ER negative invasive cancers did receive hormone 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 invasive and non-invasive cancers with unknown or negative ER status. 45% of ER negative, invasive cancers with negative PgR status did not receive chemotherapy. Regional QA reference centres and regional QA surgeons should determine the reasons why chemotherapy therapy was not given to these cancers.

SURVIVAL

Of the 8,880 cancers with known invasive status submitted to the survival analysis for the period 1 April 1999 to 31 March 2000, 182 (2%) were excluded because they were not registered at cancer registries. A further 96 cancers (1%) were excluded because they were not confirmed to be primary tumours and 35 more because their invasive status was not known. The survival analysis included 8,567 screen detected cancers. Data completeness has improved markedly in the 8-year history of this audit with only 10% of cancers in 1999/00 having an unknown NPI compared with 54% in 1992/93. The 5 year relative survival for invasive cancers in 1999/00 was 96.5% (95%CI 95.8%-97.2%). Women with micro-invasive and non-invasive breast cancer have a 5 year 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 was significantly lower for the 1% of invasive cancers with diameter greater than 50mm, for the 18% of invasive cancers which were Grade III and for the 24% of cancers which were node positive. 5 year relative survival in women with <10mm diameter cancers and/or Grade I cancers was no worse than that of the general UK population. 5 year relative survival in women with node negative cancer was 99.2% (95%CI 98.5%-99.8%). Women with cancers in the moderate and poor NPI prognostic groups (MPG1, MPG2 and PPG) have significantly lower survival rates at 3 and 5 years than those with cancers in the good and excellent prognostic groups (GPG and EPG).

TOPICS TO BE AUDITED BY REGIONAL QA REFERENCE CENTRES

Topic	Number of cases affected	Region(s)	Reference
High proportion of B5c (Not assessable/unknown) cases	140	North East, Yorkshire and Humber	P.19
High proportion of micro-invasive cases	21	London	P.20
B5a cancers which become micro-invasive after surgery	125	all	P.21
False positive core biopsy	SW: 12 NEY&H: 10	South West and North East Yorkshire and Humber	P.25
Mastectomy as diagnostic open biopsy	21	all	P.25
No non-operative diagnosis attempted	Inv: 17 Non-inv: 11	all	P.25
High proportion of C4 and/or B4 cytology/core biopsy diagnosis	Inv: 148 Non-inv: 193	all	P.26 & P.27
No surgery cases	188	all	P.29 & P.32
High grade and large non-invasive cancers treated with conservation surgery	111	all	P.31
Unknown invasive whole size information	744	all	P.34
Low mastectomy rate for large invasive cancers	SEW: 15 NW: 18	South East (West) and North West	P.33
High mastectomy rate for small invasive cancers	593	all	P.35
Nodal status data completeness	83	North West	P.42 & P.43
Positive nodal status determined by sentinel lymph nodes procedures (without subsequent surgery)	24	all	P.44
Insufficient nodal information (includes invasive cancers with no lymph nodes taken in surgery)	770	all	P.45
Nodal assessment for non-invasive cancers	—	all	P.46 & P.60
Interpretation of invasive grade definition	—	all	P.49
Significant variance in proportion of cancers in NPI groups	—	all	P.50
Mastectomy carried out on C5 invasive cancers	144	all	P.58
Axillary surgery preformed at first operation on cases with B5a non-operative diagnosis	228	all	P.59
Availability of Cerb-B2 and HER-2 data	—	all	P.68
Radiotherapy waiting time (over 200 days after final surgery)	667	all	P.70
No radiotherapy for large invasive cancers treated with conservation surgery	78	all	P.72
No radiotherapy for large high grade non-invasive cancers	195	all	P.72
No hormone therapy for ER positive or ER negative PgR positive invasive cancers	575	all	P.74
Hormone therapy given to cancers with ER and PgR negative or unknown	397	all	P.74 & P.75

CHAPTER 1

BREAST CANCERS DETECTED BY THE UK NHSBSP

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

The 2004/05 BASO breast audit examined surgical screening activity undertaken for the 1,748,997 women screened in England, Wales, Northern Ireland and Scotland between 1 April 2004 and 31 March 2005. 14,040 cancers were detected by the UK NHSBSP in women of all ages. This equates to a cancer detection rate of 8.0 cancers per 1,000 women screened. This varies from 7.2 per 1,000 screened in Northern Ireland to 8.8 per 1,000 screened in South West. Figure 1 shows the invasive status of these 14,040 cancers. Overall, 11,063 (79%) were invasive, 2,785 (20%) non-invasive and 168 (1%) micro-invasive. The invasive status of 23 cancers was unknown.

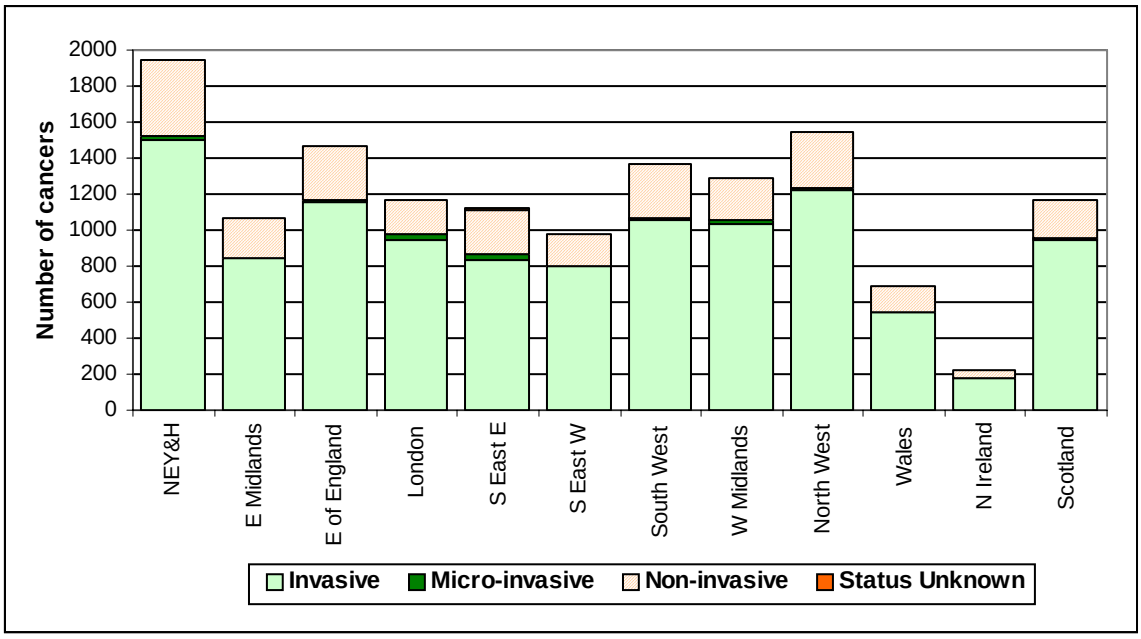

Figure 1 (Table 1): Variation in the number and invasive status of screen detected breast cancers in each region and country contributing to the 2004/05 ABS at BASO breast audit (257 missing cancers included)

The UK invasive cancer detection rate was 6.3 per 1,000 women screened, varying between 5.7 per 1,000 screened in Northern Ireland and 6.9 per 1,000 screened in East of England. 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 1.4 per 1,000 screened in London to 2.0 per 1000 in South East (East) and South West.

The following summary table shows that invasive and non-invasive cancer detection rates have risen steadily since 1996/97. The number of women screened has risen by more than 150,000 since the NHSBSP started to expand the screening programme to invite women up to 70 years of age in 2002/03. This and the implementation of two-view screening at every screen has had a marked effect on the number of cancers detected, with 750 more cancers diagnosed in 2004/05 compared with 2003/04. This effect should increase further as the full effect of these initiatives is realised.

9 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
2004/05	11,063	2,953	14,040	1,748,997	6.3	1.7	8.0

*Data from Scotland are absent in 1998/99

During the audit period, one of the East of England screening units was suspended and another did not participate in the audit due to internal issues. As a result, further information concerning their 257 cancers was not available and thus these cancers have been excluded from the remainder of the analyses in this year's ABS at BASO screening audit. This year is the first year that cancers from Scotland have been reported for individual screening units. This increases the total number of screening units included in the audit to 93, excluding the 2 East of England units that did not participate in the audit.

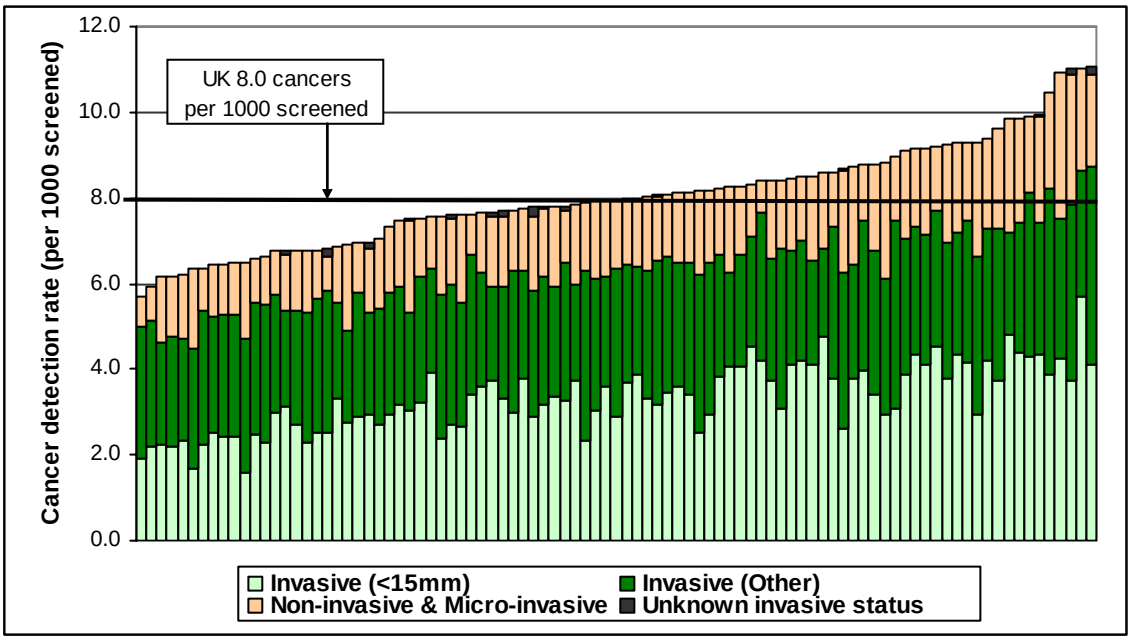

Figure 2: Variation with screening unit in the overall cancer detection rate, expressed as the number of cancers detected per 1,000 women screened

Figure 2 shows the cancer detection rates in each screening unit according to invasive status. The overall cancer detection rate varied from 5.7 per 1,000 women screened in a unit screening 15,824 women to 11.1 per 1,000 women screened in a unit screening 6,059 women.

1.2 Age Profile of Women with Screen Detected Breast Cancer

The majority (72%) 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, 16% of screen detected breast cancers were detected in women aged 56-58 and 16% for age 59-61. 21% of screen detected breast cancers were detected in women aged 65-70 compared with 18% in

this age group in 2003/04 and 13% in 2002/03.

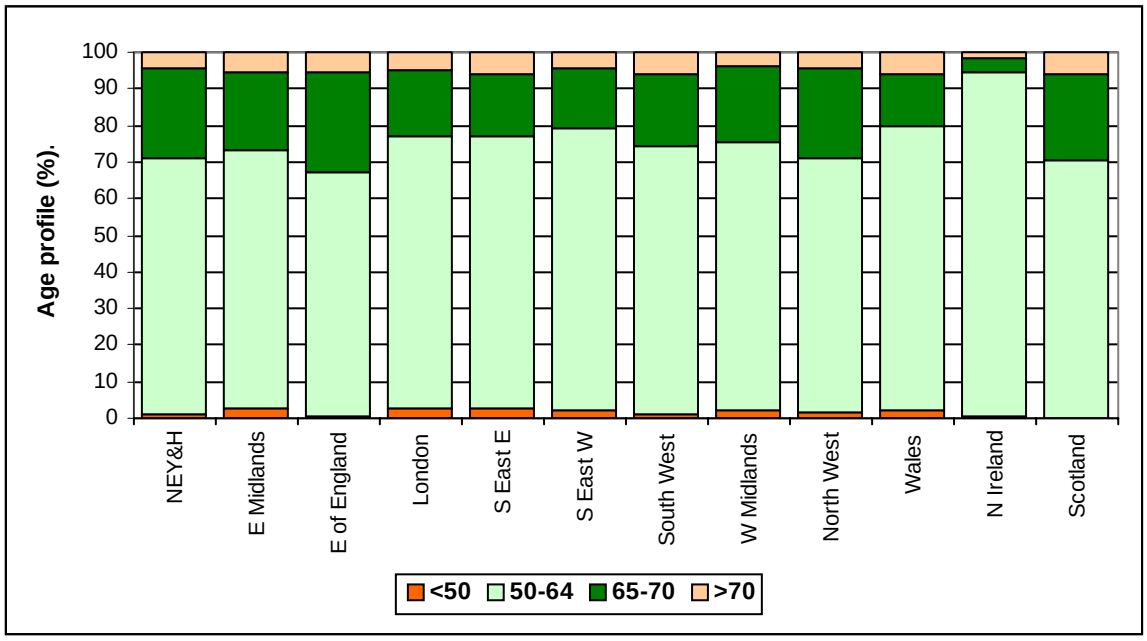

Figure 3 (Table 2): Age at screening appointment

The expansion of the NHSBSP to include women aged 50-70 has now been rolled out across the country. At the start of this audit period, 38 of the 81 breast screening units in England had extended their programmes. This had increased to 75 units by April 2005. These changes are reflected in the proportion of breast cancers detected in women aged 65-70, which ranged from 4% in Northern Ireland where the expansion was not implemented during the audit period, to 27% in East of England where all their 11 units had started the expansion. In Scotland where 24% of the cancers detected were in women aged 65-70, only 4 of the 6 units had started the expansion by the end of the audit period. It is anticipated that the increase in proportion of screen detected cancers in women aged 65-70 will continue in areas, such as Scotland, as the expansion becomes fully implemented.

AGE OF SCREEN DETECTED BREAST CANCERS (%)			
Age	***2002/03***	***2003/04***	***2004/05***
<50	*2*	*2*	*2*
50-52	*17*	*15*	*14*
53-55	*16*	*13*	*12*
56-58	*16*	*17*	*16*
59-61	*16*	*16*	*16*
62-64	*16*	*14*	*14*
65-67	*7*	*10*	*11*
68-70	*6*	*8*	*10*
70+	*4*	*5*	*5*
Total	***100***	***100***	***100***

COMMENT:

- 1,748,997 women were screened by the UK NHSBSP in England, Wales, Northern Ireland and Scotland between 1 April 2004 and 31 March 2005.
- 14,040 cancers were detected in women of all ages. This equates to a cancer detection rate of 8.0 cancers per 1,000 women screened.
- 257 cancers from two units in the East of England region are not included in the audit.
- 72% 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 75% in 2003/04. 21% of screen detected breast cancers were detected in women aged 65-70 compared with 18% in this age group in 2003/04 and 13% in 2002/03.

CHAPTER 2

DIAGNOSIS OF CANCERS

2.1 Non-operative Diagnosis

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

DIAGNOSTIC CATEGORIES		
Non-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. 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 8 such cancers in 2004/05, four of which were in West Midlands.

2.1.1 Non-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 should have a non-operative diagnosis by cytology or needle histology after a maximum of two attempts**
Target Standard	**90% of women should 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 non-operative pathological diagnosis**

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

In 2004/05, 93% of cancers detected in the UK NHSBSP were diagnosed non-operatively. All regions met the target of 90% non-operative diagnosis rate with only 4% variation between regions. East Midlands, West Midlands and Northern Ireland achieved the highest overall non-operative diagnosis rates at 95%. Figure 4 shows the non-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 (45%) 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 (20% and 25% respectively). In Scotland, final needle aspiration (FNA) biopsies were carried out on suspicious

lymph nodes. In one Scottish unit, the protocol indicates that cases might receive both cytology and core biopsy and the results of the FNA are given immediately to the women before they leave the assessment clinic.

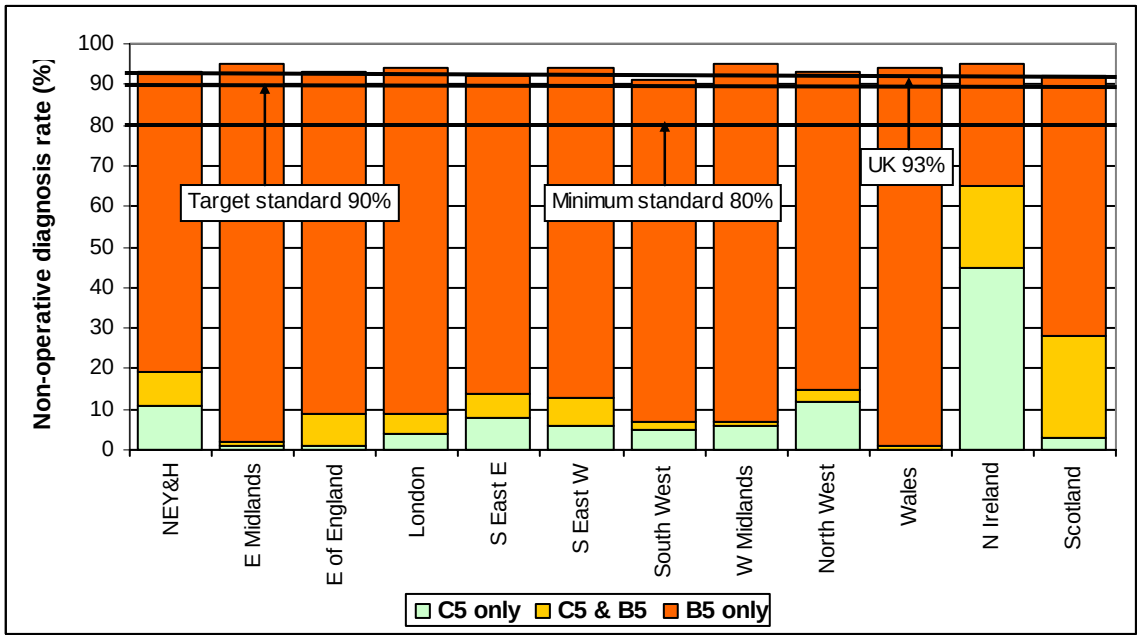

Figure 4 (Table 4): Variation in non-operative diagnosis rate and the proportion of cancers detected by cytology alone, core biopsy alone or cytology and core biopsy, as a percentage of cancers detected

As demonstrated in the table below, over the last 9 years the non-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 80% in the proportion of cancers diagnosed by B5 core biopsy alone.

9 YEAR COMPARISON: NON-OPERATIVE DIAGNOSIS RATES							
Year of data collection	***Total cancers***	***Number of cancers with C5 and/or B5***	***% with non-operative diagnosis by***				***Non-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*
*2004/05**	*13,783*	*12,856*	*7*	*6*	*-*	*80*	*93*

*Data from Scotland are absent in 1998/99 and 1999/00. 275 cancers from East of England are absent in 2004/05.

The following summary table shows how the non-operative diagnosis rates in each region have changed over the last 3 audit periods. In North West, as the non-operative diagnosis rate has risen by 4% from 89% to 93%, the proportion of cancers diagnosed by C5 cytology alone has fallen from 16% in 2002/03 to 12% in 2004/05. However, in Northern Ireland where similar improvements in the non-operative diagnosis rate have been achieved, the proportion of cancers being detected using cytology alone has increased from 30% in 2002/03 to 45% in 2004/05.

3 YEAR SUMMARY: NON-OPERATIVE DIAGNOSIS RATES								
	Non-operative diagnosis rate (%)				Cancer diagnosed by C5 only (%)			
Region	2002/03	2003/04	2004/05	3 Year 2002-05	2002/03	2003/04	2004/05	3 Year 2002-05
N East, Yorks & Humber	92	93	94	93	15	13	11	13
East Midlands	94	94	95	94	10	4	1	5
East of England	91	93	93	92	11	6	1	6
London	91	93	93	92	5	5	4	5
South East (East)	90	93	93	92	12	13	8	11
South East (West)	90	94	93	92	12	6	6	8
South West	92	92	91	92	5	6	5	5
West Midlands	92	92	95	93	8	6	6	7
North West	89	92	93	91	16	14	12	14
Wales	92	94	94	93	2	1	0	1
Northern Ireland	89	94	95	93	30	31	45	35
Scotland	91	92	92	92	9	5	3	6
United Kingdom	**91**	**93**	**93**	**92**	**10**	**8**	**7**	**8**

Figure 5 shows the non-operative diagnosis rates achieved by individual screening units. 77 screening units met or exceeded the overall non-operative diagnosis target of 90%. Non-operative diagnosis rates varied from 82.8% in a screening unit with a total of 204 cancers to 100% in a screening unit with 34 cancers. This is the first year that all screening units have met the 80% minimum standard for overall non-operative diagnosis. The screening unit with the lowest non-operative diagnosis rate in 2003/04 (79.5%) has merged with another unit in the same region, and the merged unit has a non-operative diagnosis rate of 96.5% in 2004/05.

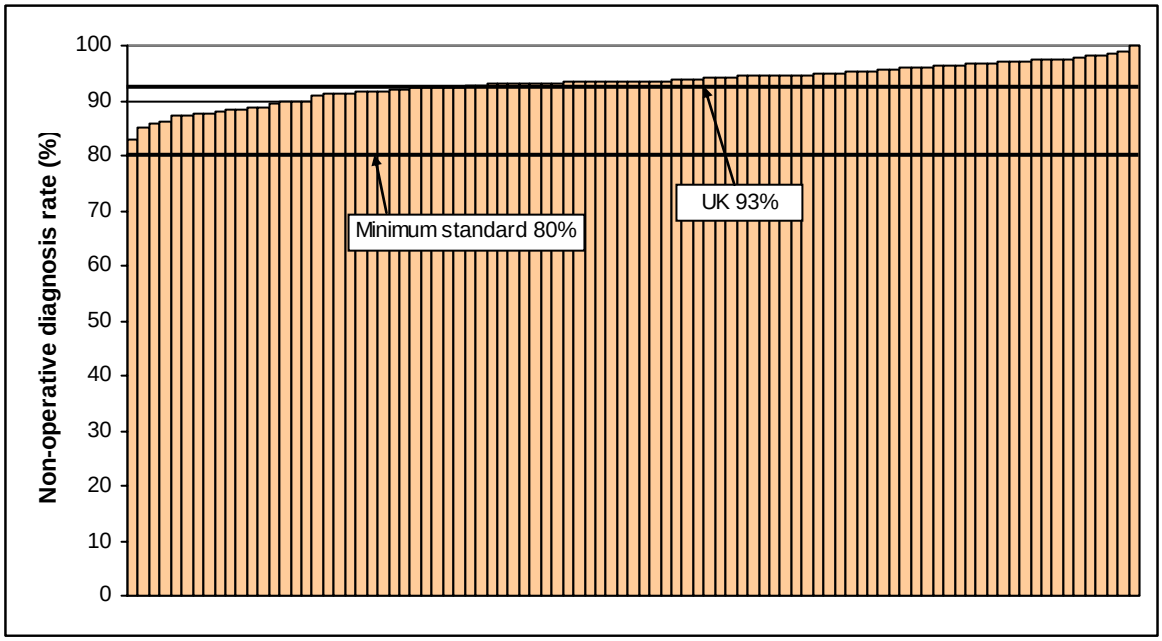

Figure 5: Variation in non-operative diagnosis rate with screening unit, expressed as a proportion of cancers detected in each screening unit

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

Overall, the non-operative diagnosis rates for invasive and non-invasive cancers were 97% and 80% respectively. Figure 6 shows the regional variation in the proportion of invasive and non-invasive cancers without a non-operative diagnosis. The 90% target for non-operative diagnosis which applies to all cancers was achieved by all regions for invasive cancers with only 3% (351 cancers) not having a non-operative diagnosis. The proportion of non-invasive cancers without a non-operative diagnosis varied from 15% in East Midlands to 25% in South West. The UK non-invasive non-operative diagnosis rate decreased from 81% in 2003/04 to 80% in 2004/05. No region met the 90% target and 6 regions failed to meet the 80% minimum standard.

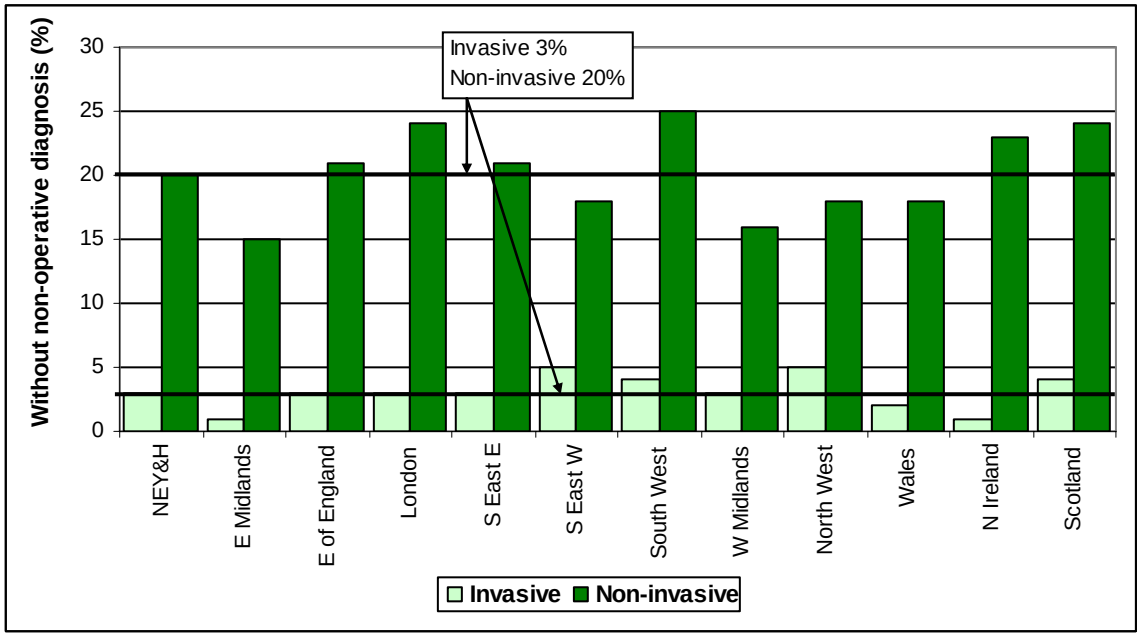

Figure 6 (Tables 5, 6): Variation in invasive cancers and non-invasive cancers without non-operative diagnosis

COMMENT:

- In 2004/05, 93% of cancers detected in the UK NHSBSP were diagnosed non-operatively. All regions met the 90% target. The non-operative diagnosis rates for invasive and non-invasive cancers were 97% and 80% respectively.
- 77 screening units met or exceeded the overall non-operative diagnosis rate target of 90%. This is the first year that all screening units have met the 80% minimum standard.
- In the UK as a whole, the overall non-operative diagnosis rate has been constant at 93% for the last 2 years, while the proportion of cancers diagnosed by C5 cytology alone fell from 8% in 2003/04 to 7% in 2004/05.
- For non-invasive cancers, no region met the 90% target for non-operative diagnosis and 6 regions failed to meet the 80% minimum standard.
- The proportion of non-invasive cancers without a non-operative diagnosis varied from 25% in South West to 15% in East Midlands.

2.1.3 Invasive Status at Non-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 11,947 cancers with a B5 diagnosis, 2,750 (23%) were B5a (Non-invasive), 8,999 (75%) were B5b (Invasive) and 198 cancers (2%) had invasive status B5c (Not Assessable or Unknown) at core biopsy. Of the latter cancers, 140 were in North East, Yorkshire and Humber. The regional QA reference centre should review these cases and ascertain the reason for the relatively high proportion of B5c cases which has increased from 4% of all diagnostic core biopsies in 2003/04 to 9% in 2004/05.

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 (33%). This may be related to the relatively high proportion of cancers diagnosed by C5 cytology alone in Northern Ireland (45%, 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.

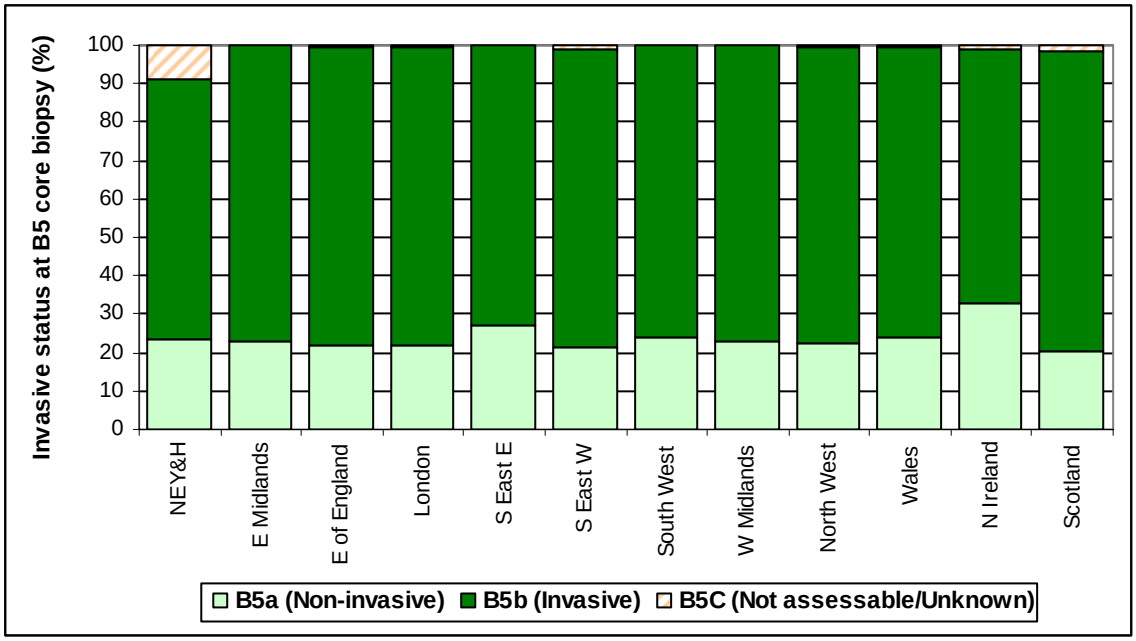

Figure 7 (Table 7): Variation in the proportion of cancers with B5a (Non-invasive), B5b (Invasive) and B5c (Not Assessable or Unknown) core biopsy diagnosis, expressed as a percentage of cancers diagnosed by core biopsy

2.1.4 Invasive Status at Non-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. 27 cases of the 2,750 cancers with a B5a (Non-invasive) non-operative diagnosis had no surgery and 2 cases had unknown surgery, so the non-operative diagnosis of non-invasive cancer was retained. Of the remaining 2,721 cases, 2,055 (76%) had surgical confirmation of non-invasive cancer and 125 (5%) had a diagnosis of micro-invasive cancer following surgery. London has a relatively high proportion of micro-invasive cancers, with 21 cases (9%) found to be micro-invasive following a B5a core biopsy. The regional QA reference centre should audit these cases to ascertain if they are localised to one unit. For 541 (20%) cancers, invasive disease was found at surgery. This varied from 10% in North West to 25% in Scotland and 28% in London and Wales (Figure 8).

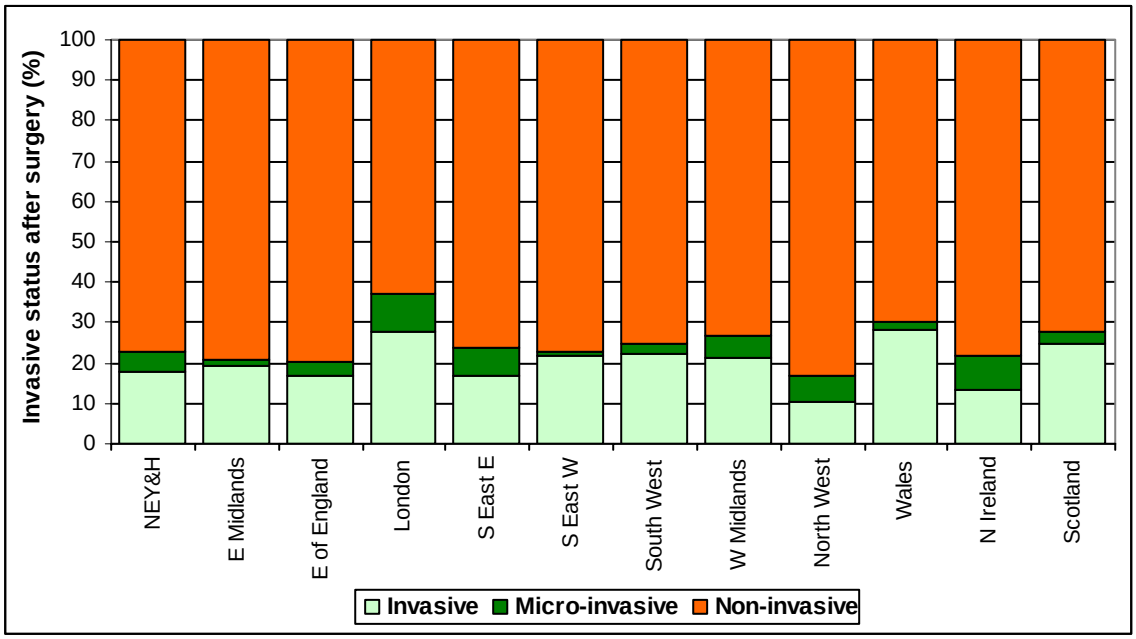

Figure 8 (Table 8): Variation in the invasive status after surgery of cases with B5a (Non-invasive), expressed as a percentage of cancers diagnosed with B5a

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 B5a (Non-invasive) by core biopsy, the proportion of B5a cancers found to be invasive after surgery varied from 0% in 3 units, which had 15 to 49 B5a cases, to 40% in one unit which had 30 B5a cases. In 6 screening units, more than 20% of B5a diagnosed cancers were found to be micro-invasive after surgery. Regional QA reference centres should review these cases and ascertain the reasons behind these results, implementing corrective action as appropriate.

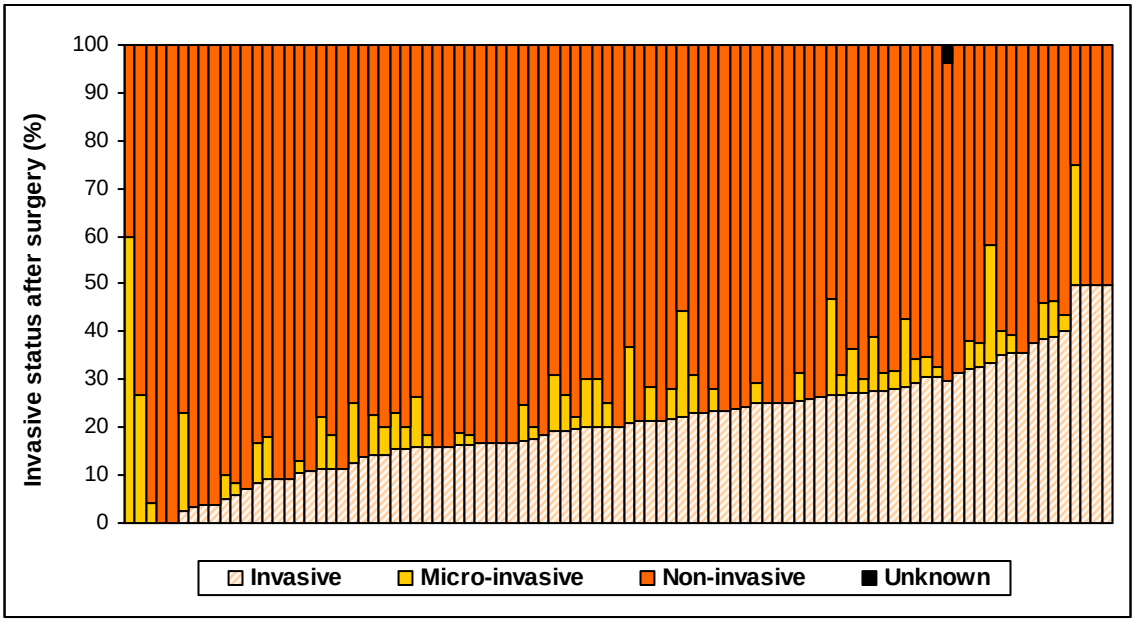

Figure 9: Variation with screening unit in the invasive status after surgery of cases with B5a (Non-invasive) non-operative diagnosis, expressed as a percentage of cancers diagnosed as B5a (Non-invasive)

Of the 8,999 cancers with a B5b (Invasive) non-operative diagnosis, 161 cases had no surgery and 18 cases had unknown surgical treatment, so the invasive status of the core biopsy was retained. In the UK as a whole, 99% (8,774 cases) of the remaining 8,820 cases had surgical confirmation of invasive cancer, the invasive status predicted by core biopsy. These data are shown for each region in Table 9. 46 cases with a B5b (Invasive) non-operative diagnosis were found to have non-invasive or micro-invasive cancer with no associated invasive disease following surgery.

The summary table below shows that the proportion of cancers that had a B5a (Non-invasive) non-operative diagnosis but which were found to be micro-invasive or invasive after surgery has fallen by 5% in the past 5 years (from 29% to 24%). The proportion of cases with a B5b (Invasive) core biopsy which were not confirmed to be invasive following surgery has remained stable for the last 5 years.

5 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*
*2004/05**	*2,750*	*666*	*24*	*8,999*	*46*	*0.5*

*Data are absent from 2 units in East of England in 2004/05

2.1.5 Invasive Status of Cancers Diagnosed by C5 Cytology Only

Table 4 shows the invasive status of the 909 cancers diagnosed by cytology only, not including cases diagnosed by both C5 cytology and B5 core biopsy. Overall, 6 of these cancers had no surgery and 1 had unknown surgical treatment. 96% of the 902 cancers diagnosed by C5 cytology alone with known surgery treatment were invasive, varying from 80% in Scotland to 100% in Wales (2 cases) and East Midlands (9 cases) (Table 10). In the UK as a whole, 32 cancers (4%) diagnosed by C5 cytology alone were non-invasive and 7 (1%) were micro-invasive. The invasive status of 1 cancer was unknown.

COMMENT:

- For 20% of cancers with a B5a (Non-invasive) non-operative diagnosis, invasive disease was found at surgery. This varied between 10% in North West and 28% in London and Wales.
- For units which had 15 or more cancers diagnosed as B5a (Non-invasive) core biopsy, the proportion of B5a cancers found to be invasive after surgery varied from 0% in 3 units to 40% in a unit which had 30 B5a cases.
- In 6 screening units, more than 20% of B5a diagnosed cancers were found to be micro-invasive after surgery. Regional QA reference centres should review these cases and ascertain the reasons behind these result, implementing corrective action as appropriate.
- 46 cases (0.5%) with a B5b (Invasive) non-operative diagnosis were found to have non-invasive or micro-invasive cancer with no associated invasive disease following surgery.
- 96% 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 non-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 non-operative diagnosis was requested.

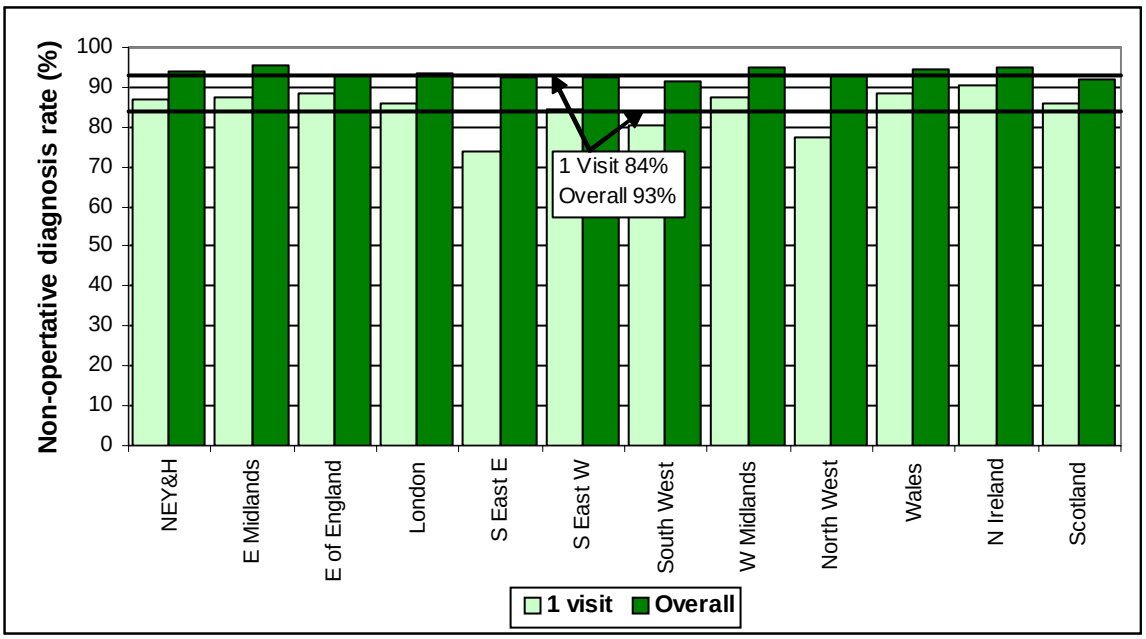

Figure 10 (Table 13): The proportion of cancers diagnosed by C5 cytology and/or B5 core biopsy at 1 visit, as a proportion of all screen detected cancers, compared to the overall non-operative diagnosis rate

The majority (89%) 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 non-operative diagnosis rates in each region were affected by repeat visits to an assessment clinic. In the UK as a whole, 84% of the 13,783 cancers included in the audit achieved a non-operative diagnosis of cancer after one assessment clinic visit. 2 regions (South East (East) and North West) had a non-operative diagnosis rate below the 80% minimum standard after the first assessment clinic visit.

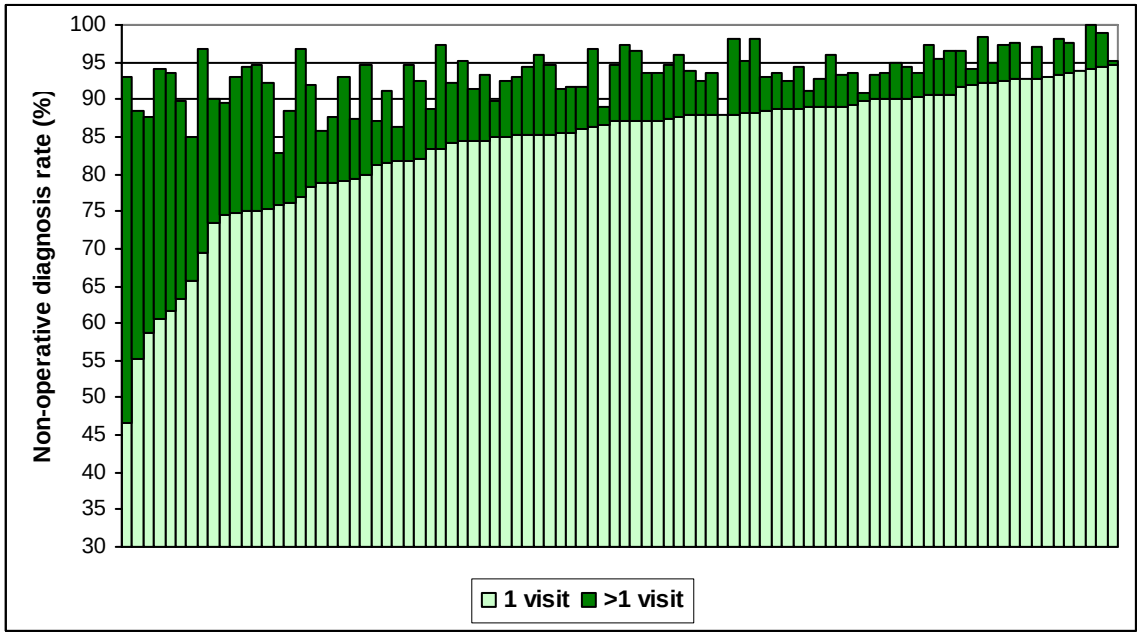

Figure 11: Variation in the proportion of cancers diagnosed by C5 cytology and/or B5 core biopsy at 1 visit and more than 1 visit, as a proportion of all screen detected cancers in each screening unit

Figure 11 illustrates the ability of individual screening units to achieve a definitive non-operative diagnosis at one assessment visit. 22 screening units failed to achieve the 80% non-operative diagnosis minimum standard at one visit, but all the units reached the minimum non-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. Regional QA reference centres should liaise with their screening units in order to clarify their policies for recording visits to assessment clinics so that more definitive data are available for this important area in future audits.

COMMENT:

- 89% of women had all attempts at core biopsy and/or cytology performed at one assessment clinic visit.
- 22 screening units failed to achieve the 80% non-operative diagnosis minimum standard at one visit.
- Regional QA reference centres should liaise with their screening units in order to clarify their policies for recording visits to assessment clinics, so that more definitive data are available for this important area in future audits.

2.3 Diagnostic Open Biopsies

2.3.1 Status of Diagnostic Open Biopsies

Quality Objective	**To minimise unnecessary surgery (ie open surgical biopsies that prove to be benign)**
Outcome Measure	**Benign open diagnostic biopsies should be: <15 per 10,000 prevalent screen <10 per 10,000 incident screen**

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

Figure 12 shows the regional variation in benign and malignant diagnostic open biopsy rates. In the UK as a whole in 2004/05, 2,722 diagnostic open biopsies were performed. Of these, 1,795 (66%) were benign and 927 (34%) were malignant.

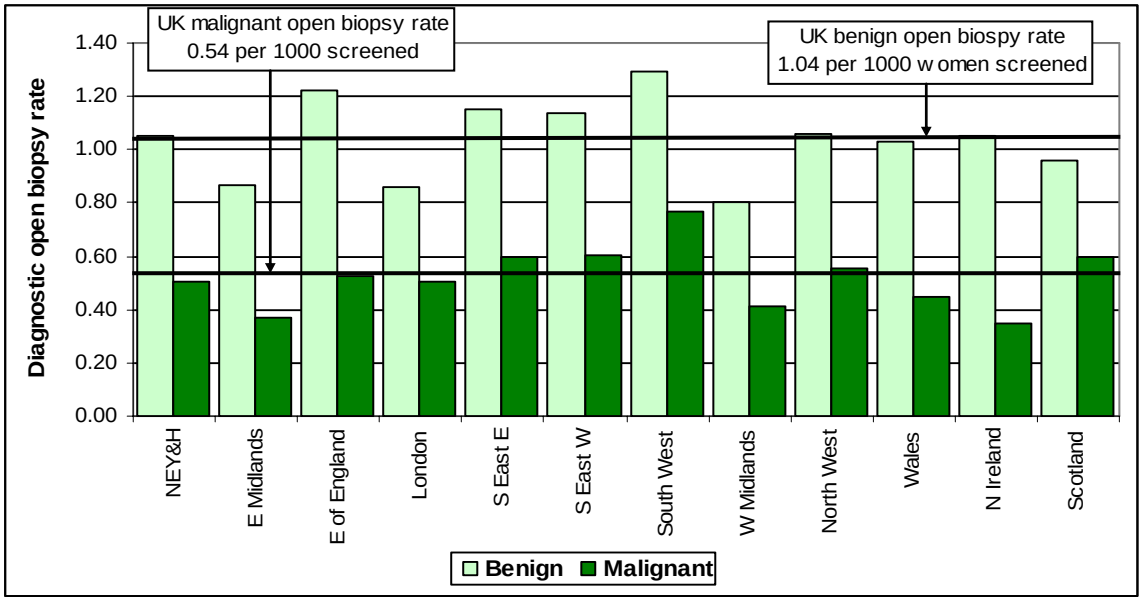

Figure 12 (Table 14): Variation in benign and malignant diagnostic open biopsy rates expressed as the number of diagnostic open biopsies undertaken per 1,000 women screened

The benign open biopsy rate was 1.05 per 1,000 women screened, varying from 0.80 per 1,000 in West Midlands to 1.33 per 1,000 in East of England. Overall, the malignant open biopsy rate was 0.54 per 1,000 women screened, varying from 0.35 per 1,000 in Northern Ireland to 0.77 per 1,000 in South West.

9 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*
*2004/05**	*1,717,170*	*1,795*	*927*	*1.05*	*0.54*

*Data from Scotland are absent in 1998/99 and 1999/00. Data for 2 units from East of England are absent in 2004/05

The summary table shows that the benign open biopsy rate has fallen over 9 years from 1.50 per 1,000 women screened in 1996/97 to 1.05 per 1,000 women screened in 2004/05. Over the same period, the malignant open biopsy rate has fallen from 2.04 per 1,000 to 0.54 per 1,000 as the non-operative diagnosis rate has increased from 63% to 93%.

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 3 false positive cytology cases and 42 false positive core biopsy cases. 10 false positive core biopsy cases were from North East, Yorkshire and Humber region and 12 from South West. Regional QA reference centres and their pathology QA co-ordinators should review these cases to ascertain the reasons behind these results, implementing corrective action as appropriate.

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

The number of cancers diagnosed by open biopsy has fallen by 2.7% to 927 cancers in 2004/05 compared with 2003/04. Of these, 351 (38%) were invasive, 17 (2%) micro-invasive and 553 (60%) non-invasive (Table 16). Invasive status was unknown for 6 cases. 4 of these were in East Midlands and 2 in London. 462 (50%) of the 927 cases did not have further surgical treatment after their diagnostic open biopsy. 21 of the 927 cases were treated by mastectomy or mastectomy with axillary surgery as the first treatment, presumably because radiological and clinical opinion was strongly supportive of the presence of malignant disease. Regional QA reference centres should ascertain the reason that mastectomies were performed as the first surgical operation for these women.

Tables 17 and 18 describe the non-operative history of cancers diagnosed by open biopsy according to whether the women had no non-operative cell or tissue sample, cytology only, core biopsy only or both cytology and core biopsy. For 69% of invasive cancers diagnosed by open biopsy there had been unsuccessful attempts to obtain a non-operative diagnosis using core biopsy alone (Table 17). For non-invasive cancers the proportion of cases where non-operative diagnosis had been attempted with core biopsy alone was higher at 89% (Table 18).

Table 17 also shows that, of the 351 invasive cancers diagnosed by open biopsy, 17 (5%) had no non-operative procedure recorded. Of the 553 non-invasive cancers diagnosed by open biopsy, 11 (2%) had no non-operative procedure recorded. Regional QA reference centres and regional QA surgeons should audit these 28 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 non-operative diagnosis should be ascertained.

5 YEAR COMPARISON:
NON-OPERATIVE HISTORY OF INVASIVE CANCERS DIAGNOSED BY OPEN BIOPSY

Year of data collection	Total invasive cancers	Diagnosed by open biopsy	No non-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
2004/05*	10,849	351	17	5	43	12	242	69	49	14

*Data for 2 units from East of England are absent in 2004/05

The 5 year summary table above shows that, 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 12%, while the proportion undergoing core biopsy alone has risen from 36% to 69%.

Figure 13 shows the highest non-operative result for cancers without a non-operative diagnosis which were ultimately determined to be invasive. Overall, 10% of invasive cancers diagnosed by open

biopsy (35 cases) had an inadequate (C1) cytology sample or a normal (B1) core biopsy sample, varying from 0% in East Midlands and Northern Ireland to 31% in Wales (4 cases). 13% had a benign (C2/B2) result (46 cases), 30% were suspicious of benign disease (C3/B3) (105 cases) and 42% were suspicious of malignant disease (C4/B4) (148 cases).

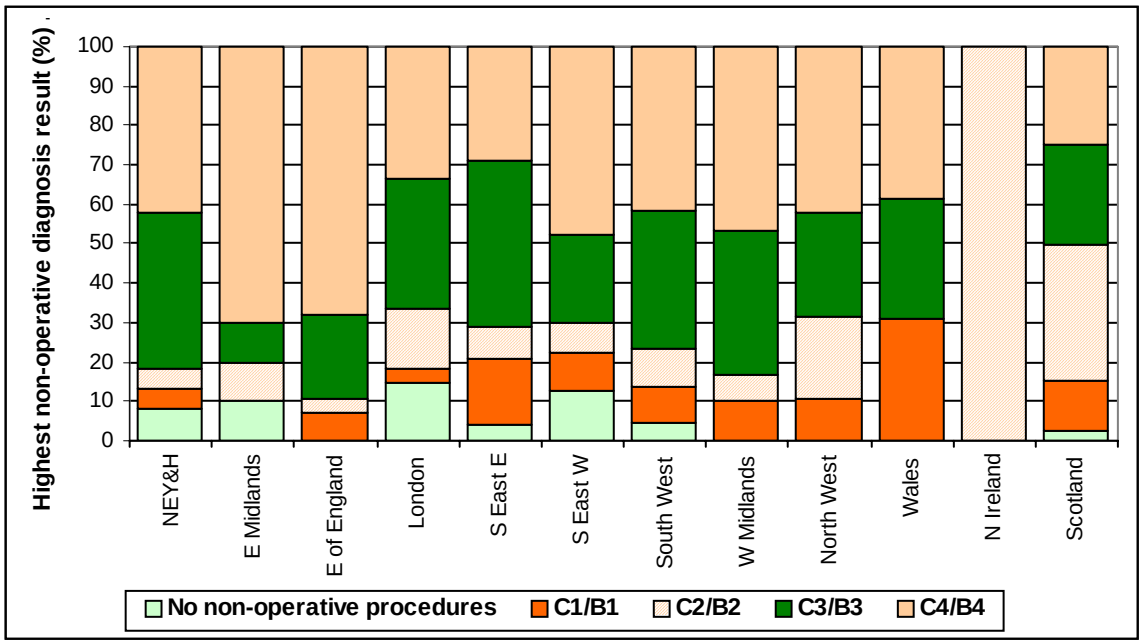

Figure 13 (Table 19): The highest non-operative diagnosis result for invasive cancers diagnosed by open biopsy, expressed as a percentage of invasive malignant diagnostic open biopsies

In all regions except South East (East), Northern Ireland and Scotland, the majority of invasive cancers diagnosed by open biopsy had a B4 core biopsy or C4 cytology result indicating suspicion of malignancy prior to diagnostic surgery. In East of England and East Midlands 68% and 70% of cases requiring an open biopsy to achieve a definitive diagnosis had a C4 cytology and/or B4 core biopsy result. The QA reference centres in these regions should audit practice to ascertain the reason for the relatively high proportion of cancers with C4 and/or B4 cytology or biopsy results, implementing corrective action as appropriate.

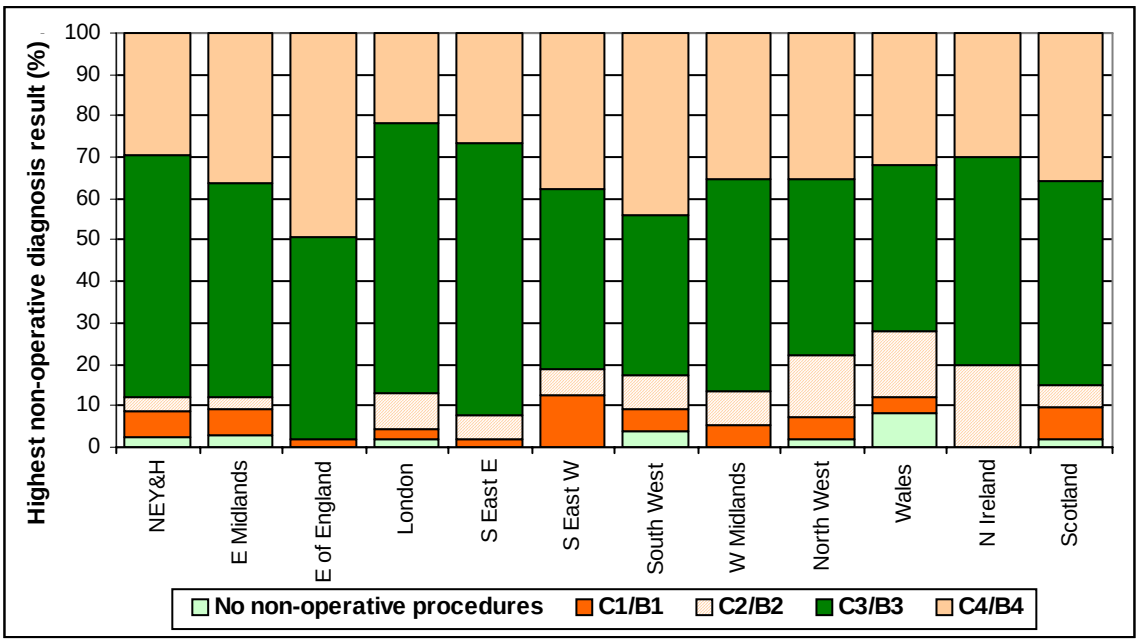

Figure 14 (Table 20): The highest non-operative diagnosis result for non-invasive cancers diagnosed by open biopsy, as a percentage of non-invasive malignant diagnostic open biopsies

Figure 14 shows the highest non-operative result for cancers without a non-operative diagnosis which were ultimately determined to be non-invasive. Overall, 35% of these non-invasive cancers had a C4 and/or B4 cytology or biopsy result and 51% had a C3 and/B3 non-operative result. In South East (West), 13% (4 cases) of the 32 non-invasive cancers diagnosed by open biopsy had an inadequate (C1) cytology sample or a normal (B1) core biopsy sample, compared to 5% in the UK as a whole. In East of England and South West, 49% (26 cases) and 44% (33 cases) respectively of the non-invasive cancers diagnosed by open biopsy were suspicious of malignant disease (C4/B4), compared to 35% in the UK as a whole. Regional QA reference centres should audit practice to ascertain the reason for these unusual results, implementing corrective action as appropriate.

5 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
2004/05*	334	35	10	46	14	105	32	148	44

*Data for 2 units from East of England are absent in 2004/05

The summary table above shows that throughout the five year period studied, the highest proportion (42% - 46%) 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 five year period from 18% to 32% while the proportion with C1 cytology or B1 core biopsy has fallen from 22% to 10%. The summary table below shows that the proportion of non-invasive cancers with C3 cytology or B3 core biopsy has increased over the five year period studied, from 27% in 2000/01 to 52% in 2004/05 while the proportion with C1 cytology or B1 core biopsy has fallen sharply from 20% to 5%.

5 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
2004/05	542	28	5	39	7	282	52	193	36

Data for 2 units from East of England are absent in 2004/05

COMMENT:

- In the UK as a whole, 2,722 diagnostic open biopsies were performed in 2004/05. Of these 66% were benign and 34% were malignant.
- The benign open biopsy rate was 1.05 per 1,000 women screened in 2004/05. The malignant open biopsy rate has fallen from 2.04 per 1,000 screened in 1996/97 to 0.54 per 1,000 screened in 2004/05 as the non-operative diagnosis rate has increased from 63% to 93%.
- In the UK as a whole, there were 3 false positive cytology cases and 42 false positive core biopsy cases. Regional QA reference centres and their pathology QA co-ordinators should review these cases to ascertain the reasons behind these results.

COMMENT:

- 21 cancers which were diagnosed by open surgical biopsy had a mastectomy as the first surgical operation. Regional QA reference centres should review these cases to ascertain the reasons behind these decisions.
- Of the 351 invasive cancers diagnosed by open biopsy, 17 (5%) had no non-operative procedure recorded. Of the 553 non-invasive cancers diagnosed by open biopsy, 11 (2%) had no non-operative procedure recorded. Regional QA reference centres and regional QA surgeons should audit these 28 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 non-operative diagnosis should be ascertained.
- 42% of invasive cancers and 35% 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. Regional QA reference centres in East of England and East Midlands should audit these cases to ascertain why they have particularly high proportions of open biopsies with a C4 and/or B4 non-operative result.

CHAPTER 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. 27 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, 70% of non-invasive and micro-invasive cancers were treated with conservation surgery, varying from 61% in East Midlands to 77% in East of England.

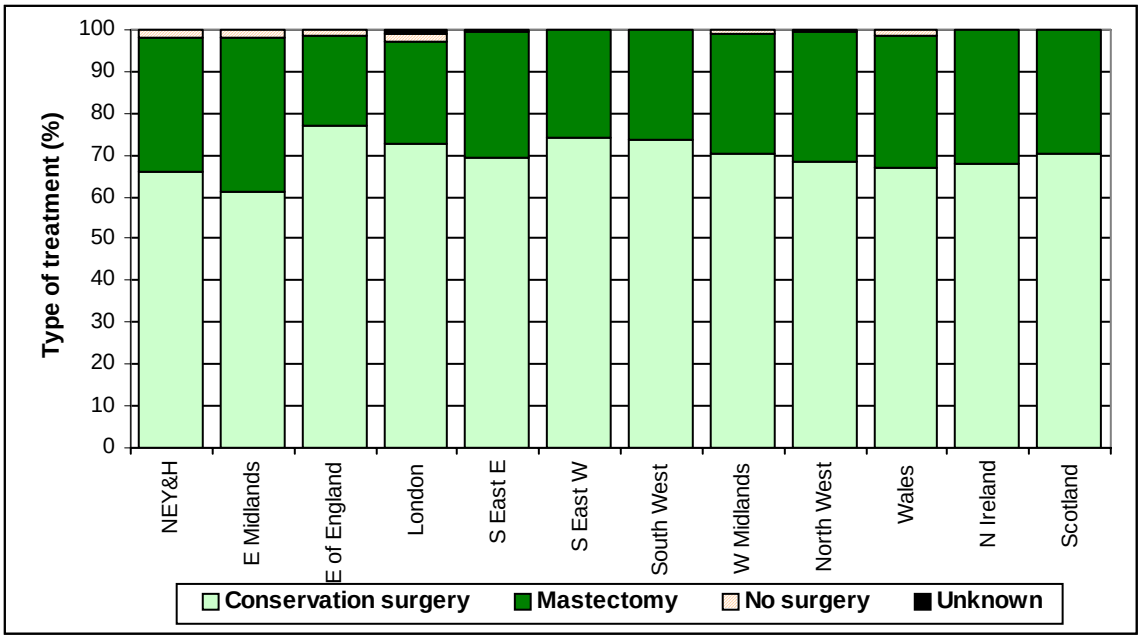

Figure 15 (Table 21): Variation in treatment for non-invasive and micro-invasive cancers

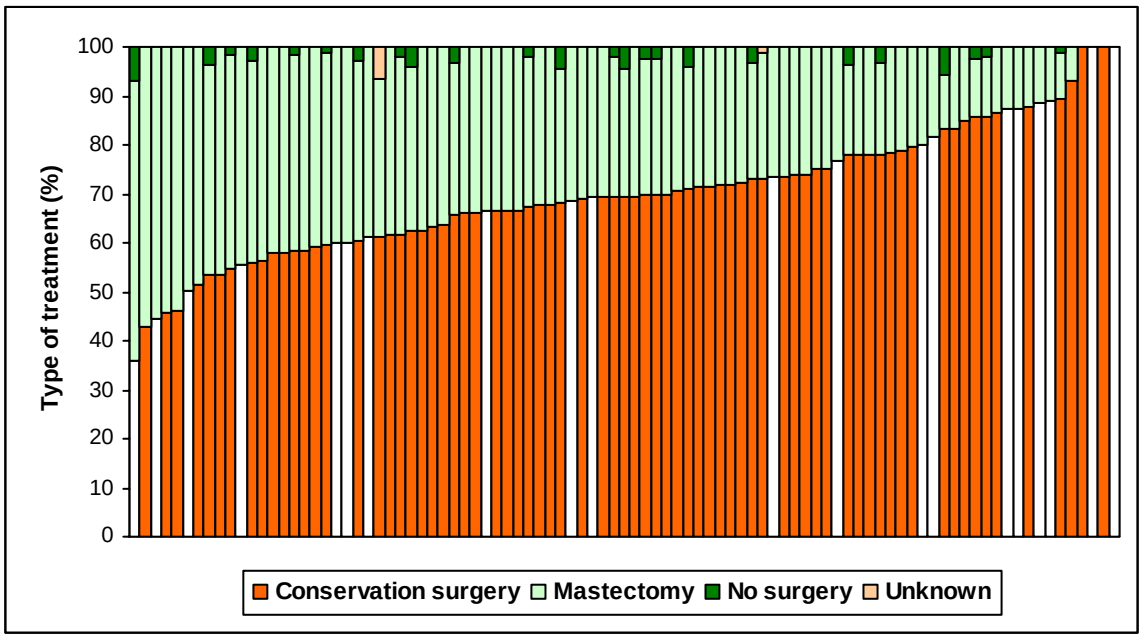

Figure 16: Variation in treatment for non-invasive and micro-invasive cancers in each screening unit. The 20 smallest units are highlighted in white

In Figure 16, the 20 smallest screening units are highlighted in white. Conservation surgery rates in individual screening units varied between 36% and 100%. Two of the 5 units with conservation surgery rates under 50% are small units which treated a total of 9 and 14 non-invasive or micro-invasive cancers. The 2 small units with 100% conservation surgery treated a total of 6 and 12 non-invasive or micro-invasive cancers in the audit period.

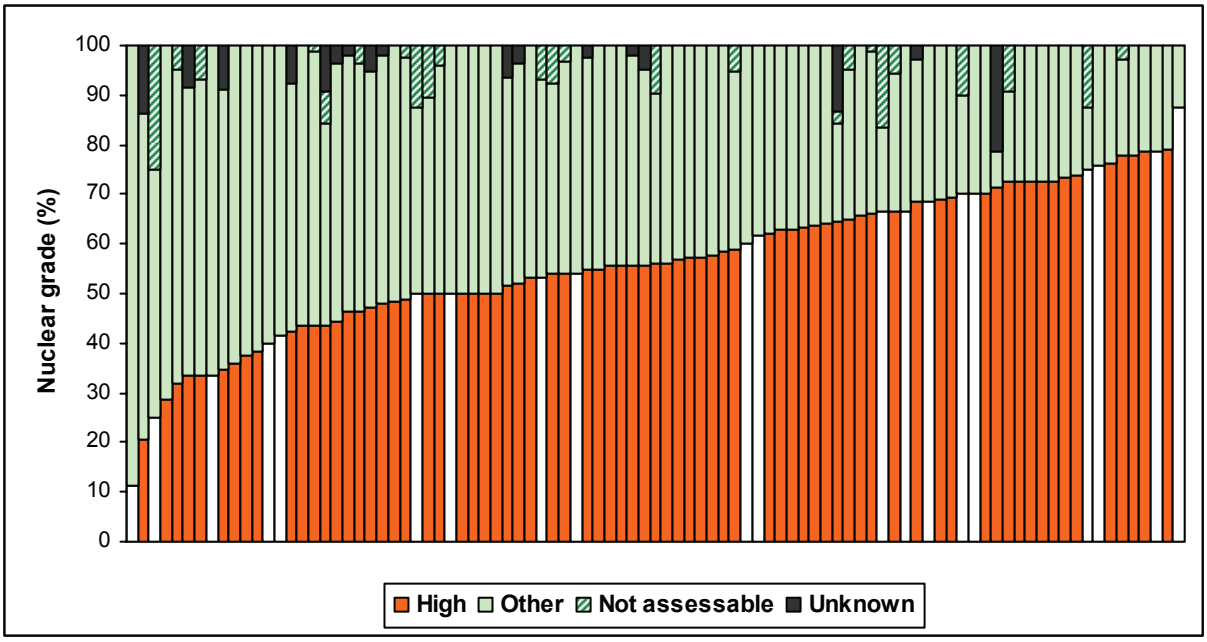

Figure 17: Variation in the nuclear grade of surgically treated non-invasive cancers in each screening unit. The 20 smallest units are highlighted in white

In the UK as a whole, 1,521 (56%) of the 2,719 surgically treated non-invasive cancers were high grade, 1,118 (41%) other grade and for 40 (1%) nuclear grade was not assessable (Table 22). Of the 40 non-invasive cancers (1%) with unknown nuclear grade, 14 (35%) cases were in South West. The variation in the nuclear grade of non-invasive cancers in each screening unit is shown in Figure 17. The unit with the greatest proportion of high grade cancers treated 8 non-invasive cases in the audit period. 76 screening units supplied grade for 100% of cases. In these 76 units, 58% of non-invasive cancers were high grade.

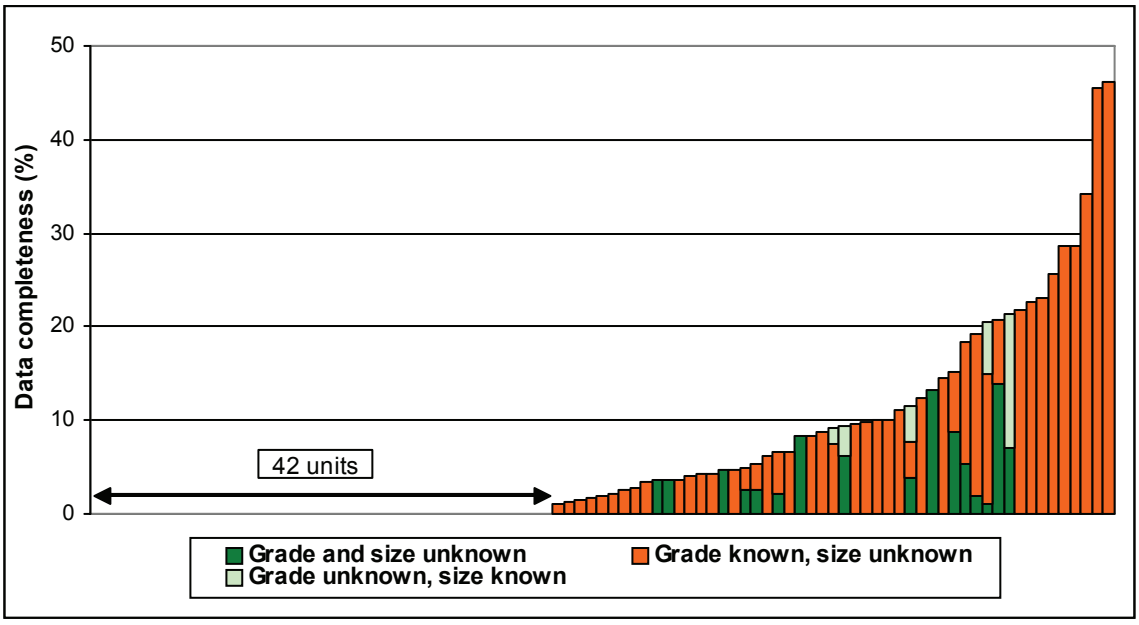

Figure 18: Variation in the data completeness of grade and size for surgically treated non-invasive cancers in each screening unit

Figure 18 shows the data completeness for non-invasive cancers at each screening unit, excluding the cases that were not surgically treated. This figure demonstrates that many screening units find it difficult to collect size information for non-invasive cancers, as only 42 screening units were able to provide complete grade and size data for these cancers. Overall, data were incomplete (unknown grade and/or size) for 190 (7%) of all surgically treated non-invasive cancers. Data completeness varied from 1% unknown in Scotland to 23% in Wales (Table 24).

The summary table below shows that data completeness for non-invasive cancers has improved in most screening units since 2003/04, possibly because of increased participation in the Sloane Project which aims to record and audit radiology, pathology and treatment for all non-invasive breast cancers detected by the NHSBSP. Regional QA reference centres should identify which of their units are participating in the Sloane Project to ascertain if their practices and procedures could be used to improve data quality in other screening units. In addition, units which already have high quality data should be encouraged to participate in the Sloane Project. It is hoped that data completeness will continue to improve as screening units sign up to the Sloane Project.

6 YEAR COMPARISON:
DATA COMPLETENESS FOR NON-INVASIVE CANCERS

Year of data collection	Unknown nuclear grade	Unknown Size	Unknown grade and/or size
	%	%	%
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
2004/05*	1	7	7

*Data exclude cases which were not surgically treated. Data for 2 units from East of England are absent in 2004/05

388 non-invasive cancers were recorded as large (30+mm) high grade lesions. Of these, 111 (29%) were treated with conservation surgery (Table 27). The following summary table shows that, in total, 176 potentially large high grade or unknown grade non-invasive cancers were treated with conservation surgery. London has shown the greatest reduction in the number of such cases compared with 2003/04 when 45 were recorded. The number in South West has tripled compared with 2003/04. Regional QA reference centres and regional QA surgeons should review the data recorded for these cases to ensure that they were not under-treated.

NUMBER OF NON-INVASIVE CANCERS IN EACH REGION TREATED WITH CONSERVATION SURGERY

Region	30+mm		Unknown size		Total*
	High grade (Table 27)	Unknown grade	High grade (Table 25)	Unknown grade (Table 26)	
N East, Yorks & Humber	14	0	4	0	18
East Midlands	6	0	1	3	10
East of England	8	0	5	0	13
London	5	0	8	5	18
South East (East)	11	0	5	0	16
South East (West)	13	0	0	1	14
South West	20	0	4	12	36
West Midlands	14	0	0	0	14
North West	11	0	7	3	21
Wales	3	0	6	0	9
Northern Ireland	0	0	0	0	0
Scotland	7	0	1	0	8
United Kingdom	**111**	**0**	**41**	**24**	**176**

*counts each non-invasive cancer once only

COMMENT:

- Overall, 70% of non-invasive and micro-invasive cancers were treated with conservation surgery, varying from 61% in East Midlands to 77% in East of England.
- The completeness of grade and size data has improved, with only 7% of cases having an unknown grade and/or size, possibly because of increased participation in the Sloane Project. Regional QA reference centres should identify which of their units are submitting cases to the Sloane Project and encourage others to do so.
- 176 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 10,849 invasive breast cancers detected by the UK NHSBSP in 2004/05, 7,738 (71%) underwent conservation surgery, 2,930 (27%) had a mastectomy and 161 cases (1%) had no surgery. Treatment information was unavailable for 20 cases, of which 12 (60%) were in London. Figure 19 shows the regional variation in invasive cancer mastectomy rates from 22% in London and East of England to 32% in East Midlands, Wales and North East Yorkshire and Humber region. Mastectomy rates in individual screening units varied between 12% and 50%.

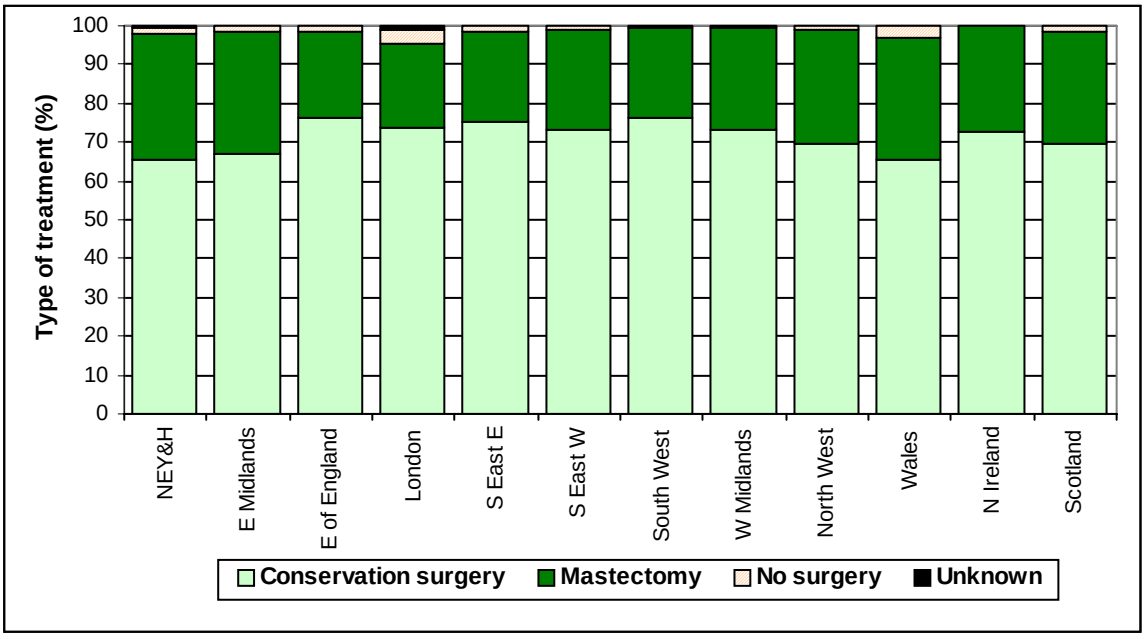

Figure 19 (Table 28): Variation in the type of treatment for invasive cancers (all sizes)

3.2.1 Treatment According to Invasive Size

Of the 10,849 invasive cancers, 2,699 (25%) measured less than 10mm, 3,096 (29%) were 10-<15mm in diameter, 2,144 (20%) were 15-<20mm in diameter and 2,489 (23%) were 20-<50mm. Only 171 cases (2%) were 50mm or more (Table 29). Size was unavailable for 250 cases (2%). 55 (22%) of these were in London and 37 (15%) were in Scotland.

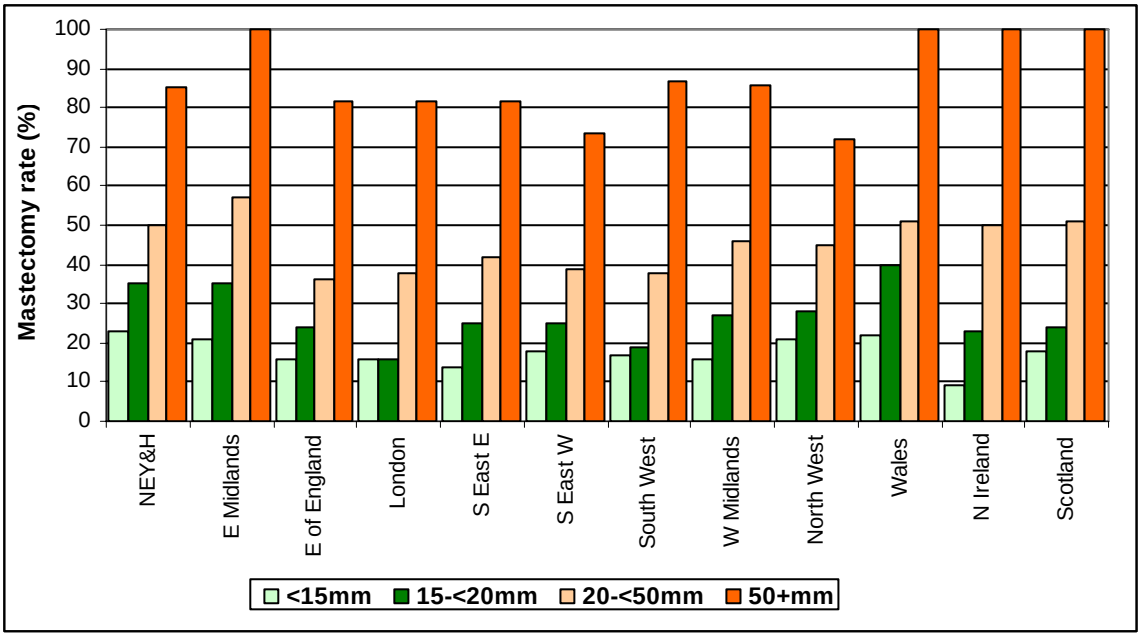

Figure 20 (Tables 32-35): Variation in mastectomy rates with invasive tumour size

In most regions there was a clear variation in mastectomy rate with tumour size, but in London and South West, there was relatively little difference in the mastectomy rates for cancers with diameters below 20mm. South East (West) and North West had relatively low mastectomy rates for cancers with invasive size 50mm or above. 73% and 72% of cancers respectively were treated with mastectomy compared to 84% in the UK as a whole. Regional QA reference centres should investigate whether this reflects a data collection problem relating to second operations or whether the data do indeed represent clinical practice.

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 and Humber region (23%) and Wales (22%) and the lowest rates (9%) in Northern Ireland (7 cases).

9 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*
*2004/05**	*5,795*	*4,723*	*82*	*1,071*	*18*

*Data from Scotland are absent in 1998/99. Data for 2 units from East of England are absent in 2004/05

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 744 (7%) of the 10,849 invasive cancers. This represents a significant improvement in data quality from last year when 985 invasive cancers (9%) did not have a whole size provided. 204 (27%) of the cancers without a whole size were in London, 177 (24%) were in South East (West) and 131 (18%) were in North East, Yorkshire and Humber. Regional QA reference centres should ascertain why these important data were not available from their screening units.

Table 37 shows the whole size of small (<15mm) invasive cancers. Of the 5,795 invasive cancers with invasive size <15mm, 4,335 (75%) had whole size <15mm, 460 (8%) had whole size 15-<20mm, 601 (10%) had whole size 20-<50mm and 123 (2%) had whole size 50+mm. Whole size was unknown for 276 cancers (5%). 89 (32%) of these cancers were in South East (West) and 79 (29%) in London.

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	*144*	*84*	*97*	*79*
20-<50mm	*1,119*	*45*	*244*	*41*
15-<20mm	*574*	*27*	*84*	*18*
<15mm	*1,071*	*18*	*593*	*14*

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 (84%) was slightly higher than that for <15mm cancers with 50+mm whole size (79%). 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 14% 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 cancers with invasive size <15mm.

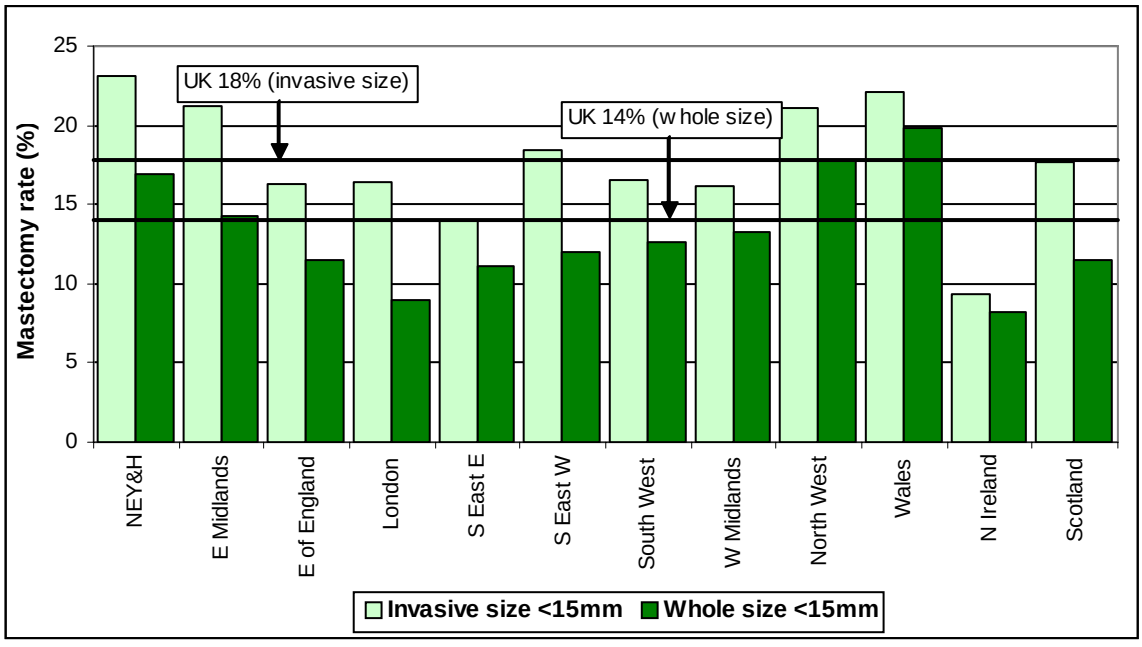

Figure 21 (Tables 32, 38): Variation in the mastectomy rates for cancers with <15mm invasive size and cancers with both whole size and invasive size <15mm

Figure 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 London (16% compared to 9%) and East Midlands (21% compared to 14%), and least in Northern Ireland (9% compared to 8%) and Wales (22% compared to 20%).

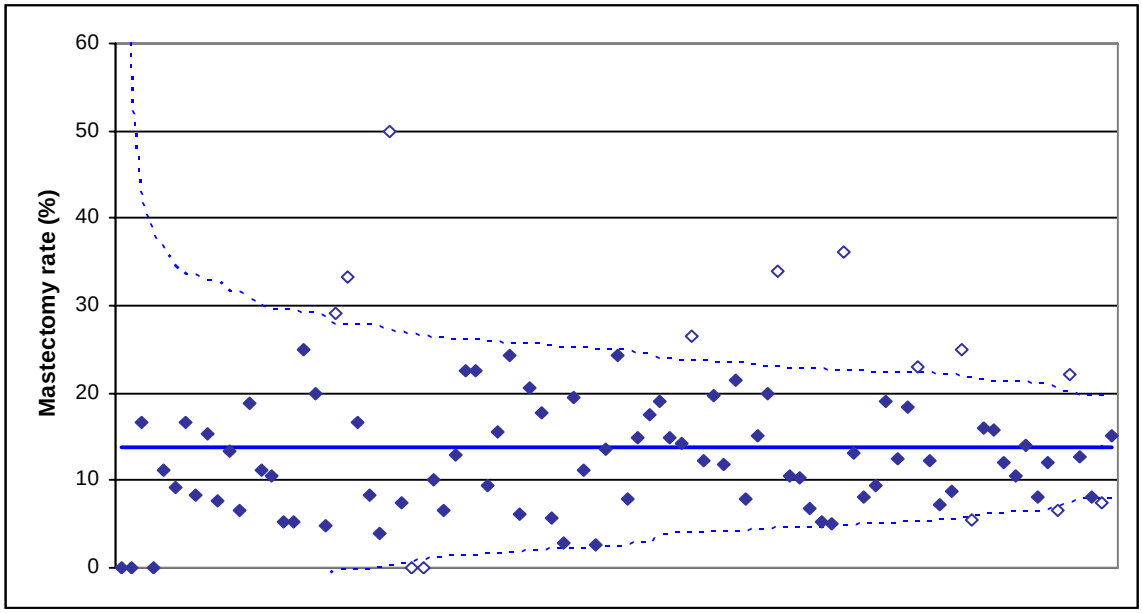

Figure 22: Variation in the mastectomy rates for invasive cancers with whole size <15mm for each screening unit

Figure 22 uses a control chart to demonstrate the variation between screening units in the mastectomy rates for invasive cancers with whole size less than 15mm. The 2 dashed lines are the upper and lower control limits which approximate to the 95% confident intervals of the average mastectomy rate (solid line). The mastectomy rates which are outside the control limits are significantly higher or lower than the average. In a unit from the West Midlands, 50% of the small cancers with whole size <15mm had a mastectomy, and only 8% had immediate reconstruction. There were 3 units from other regions which had a higher than 30% mastectomy rate for small tumours with whole size <15mm and 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

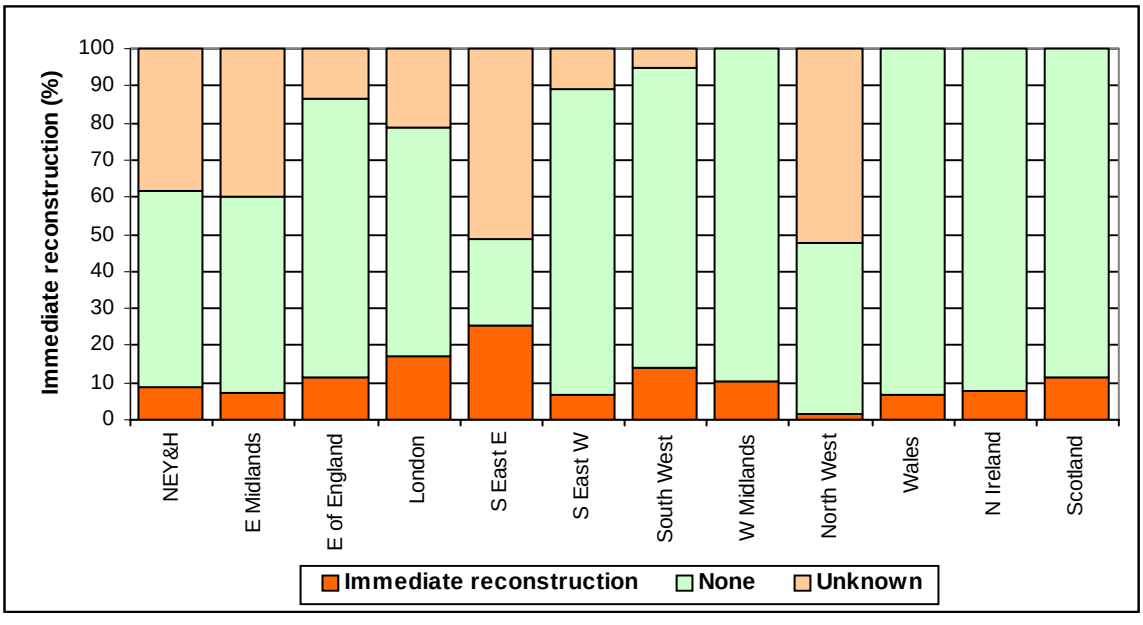

Figure 23 (Table 43): Proportion of cancers having immediate reconstruction after mastectomy

Overall, of the 13,783 cancers detected, 3,776 (27%) were treated with mastectomy. Of these, 387 (10%) were recorded as having immediate reconstruction. 2,493 (66%) cases had no immediate reconstruction recorded and for 896 (24%) cases it was unknown whether immediate reconstruction was performed. Information regarding delayed reconstruction was not collected.

Table 44 shows that, of the 387 cases known to have had immediate reconstruction following mastectomy, 229 (59%) were invasive, 13 (3%) were micro-invasive, and 145 (37%) were non-invasive. Thus, 7.8% of the 2,930 invasive cancers treated with mastectomy (Table 28) had immediate reconstruction recorded compared with 18.7% of the 846 non-invasive and micro-invasive cancers treated with mastectomy (Table 21). For invasive cancers treated with mastectomy, recorded immediate reconstruction rates varied from 1% in North West to 21% in South East (East). For non-invasive cancers treated with mastectomy, recorded immediate reconstruction rates varied from 3% in North West and 36% in South East (East). Relatively high immediate reconstruction rates above 30% were also recorded in London and West Midlands. The regions with the highest proportion of cases without immediate reconstruction data recorded were North West (53%) and South East (East) (51%). The availability of immediate reconstruction may influence a woman's decision to choose mastectomy.

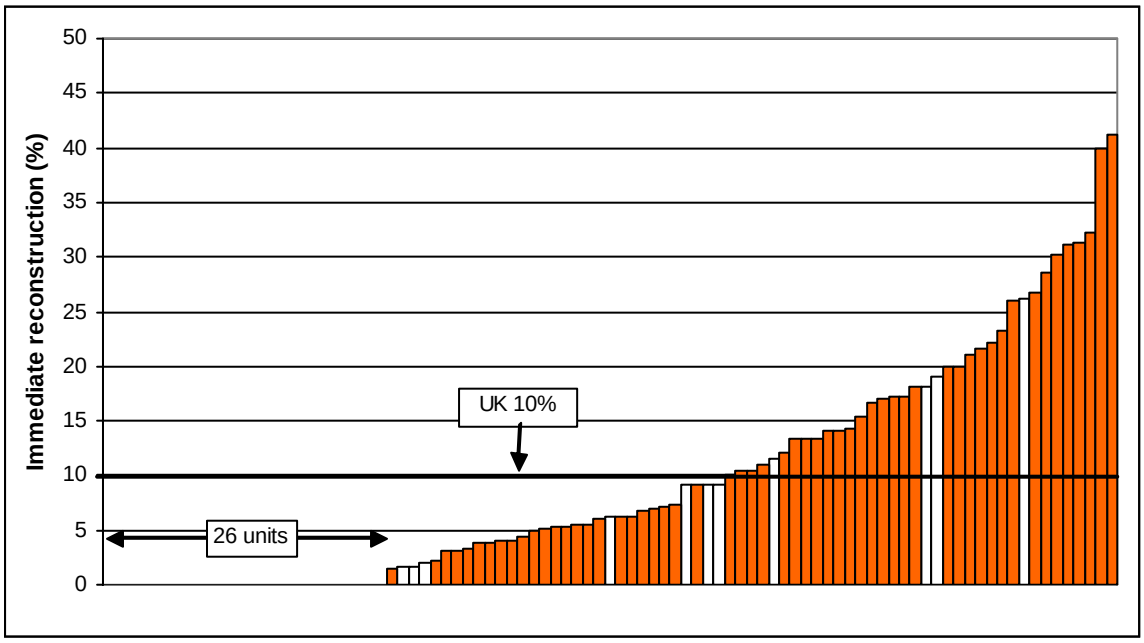

Figure 24: Variation in the proportion of cancers having immediate reconstruction in each screening unit
Smaller units are highlighted in white

Figure 24 shows that immediate reconstruction rates varied widely in individual screening units. Immediate reconstruction data were not recorded in 26 screening units.

COMMENT:

- In the UK as a whole, the mastectomy rate for invasive cancers was 27%. This varied between 12% and 50% in individual screening units.
- 84% 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 London and South West there was little difference in the mastectomy rates for tumours with diameters below 20mm.
- South East (West) and North West had relatively low mastectomy rates for cancers with whole size 50mm or above. The regional QA reference centres should investigate whether this reflects a data collection problem relating to second operations or whether the data do indeed represent clinical practice.

COMMENT:

- Whole size was not provided for 744 (7%) invasive cancers.
- 204 of the cancers without a whole size were in London, 177 were in South East (West) and 131 were in North East, Yorkshire and Humber. Regional QA reference centres should ascertain why these important data were not available from their screening units.
- Only 14% 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. Regional QA reference centres and regional QA surgeons should review the data for these cancers to ascertain the reason for this unusual clinical practice.
- 10% of cancers treated with mastectomy were recorded as having immediate reconstruction. Of these cancers, 229 (59%) were invasive, 13 (3%) were micro-invasive, and 145 (37%) were non-invasive.
- 7.8% of invasive cancers treated with mastectomy were recorded as having immediate reconstruction compared with 18.7% of micro-invasive and non-invasive cancers treated with mastectomy.

CHAPTER 4

WAITING TIME

The *NHS Cancer Plan*, which was published in 2000, sets out the goal that by 2001 no breast cancer patient should wait longer than one month from diagnosis to first treatment, and that by 2002 no patient should wait longer than two months between an urgent referral by their GP for suspected breast cancer, and the start of treatment; the only exceptions being if there is a good clinical reason or personal choice.

The *NHS Cancer Plan* (September 2000) cancer waiting time targets:

- **31 days from decision to treat to first treatment**
- **62 days from urgent GP referral to first treatment**

In the NHSBSP, the following waiting time standards were set in 1996, some time before the introduction of the waiting times standards in the *NHS Cancer Plan*.

Quality Objective	**To minimise the interval from a surgical decision to operate for therapeutic purpose and the first offered admission date**
Outcome Measure	**More than 90% of breast cancer cases should be admitted within 3 weeks of informing the patient that she needs surgical treatment**

(Quality Assurance Guidelines for Surgeons in Breast Cancer Screening, April 1996, NHSBSP Publication No 20)

In November 2003, the NHSBSP set the following waiting time standards. The definitions for which are more consistent with the waiting time standards set in the *NHS Cancer Plan*.

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, November 2003, NHSBSP Publication No 20)

The ABS at BASO audit monitors the proportion of women being admitted for treatment within two months of their first assessment visit using the routine data available from the NBSS. Unfortunately, the NBSS cannot be used to allow the accurate calculation of the waiting times defined in the *NHS Cancer Plan* as the data items collected are different from those in the waiting times dataset. This dataset was developed by the Department of Health to track the patient journey from urgent GP referral for suspected cancer to first treatment and from decision to treat date to the date of first treatment for patients coming through the non-urgent GP referral route. The analyses presented in this chapter provide an approximate indication of whether or not breast screening patients would have met the cancer waiting times targets. These data are provided only for cases which had a non-operative

diagnosis (93% of the 13,783 cases included in the audit), as only these cases had the date of the first therapeutic operation recorded. Data for the 925 cases which did not have a non-operative diagnosis are presented separately in Table 45. Cases with unknown screening, assessment or surgery dates are excluded.

In the UK as a whole, 95% of the women had their first therapeutic treatment within 2 months of their first assessment visit, with a median waiting time of 29 days (Table 46). For cases which did not have a non-operative diagnosis, only 85% of the women had their first diagnostic treatment within 2 month of their first assessment visit, with a median waiting time of 36 days (Table 45). The longer waiting time seen for these patients is probably because there have usually been several attempts to obtain a non-operative diagnosis before their diagnostic surgery was carried out.

Figure 25 shows the proportion of women in each region who had their first therapeutic surgical operation within 31 days (1 month) or 62 days (2 months) of their first assessment visit. All regions but South East (East) met the minimum standard. In the UK as whole, 58% of the women had their first therapeutic treatment within 1 month of their first assessment visit. Performance was especially good in Northern Ireland where 87% of women had their first therapeutic treatment within 1 month of their first assessment visit.

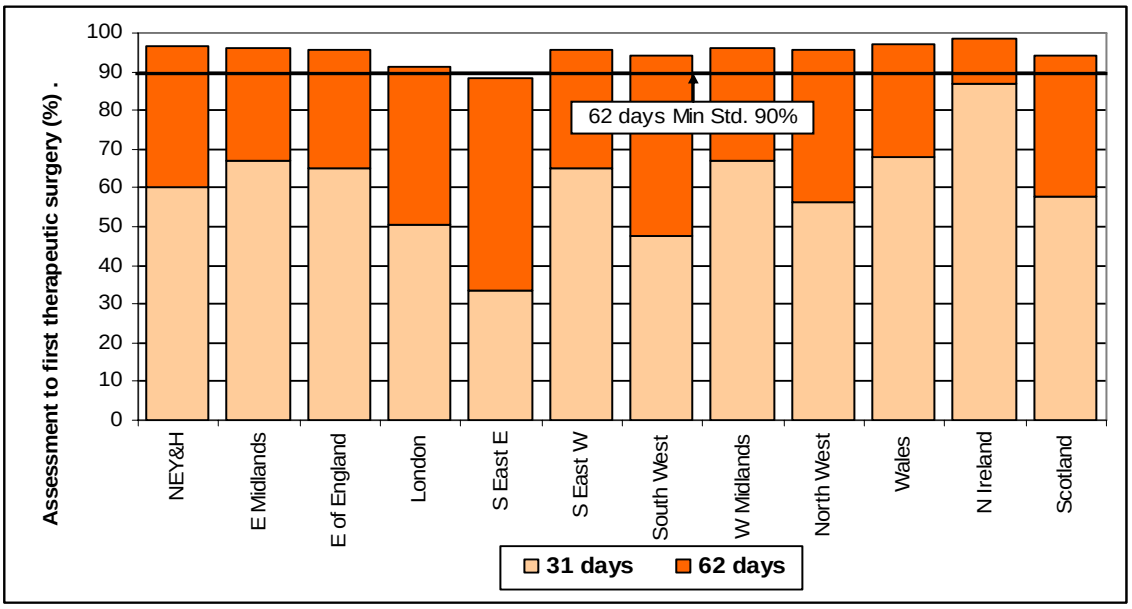

Figure 25 (Table 46) : Percentage of women which had their first therapeutic surgery within 31 days and 62 days after attending assessment clinic

Figure 26 shows the proportion of women in each region who had their first therapeutic surgical operation within 62 days of their screening visit. The proportion of women receiving their first therapeutic surgery within 62 days of their first assessment visit (as shown in Figure 25) has been included for comparison. In the UK as a whole, 71% of women had their first therapeutic surgery within 62 days (2 months) of their screening visit, with a median of 51 days. There is, however, considerably more variation between regions than is seen when waiting times from first assessment visit to first therapeutic surgery are compared. In South East (East) and South West only 53% and 55% of women respectively received their first therapeutic surgery within 62 days of their screening visit. In Northern Ireland this figure was 90% and in the South West it was 87%.

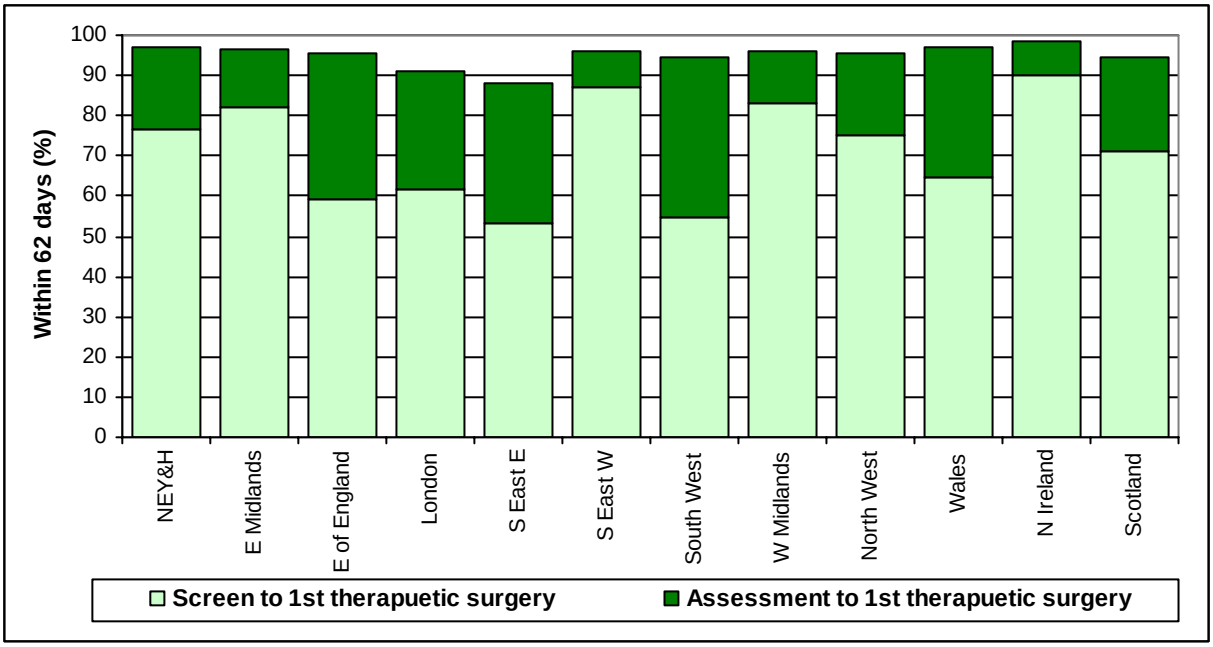

Figure 26 (Table 46 & 47) : Percentage of women which had their first therapeutic surgery within 62 days from their screening or assessment visit

COMMENT:

- 95% and 58% of the women had their first therapeutic treatment within 2 months and 1 month, respectively, of their first assessment visit.
- All regions except South East (East) met the minimum standard that 90% of women should have their first therapeutic treatment within 2 months of their first assessment visit.
- 71% of women had their first therapeutic surgery within 2 months of their screening visit. This varied between 53% in South East (East) and 90% in Northern Ireland.

CHAPTER 5

LYMPH NODE STATUS, INVASIVE GRADE AND NPI

188 cancers which did not have surgery have been excluded from this chapter as no information was available concerning their lymph node status and grade.

5.1 Lymph Node Status of Invasive Cancers

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

Quality Objective	**To ensure adequate pathological data to decide on appropriate adjuvant treatment**
Minimum Standard	**90% of patients with invasive cancers treated by surgery should have adequate axillary node assessment**
Target Standard	**95% of patients with invasive cancers treated by surgery should have adequate axillary node assessment**

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

5.1.1 Availability of Nodal Status for Invasive Cancers

Overall, nodal status was known for 97% of surgically treated invasive cancers with surgery, varying from 89% in North West to 99% in East Midlands, West Midlands, Wales, Northern Ireland, and North East Yorkshire and Humber (Table 48). In London, it was unknown whether or not nodes were obtained for 15 invasive cancers, and in North West, 80 cases had nodes taken but the status of the nodes was not recorded.

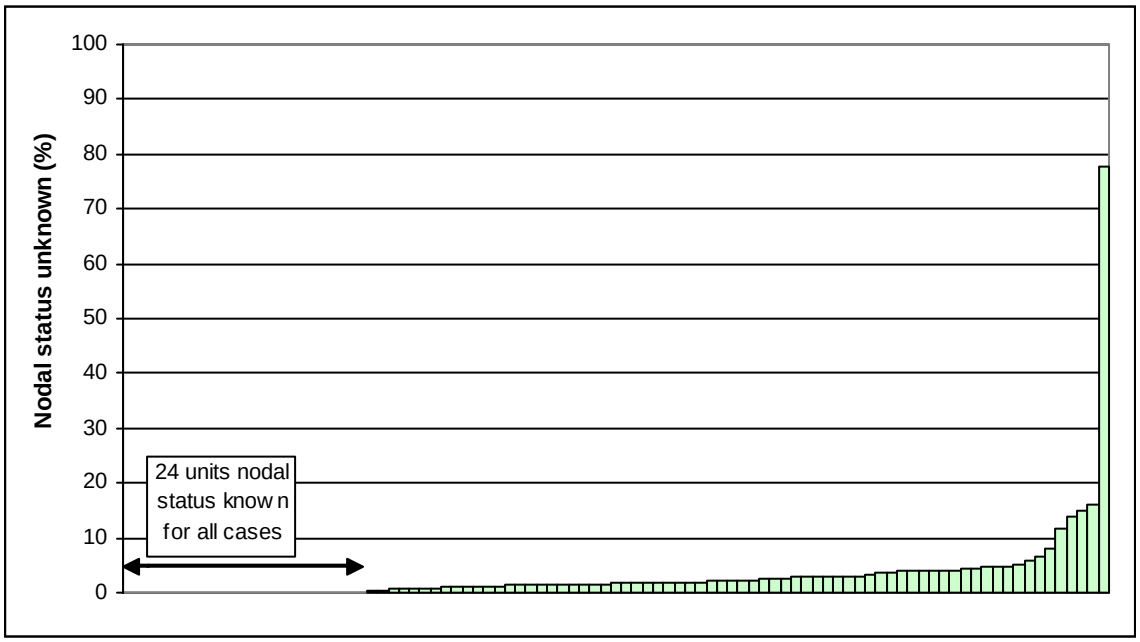

Figure 27: The availability of lymph nodal status for invasive breast cancers in each screening unit

The availability of nodal status for invasive cancers is shown for individual screening units in Figure 27. Where nodal status is unknown, this may be because no nodes were obtained, because it is not known whether or not nodes were obtained, or because the nodal status was not recorded. Nodal status was ascertained for 100% of invasive cancers in 24 screening units. In 1 screening unit in North West, nodal status was unknown for 78% of cases. The regional QA reference centre should work with this unit to ascertain the reasons for these missing data and to ensure that this important information is recorded in future.

6 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
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
2004/05*	10,848	95	23	77

*Data for 2 units from East of England are absent in 2004/05. Cases which did not receive surgical treatment are excluded in 2004/05

Of the 10,323 invasive cancers with known nodal status, 2,360 (23%) had positive nodes (Table 49). The summary table above shows that, in the last 2 years, the proportion of cases with positive nodes has decreased slightly. This may be related to the age expansion, because as shown in the following table, the proportion of cases with positive nodal status decreases as age increases.

VARIATION IN LYMPH NODE STATUS WITH AGE			
Age	Number of invasive cancers	% of invasive cancers with known nodal status	
		Positive	Negative
<50	149	28	72
50-64	7,392	24	76
65-70	2,263	21	79
71+	519	20	80

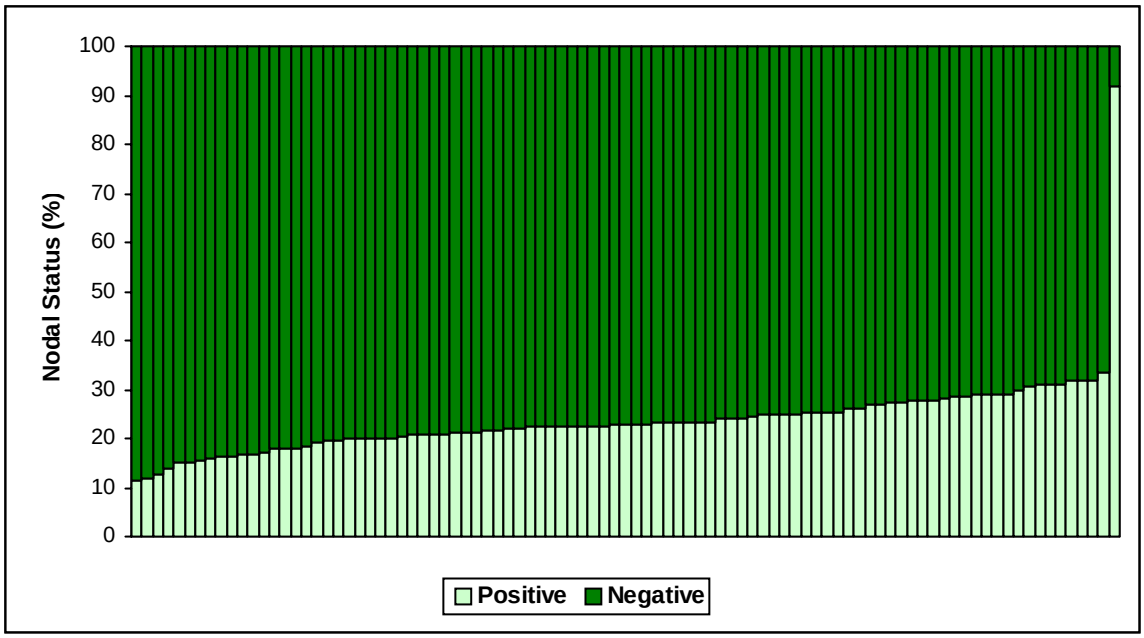

Figure 28: Variation in the lymph node status of invasive breast cancers in each screening unit

There was some regional variation in lymph node status, with the proportion of node positive cancers varying from 18% in East Midlands to 30% in Northern Ireland. The variation in nodal status in individual screening units is illustrated in Figure 28. The screening unit with 92% of cases with positive nodes had 78% nodal status unknown. This suggests that the unit is selectively failing to record nodal data for node negative cancers. The QA reference centre should investigate the reasons for this poor data ascertainment and ensure that the data are recorded in future.

5.1.2 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 10,323 invasive cancers with known nodal status, the mean number of nodes examined was 10 nodes and the median 8 nodes (Table 50). The mean and median number of nodes examined were highest in Northern Ireland (mean 18 and median 17) and lowest in East Midlands (mean 8, median 6).

The summary table below shows that the proportion of invasive cancers for which nodal status was recorded based on the examination of fewer than 4 nodes decreased from 10.6% in 1996/97 to 4.8% in 2003/04. However, in 2004/05 this figure increased to 8.6%. In nearly half of these cases, sentinel lymph node procedures were performed. As it is acceptable to obtain fewer than 4 nodes if sentinel lymph node procedures are used, the use of this new technique was taken into account when analysing the data for the proportion of cases with fewer than 4 nodes examined. After allowing for the use of sentinel node procedures, only 4.1% of cases in 2004/05 had less than 4 nodes examined.

9 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*
*2004/05**	*10,322*	*8.6*

*Data from Scotland and Northern Ireland are absent in 1998/99. Data for 2 units from East of England are absent in 2004/05

Overall, 405 (3.9%) of the invasive cancers for which nodal status was recorded had their negative nodal status determined on the basis of fewer than 4 nodes without a sentinel node procedure. Figure 29 shows that this varied from 0% (0 cancers) in Northern Ireland to 7% (59 cancers) in London. A further 399 cancers (3.9%) had their negative nodal status determined by a sentinel node procedure. This varied from 0% (0 cancers) in Northern Ireland to 11.3% (90 cancers) in South East (East).

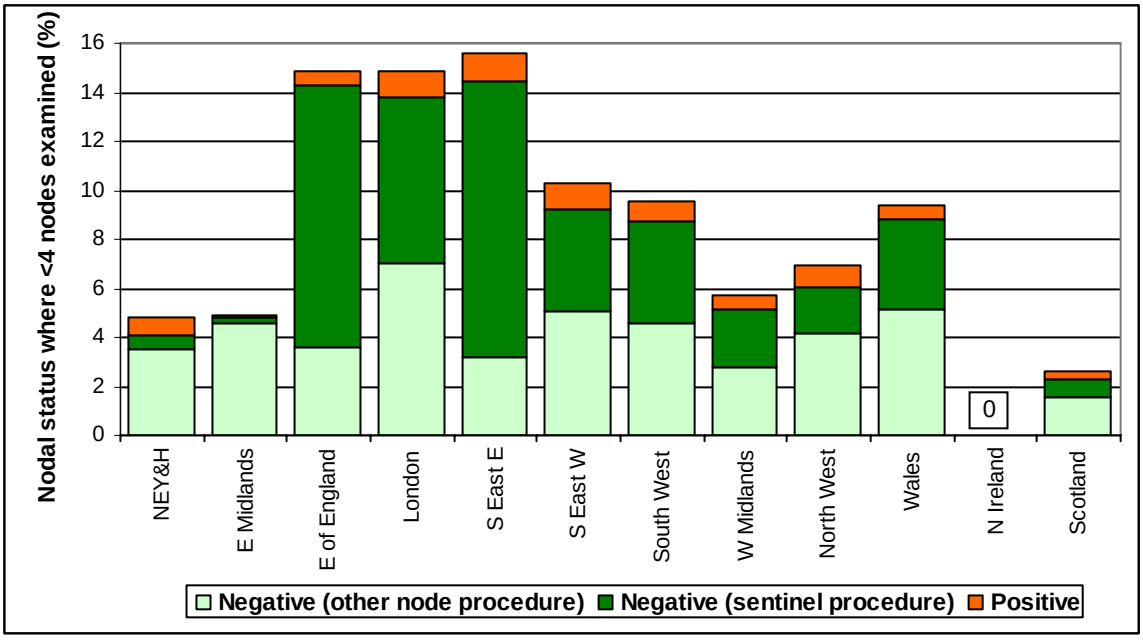

Figure 29 (Table 51): Nodal status for invasive cancers where nodal status was determined on the basis of <4 nodes, expressed as the percentage of invasive cancers with known nodal status

24 invasive cancers (0.2%) had their positive nodal status determined on the basis of fewer than 4 nodes without a sentinel node procedure. Overall, a total of 196 cancers had their positive nodal status determined from a sentinel lymph node procedure. However, only 80% of these cancers appear to have had subsequent axillary procedures. It is believed that the axillary operations carried out during training on some of the remaining cases were sampling procedures with the sentinel lymph node technique. Regional QA reference centres and regional QA surgeons should follow up these cases to ensure that the appropriate nodal procedures have been undertaken and that the axilla has not been under-treated.

INVASIVE CANCERS WITH INSUFFICIENT NODAL INFORMATION					
	Total invasive cancers with surgery	***Unknown nodal status*** *(Table 48)*	***Negative <4 nodes*** *(Not sentinel procedure - Table 51)*	***Insufficient nodal information***	
Region	***No.***	***No.***	***No.***	***No.***	***%***
N East, Yorks & Humber	*1,471*	*15*	*51*	*66*	*4*
East Midlands	*826*	*11*	*37*	*48*	*6*
East of England	*924*	*30*	*32*	*62*	*7*
London	*919*	*77*	*59*	*136*	*15*
South East (East)	*822*	*28*	*25*	*53*	*6*
South East (West)	*790*	*22*	*39*	*61*	*8*
South West	*1,055*	*18*	*47*	*65*	*6*
West Midlands	*1,032*	*15*	*28*	*43*	*4*
North West	*1,208*	*128*	*46*	*174*	*14*
Wales	*530*	*6*	*27*	*33*	*6*
Northern Ireland	*178*	*1*	*0*	*1*	*1*
Scotland	*933*	*14*	*14*	*28*	*3*
UK	***10,688***	***365***	***405***	***770***	***7***

The table above shows that of the 10,688 invasive cancers, 365 (3.4%) had unknown nodal status. 405 (3.7%) had their negative nodal status determined without a sentinel node procedure on the basis of 1, 2 or 3 nodes. Thus, 770 (7%) of the 10,688 invasive cancers detected appear to have insufficient nodal information to provide a satisfactory diagnostic work-up. This proportion varied from less than 1% in Northern Ireland (1 cases) to 14% in North West (174 cases) and 15% in London (136 cases). As

there is no record of whether a woman had a sentinel lymph node biopsy on NBSS, the accuracy of these data should be investigated. Regional QA reference centres and regional QA surgeons should therefore 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.

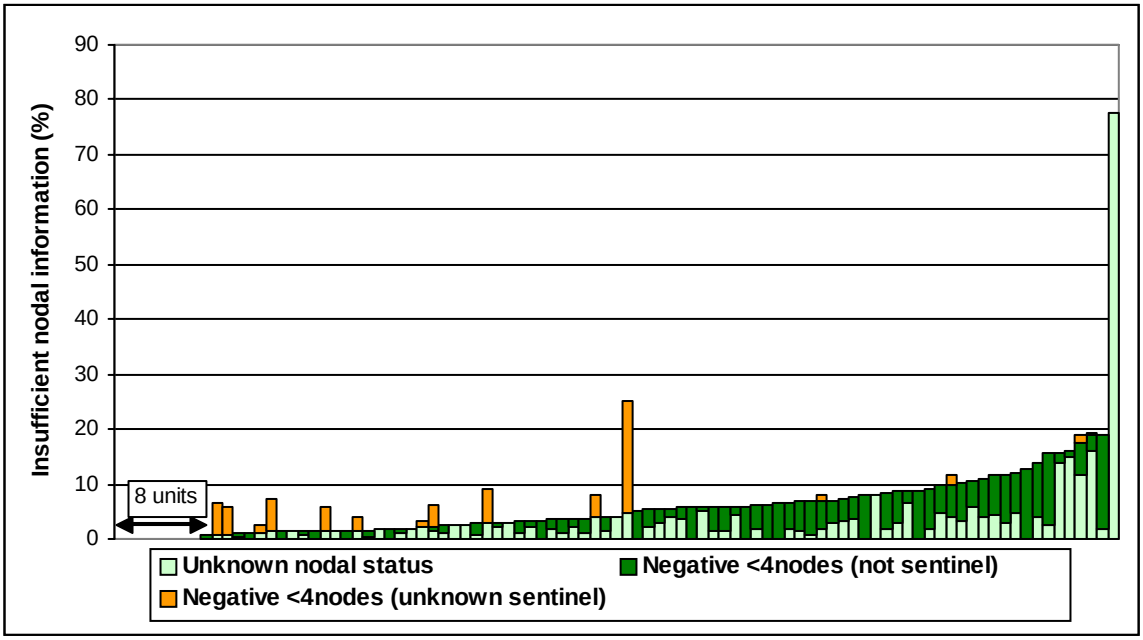

Figure 30: Proportion of invasive cancers with insufficient nodal information in each screening unit

Figure 30 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% and 25%, excluding the screening unit with 78% of cases with unknown nodal status. 20% of the invasive cases in a unit in London had no sentinel procedure information provided. In 4 screening units, more than 10% of invasive cancers had their negative nodal status determined on the basis of less than 4 nodes without a sentinel node procedure. These units treated between 69 and 170 invasive cancers. Regional QA reference centres should audit the data for these cases to ascertain whether they are a true reflection of clinical practice.

COMMENT:

- In the UK as a whole, 97% of surgically treated invasive cancers had known nodal status. This varied between 89% in North West and 99% in East Midlands, West Midlands, Wales, Northern Ireland and North East Yorkshire and Humber.
- In 24 screening units nodal status was ascertained for 100% of surgically treated invasive cancers. In 1 screening unit 78% 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 and to ensure that this important information is recorded in future.
- 196 cancers had their positive nodal status determined from a sentinel lymph node procedure. However, only 80% of these cancers appear to have had subsequent axillary operations. It is believed that the axillary operations carried out during training on some of the remaining cases were sampling procedures with the sentinel lymph node technique. Regional QA reference centres and regional QA surgeons should follow up these cases to ensure that the appropriate nodal procedures have been undertaken and that the axilla has not been under-treated.

COMMENT:

- Overall, 7% 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 1% in Northern Ireland to 14% in North West and 15% in London. 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.
- The proportion of invasive cancers with positive nodal status has fallen slightly in the last two years. This may be related to the age expansion, as the proportion of cases with positive nodes decreases as age increases.

5.2 Lymph Node Status of Non-invasive Cancers

Of the 2,719 surgically treated non-invasive cancers, 26% had known nodal status, varying from 16% in South West to 35% in Wales and 36% in East Midlands (Figure 31). For 17 non-invasive cancers (1%) nodes were obtained but the nodal status was unknown. All of these cases are from North West. For 7 cases it was unknown whether or not nodes were taken. 3 of these were also in the North West.

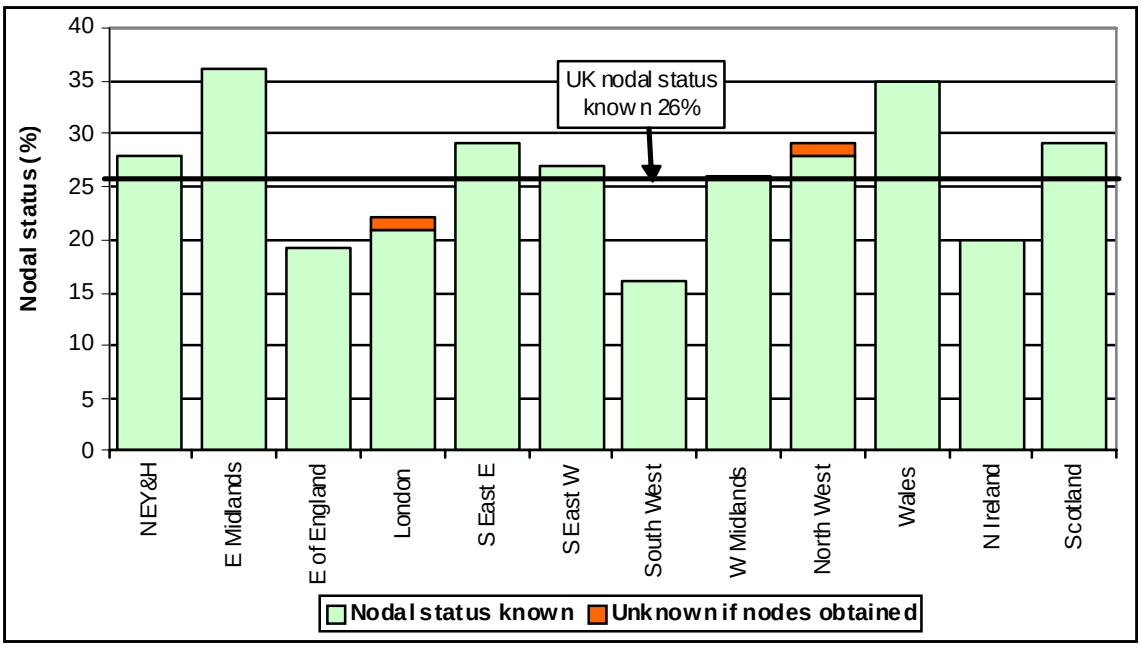

Figure 31 (Table 52): Proportion of non-invasive cancers with nodal status recorded

Of the 711 non-invasive cancers with known nodal status, 5 (1%) had positive nodal status recorded (Table 53). This is consistent with previous studies suggesting that 2% of non-invasive breast cancers have non-identified invasive disease removed during the diagnostic process. The mean and median number of nodes examined for non-invasive cancers with known nodal status in the UK as a whole were both 6 (Table 54). In Northern Ireland the median was 9 nodes and the mean 10 nodes.

Although nodal assessment is not usually indicated for non-invasive cancers, nodes may be obtained when a mastectomy is performed, especially if the assessment process provides suspicion of invasive disease. Figure 32 shows that the mastectomy rate for non-invasive cancers with known nodal status was much higher than that for non-invasive cancers with no nodes obtained (77% and 11% respectively). The lowest mastectomy rates for non-invasive cancers with known nodal status were in East of England (53%). This suggests that in these regions, nodal assessment is being carried out when conservation surgery is performed. This may well become more accepted practice 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, 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.

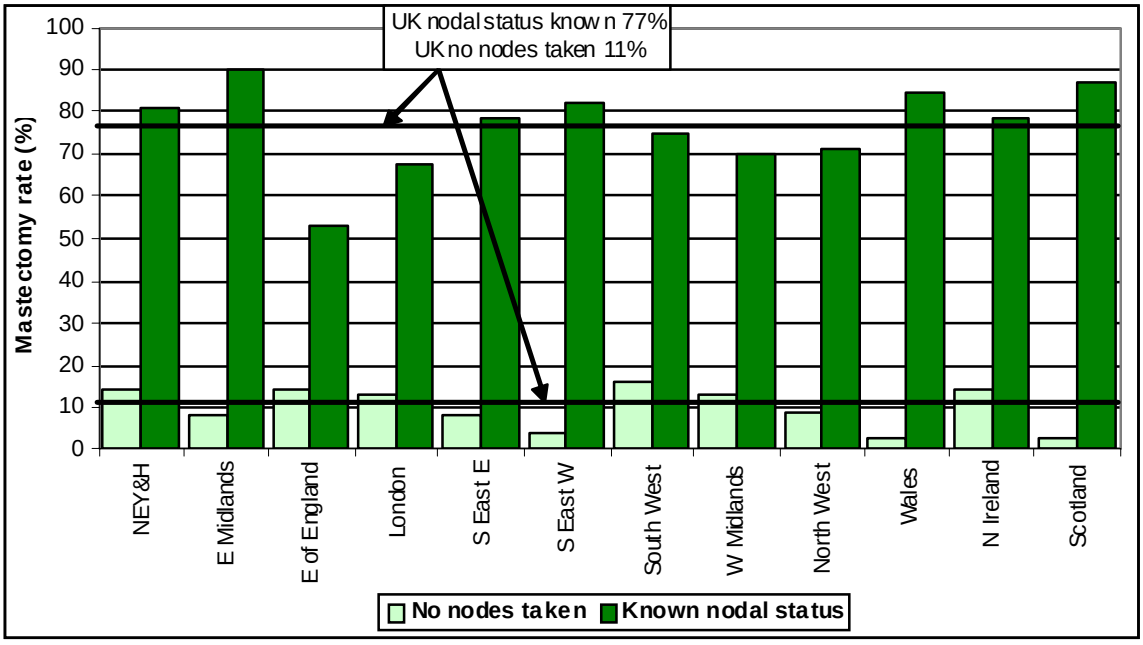

Figure 32 (Table 55, 57): Mastectomy rates for non-invasive cancers with known nodal status and with no nodes taken

Figure 33 shows the non-operative history for conservatively treated non-invasive cancers with known nodal status. In the UK as a whole, for 106 cancers (66%) 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 19 cases (12%), a B5b (Invasive) core biopsy predicted invasive disease but the invasive status of the cancer was determined to be non-invasive following surgery. Nodes were therefore taken at surgery as recommended for the anticipated invasive disease. 12 cases (7%) had C5 cytology alone with no B5 core biopsy before proceeding to breast conservation with axillary surgery. A further 6 cases had not assessable or unknown malignancy type at core biopsy and 18 cases had neither a C5 cytology nor B5 core biopsy prior to surgery.

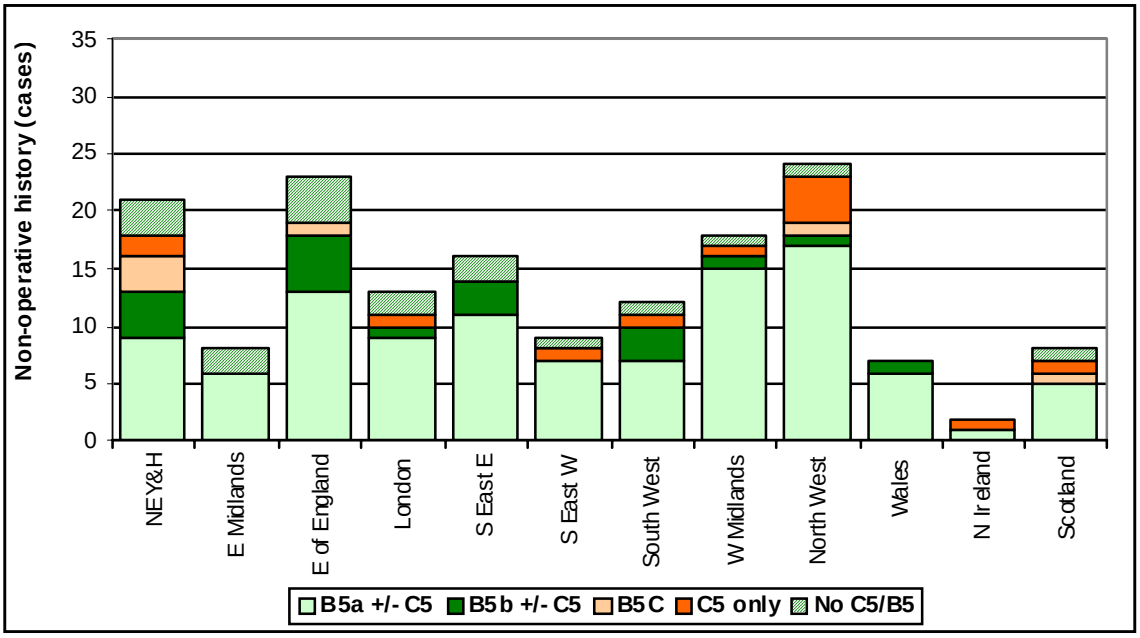

Figure 33 (Table 56): Non-operative history for non-invasive cancers with known nodal status treated by conservation surgery

COMMENT:

- Although nodal assessment is not usually indicated for non-invasive cancers, 26% of non-invasive cancers had known nodal status. This varied from 16% in South West to 35% in Wales and 36% in East Midlands.
- 1% 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.
- Mastectomy treated non-invasive cancers are more likely to have lymph nodes removed in surgery than those with conservation surgery.
- 66% 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.
- For 19 cases (12%) a B5b (Invasive) core biopsy predicted invasive disease but the invasive status of the cancer was determined to be non-invasive after surgery.

5.3 Grade of Invasive Cancers

Of the 10,688 invasive cancers which had surgery, 3,338 (31%) were Grade I, 5,222 (49%) were Grade II and 1,977 (18%) were Grade III (Table 59). Grade was not assessable for 84 cases (1%) and grade was unknown for 67 cases (1%).

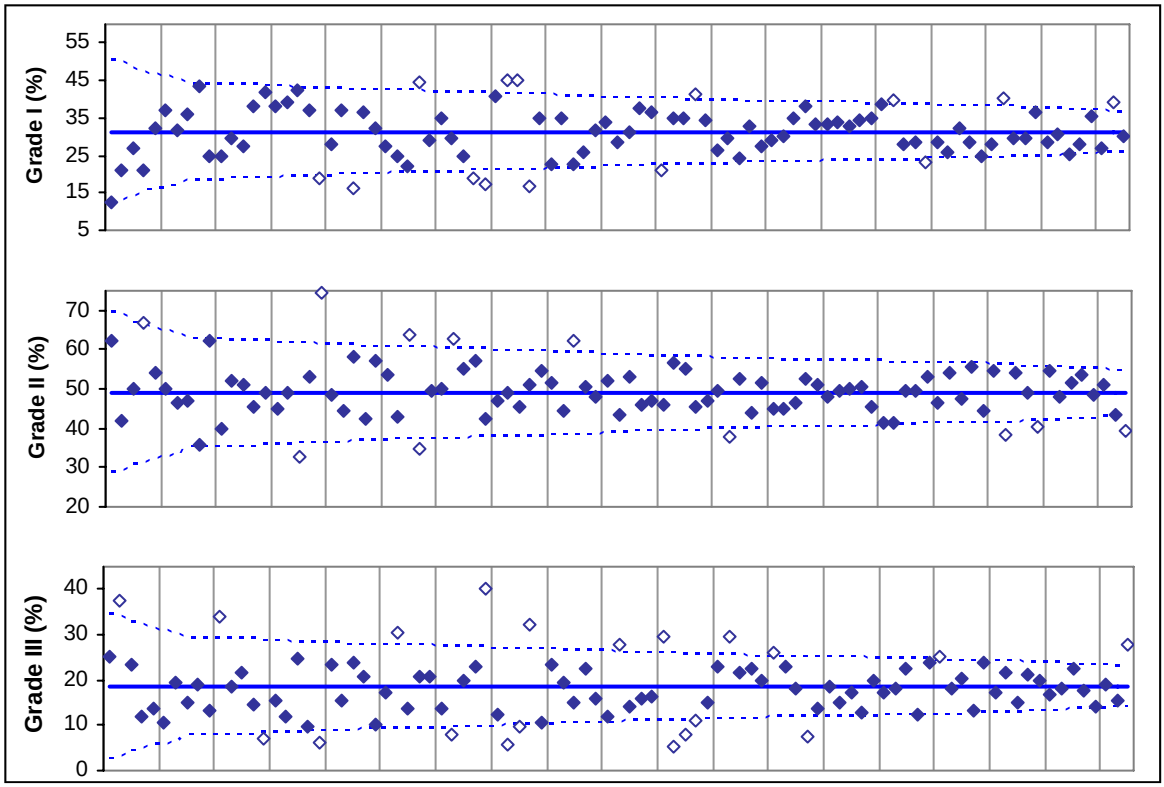

Figure 34: Variation in the grade of invasive cancers in each screening unit (open diamond shape represent units which are outliners)

The control charts in Figure 34 show the variation in the proportions of Grade I, II and III cancers recorded for individual screening units. The cases were plotted with the assumption that the proportions were normally distributed. The screening units are positioned with the same x-value in the 3 graphs, according to the total number of invasive cancers which had surgery, so that the units with the highest number of invasive cancers are located at the right hand side of the graphs. The 3 points

(Grade I, II and III) for a single unit can thus be compared vertically. Any points that are outside the 2 dashed lines (95% upper and lower control limit) are considered as significantly higher or lower than the average, represented by the solid line. The control charts suggest 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.

5.4 NPI of Invasive Cancers

NPI Group = 0.2 x Invasive Size (cm) + Grade + Nodes
where Nodes equals 1 (0 positive nodes), 2 (1, 2 or 3 positive nodes) or 3 (≥4 positive nodes)

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

The Nottingham Prognostic Index (NPI) was calculated for surgically treated invasive cancers in order to allocate the invasive cancers to one of five prognostic groups. An NPI score was calculated for all surgically treated 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 section will affect the NPI groupings.

An NPI score cannot be calculated if size, nodal status or grade are unknown or if grade is not assessable. Overall, the NPI score was unknown for only 5% (525 cases) of the 10,688 invasive cancers which had surgery. Figure 35 shows that the proportion of cancer with unknown NPI varied from 1% in Northern Ireland to 11% in London and 13% in North West. In North West, the high proportion of cancers with an unknown NPI score was largely due to unknown nodal status.

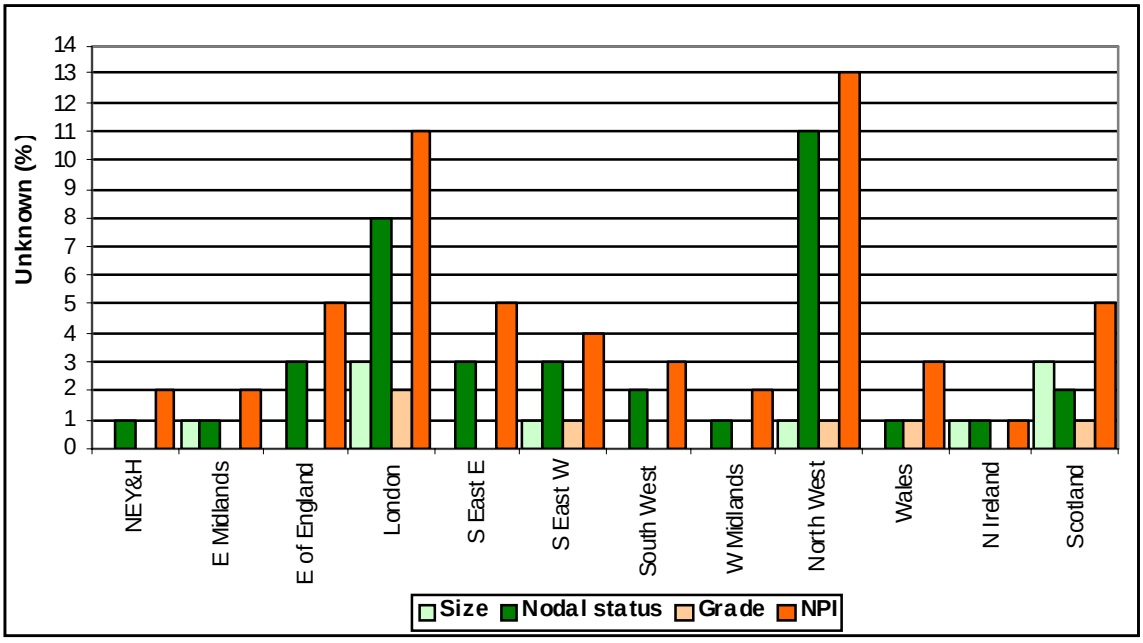

Figure 35 (Table 58): Data completeness of tumour characteristics of invasive cancers

Of the 10,163 surgically treated invasive cancers with known NPI score, the highest proportion fell into the Good Prognostic Group (36%), with only 6% (612 cases) in the Poor Prognostic Group. As expected with cancers detected by screening, the majority (61%) of cancers fell into the two best

prognostic groups, EPG (Excellent Prognostic Group) and GPG (Good Prognostic Group). This varied from 55% in Northern Ireland to 63% in East Midlands, South East (East), South West, North West and Wales (Table 60). The relatively low proportion (58%) of EPG and GPG cancers in Scotland is due to the high proportion of Grade III cancers compared with the UK as a whole (23% compared to 18%, Table 59). In Northern Ireland, it reflects the relatively high proportion of node positive cancers (3% compared with 23% in the UK as a whole).

In Figure 36, the proportion of invasive cancers for individual screening units in each prognostic group is plotted in the control charts. As in Figure 34, data for the same unit can be compared vertically across the 4 graphs. Any points that are outside the 2 dashed lines (95% upper and lower control limit) are considered as significantly higher or lower than the average, represented by the solid line.

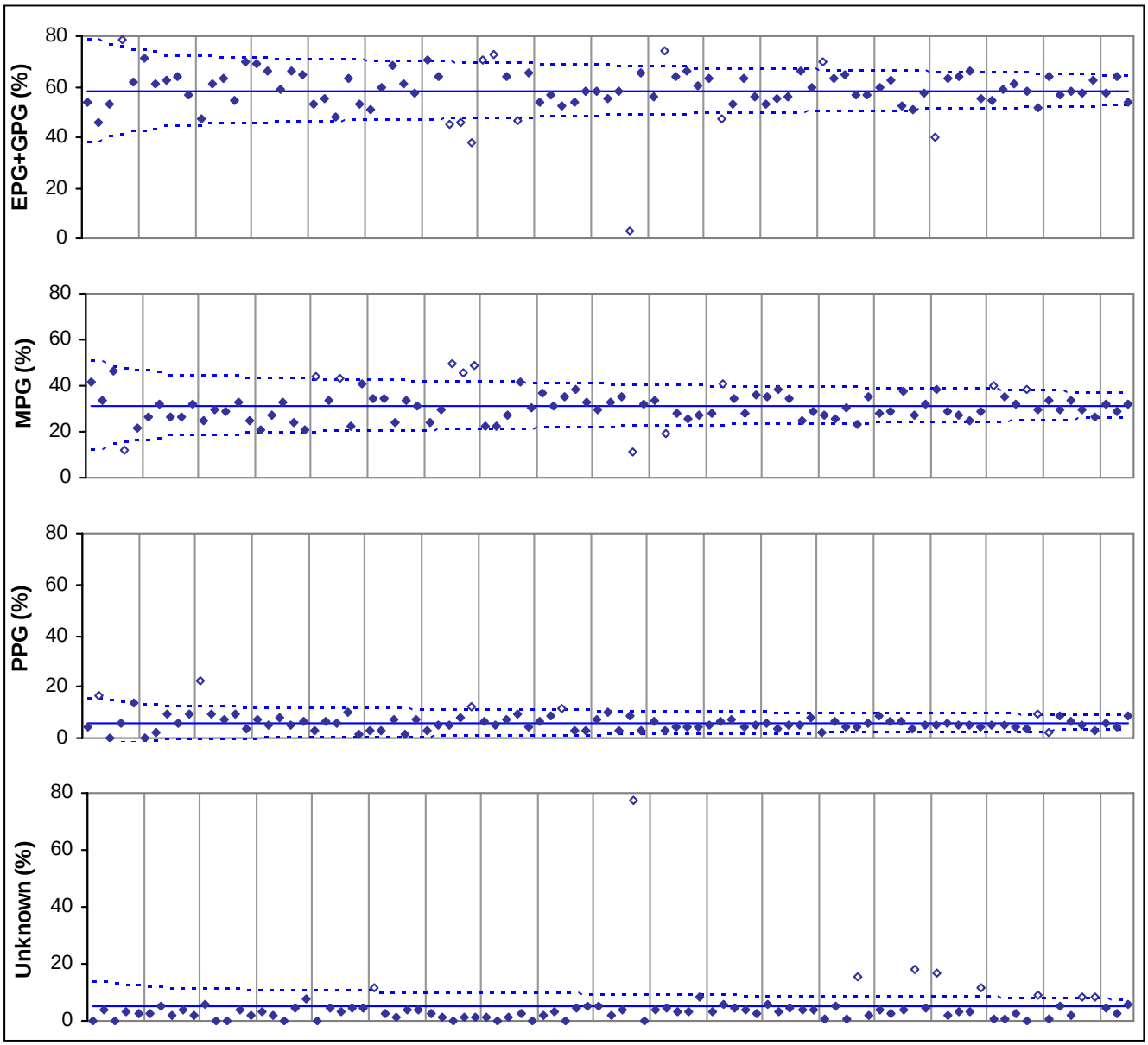

Figure 36: NPI Groups for invasive cancers in each screening unit

The first control chart in Figure 36 shows that 12 units have a significantly higher or lower proportion of EPG and GPG cancers than the UK as a whole. The third control chart shows that 5 units have a significantly higher proportion of PGP cancers. 9 units have a significantly higher proportion than the average with unknown NPI score (fourth control chart). Regional QA reference centres and their QA pathologists and surgeons should investigate the reason for these discrepancies.

COMMENT:

- Overall, 31% of invasive cancers were Grade I, 49% were Grade II and 18% were Grade III. Grade was not assessable for 84 cases (1%) and unknown for 67 cases (1%).
- There appear to be 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 95% of surgically treated invasive cancers.
- As expected with cancers detected by screening, the majority (61%) of cancers fell into the two best prognostic groups, EPG (Excellent Prognostic Group) and GPG (Good Prognostic Group).
- The proportion of EPG and GPG cancers varied from 55% in Northern Ireland to 63% in East Midlands, South East (East), South West, North West 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. In Northern Ireland it reflects the relatively high proportion of node positive cancers.
- Regional QA reference centres and their regional QA pathologists and regional QA surgeons should investigate the reasons for the significant variations in the proportion of EPG, GPG and PGP cancers apparent for some screening units in the NPI control charts.

CHAPTER 6

SCREENING SURGICAL CASELOAD

There were 484 consultant breast surgeons working in the UK NHSBSP in 2004/05. This UK figure counts only once the 39 surgeons who worked in more than one region. Throughout this section, each surgeon is credited with their total UK screening caseload. 445 of the 484 consultant surgeons were identified by their unique GMC registration code. A code other than the GMC code was provided for a further 36 surgeons from Scotland. The remaining 4 surgeons have been assumed to be 4 individual surgeons.

The screening surgical caseload is shown for each region in Figure 37. The 39 surgeons working in more than 1 region appear in each region's figures. 189 surgeons (39%) treated 30-99 cases and 7 surgeons (1%) treated more than 100 cases. 69 surgeons (14%) treated 20-29 cases, 68 (14%) treated 10-19 screening cases, and 151 surgeons (31%) had a screening caseload of fewer than 10 cases. The highest proportion of surgeons with a screening caseload of fewer than 10 was in London (51%) (37 surgeons). Surgical specialisation was most advanced in South West where only 20% of surgeons (8 in total) treated fewer than 10 screening cases. Overall the median caseload was 20 cases. Table 62 shows that the highest median was in South West (32 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 195 cases.

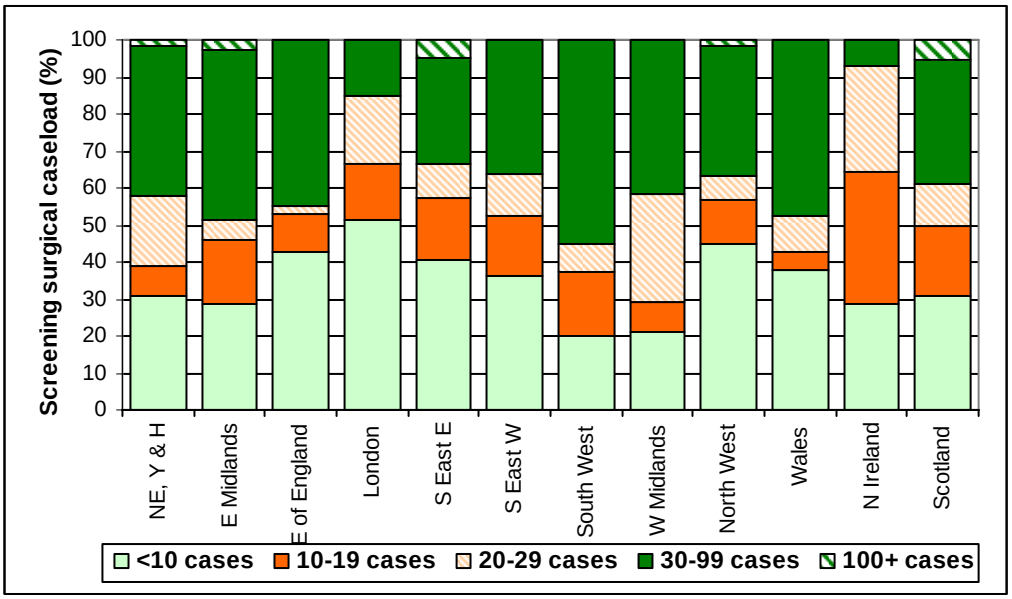

Figure 37 (Table 61): Variation in screening surgical caseload expressed as number of cases per surgeon

Table 63 shows the number of women treated by 1, 2, 3 or more surgeons and those with no referral to a surgeon. Of the 13,783 screen detected cases included in the audit, the majority (98%) were treated by 1 consultant surgeon, 215 (2%) were treated by 2 surgeons and 87 had no consultant surgeon recorded. Three women from East of England and 1 woman from London were treated by 3 consultant surgeons.

Figure 38 shows the variation in the proportion of women treated by surgeons with differing screening caseloads. Of the 13,697 women who were under the care of a consultant surgeon, 9,754 (70%) were treated by a surgeon with a screening caseload of 30-99 cases. A further 887 women (6%) were treated by the 7 surgeons with screening caseload of 100 cases or more. For 1,769 women (13%) the treating surgeon had a screening caseload of 20-29 cases, and for 978 women (7%) the treating

surgeon had a screening caseload of 10-19 cases. In the UK as a whole, 531 women (4%) were treated by a surgeon with screening caseload of less than 10 cases. 127 (24%) of these women were in London.

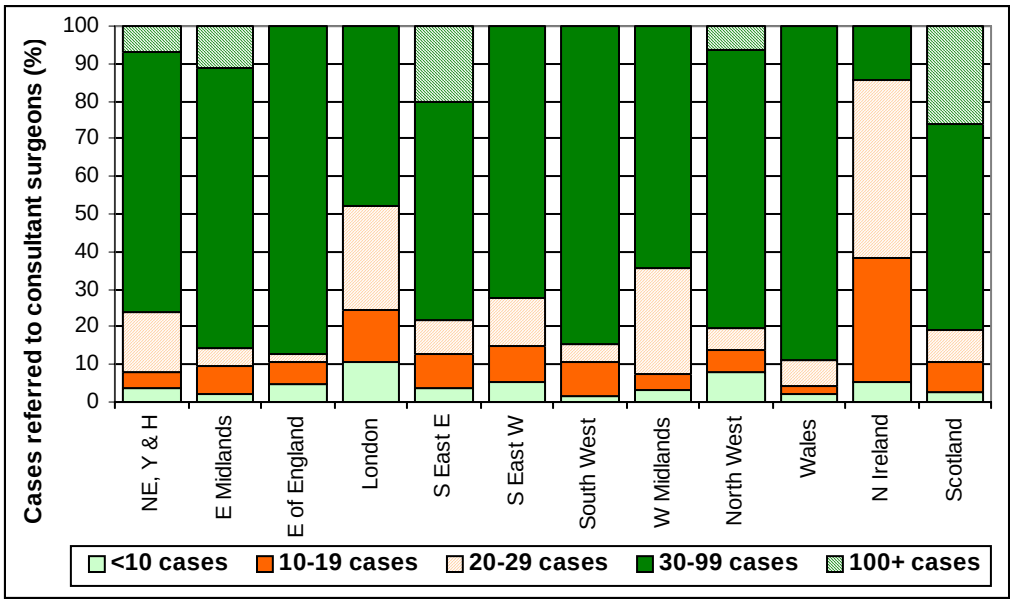

Figure 38 (Table 64): Variation in the proportion of women treated by surgeons with differing screening caseloads

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 39.

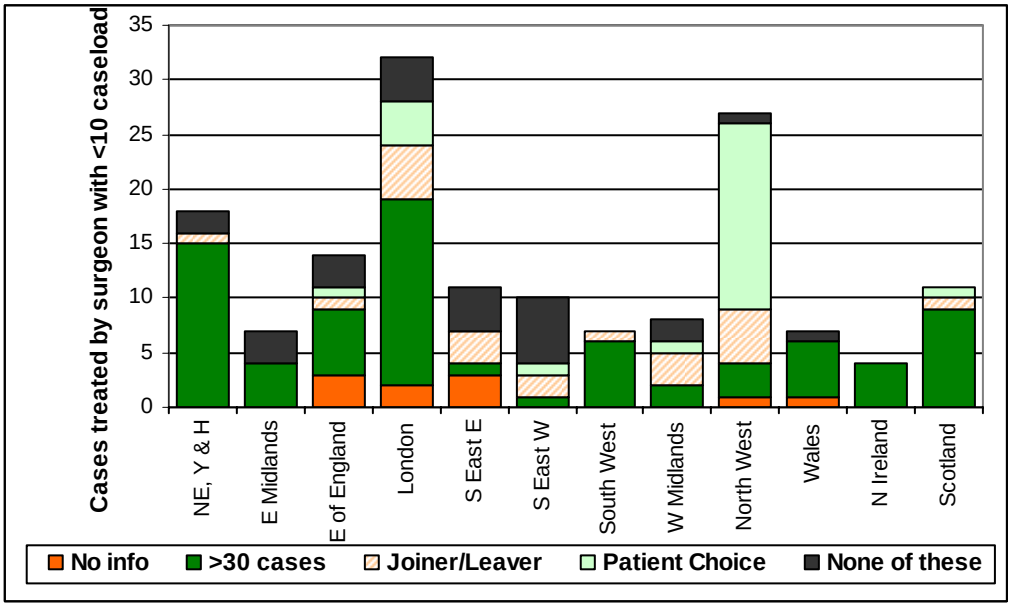

Figure 39 (Table 65): Explanations provided for surgeons treating less than 10 screening cases a year

Of the 151 surgeons in the UK with a screening caseload of less than 10 cases, 70 (46%) treated more than 30 symptomatic breast cancers during 2004/05. 21 (14%) either joined or left the NHSBSP during 2004/05. 25 (16%) of the low caseload surgeons operated under patient choice. One of the other satisfactory reasons (plastic surgeon, private practice, no screening in area) was given for 19 surgeons (13%). No information was available to explain the low screening caseload recorded for 10 surgeons (7%), treating a total of 30 women. For 6 surgeons a reason other than one of the 7 listed was provided. They treated a total of 38 women and the reasons provided were; locum surgeon and on leave in part of the audit period.

5 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*
*2004/05**	*484*	*20*	*91*	*151*	*10*

*Data for 2 units from East of England are absent in 2004/05

Since 2000/01, the number of surgeons working in the NHS Breast Screening Programme has risen from 419 in 2000/01 to 484 in 2004/05. The proportion of women treated by surgeons with a screening caseload of 20 or more has risen by 5% to 91% in 2003/04. The number of surgeons with no reason for low caseload has dropped to 10 surgeons this year.

COMMENT:

- There were 484 consultant breast surgeons working in the UK NHSBSP in 2004/05, a rise of 15% from the 419 surgeons in 2000/01.
- 89% of women were treated by a surgeon with a screening caseload of at least 20 cases.
- Of the 151 surgeons with screening caseload of less than 10 cases, 40% treated more than 30 other cases during 2004/05.
- Information was unavailable to explain the low caseload of 10 surgeons treating a total of 30 women, compared to 15 surgeons in 2003/04.

CHAPTER 7

NUMBER AND SEQUENCE OF THERAPEUTIC OPERATIONS

Details of each operation were requested so that the reasons for repeat therapeutic operations could be examined. All operations, both diagnostic and therapeutic, were coded as either conservation surgery alone (Cons), mastectomy alone (Mx), axillary surgery alone (Ax) or a combination (Cons & Ax, Mx & Ax). Diagnostic open biopsies were coded as conservation surgery. For any case without a non-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 70, 72, 74 and 76 in Appendix E.

7.1 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)

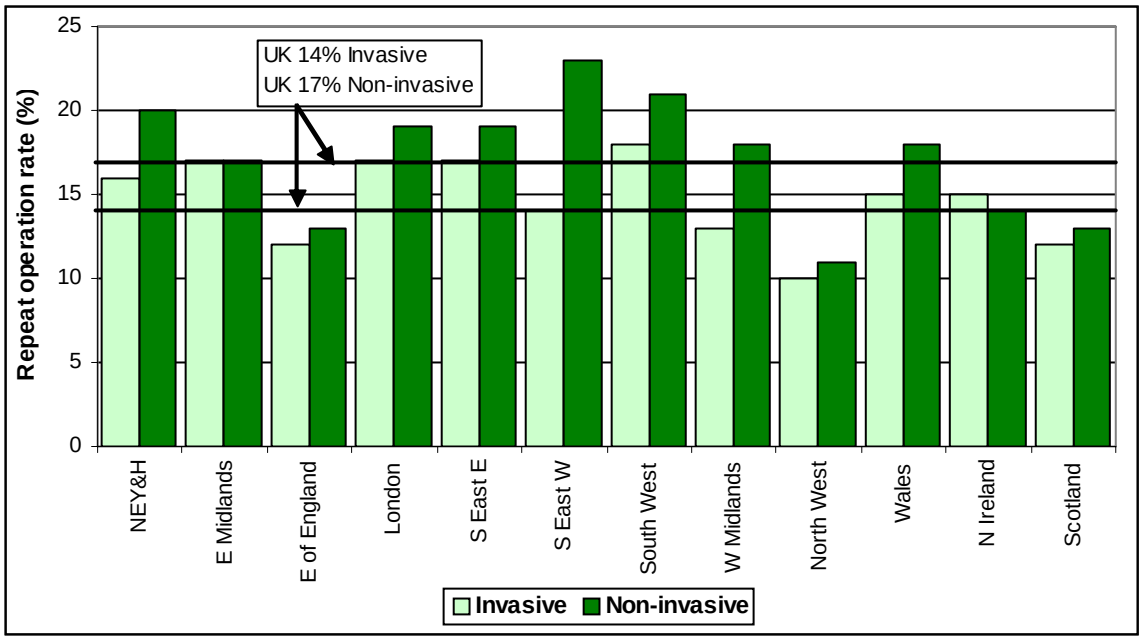

Figure 40 (Tables 67 & 68): Variation in the proportion of invasive and non-invasive cancers undergoing two or more therapeutic operations

In the UK as a whole, 2,035 cancers (16%) with a proven non-operative diagnosis by C5 cytology and/ or B5 core biopsy underwent more than one therapeutic operation (Table 66). This varied from 11% in North West to 20% in South West.

1,563 invasive cancers (14%) and 478 non-invasive cancers (17%) underwent more than one therapeutic operation (Tables 67 and 68). For invasive cancers the proportion having more than one operation varied from 10% in North West to 18% in South West. For non-invasive cancers the proportion having more than one operation varied from 11% in North West (34 cancers) to 23% in South East (West) (42 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 cosmetic, patient choice and to obtain axillary lymph nodes. The reasons for repeat therapeutic operations for cancers with a non-operative diagnosis depend upon the invasive status predicted by the non-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 non-operative diagnosis and repeat operation undertaken to obtain nodes - cancers with a B5a (Non-invasive) non-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) non-operative diagnosis found to have DCIS present after surgery require repeat operation (conservation or mastectomy) to clear margins

Scenario 4 :	Addition therapeutic nodal procedure undertaken - Insufficient number of nodes harvested at first operation - Therapeutic clearance of axilla when large proportion of nodes taken at first operation are positive - Clearance of nodes following positive sentinel node procedure

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

99% of cancers with a B5b (Invasive) core biopsy result proved to be invasive following surgery (Table 12). The treatment operation can thus be planned in advance, so these cases are least likely to require a repeat therapeutic operation. In the UK as a whole, 12% of invasive cancers with a B5b (Invasive) core biopsy required a repeat therapeutic operation. This varied from 9% in North West and Scotland to 19% in Northern Ireland (14 cancers) (Table 69).

The flow chart in Figure 41 shows that the majority (63%) of B5b (Invasive) cancers underwent a single therapeutic operation consisting of conservation surgery with an axillary procedure. 21% 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 (504 cases, 6%). This repeat operation was probably undertaken to clear involved or close margins.

56 cancers (1%) had repeat conservation surgery and additional axillary surgery and 51 cancers (1%) 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. 330 cancers (4%) had a mastectomy or a mastectomy with an axillary procedure following the initial conservation surgery and axillary procedure. A further 49 cancers went on to have a mastectomy or a mastectomy with additional axillary surgery after more than one repeat operation involving conservation surgery. For these cancers, DCIS was probably present at the margins.

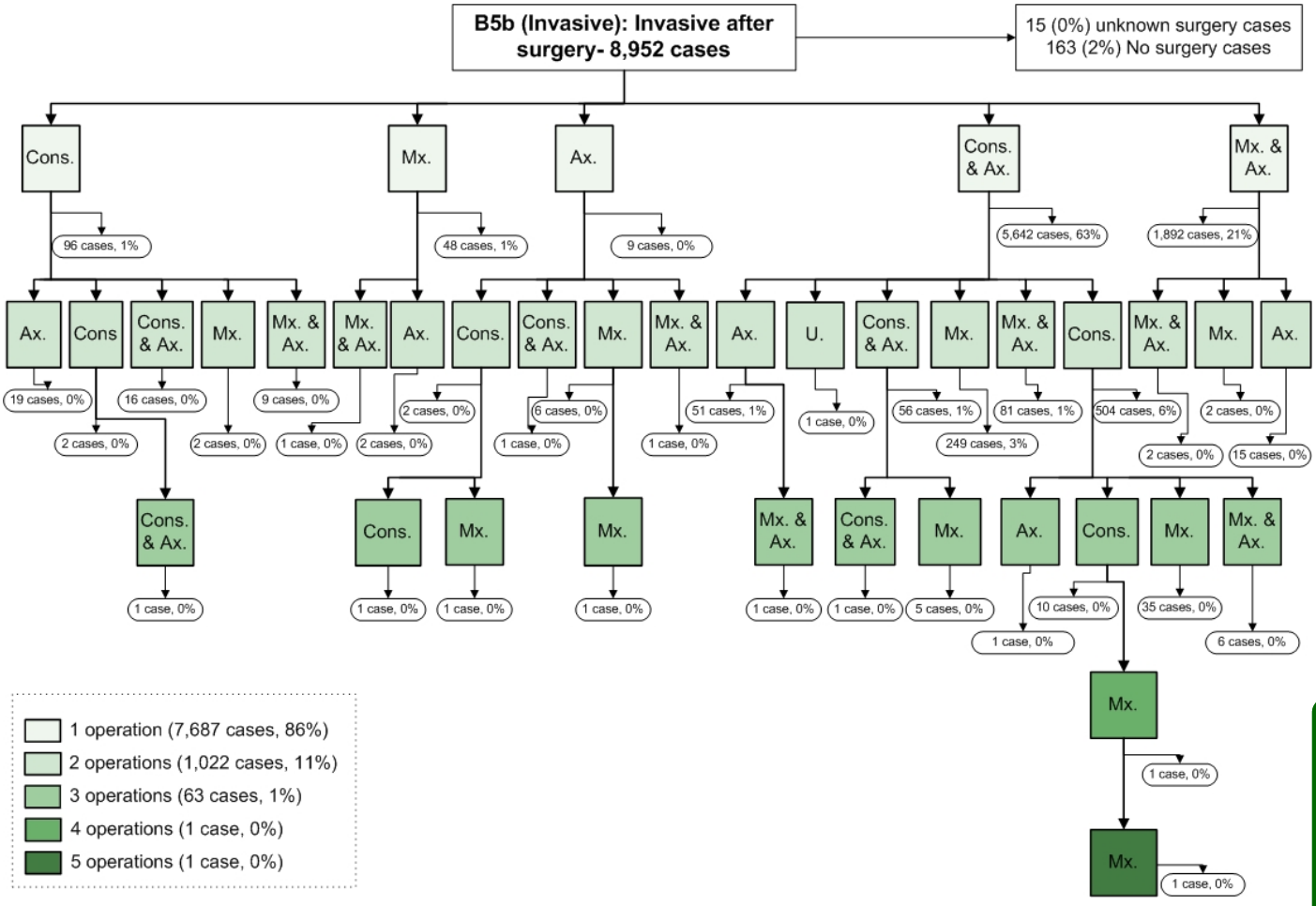

Figure 41 (Table 70): Sequence of operations for cancers with B5b (Invasive) core biopsy proved to be invasive after surgery

Overall, 8,578 cancers (98%) had an axillary procedure at the first operation (Table 70). A further 49 cancers (1%) did not have nodes taken at the first operation but underwent a repeat operation to obtain nodes. 148 cancers (2%) had no axillary procedure recorded. 41 (28%) of these cancers were in London, 22 (15%) in North West and 21 (14%) in Scotland. Regional QA reference centres and regional QA surgeons should audit these cancers to ensure that the axilla has not been under-treated.

7.3 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 42 and Table 72 show that the most common treatment, given to 66% of these cancers, was a single therapeutic operation consisting of conservation surgery and an axillary procedure. 140 cancers (16%) underwent a single therapeutic operation consisting of a mastectomy and an axillary procedure. 47 (34%) of these cancers were in North East Yorkshire and Humber, and 29 (21%) were in North West. A further 3 women had a mastectomy as their only operation. Presumably for these 143 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.

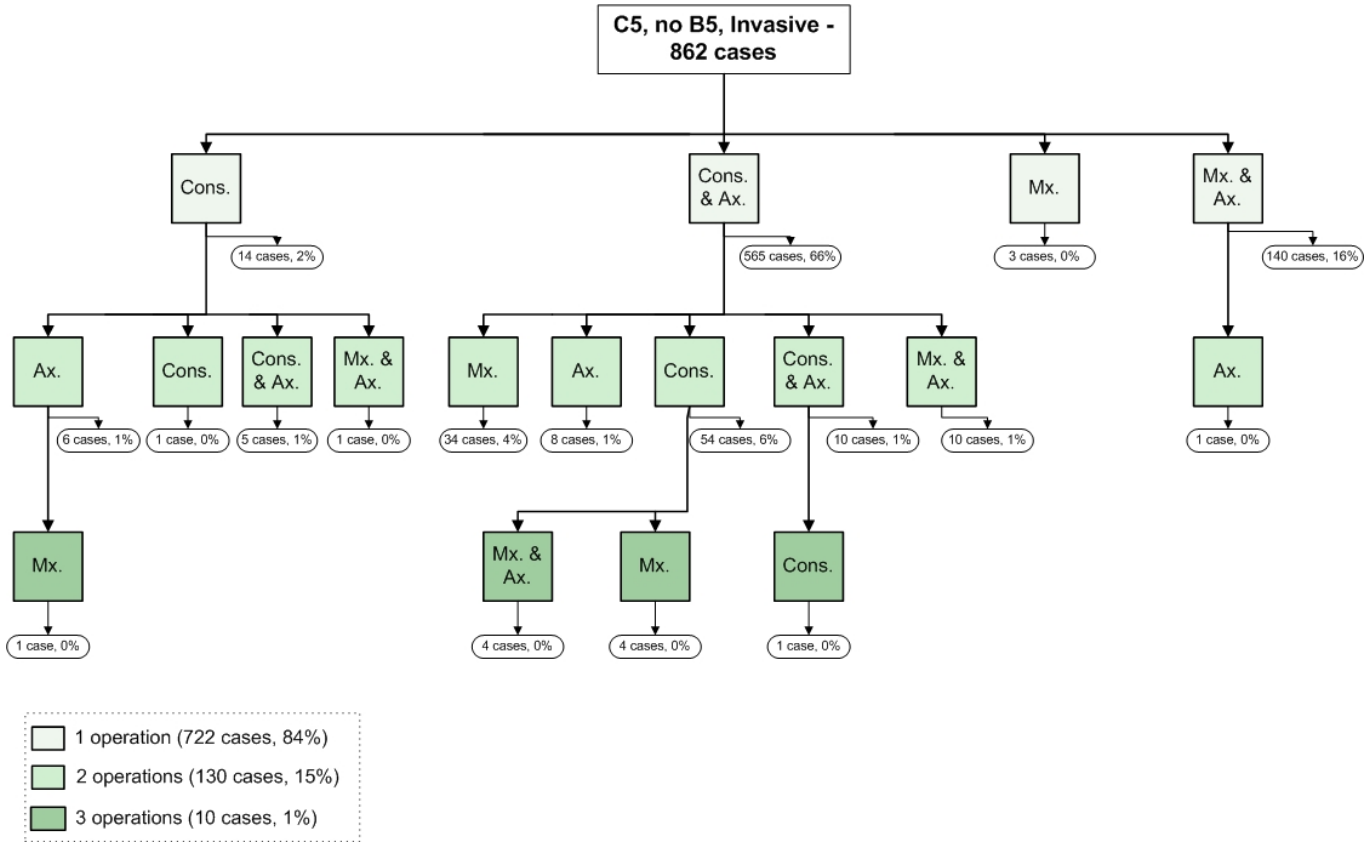

Figure 42 (Table 72): Sequence of operations for invasive cancers with C5 cytology only, no B5 core biopsy

In the UK as a whole, 140 (16%) of the 862 invasive cancers diagnosed by C5 cytology only underwent a repeat operation (Table 71). This varied from 0% in Wales (0 out of 2 cases) and 2% in South East (West) (1 cancer) to 25% in London (10 cancers) and South East (East) (23 cancers). Overall, 831 cancers (96%) had an axillary procedure at the first operation (Table 72). A further 13 cancers (2%) did not have nodes taken at the first operation but underwent a repeat operation to obtain nodes. 4 (31%) of these cancers were in London. 18 cancers (2%) did not have any axillary procedure recorded. 5 (18%) of these were in South East (East). Regional QA reference centres and regional QA surgeons should audit these cancers to ensure that the axilla has not been under-treated.

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

In the UK as a whole, 20% 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 units which had 15 or more cancers diagnosed as B5a (Non-invasive) core biopsy, the proportion of B5a cancers found to be invasive after surgery varied from 0% to 40%. 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 43 and Table 74.

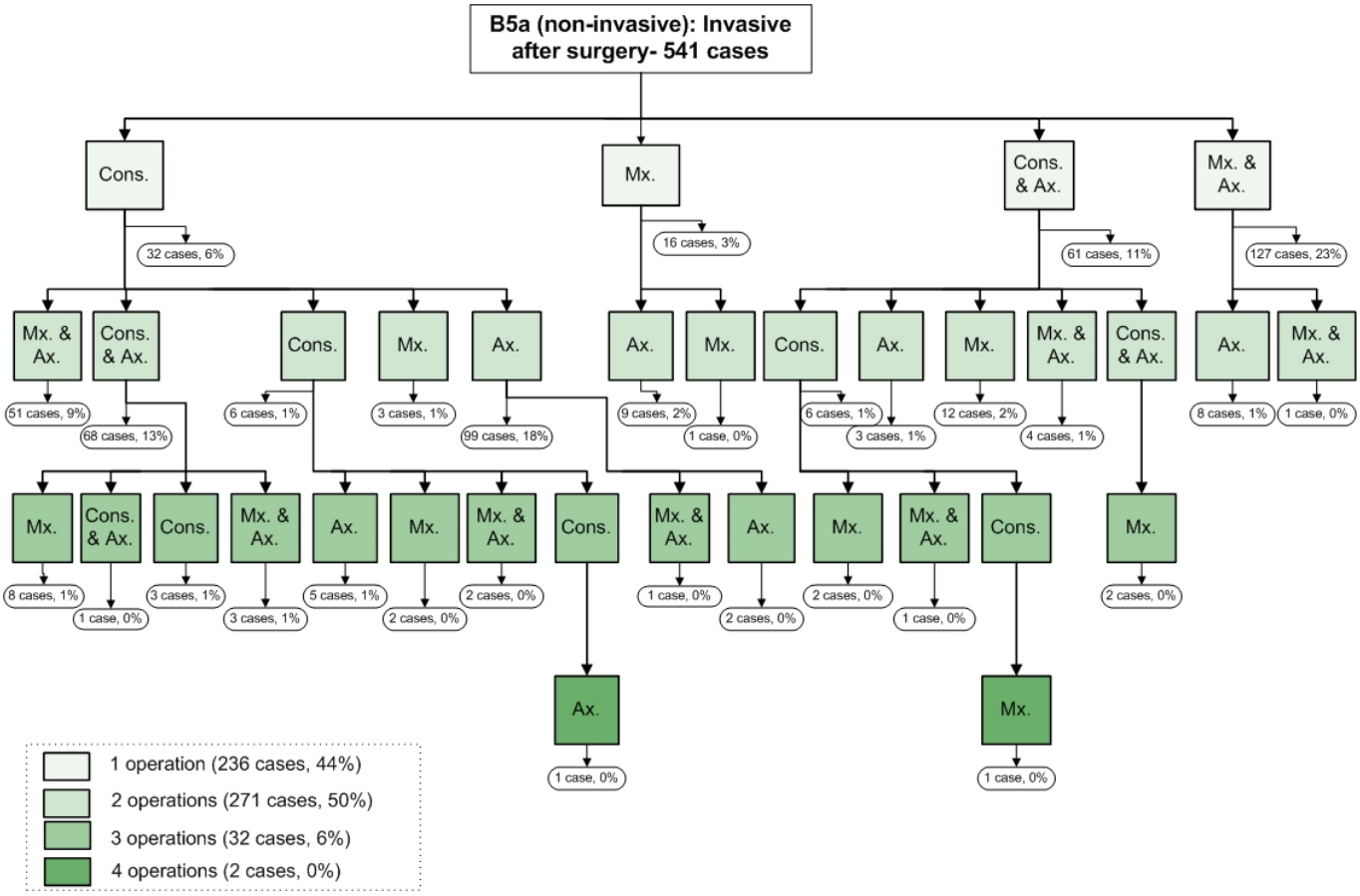

Figure 43 (Table 74): Sequence of operations for cancers with B5a (Non-invasive) core biopsy determined to be invasive after surgery

The most common single operations for B5a (Non-invasive) cancers found to be invasive after surgery were mastectomy with an axillary procedure (127 cases, 23%) or conservation surgery with an axillary procedure (61 cases, 11%). The proportion of these cancers which had surgery to the axilla at the first operation varied from 28% in South East (West) (11 cancers) to 60% in Wales (26 cancers) (Table 74). 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 non-operative diagnosis, particularly if conservation surgery was undertaken. The type of axillary operation carried out and the number of nodes removed should also be examined.

305 (56%) of the 541 cancers with a B5a (Non-invasive) core biopsy determined to be invasive after surgery underwent a repeat operation (Table 73). This varied from 47% in Wales to 64% in West

Midlands and 65% in Scotland. The low proportion of repeat operations in the Wales reflects the relatively high number of cancers where axillary surgery was carried out at the first operation. 22 cancers initially treated with conservation surgery and axillary surgery were converted to mastectomies after one or more further operations. A further 70 cancers initially treated with conservation surgery alone were converted to mastectomies after one or more further operations. For these 92 cancers, the repeat operation was probably carried out because of DCIS at the margins. 3 cancers initially treated with conservation surgery and axillary surgery and 8 cancers initially treated with mastectomy and axillary surgery had repeat operations to the axilla. In the majority of these cases, positive nodes were found when fewer than 4 nodes had been taken at the first operation.

218 women who had conservation surgery as the first therapeutic operation had a repeat operation to obtain axillary lymph nodes. Of these, 68 had further conservation surgery and 51 a mastectomy in addition to their axillary surgery, presumably to clear involved margins. 99 of these women had a repeat operation involving axillary surgery alone. In Scotland 16 women, 29% of those with a B5a (Non-invasive) core biopsy who were found to have invasive cancers after conservative surgery, had a repeat operation involving only the axilla. A further 9 women who had a mastectomy without nodal surgery at their first operation, and also had a repeat operation involving axillary surgery alone. These 108 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.

Overall, 60 (11%) B5a (Non-invasive) cancers found to be invasive after surgery (11%) did not have any axillary procedure recorded. 13 (22%) of these cancers were in London and 9 (15%) were in East of England. Regional QA reference centres and regional QA surgeons should audit these cancers to ensure that the axilla has not been under-treated.

7.5 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, 80% of cancers with a B5a (Non-invasive) core biopsy result were confirmed to be non-invasive or micro-invasive following surgery (Table 8). Figure 44 and Table 76 show that the majority of these cancers had a single operation to the breast consisting of conservation surgery (1,078 cancers, 49%).

411 B5a (Non-invasive) cancers (19%) had a single operation involving a mastectomy and surgery to the axilla and 105 (5%) had a single conservative operation which included surgery to the axilla. Both of type of surgeries had a median of 5 nodes taken. 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 practice 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, 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, 464 (21%) of the 2,181 cancers with B5a (Non-invasive) core biopsy result that were confirmed to be non-invasive or micro-invasive following surgery had a repeat therapeutic operation (Table 75). The repeat operation rate varied from 15% in North West to 27% in South West, South East (West) and North East, Yorkshire and Humber. 162 B5a (Non-invasive) cancers initially treated with conservation surgery alone were converted to mastectomies after one or more further operations. A further 12 cancers initially treated with conservation surgery and axillary surgery were converted to mastectomies after one or more further operations. For these 174 cancers, DCIS was probably still present at the margins after the conservation surgery. 111 (26%) of the 433 cancers initially treated with conservation surgery had surgery to the axilla during their repeat operations.

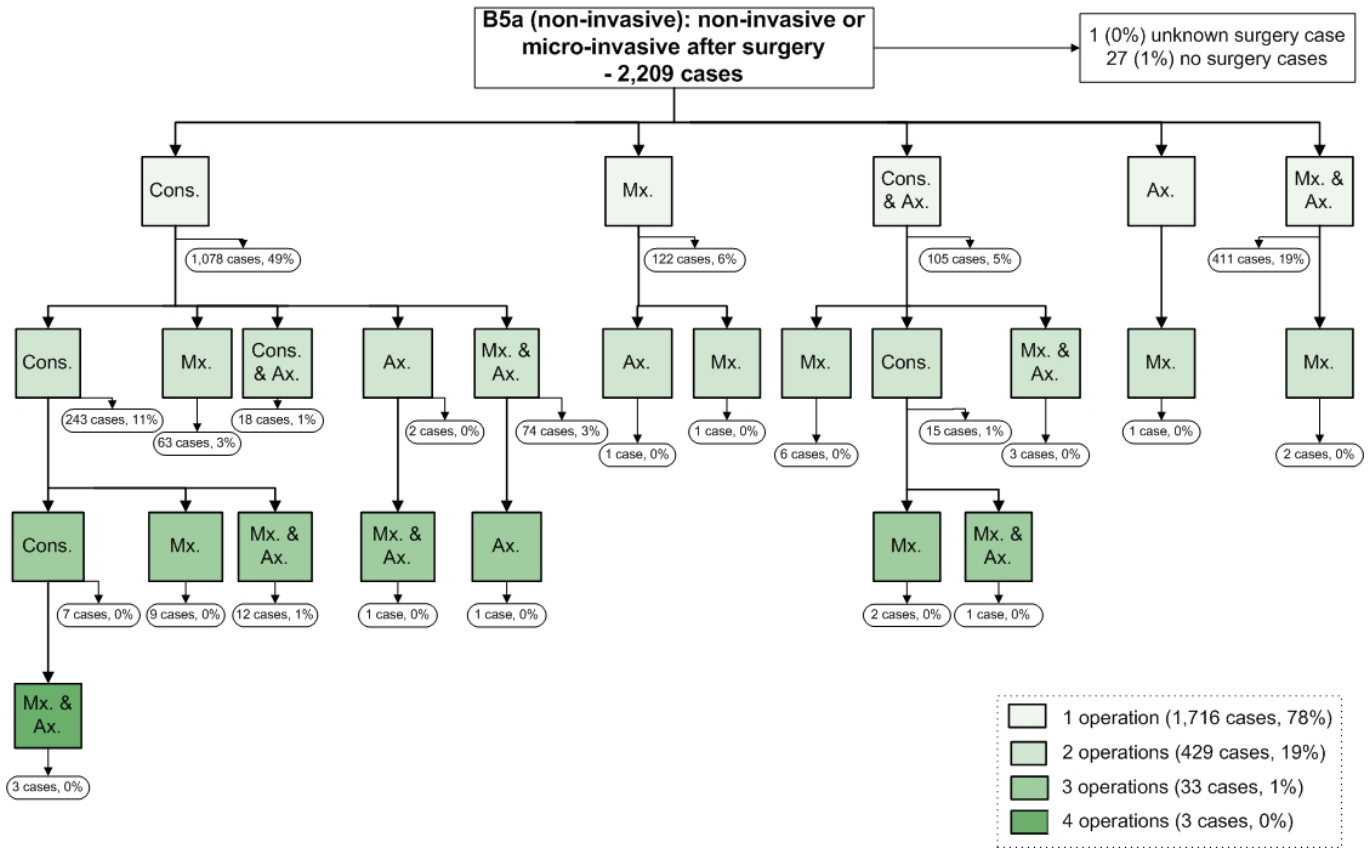

Figure 44 (Table 76): Sequence of operations for cancers with B5a (Non-invasive) core biopsy proved to be non-invasive or micro-invasive after surgery

7.6 Summary of Repeat Operation Rates

Table 7.6A summarises the regional variation in repeat operation rates for the types of cancer discussed in the previous sections. The data show that invasive cancers with B5b (Invasive) core biopsy had fewest repeat operations (12%). As expected, invasive cancers with a B5a (Non-invasive) core biopsy had the highest repeat operation rate (56%). Non-invasive or micro-invasive cancers with a B5a (Non-invasive) core biopsy had a repeat operation rate of 21%.

TABLE 7.6A : REPEAT THERAPEUTIC OPERATION RATES

Region	***Invasive cancers***						***Non-invasive or micro-invasive cancers***	
	B5b *(Table 69)*		***C5 only, no B5*** *(Table 71)*		***B5a*** *(Table 73)*		***B5a*** *(Table 75)*	
	No.	***%***	***No.***	***%***	***No.***	***%***	***No.***	***%***
N East, Yorks & Humber	*141/1044*	*14*	*52/214*	*24*	*34/66*	*52*	*82/306*	*27*
East Midlands	*112/763*	*15*	*1/9*	*11*	*26/44*	*59*	*34/186*	*18*
East of England	*87/844*	*10*	*1/10*	*10*	*22/40*	*55*	*34/199*	*17*
London	*115/782*	*15*	*10/40*	*25*	*31/62*	*50*	*41/162*	*25*
South East (East)	*93/662*	*14*	*23/92*	*25*	*24/43*	*56*	*44/213*	*21*
South East (West)	*79/652*	*12*	*1/52*	*2*	*25/40*	*63*	*38/143*	*27*
South West	*135/884*	*15*	*14/64*	*22*	*37/63*	*59*	*60/222*	*27*
West Midlands	*91/871*	*10*	*5/74*	*7*	*35/55*	*64*	*43/205*	*21*
North West	*83/939*	*9*	*22/181*	*12*	*14/28*	*50*	*38/247*	*15*
Wales	*60/470*	*13*	*0/2*	*0*	*20/43*	*47*	*21/109*	*19*
Northern Ireland	*14/75*	*19*	*10/96*	*10*	*3/5*	*60*	*5/32*	*16*
Scotland	*76/803*	*9*	*1/28*	*4*	*34/52*	*65*	*25/158*	*16*
United Kingdom	***1086/8789***	***12***	***140/862***	***16***	***305/541***	***56***	***465/2182***	***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 7.6B). Most cases diagnosed on the basis of C5 cytology only had axillary surgery at the first operation, with only 13 cases (2%) undergoing a repeat operation to obtain nodes. However, for invasive cancers with a B5a (Non-invasive) core biopsy, where the invasive disease was not predicted, 253 cancers (47%) had an axillary procedure at a repeat operation.

TABLE 7.6B : PROPORTION OF INVASIVE CANCERS WITH AXILLARY SURGERY AT 1ST AND REPEAT OPERATIONS

Region	B5b (Table 70)			C5 (Table 72)			B5a (Table 74)		
	Total	1st Op	Repeat Op	Total	1st Op	Repeat Op	Total	1st Op	Repeat Op
N East, Yorks & Humber	99	99	0	100	98	1	94	52	42
East Midlands	99	98	1	100	100	0	98	45	52
East of England	98	97	0	100	100	0	78	33	45
London	93	92	1	93	83	10	79	40	39
South East (East)	99	99	0	95	91	3	84	42	42
South East (West)	99	98	1	94	94	0	83	28	55
South West	100	99	1	98	97	2	89	38	51
West Midlands	99	99	0	100	100	0	93	35	58
North West	98	97	1	98	97	1	89	54	36
Wales	99	98	1	50	50	0	95	60	35
Northern Ireland	100	100	0	100	100	0	80	40	40
Scotland	97	97	1	100	96	4	96	40	56
United Kingdom	**98**	**98**	**1**	**98**	**96**	**2**	**89**	**42**	**47**

In the UK as a whole, axillary surgery was performed for 98% of invasive cancers with a B5b (Invasive) core biopsy. For 98% of these cancers, the axillary surgery was carried out at the first operation and less than 1% had their axillary surgery at the repeat operation. In London, 5% of these cancers appeared to have no axillary surgery and 1% have unknown surgical treatment (Table 70).

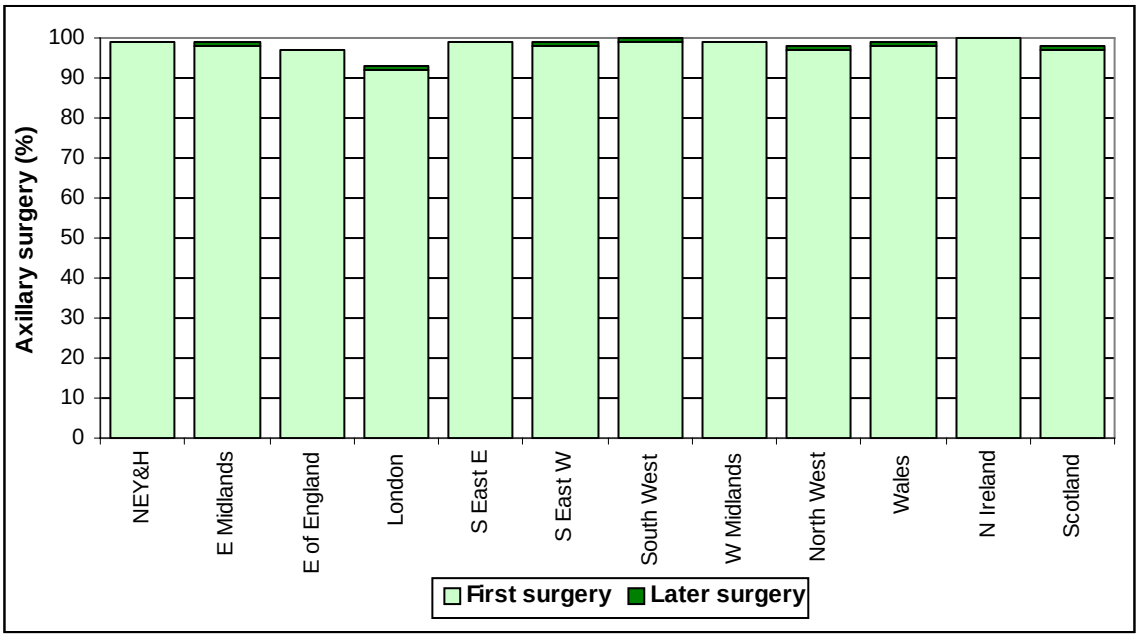

Figure 45 (Table 70): Variation in proportion of invasive cancers with B5b (invasive) non-operative diagnosis and axillary surgery at first and repeat operations

A similar picture was apparent for invasive cancers diagnosed by C5 cytology only, with 98% having axillary surgery (Figure 46). For 96% of these cancers, the axillary surgery was carried out at the first

operation. In London, axillary surgery was performed for less than 90% of cancers at the first operation. However, the proportion of these cancers with axillary surgery was increased to 93% via repeat operations. In Wales only 2 cancers were diagnosed by C5 cytology only.

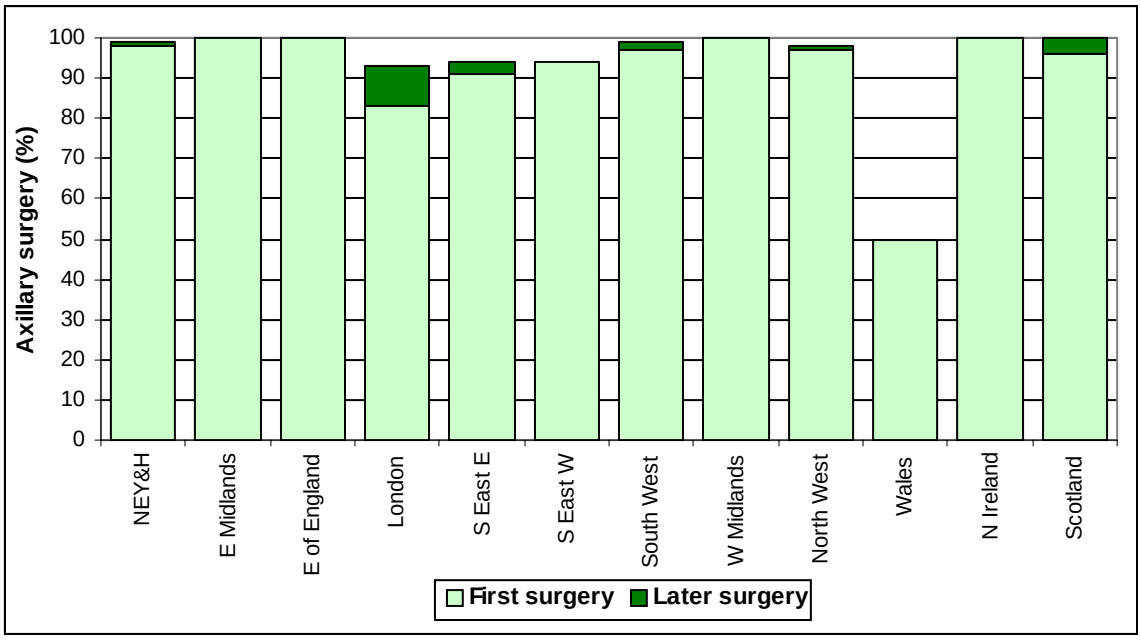

Figure 46 (Table 72): Variation in proportion of invasive cancers with C5 cytology only non-operative diagnosis and axillary surgery at first and repeat operations

In the UK as a whole, 89% of invasive cancers with a B5a (Non-invasive) diagnosis had axillary surgery. This varied from 78% in East of England to 98% in East Midlands. Overall, 42% of invasive cancers with a B5a (Non-invasive) diagnosis had their axillary surgery at the first operation with repeat operations providing nodal data for 47%. The proportion of these cancers which had their axillary surgery at the first operation was highest in Wales (60%) and lowest in South East (West) (28%).

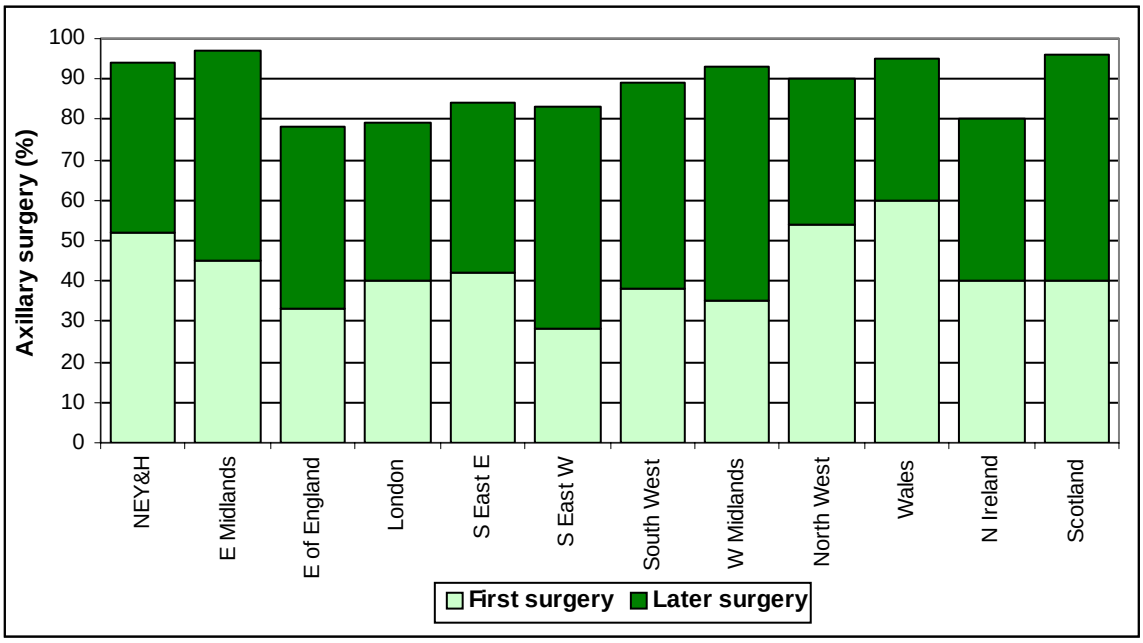

Figure 47 (Table 74): Variation in proportion of invasive cancers with B5a (non-invasive) non-operative diagnosis and axillary surgery at first and repeat operations

In five 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%. In East of England 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 45% and 55% of cancers respectively. However, despite these additional operations, in these regions only 78% and 83% respectively of invasive cancers with a B5a (Non-invasive) diagnosis appeared to have axillary surgery.

TABLE 7.6C : PROPORTION OF INVASIVE CANCERS WITH NO AXILLARY SURGERY

Region	B5b (Table 70)		C5 only, no B5 (Table 72)		B5a (Table 74)	
	No.	%	No.	%	No.	%
N East, Yorks & Humber	5/1044	0	1/214	0	4/66	6
East Midlands	8/763	1	0/9	0	1/44	2
East of England	18/844	2	0/10	0	9/40	23
London	41/782	5	3/40	8	13/62	21
South East (East)	8/662	1	5/92	5	7/43	16
South East (West)	7/652	1	3/52	6	7/40	18
South West	4/884	0	1/64	2	7/63	11
West Midlands	8/871	1	0/74	0	4/55	7
North West	22/939	2	4/181	2	3/28	11
Wales	6/470	1	1/2	50	2/43	5
Northern Ireland	0/75	0	0/96	0	1/5	20
Scotland	21/803	3	0/28	0	2/52	4
United Kingdom	**148/8789**	**2**	**18/862**	**2**	**60/541**	**11**

Table 7.6C shows the proportion of invasive cancers in each region with no axillary surgery recorded. Overall, 226 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 Northern Ireland (20%) and East Midlands (2%) to 13 cancers (21%) in London and 9 cancers (23%) in East of England. 2% of invasive cancers with a B5b (Invasive) core biopsy and 2% of invasive cancers with C5 cytology only had no axillary procedure recorded. These 226 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.

COMMENT:

- In the UK as a whole, 16% of cancers with a proven non-operative diagnosis by C5 cytology and/or B5 core biopsy underwent more than one therapeutic operation. This varied from 11% in North West to 20% in South West.
- 14% of invasive cancers and 17% of non-invasive cancers had more than one therapeutic operation. The proportion of invasive cancers having a repeat operation varied from 10% in North West to 18% in South West. The proportion of non-invasive cancers having a repeat operation varied from 11% in North West to 23% in South East (West).
- Invasive cancers with B5b (Invasive) core biopsy had the smallest proportion of repeat operations (12%), followed by invasive cancers diagnosed by C5 cytology only (16%). Invasive cancers with a B5a (Non-invasive) core biopsy had the highest repeat operation rate (56%). Non-invasive and micro-invasive cancers with a B5a (Non-invasive) core biopsy had a repeat operation rate of 21%.
- 63% of invasive cancers with a B5b (invasive) core biopsy underwent a single therapeutic operation consisting of conservation surgery with an axillary procedure. 21% underwent a single therapeutic operation consisting of a mastectomy with an axillary procedure. A further 6% of these cancers had conservation surgery with an axillary procedure followed by conservation surgery, presumably to clear involved or close margins.

COMMENT:

- 66% of invasive cancers diagnosed by C5 cytology only underwent a single therapeutic operation consisting of conservation surgery with an axillary procedure. A further 16% of these cancers underwent a single therapeutic operation consisting of a mastectomy and an axillary procedure. Presumably in these cases, the clinical and radiological signs were strongly supportive of the presence of invasive disease. 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.
- 11% of invasive cancers with a B5a (Non-invasive) core biopsy underwent a single operation consisting of conservation surgery with an axillary procedure and 23% 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 non-operative diagnosis, particularly if conservation surgery was undertaken. The type of axillary operation carried out and the number of nodes removed should also be examined.
- In the UK as a whole, axillary surgery was performed for 98% of invasive cancers with a B5b (Invasive) core biopsy. For 98% of these cancers, the nodal status was determined at the first operation.
- For 96% of invasive cancers diagnosed by C5 cytology only, axillary surgery was performed at the first operation with 2% having their axillary surgery at a repeat operation.
- 89% of invasive cancers with a B5a (Non-invasive) diagnosis had axillary surgery. 42% of these cancers had their axillary surgery at the first operation, with repeat operations providing nodal data for the additional 47%.
- 148 invasive cancers with a B5b (Invasive) core biopsy, 18 invasive cancers with C5 cytology and 60 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.

CHAPTER 8

ADJUVANT THERAPY

Surgeons were asked to supply radiotherapy, chemotherapy and hormone therapy information for cancers detected through screening between 1 April 2003 and 31 March 2004, 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 31 March 2005, 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.

8.1 Data Completeness for the Adjuvant Therapy Audit

The 2003/04 ABS at BASO audit reported tumour characteristics and primary treatment data for 13,290 screen detected breast cancers. 8 cases were later found not to be screen detected breast cancers and 1 eligible case was found to be missing in last year's main audit. Thus 13,283 cases were eligible for inclusion in the adjuvant therapy audit. Of these, 1,126 (8%) had no adjuvant data supplied. 1,088 cases (8%) were excluded from the audit due to incomplete surgery data or because the woman had had a previous cancer. Following these exclusions, 11,069 cases (83%) were included in the adjuvant therapy audit. Figure 48 shows the variation in data completeness between regions. East Midlands, Wales and Scotland have the highest proportion of eligible cases (99%). East of England (57%) and Northern Ireland (62%) have the lowest (Table 77).

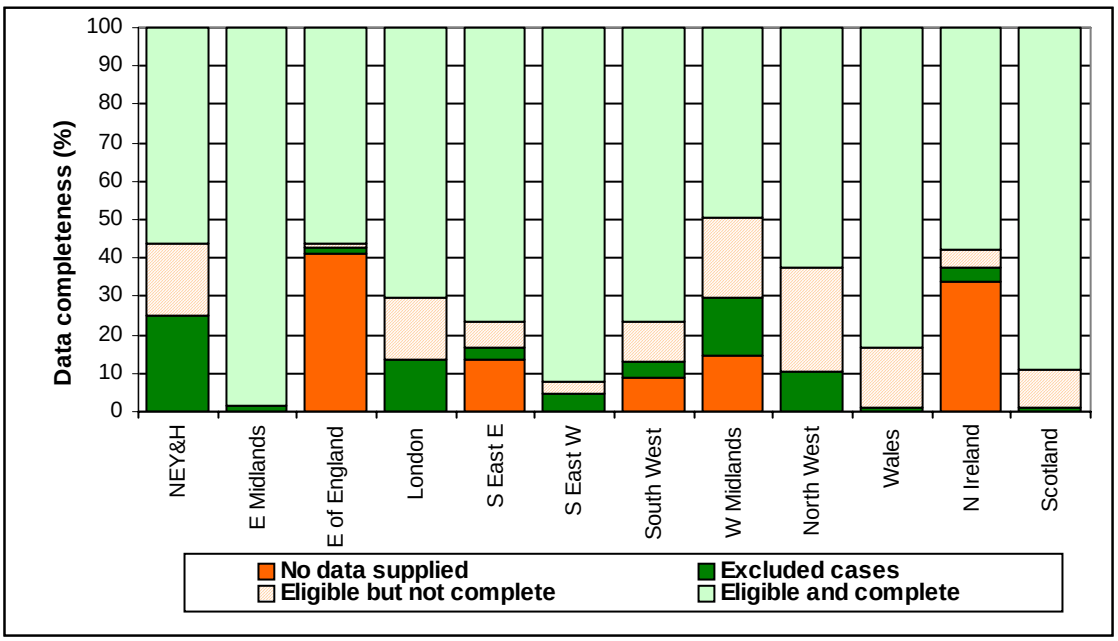

Figure 48 (Table 77): Data completeness of adjuvant analysis data

In the UK as a whole, data completeness for radiotherapy, chemotherapy and hormone therapy was 90%, 96% and 96% respectively for the 11,069 eligible cases included in the audit. Complete radiotherapy, chemotherapy and hormone therapy data were available for 9,440 cases (85%) (Table 78). The completeness of radiotherapy, chemotherapy and hormone therapy for the eligible cases varied from 70% in West Midlands and North West to 100% in East Midlands. In East of England where data were only available for just over 50% of the total cancers, 98% of the eligible cases that could be included in the audit had complete radiotherapy, chemotherapy and hormone therapy data.

In the UK as a whole, ER status was unknown for 484 (6%) of invasive cancers and for 53% of non-invasive cancers (Figure 49). The proportion of invasive cancers without ER status varied from 1% in East Midlands and Scotland to 12% in North East, Yorkshire and Humber. The proportion of non-invasive cancers without ER status varied from 9% in Northern Ireland to 74% in Wales and Scotland. Of the 8,251 invasive cancers with known ER status, 89% were ER positive and 11% were ER negative. Only 73% of the 1,015 non-invasive cancers with known ER status were ER positive.

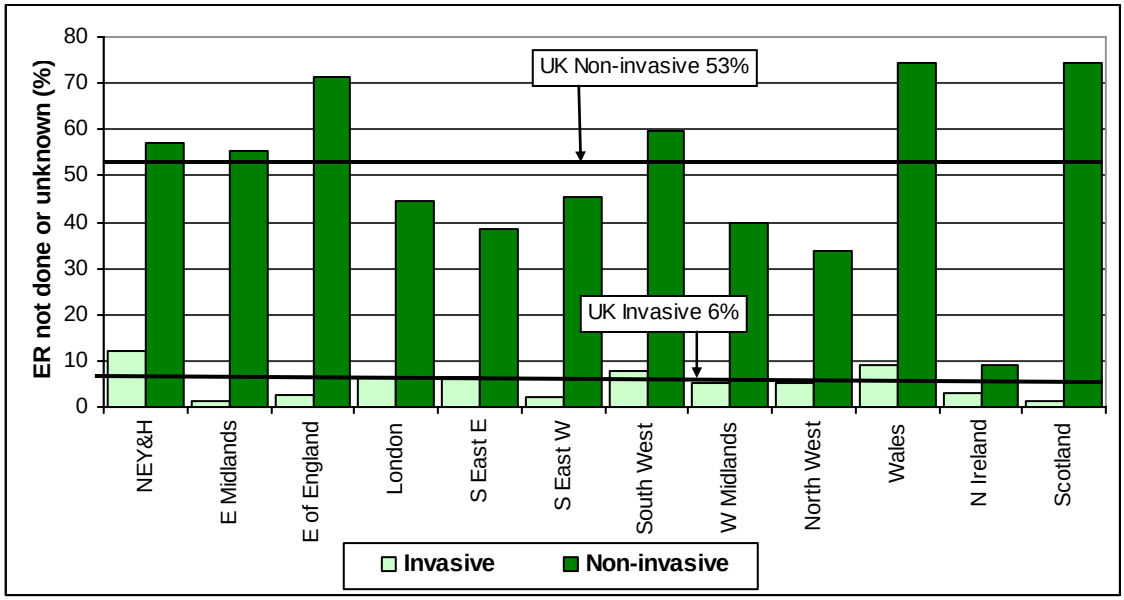

Figure 49 (Table 79): Variation in the proportion of invasive and non-invasive cancers with no ER status information provided

PgR status data were available for 48% of all cancers (Table 81). PgR status was known for 75% of the ER negative invasive cancers, suggesting that PgR status was preferentially requested when the ER status was negative for invasive cancers (Figure 50). The proportion of ER negative invasive cancers with unknown PgR status varied from 6% in South East (West) and London to 51% in West Midlands and East Midlands and 50% in Northern Ireland.

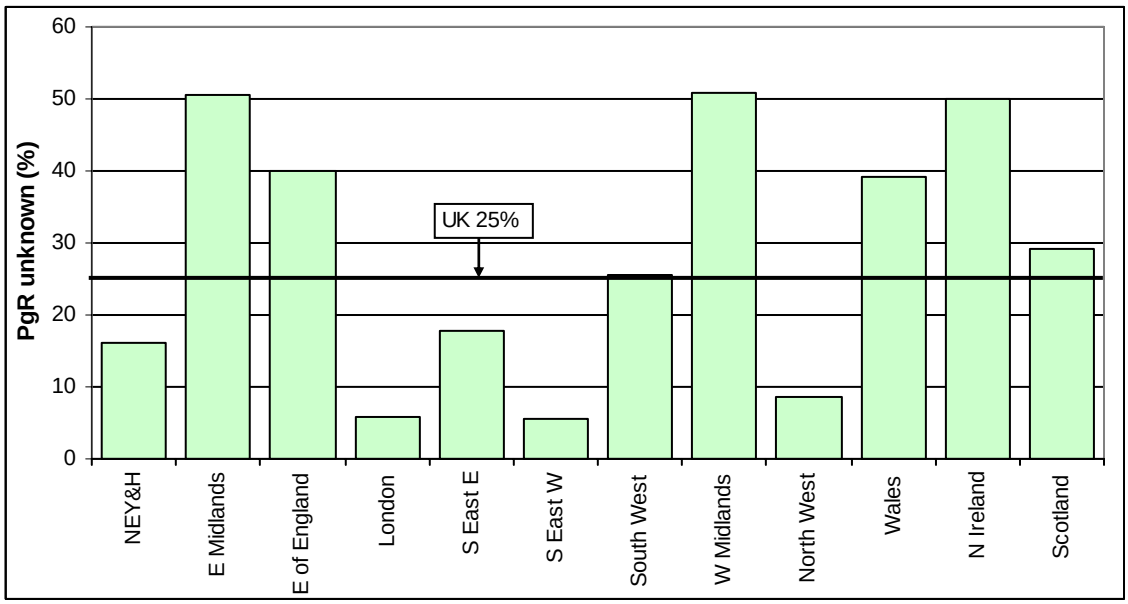

Figure 50 (Table 82): Variation in the proportion of ER negative invasive cases with unknown PgR status

Overall, Cerb-B2/HER-2 status data were available for only 22% of the 8,735 invasive cancers included in the audit. The proportion of cases with known Cerb-B2/HER-2 status varied from 0% (1

case) in East Midlands to 45% in South West (Table 83). Of the 1,891 invasive cancers with known Cerb-B2/HER-2 status, 507 (27%) were positive and 1,384 (73%) were negative. Regional QA reference centres and regional QA surgeons should ascertain the reasons why Cerb-B2/HER-2 status was not available for invasive cancers, especially in regions where the data would have been expected to be available for invasive cancers from clinical trial databases.

8.2 Adjuvant Treatment

Tables 84, 85 and 86 show that, of those with known adjuvant data, 6,793 (68%) cases had started radiotherapy, 1,916 (18%) had started chemotherapy and 7,518 (71%) had started hormone therapy before the audit cut off date.

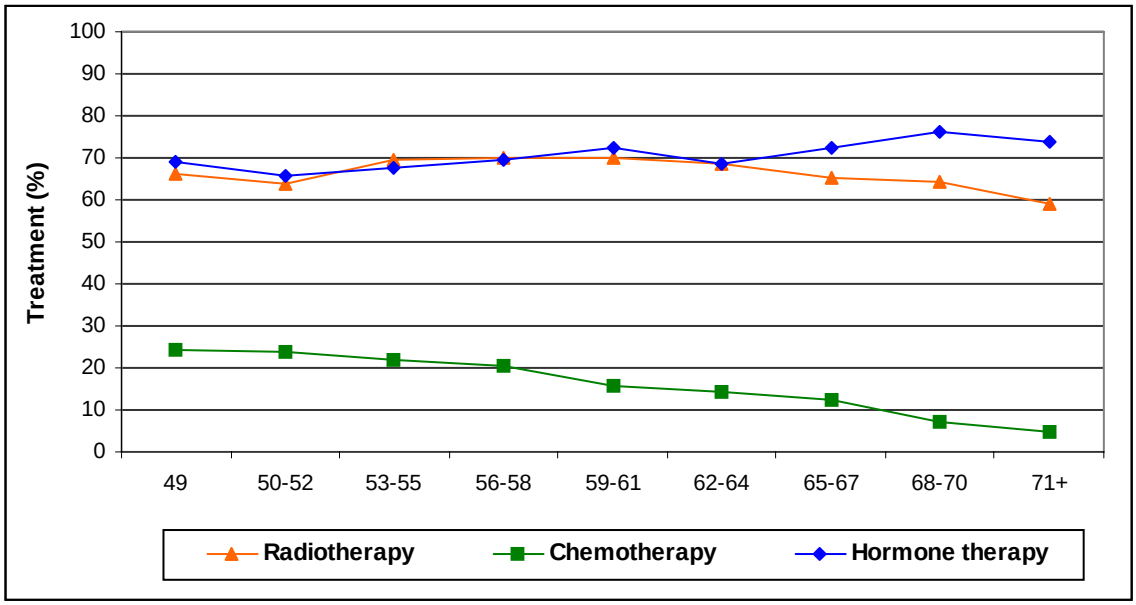

Figure 51 (Table 87): Proportion of women in each age group who had radiotherapy, chemotherapy and hormone therapy, for cases with complete adjuvant data

A similar proportion of women aged less than 65 had started hormone therapy (68%) or radiotherapy (69%) before the audit cut off date (Figure 51). Hormone therapy was the main adjuvant treatment for women over 65, being given to 74% of the cases. Chemotherapy was the least used adjuvant therapy. The proportion of women receiving chemotherapy decreased with age from 24% in women aged 50-52 to 7% in women aged 68-70. There was a slight increase with age in the proportion of women receiving hormone therapy, but there was very little variation in the women age range 50-70 receiving radiotherapy.

8,979 (81%) of the 11,069 cancers included in the audit had one surgical operation (diagnostic or therapeutic), 1,978 (18%) had more than one surgical operation and 112 cases (1%) had no surgery (Table 89). The first operation was diagnostic for 765 (7%) of the 10,957 women who had surgery (Table 90). Surgery, radiotherapy and hormone therapy as a combination of treatment was the most common treatment pattern. In the UK as a whole, 43% (4,062 cases) of the cases with completed radiotherapy, chemotherapy and hormone therapy data received this treatment (Figure 52). Of the 6,793 women given radiotherapy, 5,676 (84%) had one operation and 1,101 (16%) had more than one operation (Table 91). Of the 1,916 women given chemotherapy, 25 (1%) had no surgery, 1,579 (82%) had one operation and 312 (16%) had more than one operation (Table 92).

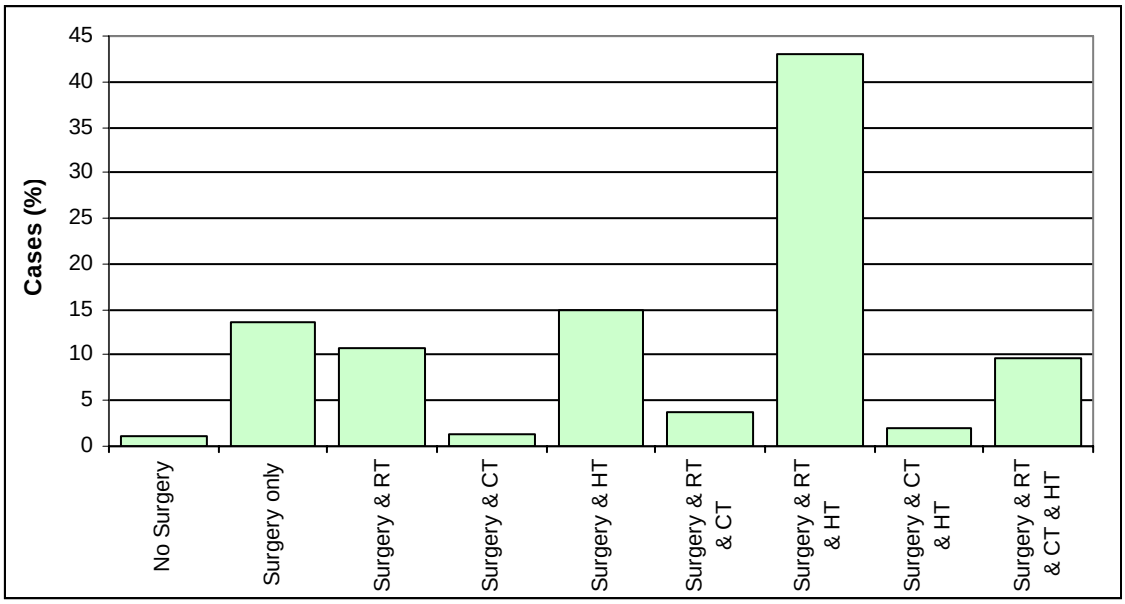

Figure 52 (Table 88): Combinations of treatment, expressed as a percentage of cases with completed adjuvant data

COMMENT:

- Hormone therapy and radiotherapy were the main adjuvant treatments used for women in all age groups. The proportion of women receiving hormone therapy increased in women over 64 year old and the proportion receiving radiotherapy decreased.
- Chemotherapy was the least used adjuvant therapy. The proportion of women receiving chemotherapy decreased with age from 24% in women aged 50-52 to 7% in women aged 68-70.
- The most common treatment for screen detected breast cancer in the UK was surgery, hormone therapy and radiotherapy. 43% of women received this treatment combination.
- ER status was unknown for 484 (6%) of invasive cancers and 53% of non-invasive cancers. 84% of invasive cancers were ER positive.
- PgR status data was available for 75% of ER negative invasive cancers.
- Cerb-B2/HER-2 status data were available for only 22% of the invasive cancers included in the audit. Of the 1,891 invasive cancers with known Cerb-B2/HER-2 status, 27% were positive. Regional QA reference centres and regional QA surgeons should ascertain the reasons why Cerb-B2/HER-2 status was not available for invasive cancers, especially in regions where the data would have been expected to be available from clinical trial databases.

8.3 Time Between Assessment, Surgery and Radiotherapy

Tables 94 to 97 show the regional variation in the cumulative percentages of cases having various therapies within 14, 30, 60, 90, 120 and 200 days. In Figures 53, 54 and 55 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.

Overall, only 84% of women who had diagnostic surgery had their open biopsy within 60 days of assessment, but 94% of women with a non-operative diagnosis had their therapeutic surgery within 60 days (Figure 53). 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 non-operative diagnosis are often more complex and therefore will usually have a longer period during which attempts to obtain a non-operative diagnosis are made.

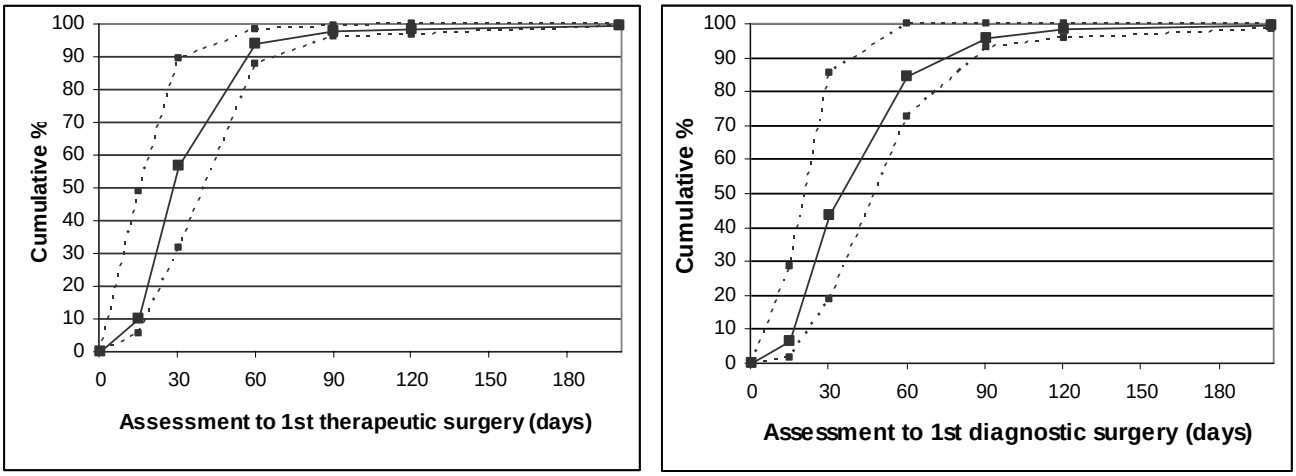

Figure 53 (Tables 94 & 95): The cumulative percentage of cases with diagnostic surgery and cases with a non-operative diagnosis who had therapeutic surgery up to 200 days after assessment

Figure 54 shows the time taken from final surgery to radiotherapy, excluding those cases with neo-adjuvant radiotherapy. As start dates of chemotherapy and hormone therapy were not collected, cases with chemotherapy before radiotherapy are not excluded in this analysis. In the UK as a whole, only 31% of women received radiotherapy within 60 days of their final surgery and just 60% 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 58 days in East Midlands to 105 days in South East (West) and 123 days in South East (East).

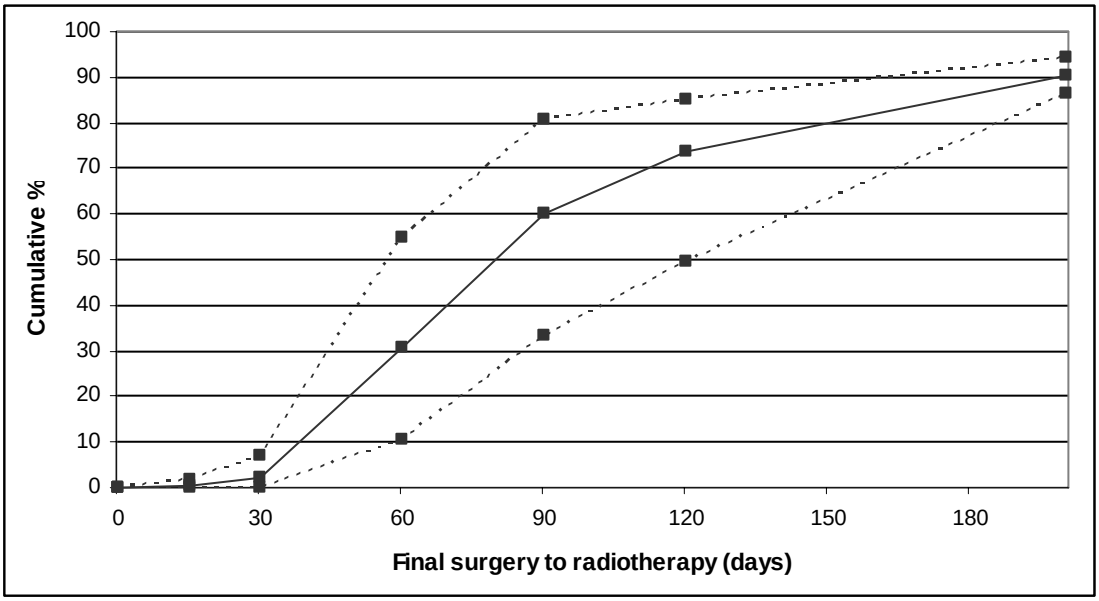

Figure 54 (Table 96): The cumulative percentage of cases with surgery and adjuvant radiotherapy, who had radiotherapy up to 200 days after final surgery

Figure 55 shows that only 27% of the women who had radiotherapy had started treatment within 90 days of their first assessment. 19% 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 117. This varied from 97 days in East Midlands to 176 days in South East (East). Comparison of Figures 53 to 55 shows that waiting time for radiotherapy is the main factor determining the length of time taken from assessment and final surgery to radiotherapy.

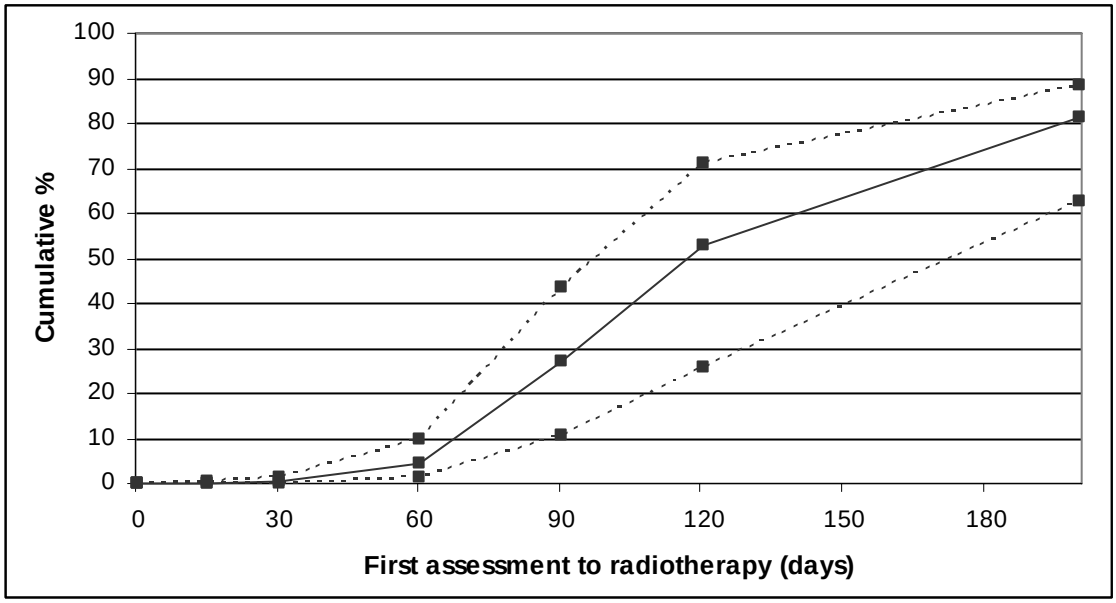

Figure 55 (Table 97): The cumulative percentage of cases with surgery and adjuvant radiotherapy, who had radiotherapy up to 200 days after first assessment

MEDIAN DAYS BETWEEN THERAPIES						
	Assessment to …				Final surgery to …	
Region	Diagnostic Surgery (Table 94)	Therapeutic Surgery (Table 95)	RT (1 op)	RT (>1 op)	RT (1 op)	RT (>1 op)
N East, Yorks & Humber	33	27	114	146	85	89
East Midlands	34	25	90	131	58	59
East of England	28	28	96	139	62	70
London	36	31	119	151	83	77
South East (East)	49	38	162	207	125	119
South East (West)	31	26	135	158	107	97
South West	40	35	114	158	77	77
West Midlands	30	24	97	140	69	67
North West	30	29	125	145	96	78
Wales	22	24	99	126	70	70
Northern Ireland	21	15	104	131	84	94
Scotland	28	29	102	127	69	68
United Kingdom	**33**	**28**	**111**	**147**	**78**	**76**

Cells which are 10% higher than average are highlighted

COMMENT:

- It took longer for women without a non-operative diagnosis to undergo an open biopsy than for women with non-operative diagnosis of breast cancer to have their first surgery. This is probably because cases without a non-operative diagnosis are often more complex and therefore will usually have a longer period during which attempts to obtain a non-operative diagnosis are made.
- Only 31% of cases received radiotherapy within 60 days of their final surgery. Women in South East (East) and South East (West) experienced the longest waits for radiotherapy.

8.4 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 treatment protocols. It is hoped that by presenting analyses for four specific propositions, an informative discussion to agree best practice can take place.

PROPOSITION 1

Women treated with conservation surgery should normally receive adjuvant radiotherapy

Of the 10,004 cases with radiotherapy data available, 78% were invasive and 20% were non-invasive (Table 98). 5,717 (73%) of the invasive cancers were treated with conservation surgery (Table 99). Of these, 492 (9%) did not have adjuvant radiotherapy recorded (Table 100). This varied from 3% in West Midlands to 20% in Wales. Of the 1,432 non-invasive cancers treated by conservation surgery, 689 (48%) did not have adjuvant radiotherapy recorded (Table 103). This varied from 26% in Scotland to 61% in Wales.

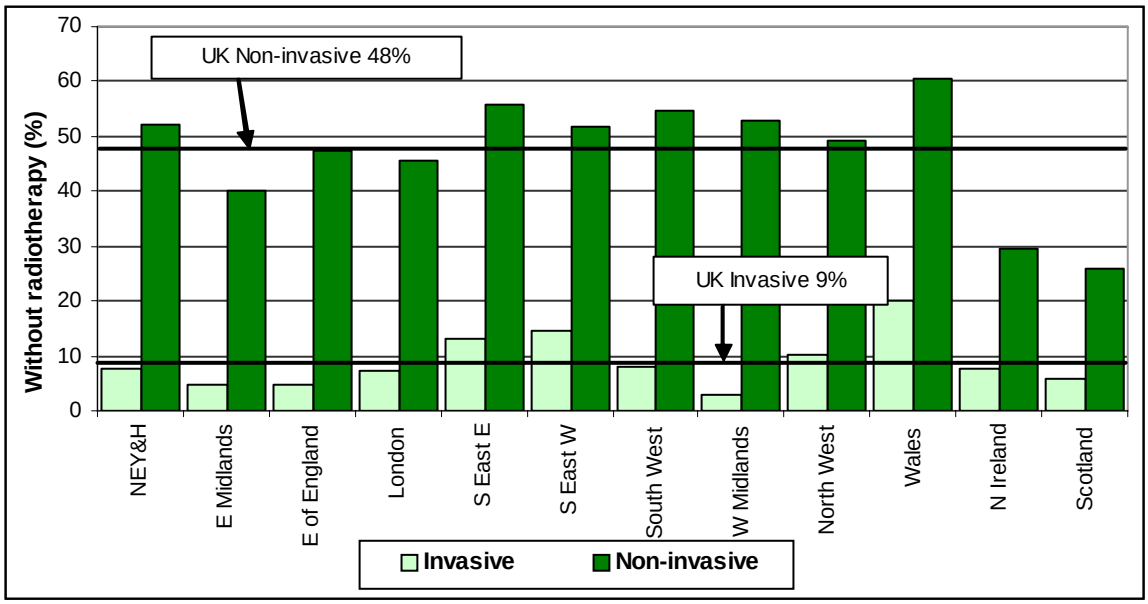

Figure 56 (Tables 100 &103): The proportion of conservatively treated invasive cancers and non-invasive cancers that did not receive adjuvant radiotherapy

Figure 56 shows the variation in the proportion of conservatively treated invasive cancers and non-invasive cancers that did not receive adjuvant radiotherapy. In the UK as a whole, the majority (67%) of conservatively treated invasive cancers not given adjuvant radiotherapy were small (<15mm diameter) (Table 101). However, a total of 78 cancers were at least 20mm in diameter. Regional QA reference centres and regional QA surgeons should determine the reasons why these larger conservatively treated invasive cancers did not receive adjuvant radiotherapy.

In the UK as a whole, 63% of the 689 conservatively treated non-invasive cancers not given adjuvant radiotherapy were other (low or intermediate) grade (Table 104) and 59% were small (<15mm diameter) (Table 105). In Northern Ireland 63% (5 cases) and in South East (West) 49% (28 cases) of women not given adjuvant radiotherapy were high grade and 25% (2 cases) and 32% (28 cases) respectively were at least 15mm in diameter. Provided that the tumour margins were adequate, it may be acceptable for conservatively treated non-invasive cancers to not receive adjuvant radiotherapy. However, regional QA reference centres and regional QA surgeons should audit the

treatment provided to larger high grade non-invasive cancers to ensure that these cancers did not receive less than optimal therapy.

CONCLUSION 1

91% of women with invasive cancer treated with conservation surgery received adjuvant radiotherapy, compared to only 52% of women with conservatively treated non-invasive cancer. 67% of the 492 conservatively treated invasive cancers without adjuvant radiotherapy were small (<15mm) tumours. 63% of the conservatively treated non-invasive cancers without radiotherapy were other (low or medium) grade and 59% were small (<15mm) in diameter. Regional QA reference centres and QA surgeons should audit the cancers in their regions to determine the reasons that their treatment differed from that suggested in Proposition 1.

PROPOSITION 2

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

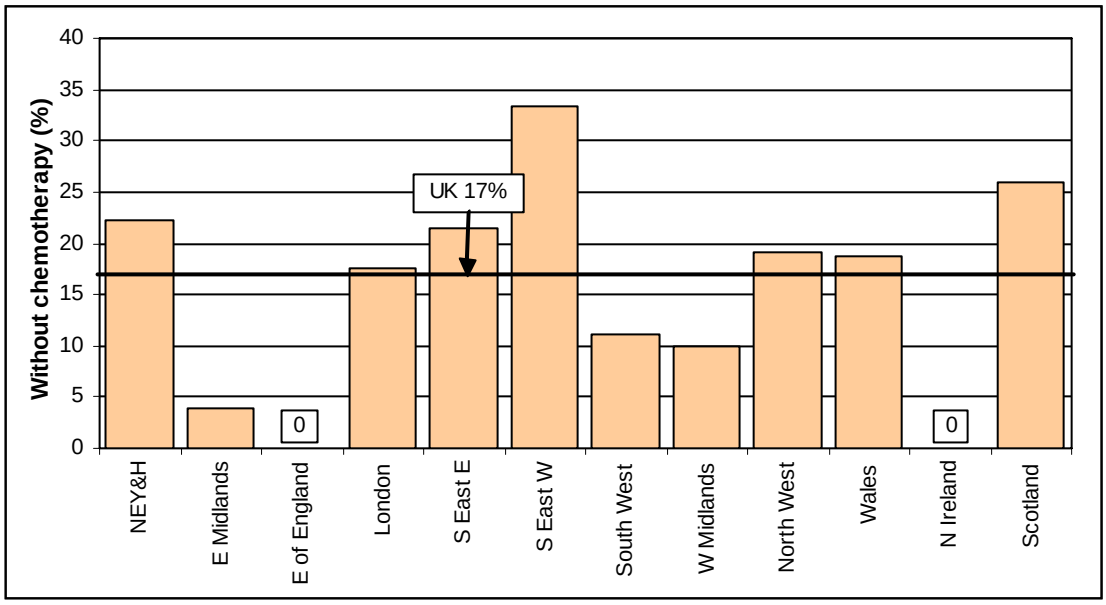

Figure 57 (Tables 107): The proportion of ER negative node positive invasive cancers that did not receive chemotherapy

Of the 10,572 cancers with known chemotherapy data, 227 (2%) were recorded as ER negative, node positive invasive cancers and 616 (6%) were recorded as ER negative, node negative invasive cancers (Table 106). Of the 227 ER negative, node positive invasive cancers, 39 (17%) did not receive chemotherapy (Figure 57). This varied from 0% in East of England and Northern Ireland to 33% in South East (West). Of the 616 ER negative, node negative invasive cancers, 345 (56%) did not receive chemotherapy (Table 108). This varied from 18% in Northern Ireland to 71% in East of England. 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. 87% of the 271 ER negative, node negative invasive cancers given chemotherapy were Grade III (Table 109). Only 1 cancer was Grade I and 33 (12%) were Grade II.

CONCLUSION 2

17% of women with ER negative, node positive invasive cancers did not receive chemotherapy compared to 52% of ER negative, node negative invasive cancers. This indicates that nodal status was taken into account when deciding whether women would benefit from chemotherapy. 87% of the 271 ER negative, node negative invasive cancers given chemotherapy were Grade III. Regional QA reference centres and QA surgeons should audit the cancers in their regions to determine the reasons that their treatment differed from that suggested in Proposition 2.

PROPOSITION 3

Hormone therapy (e.g. Tamoxifen) is only beneficial to women with ER positive cancers and women with ER negative, PgR positive cancers

Of the 10,648 cancers with complete hormone therapy data included in the adjuvant therapy analysis, 7,947 (75%) were ER positive, 1,180 (11%) ER negative and for 1,521 (14%) either the ER status tests were not done or the ER status was unknown (Table 110). 90% of the ER positive cancers with known hormone therapy data were invasive and 9% non-invasive (Table 112).

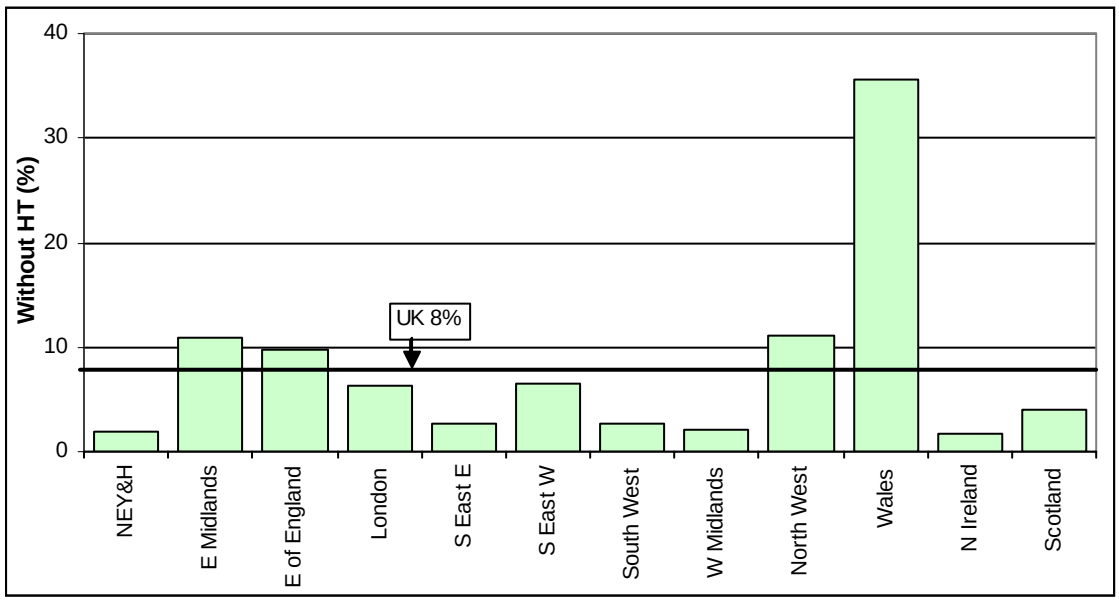

Figure 58 (Tables 115): Variation in the proportion of ER positive, invasive cancers that did not receive hormone therapy

In the UK as a whole, 8% of ER positive, invasive cancers did not receive hormone therapy (Table 115). This varied from 2% in Northern Ireland (2 out of 114 cancers), West Midlands (11 out of 526 cancers) and North East Yorkshire and Humber (15 out of 764 cancers) to 36% in Wales (166 out of 467 cancers) (Figure 58). In the UK as a whole, 44% (17 cases) of ER negative, PgR positive invasive cancers did not receive hormone therapy (Table 120). 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.

In the UK as a whole, 96 ER negative cancers (8%) received hormone therapy (Table 117). The proportion of ER negative cancers treated with hormone therapy varied between 0% (0 out of 20 cancers) in Northern Ireland to 13% in London (12 out of 94 cancers) and South East (West) (12 out of 94 cancers) (Table 117). 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 ER negative cancers.

Of the 7,947 ER positive cancers, 726 (9%) were non-invasive (Table 112). 38% of these cancers did not receive hormone therapy (Table 116). This varied between 10% (7 out of 69 cases) in East Midlands and 59% (41 out of 69 cases) in South West.

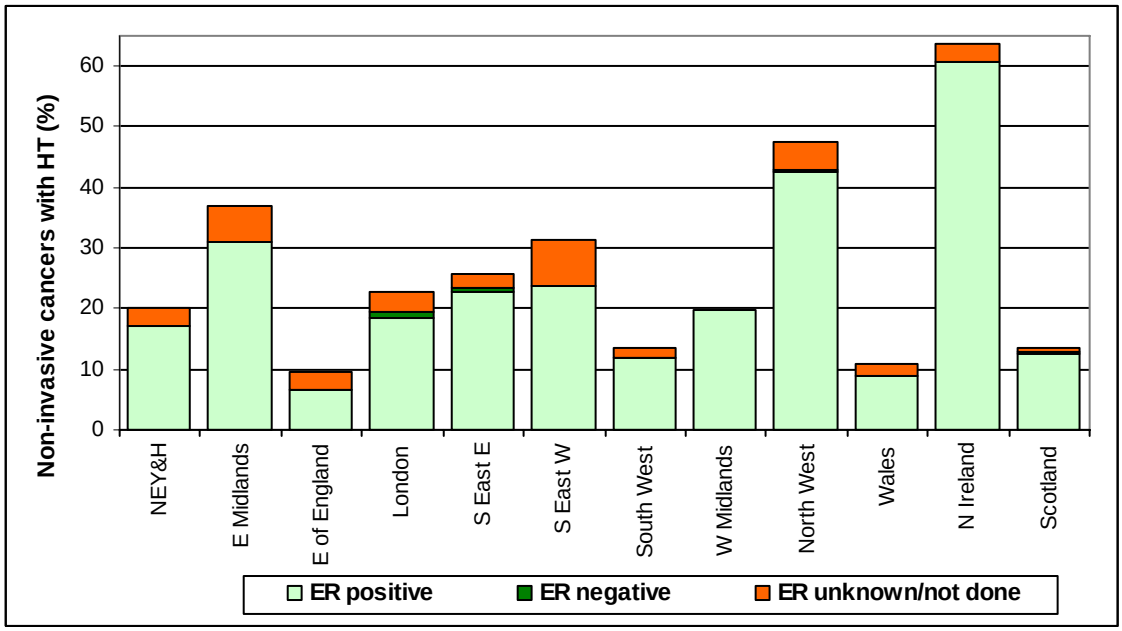

Figure 59 (Table 118): Variation in proportion of non-invasive cancers that received hormone therapy

Of the 456 non-invasive cancers with known ER status treated with hormone therapy, 451 were ER positive and 5 were ER negative (Table 118). A further 69 non-invasive cancers (3%) with unknown ER status were also treated with hormone therapy. The proportion of non-invasive cancers treated with hormone therapy varied markedly between regions from 10% in East of England and 11% in Wales to 64% in Northern Ireland. In South East (West) 8% of the non-invasive cancers had treated with hormone therapy without known ER status recorded. 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 or negative ER status.

CONCLUSION 3

The decision to give hormone therapy did depend to a large extent on ER and PgR status. However, 8% of ER positive, invasive cancers and 44% of ER negative, PgR positive invasive cancers did not receive hormone therapy and 8% of ER negative invasive cancers did receive hormone 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 invasive and non-invasive cancers with unknown or negative ER status.

PROPOSITION 4

Chemotherapy *should* be considered as a treatment for ER negative, PgR negative invasive cancers

In the UK as a whole, 45% of invasive cancers with ER negative PgR negative status did not receive chemotherapy (Figure 60). This varied between 26% (9 out of 35 cancers) in East Midlands to 57% (34 out of 60 cancers) in South West.

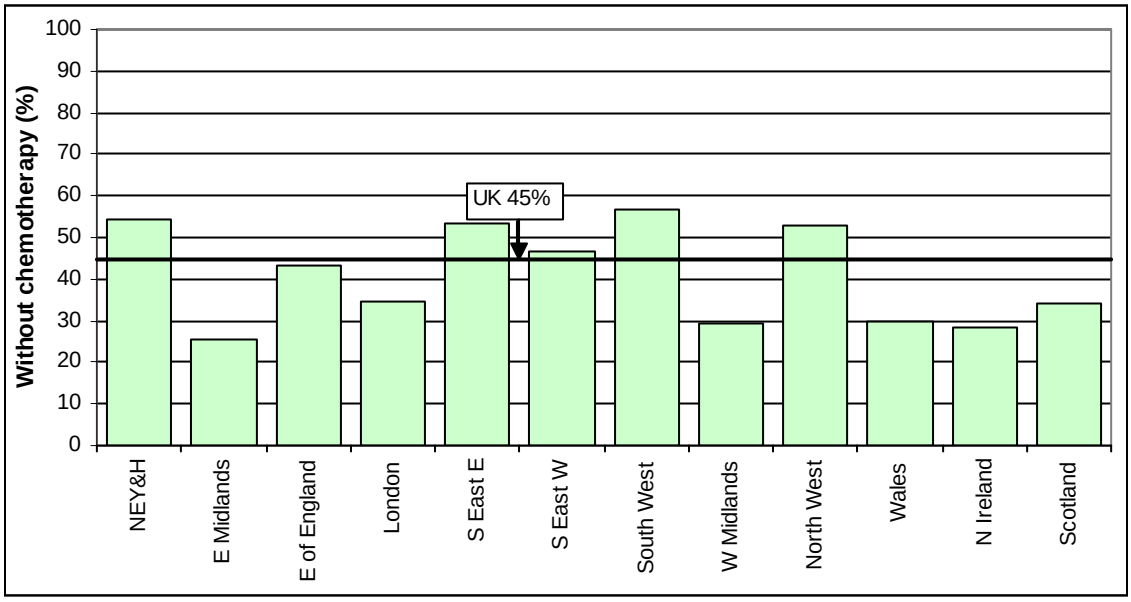

Figure 60 (Table 122): Proportion of ER negative, PgR negative invasive cancers that did not receive chemotherapy

CONCLUSION 4

45% of ER negative, invasive cancers with negative PgR status did not receive chemotherapy. Regional QA reference centres and regional QA surgeons should determine the reasons why chemotherapy therapy was not given to these cancers.

The following table provides a summary of the proportion of cancers in each region which did not receive treatment consistent with propositions 1 to 4 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.

SUMMARY OF PROPOSITIONS 1, 2, 3 AND 4							
	Proposition 1 Conservation surgery, no RT		***Proposition 2***	***Proposition 3***			***Proposition 4***
Region	***Invasive*** *(Table 100)*	***Non-invasive*** *(Table 103)*	***ER negative node positive invasive no CT*** *(Table 107)*	***ER positive invasive no HT*** *(Table 115)*	***ER negative PgR positive invasive no HT*** *(Table 120)*	***ER negative with HT*** *(Table 117)*	***ER negative PgR negative, no CT*** *(Table 122)*
N East, Yorks & Humber	8	52	22	2	40	9	55
East Midlands	5	40	4	11	50	11	26
East of England	5	47	0	10	0	7	43
London	7	46	18	6	50	13	35
South East (East)	13	56	21	3	50	8	54
South East (West)	15	52	33	6	40	13	47
South West	8	55	11	3	33	4	57
West Midlands	3	53	10	2	-	1	29
North West	10	49	19	11	50	11	53
Wales	20	61	19	36	100	7	30
Northern Ireland	8	30	0	2	100	0	29
Scotland	6	26	26	4	67	5	34
United Kingdom	**9% (492/5717)**	**48% (689/1432)**	**17% (39/227)**	**8% (558/7155)**	**44% (17/39)**	**8% (96/1180)**	**45% (281/625)**

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

CHAPTER 9

SURVIVAL ANALYSIS

UK NHS Breast Screening Programme data for women with breast cancers detected by screening between 1 April 1999 and 31 March 2000 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 31 March 2005, enabling survival for a period of up to 5 years post diagnosis to be calculated. By liaising with the cancer registries serving their population, 11 of the 12 regional QA reference centres were able to provide complete data for this analysis. Scotland were unable to provide data for this part of the audit.

Age at diagnosis, invasive grade, invasive tumour size and nodal status were requested from the screening services for cases detected in 1999/00. 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.

9.1 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 for a given time 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.

9.2 Eligibility and Data Completeness

Details of 8,880 breast cancers detected by screening between 1 April 1999 and 31 March 2000 were submitted to the survival audit. Of these, 313 cancers (4%) were excluded if one of the following reasons applied.

- Unknown invasive status (35 cases)
- Case not registered at the regional cancer registry or registered with an unknown diagnosis date (182 cases)
- Screen detected cancer not confirmed to be the first primary breast tumour, either because it was flagged as a recurrence or contralateral cancer at the cancer registry/screening units (66 cases), or because the date of diagnosis at the cancer registry was more than 6 months prior to the screening surgery date without an acceptable explanation (30 cases)

The diagnosis date recorded at the cancer registry was taken for the survival analysis, 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 1999/00 Survival Audit									
Region	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
	No.	%	No.	%	No.	%	No.	%	
N E Yorks & Humber	22	2	2	0	21	2	1,233	98	1,263
East Midlands	37	5	4	1	24	3	680	94	721
East of England	36	4	11	1	43	5	872	93	936
London	52	5	23	2	40	4	884	92	964
South East (East)	19	2	5	1	9	1	777	97	801
South East (West)	0	0	13	2	10	2	645	98	660
South West	0	0	18	2	14	1	970	98	988
West Midlands	0	0	7	1	5	1	755	99	765
North West	15	1	8	1	74	7	1,010	98	1,034
Wales	1	0	4	1	6	1	518	99	524
Northern Ireland	0	0	1	0	6	3	223	100	224
United Kingdom	**182**	**2**	**96**	**1**	**252**	**3**	**8,567**	**96**	**8,880**

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

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 summary table below shows that the proportion of invasive cancers with unknown size has fallen from 7% in 1992/93 to 1% in 1999/00 and the proportion with unknown grade has decreased from 21% to 2%. 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 1999/00 only 7% 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 only 10% in 1999/00.

8 YEAR COMPARISON: DATA COMPLETENESS FOR INVASIVE CANCERS (%)								
	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99*	1999/00
Unknown size	7	5	3	2	2	2	1	1
Unknown grade	21	20	14	11	5	5	3	2
Unknown nodal status	43	40	31	28	20	16	11	7
Unknown NPI	54	51	40	35	25	20	14	10

* Data include cases from Scotland

9.3 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 (31 March 2005) together with text from the death certificate to give the exact cause of death.

Table 124 shows that there were a total of 8 deaths (7%) recorded amongst the 121 women with

micro-invasive cancer detected by screening. Two of these were non cancer deaths and 2 were from a cancer other than the screen detected breast cancer. 4 women died from breast cancer. Of the 49 deaths in the 1,685 women with non-invasive cancer (3% of the total), 13 (27%) were attributed to the tumour detected by screening, 19 (39%) were from a cancer other than the screen detected breast cancer and 14 (29%) were non cancer deaths (Table 125).

Overall, 63% of deaths among the 6,761 women with invasive cancer were recorded as being due to the screen detected breast cancer, 18% were due to a cancer other than the screen detected breast cancer and 17% due to non-cancer related causes. Death cause was unknown or not collected for 12 women (2%). 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 Wales only 45% of the deaths in women with invasive cancer were attributed to the screen detected breast cancer, compared to 75% in East Midlands and Northern Ireland (Table 123). Because of these differences, cause specific survival analysis was not performed as it was felt that it was necessary to validate the coding of cause of death by cancer registries before such data could be used in survival analysis. These variations in the coding of cause of death are being investigated via the UK Association of Cancer Registries' Registration Subgroup.

9.4 5 year Relative Survival Rates for Cancers Diagnosed in 1999/2000

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. In the UK as a whole, 5 year relative survival has improved in the last three audit periods increasing from 95.7% (95CI 94.9%-96.5%) in 1997/98 to 96.5% (95%CI 95.8%-97.2%) in 1999/00 (Table 126). Figure 62 shows the regional variation in 5 year survival compared to the UK figure for cases diagnosed in 1999/00. North West had the highest relative survival at 97.5%, and Northern Ireland the lowest at 93.8%. The differences between regional survival rates are not statistically significant.

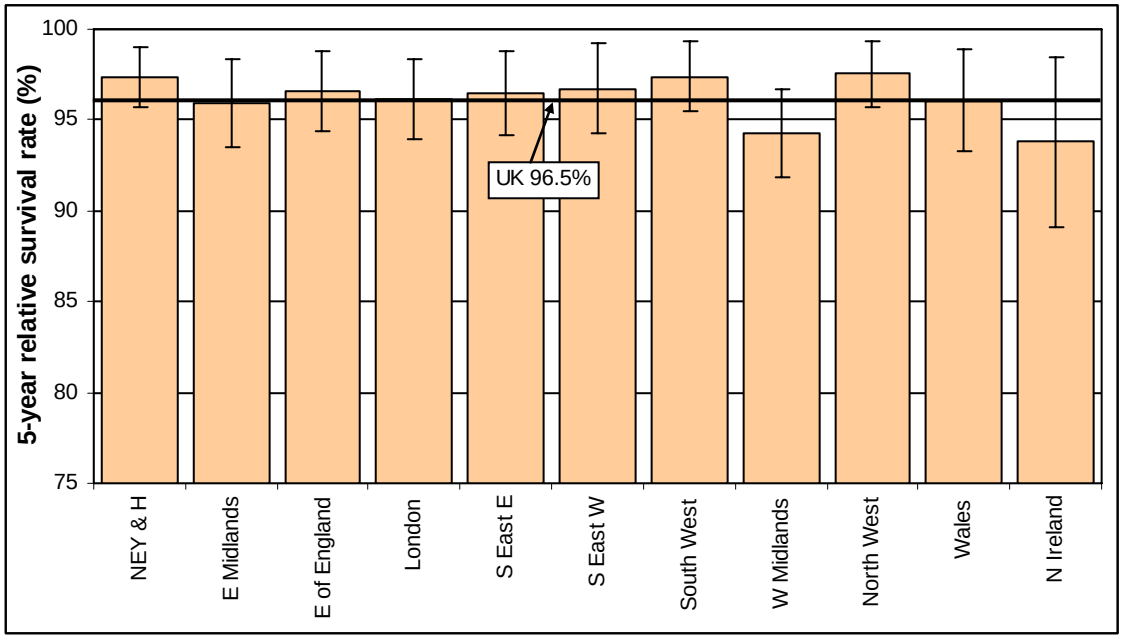

Figure 61 (Table 126): 5 year relative survival for women with screen detected invasive breast cancer diagnosed in 1999/00

9.5 Variation in Relative Survival with Tumour Characteristics

The following table shows the characteristics of the cancers included in the 1999/00 survival audit. 84% of the invasive cancers included in the audit were diagnosed in women aged 50-64 years. 74% of the cancers were least than 20 mm in diameter and 68% were node negative. 79% of the cancers were Grade I or II.

Parameter		*Cancers included in each analysis group*	
		Number	***%***
Invasive status	Invasive	6761	79
	Micro-invasive	121	1
	Non-invasive	1685	20
Age Group (invasive cancers only)	<50	138	2
	50-52	1350	20
	53-55	1011	15
	56-58	1066	16
	59-61	1150	17
	62-64	1114	16
	65+	932	14
	Total	**6761**	**100**
Invasive cancer size	<10mm	1568	23
	10-<20mm	3433	51
	20-<49mm	1605	24
	50mm+	94	1
	Unknown	61	1
	Total	**6761**	**100**
Invasive grade	Grade I	2166	32
	Grade II	3153	47
	Grade III	1228	18
	Not assessable	61	1
	Unknown	153	2
	Total	**6761**	**100**
Nodal status (invasive cancers only)	Positive	1597	24
	Negative	4687	68
	Unknown	477	7
	Total	**6761**	**100**
NPI group (invasive cancers only)	EPG	1531	23
	GPG	2183	32
	MPG1	1319	20
	MPG2	664	10
	PPG	416	6
	Unknown	648	9
	Total	**6761**	**100**

9.5.1 Variation in Relative Survival with Invasive Status

The following table shows that in the last 3 survival audits, the 5 year relative survival for non-invasive cancers is higher than 100%. Moreover, the lower limits of the 95% confidence intervals for the 5 year relative survival of women with non-invasive cancers are over 100% in 1998/1999 and 1999/00. This indicates that their chance of survival was no worse than that of the general UK female population.

5 Year Relative Survival by Invasive Status			
	1997/98	1998/99	1999/00
Invasive	95.7 (94.9,96.5)	95.8 (95.1,96.5)	96.5 (95.8,97.2)
Micro-invasive	100.2 (96.6,103.9)	100.7 (97.8,103.7)	97.5 (93,102.1)
Non-invasive	99.9 (98.8,101.1)	101.3 (100.5,102.1)	101.1 (100.3,101.9)

9.5.2 Variation in Relative Survival of Invasive Cancers with Age Group

Table 127 shows the variation with age at diagnosis in the 5 year relative survival rates of women diagnosed with primary 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 in 1999/00 was highest for women aged over 65.

This effect, which is similar to that seen for non-invasive cancers diagnosed via screening may be due to a number of factors. Firstly, it is possibly that routine follow-up appointments result in the earlier diagnoses of other health problems in women diagnosed with early stage breast cancer than in women of the same age in the general population. Secondly, women over 65 years of age who self-referred for breast screening in the time periods studied in the survival analysis may be from a more affluent socio-economic group and therefore have better survival than the general population as a whole. There is some evidence to support this hypothesis from screening history data available in the West Midlands which show that 48% of women aged 65 and over diagnosed with screen detected breast cancer are in the two most affluent Townsend bands. These explanations could be tested using socio-economic status adjusted life tables and this will form part of an independent research project.

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

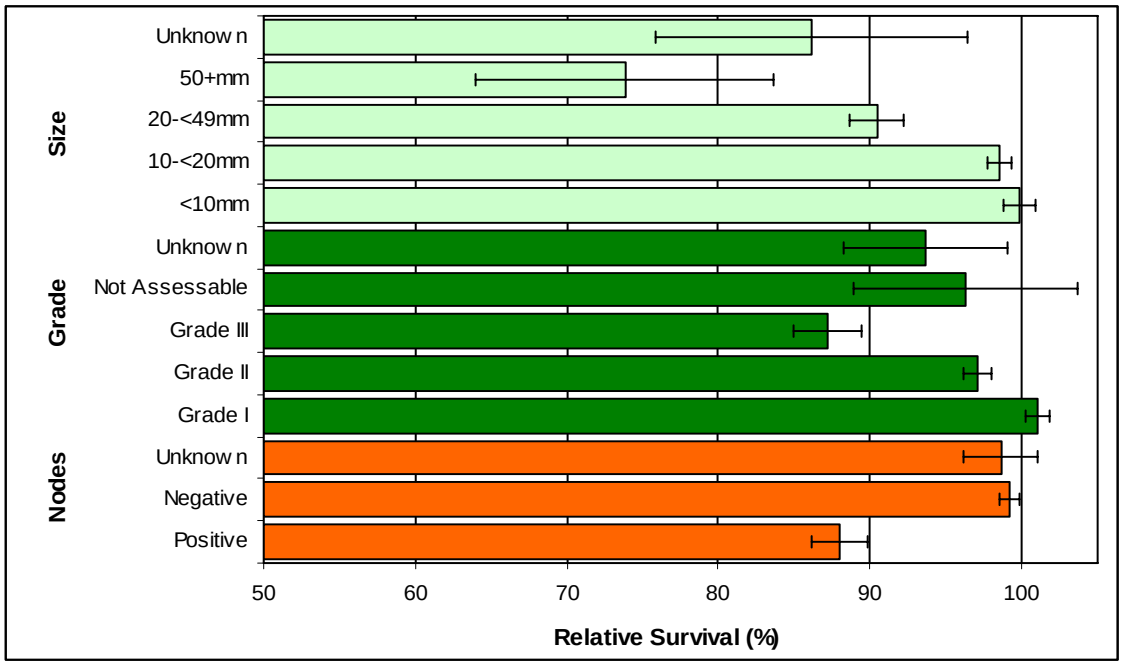

Figure 62 (Table 128, 129 & 130): Variation in 5 year relative survival with nodal status, grade and size for women with screen detected invasive breast cancer

Figure 62 shows the variation in 5 year relative survival rate with tumour size, grade and nodal status. At 73.8% (95% CI 64.0%-83.6%), 5 year relative survival was significantly lower for cancers with diameter greater than 50mm (1% of the cohort). It was also lower for Grade III cancers (18% of the cohort) at 87.2% (95% CI 85.0%-89.4%) and for node positive cancers (24% of the cohort) at 88.0% (95CI 86.1%-89.9%). The 5 year relative survival of women with less than 10mm diameter cancers

and/or Grade I cancers was no worse than that of the general UK population. The 5 year relative survival of node negative cancer was 99.2% (95CI 98.5%-99.8%).

9.5.4 Variation in Relative Survival of Invasive Cancers with NPI Group

The Nottingham Prognostic Index (NPI) is a combined score derived from the invasive size, grade and nodal status of an invasive cancer. Figure 63 shows how relative survival rates varied with NPI score at diagnosis. The 5 year relative survival rate in 1999/00 for cancers in the excellent prognostic group (EPG) was 101.1% (95% CI 100.2%-102%), and for cancers in the good prognostic group (GPG) and moderate prognostic group 1 (MPG1) was 100.2% (95% CI 99.3%-101.1%) and 96.4% (95% CI 94.9%-98%) respectively. There has been no significant change in the 5 year relative survival in these 3 prognostic groups in the period from 1997/98 to 1999/00.

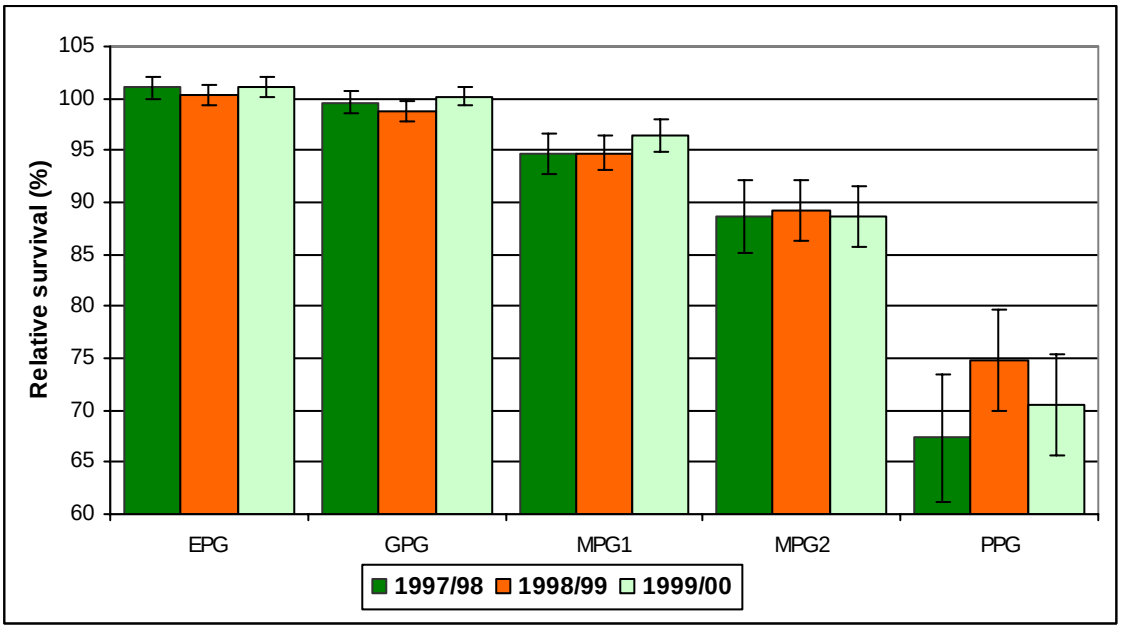

Figure 63 (Table 131): Variation in 5 year relative survival by NPI for women with screen detected invasive breast cancer diagnosed in 1997/98 to 1999/00

At 88.7% (95% CI 85.8%-91.6%), the 5 year relative survival for the 10% of cancers in moderate prognostic group 2 (MPG2) was significantly worse than that of cancers in the EPG and GPG groups. The 5 year relative survival of the 6% of cancers in the PGP group was even lower at 70.5% (95% CI 65.7%-75.3%).

COMMENT:

- Of the 8,880 cancers with known invasive status submitted to the survival analysis for the period 1 April 1999 to 31 March 2000, 182 (2%) were excluded because they were not registered at cancer registries. A further 96 cancers (1%) were excluded because they were not confirmed to be primary tumours and 35 more because their invasive status was not known.
- The survival analysis included 8,567 screen detected cancers. Data completeness has improved markedly in the 8-year history of this audit with only 10% of cancers in 1999/00 having an unknown NPI compared with 54% in 1992/93.
- The 5 year relative survival for invasive cancers in 1999/00 was 96.5% (95% CI 95.8%-97.2%). Women with micro-invasive and non-invasive breast cancer have a 5 year relative survival higher than 100%, indicating that their chance of survival was no worse than that of the general UK female population.

COMMENT:

- 5 year relative survival was significantly lower for the 1% of invasive cancers with diameter greater than 50mm, for the 18% of invasive cancers which were Grade III and for the 24% of cancers which were node positive.
- 5 year relative survival in women with <10mm diameter cancers and/or Grade I cancers was no worse than that of the general UK population. 5 year relative survival in women with node negative cancer was 99.2% (95% CI 98.5%-99.8%).
- Women with cancers in the moderate and poor NPI prognostic groups (MPG1, MPG2 and PPG) have significantly lower survival rates at 3 and 5 years than those with cancers 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 1 APRIL 2004 - 31 MARCH 2005

REVISED AUDIT TIMETABLE	
Date	**Event**
12th May 05	Audit group meet to plan the 2004/05 audit.
25th May 05	Draft timetable emailed to Audit Group and QA Reference Centres (QARCs) for comment. Inform QA co-ordinators and Cancer Registry Directors that the audit is the same as last year.
25th May–2nd June 05	QA Co-ordinators discuss draft timetable with their QA Surgeon, QA Director and QA Data Managers. Return comments to the West Midlands Cancer Intelligence Unit (WMCIU).
24th June 05	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 2004/05.
26th Aug 05	Deadline for QARCs to request survival audit data from Cancer Registries.
27th Sept 05	Survival audit to be discussed at Cancer Registry Directors meeting.
28th Sept 05	Deadline for Cancer Registries to provide data to the QARCs for the survival audit.
28th Sept 05	Audit to be discussed at the ABS at BASO Screening Representatives meeting.
14th Oct 05	**Deadline for receipt of survival data from QARCs at the WMCIU.**
17th - 28th Oct 05	All QARCs to ensure that an appropriate member of staff is available to respond to any queries from the WMCIU regarding the survival audit.
18th Nov 05	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.*
21th Nov 05	**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.**
22th Nov – 2nd Dec 06	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.
5th Dec – 6th Jan 06	QARCs make final adjustments to the audit spreadsheets.
9th Jan 06	**Deadline for receipt of main and adjuvant audit data from QARCs at the WMCIU.**
9th –20th Jan 06	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.
17th Feb 06	First draft tables sent out to Audit Group for comment.
8th March 06	Audit booklet first draft to be taken to the ABS at BASO Screening Representatives meeting, and emailed to QA Reference Centres for information. *All draft data should be marked "Not for circulation" to avoid unpublished data getting into the public domain.*
3rd April 06	Audit booklet final draft sent to the Audit Group to act as scrutinisers/editors.
24th April 06	Deadline for receipt of the audit booklet at the printers.
15th – 19th May 06	Advance copies of booklet to be sent to Audit Group and commentator of the BASO conference, Nottingham.
14th June 06	**Audit booklet distributed at the 2006 ABS at BASO Meeting, Nottingham.**

APPENDIX B

ABS AT BASO AUDIT OF WOMEN WITH SCREEN DETECTED BREAST CANCERS DETECTED BETWEEN 1 APRIL 2004 AND 31 MARCH 2005

PLEASE SUPPLY DATA FOR WOMEN OF ALL AGES WITH SCREEN DETECTED BREAST CANCERS WITH FIRST OFFERED APPOINTMENT FROM 1ST APRIL 2004 - 31ST MARCH 2005 INCLUSIVE ACCORDING TO THE REGIONAL BOUNDARIES EXTANT FROM 1ST APRIL 2005

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. A check programme has been designed in order to speed up the data checking process. It is up to regional QA reference centres to decide whether to distribute the spreadsheet with the check programme to their screening office managers or to validate the data within the regional QA reference centre. Regional data should be sent to the West Midlands Cancer Intelligence Unit (WMCIU) in electric format using the spreadsheet with the check programme. Although there is an explanation column for special cases that contain errors in this spreadsheet, it is only for regional recording use and WMCIU does not need to know details of individual cases. However, we would ask for an indication that those cases were being checked. **All data sent to WMCIU should be password protected.**

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 9th January 2006

****

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 2004/05. 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.

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

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 or B5B) is unknown or not assessable enter B5C in the "worst core biopsy" column. <u>The number of visits to an assessment clinic (excluding results clinics) in order to undergo core biopsy or cytology procedures should be recorded.</u>

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 2004/05. 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 intended to carry 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 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

Regional QA co-ordinator should work with screen office managers on data quality issues. A number of data checks have been incorporated into the spreadsheet. Please consult the user guide for the data check programme. References to the KC62 Table T column and line numbers are given for information.

Case Check 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).

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 Co-ordinator must ensure that all records are cleared of errors, except special cases with explanations.

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

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shan.cheung@wmciu.nhs.uk
qarc@wmciu.nhs.uk

ABS AT BASO BREAST AUDIT 2004/05

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 any sentinel procedure trial? (Y/N)	Number of clients in 2004/05 with C5 cytology but benign histology (ie. false positive C5) (CQA report)	Number of clients in 2004/05 with B5 core biopsy but benign histology (ie. false positive B5) (BQA report)

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

Col. D - 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. Cases with no surgery (NS) still usually are assigned to a consultant surgeon.
Dates - Enter dates in dd/mm/yyyy format. EC=Early Recall. U=Unknown
Col. K - Number of visit refers to FNA Date and Core Date in the crystal report. If biopsy/cyt performed on the same date, count as 1 visit.
Col. L - Type of treatment refer to the final concluded treatment type of all treatment involved (C=Conservation surgery, M=Mastectomy, NS=No surgery, U=Unknown)
Col. M - Immediate Reconstruction - to be completed by the surgeon for mastectomies only. Enter X if type of treatment not M.
Col. N - Invasive status refers to Non Invasive, Micro Invasive and Invasive in the crystal report. The worse invasive status of all should be recorded here. For example, DCIS with invasive component should be recorded as ‘I’. If a patient has two cancers (invasive and non-invasive), input details for the invasive cancer. (I=Invasive, M=Micro-invasive, N=Non-invasive, U=Unknown)

-Sx Number- *{C}* **Sx Number**	*-Surgeon-* *{D}* **Consultant GMC Code**	*-DOB-* *{E}* **Date of birth** *(dd/mm/yyyy*	*-DOFOA-* *{F}* **Date of first offered appt** *(dd/mm/yyyy)*	*-Screen Date-* *{G}* **Screen date** *(dd/mm/yyyy , EC,U)*	*-Ass Date-* *{H}* **First assessment date** *(dd/mm/yyyy, U)*	*-WBN Opinon-* *{I}* **Worst cytology** *(see above)*	*-WBN Opinion + Type-* *{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)*	*-treatment-* *{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) – intended surgery, 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
(e.g. a diagnostic open biopsy on one day followed at a later date by a mastectomy where axillary surgery was done. It should be coded 1st=C, 2nd=M+AX, 3rd=NS, 4th=NS, 5th=NS)

{C} **Sx Number**	*-Biopsy Date- {o}* **First surgery date** *(diag or therapeutic)* *(dd/mm/yyyy,NS,U)*	*-Biopsy Date- {P}* **Final surgery date** *(excl reconstruction only)* *(dd/mm/yyyy,NS,U)*	*-Treatment + No des- {Q}* **First operation type** *(diag or therapeutic)* *(C,M,AX, C+AX,M+AX, NS,U)*	*-Treatment + No des- {R}* **Second operation type** *(C,M,AX, C+AX,M+AX, NS,U)*	*-Treatment + No des- {S}* **Third operation type** *(C,M,AX, C+AX,M+AX, NS,U)*	*-Treatment + No des- {T}* **Fourth operation type** *(C,M,AX, C+AX,M+AX, NS,U)*	*-Treatment + No des- {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 and flagged 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**	*-Total Node- {V}* **Total nodes obtained** *(NS,U, 0,1,2,..)*	*-Pos Nod- {W}* **Number nodes positive** *(NS,U, 0,1,2,..)*	*-Total Node- {X}* **Total nodes obtained** *(NS,U, 0,1,2,..)*	*-Pos Nod- {Y}* **Number nodes positive** *(NS,U, 0,1,2,..)*	*-Total Node- {Z}* **Total nodes obtained** *(NS,U, 0,1,2,..)*	*-Pos Nod- {AA}* **Number nodes positive** *(NS,U, 0,1,2,..)*	*-Total Node- {AB}* **Total nodes obtained** *(NS,U, 0,1,2,..)*	*-Pos Nod- {AC}* **Number nodes positive** *(NS,U, 0,1,2,..)*	*-Total Node- {AD}* **Total nodes obtained** *(NS,U, 0,1,2,..)*	*-Pos Nod- {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)

Col. AI - Invasive size (enter size in millimetres, U = Unknown)
Col. AJ - Whole size (enter size in millimetres, U = Unknown). Whole size includes any surrounding DCIS.
Col. AK - Invasive grade – Bloom & Richardson (I, II, III, NA=Not assessable or U=Unknown. Enter X if not invasive)

{C} **Sx Number**	*-Max Dia- {AI}* **Invasive size of tumour**	*-Whole Size- {AJ}* **Whole size of tumour** *(including surrounding DCIS)*	***-Grade-*** *{AK}* **Invasive grade** (I,II,III, NA, U)

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

Col. AN - Grade (H = High grade, O = Other grade, NA = Not assessable, U = Unknown)
Col. AO - Pathological size (enter size in millimetres, NA = Not assessable, U = Unknown)

{C} **Sx Number**	*-Non Invasive-* *{AN}* **Grade** (H,O,NA,U)	*-Whole Size-* *{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.
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 Shared Cases field. For example if Surgeon A & B shared 1 case, input '1' in both fields of Surgeon A and B.

GMC Code	**Screening caseload (from Part A)**	**Shared Cases**	**If caseload <10 was this because: (write Y in the first applicable reason)**								
			Other caseload > 30 per year	**Joined NHSBSP 2004/05**	**Left NHSBSP 2004/05**	**Surgeon operated on patient request**	**Surgeon is a plastic surgeon**	**Surgeon operated in private practice**	**Not screening in area 2004/05**	**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 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 TO 31ST MARCH 2004 INCLUSIVE ACCORDING TO THE REGIONAL BOUNDARIES EXTANT FROM 1ST APRIL 2005

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 9th January 2006

DEFINITIONS AND GUIDANCE NOTES

Audit cut-off date: If a woman has not received radiotherapy or chemotherapy or hormonal therapy before 31st March 2005 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 2003/04 main audit presented on 11th May 2005 (13,290 UK NHSBSP cancers in total). To aid data collection, coded identifiers and screening dates already collected in the 2003/04 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	Minimum, maximum, 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:

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BASO ADJUVANT THERAPY AUDIT - TO BE COMPLETED FOR ALL CANCERS WITH DATE OF FIRST OFFERED APPOINTMENT FROM 1 APRIL 2003 TO 31 MARCH 2004 INCLUSIVE

UNIT:

Enter dates in dd/mm/yyyy format (e.g. 28/04/2004)

{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 2003 TO 31ST MARCH 2004 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 31/03/05, N = No therapy given before 31/03/05, 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 1 APRIL 1999 AND 31 MARCH 2000

Aim: To combine NHS Breast Screening Programme (NHSBSP) data for women with breast cancers detected by screening between 1st April 1999 and 31st March 2000 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 1999 and 31st March 2000 should be included in the audit.

Core patient and tumour data for women detected at screening between 1st April 1999 and 31st March 2000 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 1999 and 31st March 2000 prior to the end of study censor date of 31st March 2005. Each cancer registry should confirm that death data are complete to 31st March 2005, 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 14th October 2005

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

For cases screen detected in 1999/00 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 Centers to match screen detected breast tumours detected by screening in 1999/00 with data held on the cancer registration systems using name, NHS number, address, post code, 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 26th August 2005

The following data items are required from the cancer registry for all breast tumours screen detected between 1st April 1999 and 31st March 2000.

- 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 2005**. The cancer registry should confirm to the QA Reference Centre that death data are complete to 31st March 2005, 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 28th September 2005

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:

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qarc@wmciu.nhs.uk

SURVIVAL AUDIT: SCREENING OFFICE DATA FOR CASES DETECTED IN 1999/00

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 1999/00

Region:
Screening Unit:
Cancer Registry: **Data complete to : 31/03/2005 (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 2004/05 AUDIT OF SCREEN DETECTED BREAST CANCERS IN WOMEN ALL AGES FOR THE PERIOD 1 APRIL 2004 – 31 MARCH 2005

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	Micro/ Non-invasive cancer rate	Invasive cancer rate
	No.	%	No.	%	No.	%	No.	%	No.	%			
N East, Yorks & Humber	1499	77	28	1	416	21	2	0	1945	100	243212	1.8	6.2
East Midlands	839	78	7	1	221	21	5	0	1072	100	132711	1.7	6.3
East of England*	1154	79	15	1	297	20	3	0	1470	100	168345	1.9	6.9
London	950	81	23	2	195	17	3	0	1171	100	152712	1.4	6.2
South East (East)	837	75	26	2	253	23	2	0	1118	100	137974	2.0	6.1
South East (West)	799	81	2	0	179	18	1	0	981	100	119431	1.5	6.7
South West	1061	78	9	1	296	22	1	0	1367	100	155265	2.0	6.8
West Midlands	1038	81	16	1	235	18	0	0	1289	100	165047	1.5	6.3
North West	1218	79	26	2	296	19	3	0	1543	100	202978	1.6	6.0
Wales	547	80	3	0	136	20	0	0	686	100	84376	1.6	6.5
Northern Ireland	178	79	3	1	44	19	1	0	226	100	31364	1.5	5.7
Scotland	943	80	10	1	217	19	2	0	1172	100	155582	1.5	6.1
United Kingdom	**11063**	**79**	**168**	**1**	**2785**	**20**	**23**	**0**	**14040**	**100**	**1748997**	**1.7**	**6.3**

* 257 cancers from East of England which are included in this table have been excluded from the remainder of the analysis, as 2 screening units did not participate in the audit.

Table 2 : Age at first offered appointment

Region	<50		50-64		65-70		>70		Total	>65	
	No.	%	No.	%	No.	%	No.	%		No.	%
N East, Yorks & Humber	18	1	1369	70	473	24	85	4	1945	558	29
East Midlands	29	3	754	70	228	21	61	6	1072	289	27
East of England	8	1	810	67	330	27	65	5	1213	395	33
London	32	3	868	74	214	18	57	5	1470	271	23
South East (East)	30	3	830	74	190	17	68	6	1118	258	23
South East (West)	22	2	754	77	162	17	43	4	981	205	21
South West	17	1	999	73	270	20	81	6	1367	351	26
West Midlands	31	2	940	73	267	21	51	4	1289	318	25
North West	25	2	1075	70	373	24	70	5	1543	443	29
Wales	14	2	534	78	95	14	43	6	686	138	20
Northern Ireland	1	0	213	94	8	4	4	2	226	12	5
Scotland	1	0	822	70	280	24	69	6	1172	349	30
United Kingdom	**228**	**2**	**9968**	**72**	**2890**	**21**	**697**	**5**	**13783**	**3587**	**26**

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	1945	1	0.05
East Midlands	1072	1	0.09
East of England	1213	1	0.08
London	1171	0	0.00
South East (East)	1118	1	0.09
South East (West)	981	0	0.00
South West	1367	0	0.00
West Midlands	1289	4	0.31
North West	1543	0	0.00
Wales	686	0	0.00
Northern Ireland	226	0	0.00
Scotland	1172	0	0.00
United Kingdom	**13783**	**8**	**0.06**

Table 4 : Non-operative diagnosis rate											
	Total cancers	C5 only		C5 & B5		B5 only		Non-operative diagnosis		No non-operative diagnosis	
Region		No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	1945	222	11	160	8	1441	74	1823	94	122	6
East Midlands	1072	9	1	13	1	1001	93	1023	95	49	5
East of England	1213	12	1	93	8	1024	84	1129	93	84	7
London	1171	44	4	57	5	993	85	1094	93	77	7
South East (East)	1118	95	8	68	6	873	78	1036	93	82	7
South East (West)	981	54	6	65	7	790	81	909	93	72	7
South West	1367	66	5	30	2	1152	84	1248	91	119	9
West Midlands	1289	76	6	17	1	1128	88	1221	95	68	5
North West	1543	192	12	42	3	1197	78	1431	93	112	7
Wales	686	2	0	6	1	640	93	648	94	38	6
Northern Ireland	226	102	45	45	20	68	30	215	95	11	5
Scotland	1172	35	3	289	25	755	64	1079	92	93	8
United Kingdom	**13783**	**909**	**7**	**885**	**6**	**11062**	**80**	**12856**	**93**	**927**	**7**

Table 5 : Non-operative diagnosis rate (invasive cancers)											
	Total cancers	C5 only		C5 & B5		B5 only		Non-operative diagnosis		No non-operative diagnosis	
Region		No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	1499	214	14	128	9	1119	75	1461	97	38	3
East Midlands	839	9	1	13	2	807	96	829	99	10	1
East of England	940	10	1	87	9	815	87	912	97	28	3
London	950	40	4	52	5	831	87	923	97	27	3
South East (East)	837	92	11	67	8	654	78	813	97	24	3
South East (West)	799	52	7	62	8	645	81	759	95	40	5
South West	1061	64	6	30	3	924	87	1018	96	43	4
West Midlands	1038	74	7	15	1	919	89	1008	97	30	3
North West	1218	181	15	38	3	942	77	1161	95	57	5
Wales	547	2	0	6	1	526	96	534	98	13	2
Northern Ireland	178	96	54	37	21	44	25	177	99	1	1
Scotland	943	28	3	269	29	606	64	903	96	40	4
United Kingdom	**10849**	**862**	**8**	**804**	**7**	**8832**	**81**	**10498**	**97**	**351**	**3**

Table 6 : Non-operative diagnosis rate (non-invasive cancers)											
	Total cancers	C5 only		C5 & B5		B5 only		Non-operative diagnosis		No non-operative diagnosis	
Region		No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	416	7	2	31	7	296	71	334	80	82	20
East Midlands	221	0	0	0	0	188	85	188	85	33	15
East of England	258	1	0	6	2	198	77	205	79	53	21
London	195	3	2	5	3	141	72	149	76	46	24
South East (East)	253	0	0	1	0	199	79	200	79	53	21
South East (West)	179	2	1	2	1	143	80	147	82	32	18
South West	296	1	0	0	0	220	74	221	75	75	25
West Midlands	235	2	1	2	1	194	83	198	84	37	16
North West	296	6	2	4	1	232	78	242	82	54	18
Wales	136	0	0	0	0	111	82	111	82	25	18
Northern Ireland	44	5	11	8	18	21	48	34	77	10	23
Scotland	217	5	2	17	8	142	65	164	76	53	24
United Kingdom	**2746**	**32**	**1**	**76**	**3**	**2085**	**76**	**2193**	**80**	**553**	**20**

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	1601	379	24	1082	68	140	9
East Midlands	1014	234	23	779	77	1	0
East of England	1117	243	22	868	78	6	1
London	1050	228	22	814	78	8	1
South East (East)	941	257	27	682	72	2	0
South East (West)	855	183	21	662	77	10	1
South West	1182	285	24	895	76	2	0
West Midlands	1145	263	23	880	77	2	0
North West	1239	277	22	953	77	9	1
Wales	646	154	24	490	76	2	0
Northern Ireland	113	37	33	75	66	1	1
Scotland	1044	210	20	819	78	15	1
United Kingdom	**11947**	**2750**	**23**	**8999**	**75**	**198**	**2**

Table 8 : B5a (Non-invasive) core biopsy: histological invasive status after surgery								
	Invasive		Micro-invasive		Non-invasive		Total with surgery	
Region	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	66	18	19	5	287	77	372	100
East Midlands	44	19	4	2	182	79	230	100
East of England	40	17	9	4	190	79	239	100
London	62	28	21	9	140	63	223	100
South East (East)	43	17	18	7	195	76	256	100
South East (West)	40	22	2	1	141	77	183	100
South West	63	22	8	3	214	75	285	100
West Midlands	55	21	14	5	191	73	260	100
North West	28	10	18	7	228	83	274	100
Wales	43	28	3	2	106	70	152	100
Northern Ireland	5	14	3	8	29	78	37	100
Scotland	52	25	6	3	152	72	210	100
United Kingdom	**541**	**20**	**125**	**5**	**2055**	**76**	**2721**	**100**

Table 9 : B5b (Invasive) core biopsy: histological invasive status after surgery								
	Invasive		Micro-invasive		Non-invasive		Total with surgery	
Region	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	1040	99	1	0	9	1	1050	100
East Midlands	763	100	1	0	2	0	766	100
East of England	844	99	1	0	7	1	852	100
London	771	100	0	0	1	0	772	100
South East (East)	662	99	1	0	4	1	667	100
South East (West)	652	100	0	0	1	0	653	100
South West	884	99	0	0	5	1	889	100
West Midlands	871	100	1	0	2	0	874	100
North West	939	100	1	0	2	0	942	100
Wales	470	99	0	0	3	1	473	100
Northern Ireland	75	100	0	0	0	0	75	100
Scotland	803	100	2	0	2	0	807	100
United Kingdom	**8774**	**99**	**8**	**0**	**38**	**0**	**8820**	**100**

Table 10 : C5 only: histological invasive status after surgery										
	Invasive		Micro-invasive		Non-invasive		Unknown status		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	214	96	1	0	7	3	0	0	222	100
East Midlands	9	100	0	0	0	0	0	0	9	100
East of England	10	91	0	0	1	9	0	0	11	100
London	40	93	0	0	3	7	0	0	43	100
South East (East)	92	99	1	1	0	0	0	0	93	100
South East (West)	52	96	0	0	2	4	0	0	54	100
South West	64	98	0	0	1	2	0	0	65	100
West Midlands	74	97	0	0	2	3	0	0	76	100
North West	181	95	3	2	6	3	0	0	190	100
Wales	2	100	0	0	0	0	0	0	2	100
Northern Ireland	96	94	0	0	5	5	1	1	102	100
Scotland	28	80	2	6	5	14	0	0	35	100
United Kingdom	**862**	**96**	**7**	**1**	**32**	**4**	**1**	**0**	**902**	**100**

Table 11 : Number of visits for cytology/core biopsy for all cancers														
	0		1		2		3+		Unknown		Total		Repeat (2+) visit for core/cyt	
Region	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	5	0	1769	91	167	9	4	0	0	0	1945	100	171	9
East Midlands	4	0	978	91	86	8	4	0	0	0	1072	100	90	8
East of England	0	0	1153	95	59	5	1	0	0	0	1213	100	60	5
London	5	0	1076	92	88	8	1	0	1	0	1171	100	90	8
South East (East)	1	0	873	78	230	21	14	1	0	0	1118	100	244	22
South East (West)	4	0	878	90	94	10	5	1	0	0	981	100	99	10
South West	5	0	1185	87	167	12	10	1	0	0	1367	100	177	13
West Midlands	0	0	1177	91	104	8	8	1	0	0	1289	100	112	9
North West	1	0	1273	83	251	16	18	1	0	0	1543	100	269	17
Wales	2	0	638	93	46	7	0	0	0	0	686	100	46	7
Northern Ireland	0	0	213	94	13	6	0	0	0	0	226	100	13	6
Scotland	2	0	1078	92	91	8	1	0	0	0	1172	100	92	8
United Kingdom	**29**	**0**	**12291**	**89**	**1396**	**10**	**66**	**0**	**1**	**0**	**13783**	**100**	**1463**	**11**

Table 12 : Average number of visits					
Region	Total	Mean	Min.	Median	Max.
N East, Yorks & Humber	1945	1.1	0	1	3
East Midlands	1072	1.1	0	1	3
East of England	1213	1.1	1	1	3
London	1171	1.1	0	1	3
South East (East)	1118	1.2	0	1	3
South East (West)	981	1.1	0	1	3
South West	1367	1.1	0	1	4
West Midlands	1289	1.1	1	1	4
North West	1543	1.2	0	1	4
Wales	686	1.1	0	1	2
Northern Ireland	226	1.1	1	1	2
Scotland	1172	1.1	0	1	3
United Kingdom	**13783**	**1.1**	**0**	**1**	**4**

Table 13 : All cancers versus C5 and/or B5 at first visit						
	1 C5/B5		Non-operative diagnosis rate		All cancers	
Region	No.	%	No.	%	No.	%
N East, Yorks & Humber	1690	87	1823	94	1945	100
East Midlands	939	88	1023	95	1072	100
East of England	1075	89	1129	93	1213	100
London	1007	86	1094	93	1171	100
South East (East)	826	74	1036	93	1118	100
South East (West)	827	84	909	93	981	100
South West	1098	80	1248	91	1367	100
West Midlands	1125	87	1221	95	1289	100
North West	1197	78	1431	93	1543	100
Wales	606	88	648	94	686	100
Northern Ireland	204	90	215	95	226	100
Scotland	1010	86	1079	92	1172	100
United Kingdom	**11604**	**84**	**12856**	**93**	**13783**	**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	255	68	122	32	377	100	243212	1.05	0.50
East Midlands	115	70	49	30	164	100	132711	0.87	0.37
East of England	182	68	84	32	266	100	136518	1.33	0.62
London	131	63	77	37	208	100	152712	0.86	0.50
South East (East)	159	66	82	34	241	100	137974	1.15	0.59
South East (West)	136	65	72	35	208	100	119431	1.14	0.60
South West	201	63	119	37	320	100	155265	1.29	0.77
West Midlands	132	66	68	34	200	100	165047	0.80	0.41
North West	215	66	112	34	327	100	202978	1.06	0.55
Wales	87	70	38	30	125	100	84376	1.03	0.45
Northern Ireland	33	75	11	25	44	100	31364	1.05	0.35
Scotland	149	62	93	38	242	100	155582	0.96	0.60
United Kingdom	**1795**	**66**	**927**	**34**	**2722**	**100**	**1717170**	**1.05**	**0.54**

Table 15 : Number of clients in 2003/04 with C5 or B5 non-operative diagnosis but benign histology				
	False positive C5 (CQA Report)		False positive B5 (BQA Report)	
Region	No.	Per 100,000 screened	No.	Per 100,000 screened
N East, Yorks & Humber	1	0.41	10	4.11
East Midlands	0	0.00	0	0.00
East of England	1	0.59	6	3.56
London	1	0.65	3	1.96
South East (East)	0	0.00	0	0.00
South East (West)	0	0.00	5	2.51
South West	0	0.00	12	7.73
West Midlands	0	0.00	1	0.61
North West	0	0.00	2	0.99
Wales	0	0.00	0	0.00
Northern Ireland	0	0.00	1	3.19
Scotland	0	0.00	2	1.29
United Kingdom	**3**	**0.17**	**42**	**2.29**

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	122	38	31	2	2	82	67	0	0
East Midlands	49	10	20	2	4	33	67	4	8
East of England	84	28	33	3	4	53	63	0	0
London	77	27	35	2	3	46	60	2	3
South East (East)	82	24	29	5	6	53	65	0	0
South East (West)	72	40	56	0	0	32	44	0	0
South West	119	43	36	1	1	75	63	0	0
West Midlands	68	30	44	1	1	37	54	0	0
North West	112	57	51	1	1	54	48	0	0
Wales	38	13	34	0	0	25	66	0	0
Northern Ireland	11	1	9	0	0	10	91	0	0
Scotland	93	40	43	0	0	53	57	0	0
United Kingdom	**927**	**351**	**38**	**17**	**2**	**553**	**60**	**6**	**1**

Table 17 : Non-operative history for invasive cancers with malignant open biopsy									
Region	Total malignant open biopsies	No non-operative procedures		Cytology only		Core biopsy only		Both cytology and core biopsy	
		No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	38	3	8	2	5	25	66	8	21
East Midlands	10	1	10	0	0	6	60	3	30
East of England	28	0	0	3	11	19	68	6	21
London	27	4	15	4	15	17	63	2	7
South East (East)	24	1	4	7	29	14	58	2	8
South East (West)	40	5	13	5	13	29	73	1	3
South West	43	2	5	5	12	29	67	7	16
West Midlands	30	0	0	1	3	25	83	4	13
North West	57	0	0	14	25	40	70	3	5
Wales	13	0	0	0	0	13	100	0	0
Northern Ireland	1	0	0	0	0	1	100	0	0
Scotland	40	1	3	2	5	24	60	13	33
United Kingdom	**351**	**17**	**5**	**43**	**12**	**242**	**69**	**49**	**14**

Table 18 : Non-operative history for non-invasive cancers with malignant open biopsy									
Region	Total malignant open biopsies	No non-operative procedures		Cytology only		Core biopsy only		Both cytology and core biopsy	
		No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	82	2	2	0	0	70	85	10	12
East Midlands	33	1	3	0	0	31	94	1	3
East of England	53	0	0	0	0	42	79	11	21
London	46	1	2	1	2	42	91	2	4
South East (East)	53	0	0	2	4	46	87	5	9
South East (West)	32	0	0	0	0	31	97	1	3
South West	75	3	4	1	1	68	91	3	4
West Midlands	37	0	0	1	3	35	95	1	3
North West	54	1	2	0	0	49	91	4	7
Wales	25	2	8	0	0	23	92	0	0
Northern Ireland	10	0	0	0	0	6	60	4	40
Scotland	53	1	2	0	0	49	92	3	6
United Kingdom	**553**	**11**	**2**	**5**	**1**	**492**	**89**	**45**	**8**

Table 19 : Highest cytology and core biopsy score prior to malignant diagnostic open biopsies (invasive cancers)											
	Total malignant open biopsies	No non-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	38	3	8	16	42	15	39	2	5	2	5
East Midlands	10	1	10	7	70	1	10	1	10	0	0
East of England	28	0	0	19	68	6	21	1	4	2	7
London	27	4	15	9	33	9	33	4	15	1	4
South East (East)	24	1	4	7	29	10	42	2	8	4	17
South East (West)	40	5	13	19	48	9	23	3	8	4	10
South West	43	2	5	18	42	15	35	4	9	4	9
West Midlands	30	0	0	14	47	11	37	2	7	3	10
North West	57	0	0	24	42	15	26	12	21	6	11
Wales	13	0	0	5	38	4	31	0	0	4	31
Northern Ireland	1	0	0	0	0	0	0	1	100	0	0
Scotland	40	1	3	10	25	10	25	14	35	5	13
United Kingdom	**351**	**17**	**5**	**148**	**42**	**105**	**30**	**46**	**13**	**35**	**10**

Table 20 : Highest cytology and core biopsy score prior to malignant diagnostic open biopsies (non-invasive)											
	Total malignant open biopsies	No non-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	82	2	2	24	29	48	59	3	4	5	6
East Midlands	33	1	3	12	36	17	52	1	3	2	6
East of England	53	0	0	26	49	26	49	0	0	1	2
London	46	1	2	10	22	30	65	4	9	1	2
South East (East)	53	0	0	14	26	35	66	3	6	1	2
South East (West)	32	0	0	12	38	14	44	2	6	4	13
South West	75	3	4	33	44	29	39	6	8	4	5
West Midlands	37	0	0	13	35	19	51	3	8	2	5
North West	54	1	2	19	35	23	43	8	15	3	6
Wales	25	2	8	8	32	10	40	4	16	1	4
Northern Ireland	10	0	0	3	30	5	50	2	20	0	0
Scotland	53	1	2	19	36	26	49	3	6	4	8
United Kingdom	**553**	**11**	**2**	**193**	**35**	**282**	**51**	**39**	**7**	**28**	**5**

Table 21 : Treatment for non-invasive and micro-invasive breast cancers										
	Conservation surgery		Mastectomy		No surgery		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	293	66	143	32	7	2	1	0	444	100
East Midlands	140	61	84	37	4	2	0	0	228	100
East of England	209	77	58	21	4	1	0	0	271	100
London	159	73	53	24	4	2	2	1	218	100
South East (East)	194	70	84	30	1	0	0	0	279	100
South East (West)	134	74	47	26	0	0	0	0	181	100
South West	225	74	80	26	0	0	0	0	305	100
West Midlands	177	71	71	28	3	1	0	0	251	100
North West	220	68	100	31	2	1	0	0	322	100
Wales	93	67	44	32	2	1	0	0	139	100
Northern Ireland	32	68	15	32	0	0	0	0	47	100
Scotland	160	70	67	30	0	0	0	0	227	100
United Kingdom	**2036**	**70**	**846**	**29**	**27**	**1**	**3**	**0**	**2912**	**100**

Table 22 : Nuclear grade of surgically treated non-invasive cancers										
	High		Other		Not assessable		Unknown		Total with surgery	
Region	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	252	62	156	38	0	0	1	0	409	100
East Midlands	126	58	82	38	5	2	4	2	217	100
East of England	137	54	113	44	4	2	0	0	254	100
London	91	48	90	47	4	2	6	3	191	100
South East (East)	132	52	106	42	8	3	6	2	252	100
South East (West)	111	62	65	36	2	1	1	1	179	100
South West	169	57	112	38	1	0	14	5	296	100
West Midlands	149	64	79	34	1	0	3	1	232	100
North West	141	48	145	49	3	1	5	2	294	100
Wales	60	45	69	51	5	4	0	0	134	100
Northern Ireland	24	55	19	43	1	2	0	0	44	100
Scotland	129	59	82	38	6	3	0	0	217	100
United Kingdom	**1521**	**56**	**1118**	**41**	**40**	**1**	**40**	**1**	**2719**	**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	165	40	126	30	94	23	9	2	22	5	416	100
East Midlands	87	39	63	29	59	27	4	2	8	4	221	100
East of England	115	45	67	26	31	12	27	10	18	7	258	100
London	84	43	41	21	35	18	1	1	34	17	195	100
South East (East)	110	43	62	25	51	20	14	6	16	6	253	100
South East (West)	79	44	59	33	35	20	1	1	5	3	179	100
South West	143	48	69	23	59	20	0	0	25	8	296	100
West Midlands	97	41	77	33	52	22	2	1	7	3	235	100
North West	128	43	81	27	47	16	5	2	35	12	296	100
Wales	52	38	27	20	24	18	0	0	33	24	136	100
Northern Ireland	20	45	17	39	6	14	0	0	1	2	44	100
Scotland	88	41	65	30	59	27	2	1	3	1	217	100
United Kingdom	**1168**	**43**	**754**	**27**	**552**	**20**	**65**	**2**	**207**	**8**	**2746**	**100**

Table 24: Data completeness for non-invasive cancers (with surgery only)							
	Unknown nuclear grade		Unknown size		Unknown grade and/or size		Total
Region	No.	%	No.	%	No.	%	No.
N East, Yorks & Humber	1	0	15	4	16	4	409
East Midlands	4	2	4	2	5	2	217
East of England	0	0	14	6	14	6	254
London	6	3	30	16	30	16	191
South East (East)	6	2	15	6	20	8	252
South East (West)	1	1	5	3	5	3	179
South West	14	5	25	8	25	8	296
West Midlands	3	1	4	2	6	3	232
North West	5	2	33	11	34	11	294
Wales	0	0	31	23	31	23	134
Northern Ireland	0	0	1	2	1	2	44
Scotland	0	0	3	1	3	1	217
United Kingdom	**40**	**1**	**180**	**7**	**190**	**7**	**2719**

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	4	44	5	56	0	0	9	100
East Midlands	1	100	0	0	0	0	1	100
East of England	5	83	1	17	0	0	6	100
London	8	57	5	36	1	7	14	100
South East (East)	5	83	1	17	0	0	6	100
South East (West)	0	0	1	100	0	0	1	100
South West	4	67	2	33	0	0	6	100
West Midlands	0	0	1	100	0	0	1	100
North West	7	50	7	50	0	0	14	100
Wales	6	60	4	40	0	0	10	100
Northern Ireland	0	-	0	-	0	-	0	-
Scotland	1	100	0	0	0	0	1	100
United Kingdom	**41**	**59**	**27**	**39**	**1**	**1**	**69**	**100**

Table 26 : Treatment of non-invasive cancers with unknown grade and unknown size										
	Conservation surgery		Mastectomy		Unknown treatment		No surgery		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	0	0	0	0	0	0	7	100	7	100
East Midlands	3	43	0	0	0	0	4	57	7	100
East of England	0	0	0	0	0	0	4	100	4	100
London	5	50	0	0	1	10	4	40	10	100
South East (East)	0	0	1	50	0	0	1	50	2	100
South East (West)	1	100	0	0	0	0	0	0	1	100
South West	12	86	2	14	0	0	0	0	14	100
West Midlands	0	0	1	25	0	0	3	75	4	100
North West	3	50	1	17	0	0	2	33	6	100
Wales	0	0	0	0	0	0	2	100	2	100
Northern Ireland	0	-	0	-	0	-	0	-	0	-
Scotland	0	-	0	-	0	-	0	-	0	-
United Kingdom	**24**	**42**	**5**	**9**	**1**	**2**	**27**	**47**	**57**	**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	14	20	56	80	0	0	70	100
East Midlands	6	14	37	86	0	0	43	100
East of England	8	38	13	62	0	0	21	100
London	5	28	13	72	0	0	18	100
South East (East)	11	28	29	73	0	0	40	100
South East (West)	13	52	12	48	0	0	25	100
South West	20	47	23	53	0	0	43	100
West Midlands	14	37	24	63	0	0	38	100
North West	10	32	21	68	0	0	31	100
Wales	3	23	10	77	0	0	13	100
Northern Ireland	0	0	4	100	0	0	4	100
Scotland	7	17	35	83	0	0	42	100
United Kingdom	**111**	**29**	**277**	**71**	**0**	**0**	**388**	**100**

Table 28 : Treatment for invasive breast cancers										
	Conservation surgery		Mastectomy		Unknown		No Surgery		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	980	65	487	32	4	0	28	2	1499	100
East Midlands	561	67	265	32	0	0	13	2	839	100
East of England	716	76	208	22	0	0	16	2	940	100
London	698	73	209	22	12	1	31	3	950	100
South East (East)	632	76	190	23	0	0	15	2	837	100
South East (West)	584	73	206	26	0	0	9	1	799	100
South West	812	77	243	23	0	0	6	1	1061	100
West Midlands	761	73	271	26	0	0	6	1	1038	100
North West	850	70	357	29	1	0	10	1	1218	100
Wales	357	65	173	32	0	0	17	3	547	100
Northern Ireland	129	72	49	28	0	0	0	0	178	100
Scotland	658	70	272	29	3	0	10	1	943	100
United Kingdom	**7738**	**71**	**2930**	**27**	**20**	**0**	**161**	**1**	**10849**	**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	348	23	459	31	283	19	351	23	27	2	31	2	1499	100
East Midlands	234	28	243	29	161	19	174	21	8	1	19	2	839	100
East of England	262	28	289	31	174	19	185	20	11	1	19	2	940	100
London	221	23	237	25	203	21	207	22	27	3	55	6	950	100
South East (East)	214	26	249	30	171	20	173	21	11	1	19	2	837	100
South East (West)	189	24	217	27	164	21	199	25	15	2	15	2	799	100
South West	274	26	300	28	218	21	248	23	15	1	6	1	1061	100
West Midlands	264	25	292	28	215	21	249	24	7	1	11	1	1038	100
North West	311	26	326	27	231	19	307	25	25	2	18	1	1218	100
Wales	140	26	163	30	104	19	116	21	5	1	19	3	547	100
Northern Ireland	18	10	57	32	40	22	58	33	4	2	1	1	178	100
Scotland	224	24	264	28	180	19	222	24	16	2	37	4	943	100
United Kingdom	**2699**	**25**	**3096**	**29**	**2144**	**20**	**2489**	**23**	**171**	**2**	**250**	**2**	**10849**	**100**

Table 30 : Treatment for invasive breast cancers (invasive size <10mm)								
	Conservation surgery		Mastectomy		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	268	77	80	23	0	0	348	100
East Midlands	189	81	45	19	0	0	234	100
East of England	219	84	43	16	0	0	262	100
London	178	81	42	19	1	0	221	100
South East (East)	181	85	33	15	0	0	214	100
South East (West)	154	81	35	19	0	0	189	100
South West	221	81	53	19	0	0	274	100
West Midlands	217	82	47	18	0	0	264	100
North West	252	81	59	19	0	0	311	100
Wales	110	79	30	21	0	0	140	100
Northern Ireland	14	78	4	22	0	0	18	100
Scotland	180	80	44	20	0	0	224	100
United Kingdom	**2183**	**81**	**515**	**19**	**1**	**0**	**2699**	**100**

Table 31 : Treatment for invasive breast cancers (invasive size 10-<15mm)								
	Conservation surgery		Mastectomy		Unknown		Total	
Region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
N East, Yorks & Humber	353	77	106	23	0	0	459	100
East Midlands	187	77	56	23	0	0	243	100
East of England	242	84	47	16	0	0	289	100
London	204	86	33	14	0	0	237	100
South East (East)	217	87	32	13	0	0	249	100
South East (West)	177	82	40	18	0	0	217	100
South West	258	86	42	14	0	0	300	100
West Midlands	249	85	43	15	0	0	292	100
North West	251	77	75	23	0	0	326	100
Wales	126	77	37	23	0	0	163	100
Northern Ireland	54	95	3	5	0	0	57	100
Scotland	222	84	42	16	0	0	264	100
United Kingdom	**2540**	**82**	**556**	**18**	**0**	**0**	**3096**	**100**

Table 32 : Treatment for invasive breast cancers (invasive size <15mm)								
	Conservation surgery		Mastectomy		Unknown		Total	
Region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
N East, Yorks & Humber	621	77	186	23	0	0	807	100
East Midlands	376	79	101	21	0	0	477	100
East of England	461	84	90	16	0	0	551	100
London	382	83	75	16	1	0	458	100
South East (East)	398	86	65	14	0	0	463	100
South East (West)	331	82	75	18	0	0	406	100
South West	479	83	95	17	0	0	574	100
West Midlands	466	84	90	16	0	0	556	100
North West	503	79	134	21	0	0	637	100
Wales	236	78	67	22	0	0	303	100
Northern Ireland	68	91	7	9	0	0	75	100
Scotland	402	82	86	18	0	0	488	100
United Kingdom	**4723**	**82**	**1071**	**18**	**1**	**0**	**5795**	**100**

Table 33 : Treatment for invasive breast cancers (invasive size 15-<20mm)								
	Conservation surgery		Mastectomy		Unknown		Total	
Region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
N East, Yorks & Humber	182	64	100	35	1	0	283	100
East Midlands	105	65	56	35	0	0	161	100
East of England	132	76	42	24	0	0	174	100
London	170	84	32	16	1	0	203	100
South East (East)	128	75	43	25	0	0	171	100
South East (West)	123	75	41	25	0	0	164	100
South West	176	81	42	19	0	0	218	100
West Midlands	157	73	58	27	0	0	215	100
North West	166	72	65	28	0	0	231	100
Wales	62	60	42	40	0	0	104	100
Northern Ireland	31	78	9	23	0	0	40	100
Scotland	136	76	44	24	0	0	180	100
United Kingdom	**1568**	**73**	**574**	**27**	**2**	**0**	**2144**	**100**

Table 34 : Treatment for invasive breast cancers (invasive size 20-<50mm)								
	Conservation surgery		Mastectomy		Unknown		Total	
Region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
N East, Yorks & Humber	172	49	176	50	3	1	351	100
East Midlands	75	43	99	57	0	0	174	100
East of England	119	64	66	36	0	0	185	100
London	129	62	78	38	0	0	207	100
South East (East)	100	58	73	42	0	0	173	100
South East (West)	121	61	78	39	0	0	199	100
South West	155	63	93	38	0	0	248	100
West Midlands	134	54	115	46	0	0	249	100
North West	168	55	139	45	0	0	307	100
Wales	57	49	59	51	0	0	116	100
Northern Ireland	29	50	29	50	0	0	58	100
Scotland	108	49	114	51	0	0	222	100
United Kingdom	**1367**	**55**	**1119**	**45**	**3**	**0**	**2489**	**100**

Table 35 : Treatment for invasive breast cancers (invasive size 50+mm)								
	Conservation surgery		Mastectomy		Unknown		Total	
Region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
N East, Yorks & Humber	4	15	23	85	0	0	27	100
East Midlands	0	0	8	100	0	0	8	100
East of England	2	18	9	82	0	0	11	100
London	5	19	22	81	0	0	27	100
South East (East)	2	18	9	82	0	0	11	100
South East (West)	4	27	11	73	0	0	15	100
South West	2	13	13	87	0	0	15	100
West Midlands	1	14	6	86	0	0	7	100
North West	7	28	18	72	0	0	25	100
Wales	0	0	5	100	0	0	5	100
Northern Ireland	0	0	4	100	0	0	4	100
Scotland	0	0	16	100	0	0	16	100
United Kingdom	**27**	**16**	**144**	**84**	**0**	**0**	**171**	**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	199	13	345	23	269	18	477	32	78	5	131	9	1499	100
East Midlands	150	18	234	28	161	19	251	30	24	3	19	2	839	100
East of England	183	19	272	29	176	19	251	27	20	2	38	4	940	100
London	126	13	153	16	181	19	243	26	43	5	204	21	950	100
South East (East)	160	19	244	29	172	21	217	26	26	3	18	2	837	100
South East (West)	77	10	140	18	134	17	230	29	41	5	177	22	799	100
South West	174	16	278	26	223	21	348	33	31	3	7	1	1061	100
West Midlands	163	16	260	25	232	22	330	32	40	4	13	1	1038	100
North West	206	17	290	24	234	19	353	29	42	3	93	8	1218	100
Wales	103	19	144	26	101	18	162	30	18	3	19	3	547	100
Northern Ireland	9	5	52	29	36	20	68	38	9	5	4	2	178	100
Scotland	136	14	243	26	187	20	313	33	43	5	21	2	943	100
United Kingdom	**1686**	**16**	**2655**	**24**	**2106**	**19**	**3243**	**30**	**415**	**4**	**744**	**7**	**10849**	**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	544	67	69	9	115	14	24	3	55	7	807	100
East Midlands	384	81	34	7	49	10	10	2	0	0	477	100
East of England	455	83	33	6	51	9	5	1	7	1	551	100
London	278	61	42	9	46	10	13	3	79	17	458	100
South East (East)	404	87	24	5	26	6	9	2	0	0	463	100
South East (West)	217	53	39	10	53	13	8	2	89	22	406	100
South West	452	79	52	9	60	10	9	2	1	0	574	100
West Midlands	423	76	62	11	61	11	9	2	1	0	556	100
North West	496	78	46	7	40	6	12	2	43	7	637	100
Wales	247	82	16	5	30	10	10	3	0	0	303	100
Northern Ireland	61	81	8	11	5	7	0	0	1	1	75	100
Scotland	374	77	35	7	65	13	14	3	0	0	488	100
United Kingdom	**4335**	**75**	**460**	**8**	**601**	**10**	**123**	**2**	**276**	**5**	**5795**	**100**

Table 38 : Treatment for invasive breast cancers <15mm with whole size <15mm								
	Conservation surgery		Mastectomy		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	452	83	92	17	0	0	544	100
East Midlands	329	86	55	14	0	0	384	100
East of England	403	89	52	11	0	0	455	100
London	252	91	25	9	1	0	278	100
South East (East)	359	89	45	11	0	0	404	100
South East (West)	191	88	26	12	0	0	217	100
South West	395	87	57	13	0	0	452	100
West Midlands	367	87	56	13	0	0	423	100
North West	408	82	88	18	0	0	496	100
Wales	198	80	49	20	0	0	247	100
Northern Ireland	56	92	5	8	0	0	61	100
Scotland	331	89	43	11	0	0	374	100
United Kingdom	**3741**	**86**	**593**	**14**	**1**	**0**	**4335**	**100**

Table 39 : Treatment for invasive breast cancers <15mm with whole size <15mm or whole size unknown								
	Conservation surgery		Mastectomy		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	493	82	106	18	0	0	599	100
East Midlands	329	86	55	14	0	0	384	100
East of England	408	88	54	12	0	0	462	100
London	316	89	40	11	1	0	357	100
South East (East)	359	89	45	11	0	0	404	100
South East (West)	267	87	39	13	0	0	306	100
South West	395	87	58	13	0	0	453	100
West Midlands	368	87	56	13	0	0	424	100
North West	443	82	96	18	0	0	539	100
Wales	198	80	49	20	0	0	247	100
Northern Ireland	57	92	5	8	0	0	62	100
Scotland	331	89	43	11	0	0	374	100
United Kingdom	**3964**	**86**	**646**	**14**	**1**	**0**	**4611**	**100**

Table 40 : Treatment for invasive breast cancers <15mm with whole size 15-<20mm								
	Conservation surgery		Mastectomy		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	54	78	15	22	0	0	69	100
East Midlands	24	71	10	29	0	0	34	100
East of England	27	82	6	18	0	0	33	100
London	36	86	6	14	0	0	42	100
South East (East)	21	88	3	13	0	0	24	100
South East (West)	30	77	9	23	0	0	39	100
South West	43	83	9	17	0	0	52	100
West Midlands	57	92	5	8	0	0	62	100
North West	36	78	10	22	0	0	46	100
Wales	12	75	4	25	0	0	16	100
Northern Ireland	8	100	0	0	0	0	8	100
Scotland	28	80	7	20	0	0	35	100
United Kingdom	**376**	**82**	**84**	**18**	**0**	**0**	**460**	**100**

Table 41 : Treatment for invasive breast cancers <15mm with whole size 20-49mm								
	Conservation surgery		Mastectomy		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	70	61	45	39	0	0	115	100
East Midlands	21	43	28	57	0	0	49	100
East of England	26	51	25	49	0	0	51	100
London	26	57	20	43	0	0	46	100
South East (East)	16	62	10	38	0	0	26	100
South East (West)	33	62	20	38	0	0	53	100
South West	39	65	21	35	0	0	60	100
West Midlands	37	61	24	39	0	0	61	100
North West	24	60	16	40	0	0	40	100
Wales	21	70	9	30	0	0	30	100
Northern Ireland	3	60	2	40	0	0	5	100
Scotland	41	63	24	37	0	0	65	100
United Kingdom	**357**	**59**	**244**	**41**	**0**	**0**	**601**	**100**

Table 42 : Treatment for invasive breast cancers <15mm with whole size 50+mm								
	Conservation surgery		Mastectomy		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	4	17	20	83	0	0	24	100
East Midlands	2	20	8	80	0	0	10	100
East of England	0	0	5	100	0	0	5	100
London	4	31	9	69	0	0	13	100
South East (East)	2	22	7	78	0	0	9	100
South East (West)	1	13	7	88	0	0	8	100
South West	2	22	7	78	0	0	9	100
West Midlands	4	44	5	56	0	0	9	100
North West	0	0	12	100	0	0	12	100
Wales	5	50	5	50	0	0	10	100
Northern Ireland	0	-	0	-	0	-	0	-
Scotland	2	14	12	86	0	0	14	100
United Kingdom	**26**	**21**	**97**	**79**	**0**	**0**	**123**	**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	54	9	334	53	242	38	630	100
East Midlands	25	7	185	53	139	40	349	100
East of England	30	11	200	75	36	14	266	100
London	45	17	161	61	56	21	262	100
South East (East)	70	26	64	23	140	51	274	100
South East (West)	17	7	209	83	27	11	253	100
South West	46	14	261	81	16	5	323	100
West Midlands	35	10	307	90	0	0	342	100
North West	7	2	210	46	240	53	457	100
Wales	15	7	202	93	0	0	217	100
Northern Ireland	5	8	59	92	0	0	64	100
Scotland	38	11	301	89	0	0	339	100
United Kingdom	**387**	**10**	**2493**	**66**	**896**	**24**	**3776**	**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	28	52	1	2	25	46	54	100
East Midlands	12	48	0	0	13	52	25	100
East of England	22	73	0	0	8	27	30	100
London	29	64	3	7	13	29	45	100
South East (East)	40	57	4	6	26	37	70	100
South East (West)	10	59	0	0	7	41	17	100
South West	32	70	1	2	13	28	46	100
West Midlands	13	37	1	3	21	60	35	100
North West	4	57	1	14	2	29	7	100
Wales	10	67	0	0	5	33	15	100
Northern Ireland	3	60	1	20	1	20	5	100
Scotland	26	68	1	3	11	29	38	100
United Kingdom	**229**	**59**	**13**	**3**	**145**	**37**	**387**	**100**

Table 45: Waiting time - assessment to first diagnostic surgery												
	Total	≤14 days		≤31 days		≤45 days		≤62 days		≤90 days		Median
Region	**cancers**	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**	**days**
N East, Yorks & Humber	122	5	4	40	33	82	67	106	87	119	98	35
East Midlands	49	3	6	26	53	42	86	46	94	48	98	30
East of England	84	13	15	46	55	65	77	74	88	82	98	30.5
London*	75	5	7	33	44	49	65	60	80	69	92	35
South East (East)	82	2	2	16	20	36	44	59	72	81	99	49
South East (West)	72	5	7	32	44	59	82	67	93	71	99	33.5
South West	119	7	6	36	30	74	62	101	85	114	96	40
West Midlands	68	3	4	26	38	45	66	56	82	64	94	37
North West	112	8	7	41	37	72	64	93	83	107	96	37.5
Wales	38	6	16	24	63	32	84	34	89	38	100	25.5
Northern Ireland	11	1	9	6	55	10	91	10	91	11	100	29
Scotland	93	5	5	36	39	63	68	80	86	91	98	37
United Kingdom	**925**	**63**	**7**	**362**	**39**	**629**	**68**	**786**	**85**	**895**	**97**	**36**

* 2 cases have been excluded as assessment dates were not provided.

Table 46 : Waiting time - assessment to first therapeutic surgery											
Region	Total cancers	≤14 days		≤31 days		≤45 days		≤62 days		≤90 days		Median days
		No	%	No	%	No	%	No	%	No	%	
N East, Yorks & Humber	1786	112	6	1073	60	1573	88	1729	97	1764	99	28
East Midlands	1005	111	11	674	67	908	90	968	96	991	99	27
East of England	1108	94	8	720	65	995	90	1061	96	1094	99	27
London*	1047	60	6	529	51	841	80	954	91	1016	97	31
South East (East)	1018	36	4	343	34	670	66	897	88	977	96	38
South East (West)	900	132	15	587	65	794	88	862	96	887	99	25
South West	1241	73	6	591	48	1021	82	1171	94	1214	98	32
West Midlands	1212	145	12	812	67	1053	87	1165	96	1198	99	26
North West	1415	104	7	795	56	1222	86	1353	96	1401	99	29
Wales	629	94	15	428	68	567	90	611	97	624	99	25
Northern Ireland	215	96	45	187	87	207	96	212	99	213	99	16
Scotland	1065	123	12	614	58	903	85	1005	94	1032	97	29
United Kingdom	**12641**	**1180**	**9**	**7353**	**58**	**10754**	**85**	**11988**	**95**	**12411**	**98**	**29**

* 2 cases have been excluded as assessment dates were not provided.

Table 47 : Waiting time - screen to first therapeutic surgery												
Region	Total cancers	≤14 days		≤31 days		≤45 days		≤62 days		≤90 days		Median days
		No	%	No	%	No	%	No	%	No	%	
N East, Yorks & Humber	1779	1	0	133	7	649	36	1366	77	1718	97	50
East Midlands	1000	0	0	109	11	502	50	820	82	971	97	45
East of England	1105	4	0	87	8	342	31	653	59	990	90	56
London*	1047	3	0	37	4	248	24	647	62	941	90	56
South East (East)	1012	2	0	37	4	193	19	541	53	907	90	61
South East (West)	898	5	1	242	27	531	59	782	87	873	97	41
South West	1239	1	0	37	3	257	21	678	55	1092	88	60
West Midlands	1208	5	0	174	14	623	52	1004	83	1178	98	45
North West	1411	4	0	150	11	566	40	1060	75	1355	96	50
Wales	629	1	0	51	8	182	29	407	65	594	94	55
Northern Ireland	215	3	1	71	33	149	69	194	90	210	98	38
Scotland	1065	2	0	68	6	348	33	757	71	999	94	51
United Kingdom	**12608**	**31**	**0**	**1196**	**9**	**4590**	**36**	**8909**	**71**	**11828**	**94**	**51**

* 2 cases have been excluded as assessment dates were not provided.

Table 48: Availability of lymph node status for invasive cancers									
Region	Total invasive cancers with surgery	Nodal status known		Nodes obtained but status unknown		No nodes obtained		Unknown if nodes obtained	
		No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	1471	1456	99	0	0	15	1	0	0
East Midlands	826	815	99	0	0	11	1	0	0
East of England	924	894	97	0	0	28	3	2	0
London	919	842	92	0	0	62	7	15	2
South East (East)	822	794	97	0	0	28	3	0	0
South East (West)	790	768	97	0	0	22	3	0	0
South West	1055	1037	98	0	0	18	2	0	0
West Midlands	1032	1017	99	0	0	15	1	0	0
North West	1208	1080	89	80	7	45	4	3	0
Wales	530	524	99	0	0	6	1	0	0
Northern Ireland	178	177	99	0	0	1	1	0	0
Scotland	933	919	98	0	0	14	2	0	0
United Kingdom	**10688**	**10323**	**97**	**80**	**1**	**265**	**2**	**20**	**0.2**

Table 49 : Nodal status of invasive cancers with known status					
Region	Total known nodal status	Positive		Negative	
		No.	%	No.	%
N East, Yorks & Humber	1456	312	21	1144	79
East Midlands	815	146	18	669	82
East of England	894	196	22	698	78
London	842	213	25	629	75
South East (East)	794	186	23	608	77
South East (West)	768	202	26	566	74
South West	1037	234	23	803	77
West Midlands	1017	221	22	796	78
North West	1080	259	24	821	76
Wales	524	124	24	400	76
Northern Ireland	177	53	30	124	70
Scotland	919	214	23	705	77
United Kingdom	**10323**	**2360**	**23**	**7963**	**77**

Table 50 : 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	1456	10	9
East Midlands	815	8	6
East of England	894	10	8
London	842	12	11
South East (East)	794	10	8
South East (West)	768	10	9
South West	1037	10	9
West Midlands	1017	9	8
North West	1080	11	9
Wales	524	10	8
Northern Ireland	177	18	17
Scotland	919	9	6
United Kingdom	**10323**	**10**	**8**

Table 51 : 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	1456	70	4.8	1	0.1	10	0.7	8	0.5	51	3.5	0	0.0
East Midlands	815	40	4.9	0	0.0	1	0.1	2	0.2	37	4.5	0	0.0
East of England	894	133	14.9	5	0.6	0	0.0	96	10.7	32	3.6	0	0.0
London	842	125	14.8	3	0.4	6	0.7	57	6.8	59	7.0	0	0.0
South East (East)	794	124	15.6	5	0.6	4	0.5	90	11.3	25	3.1	0	0.0
South East (West)	768	79	10.3	1	0.1	7	0.9	32	4.2	39	5.1	0	0.0
South West	1037	99	9.5	1	0.1	7	0.7	44	4.2	47	4.5	0	0.0
West Midlands	1017	58	5.7	3	0.3	3	0.3	24	2.4	28	2.8	0	0.0
North West	1080	82	7.6	2	0.2	8	0.7	20	1.9	46	4.3	6	0.6
Wales	524	49	9.4	2	0.4	1	0.2	19	3.6	27	5.2	0	0.0
Northern Ireland	177	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Scotland	919	24	2.6	1	0.1	2	0.2	7	0.8	14	1.5	0	0.0
United Kingdom	**10323**	**883**	**8.6**	**24**	**0.2**	**49**	**0.5**	**399**	**3.9**	**405**	**3.9**	**6**	**0.1**

Table 52 : Availability of lymph node status for non-invasive cancers									
Region	Total non-invasive cancers	Nodal status known		Nodes obtained but status unknown		No nodes obtained		Unknown if nodes obtained	
		No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	409	113	28	0	0	294	72	2	0
East Midlands	217	78	36	0	0	139	64	0	0
East of England	254	49	19	0	0	205	81	0	0
London	191	40	21	0	0	149	78	2	1
South East (East)	252	73	29	0	0	179	71	0	0
South East (West)	179	49	27	0	0	130	73	0	0
South West	296	48	16	0	0	248	84	0	0
West Midlands	232	60	26	0	0	172	74	0	0
North West	294	82	28	17	6	192	65	3	1
Wales	134	47	35	0	0	87	65	0	0
Northern Ireland	44	9	20	0	0	35	80	0	0
Scotland	217	63	29	0	0	154	71	0	0
United Kingdom	**2719**	**711**	**26**	**17**	**1**	**1984**	**73**	**7**	**0.3**

Table 53 : Nodal status of nodes with status known for non-invasive cancers					
Region	Total known nodal status	Positive		Negative	
		No.	%	No.	%
N East, Yorks & Humber	113	1	1	112	99
East Midlands	78	1	1	77	99
East of England	49	0	0	49	100
London	40	1	3	39	98
South East (East)	73	1	1	72	99
South East (West)	49	0	0	49	100
South West	48	1	2	47	98
West Midlands	60	0	0	60	100
North West	82	0	0	82	100
Wales	47	0	0	47	100
Northern Ireland	9	0	0	9	100
Scotland	63	0	0	63	100
United Kingdom	**711**	**5**	**1**	**706**	**99**

Table 54 : 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	113	7	6
East Midlands	78	5	5
East of England	49	5	5
London	40	7	4.5
South East (East)	73	5	5
South East (West)	49	5	5
South West	48	6	5
West Midlands	60	6	5
North West	82	6	4
Wales	47	6	5
Northern Ireland	9	10	9
Scotland	63	6	5
United Kingdom	**711**	**6**	**6**

Table 55 : Treatment for non-invasive cancers with known nodal status					
	Total	Conservation		Mastectomy	
Region		No.	%	No.	%
N East, Yorks & Humber	113	21	19	92	81
East Midlands	78	8	10	70	90
East of England	49	23	47	26	53
London	40	13	33	27	68
South East (East)	73	16	22	57	78
South East (West)	49	9	18	40	82
South West	48	12	25	36	75
West Midlands	60	18	30	42	70
North West	82	24	29	58	71
Wales	47	7	15	40	85
Northern Ireland	9	2	22	7	78
Scotland	63	8	13	55	87
United Kingdom	**711**	**161**	**23**	**550**	**77**

Table 56 : Non-operative history for non-invasive cancers with known nodal status treated by conservation											
	Total	B5A		B5B		B5C		C5 only		No C5/B5	
Region		No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	21	9	43	4	19	3	14	2	10	3	14
East Midlands	8	6	75	0	0	0	0	0	0	2	25
East of England	23	13	57	5	22	1	4	0	0	4	17
London	13	9	69	1	8	0	0	1	8	2	15
South East (East)	16	11	69	3	19	0	0	0	0	2	13
South East (West)	9	7	78	0	0	0	0	1	11	1	11
South West	12	7	58	3	25	0	0	1	8	1	8
West Midlands	18	15	83	1	6	0	0	1	6	1	6
North West	24	17	71	1	4	1	4	4	17	1	4
Wales	7	6	86	1	14	0	0	0	0	0	0
Northern Ireland	2	1	50	0	0	0	0	1	50	0	0
Scotland	8	5	63	0	0	1	13	1	13	1	13
United Kingdom	**161**	**106**	**66**	**19**	**12**	**6**	**4**	**12**	**7**	**18**	**11**

Table 57 : Treatment for non-invasive cancers with no nodes obtained (with surgery)					
	Total	Conservation surgery		Mastectomy	
Region		No.	%	No.	%
N East, Yorks & Humber	294	254	86	40	14
East Midlands	139	128	92	11	8
East of England	205	177	86	28	14
London	149	130	87	19	13
South East (East)	179	164	92	15	8
South East (West)	130	125	96	5	4
South West	248	209	84	39	16
West Midlands	172	150	87	22	13
North West	192	174	91	18	9
Wales	87	84	97	3	3
Northern Ireland	35	30	86	5	14
Scotland	154	149	97	5	3
United Kingdom	**1984**	**1774**	**89**	**210**	**11**

Table 58 : Data completeness for invasive cancers (with surgery)									
	Unknown invasive size		Unknown nodal status		Unknown grade		Unknown NPI		Total invasive
Region	No.	%	No.	%	No.	%	No.	%	
N East, Yorks & Humber	3	0	15	1	2	0	24	2	1471
East Midlands	6	1	11	1	4	0	16	2	826
East of England	3	0	30	3	2	0	44	5	924
London	24	3	77	8	18	2	98	11	919
South East (East)	4	0	28	3	1	0	39	5	822
South East (West)	6	1	22	3	4	1	29	4	790
South West	0	0	18	2	1	0	31	3	1055
West Midlands	5	0	15	1	4	0	23	2	1032
North West	8	1	128	11	17	1	154	13	1208
Wales	2	0	6	1	4	1	15	3	530
Northern Ireland	1	1	1	1	0	0	2	1	178
Scotland	27	3	14	2	10	1	50	5	933
United Kingdom	**89**	**1**	**365**	**3**	**67**	**1**	**525**	**5**	**10688**

Table 59 : 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	468	32	723	49	273	19	5	0	2	0	1471	100
East Midlands	259	31	395	48	168	20	0	0	4	0	826	100
East of England	258	28	482	52	172	19	10	1	2	0	924	100
London	288	31	427	46	176	19	10	1	18	2	919	100
South East (East)	293	36	375	46	145	18	8	1	1	0	822	100
South East (West)	255	32	386	49	141	18	4	1	4	1	790	100
South West	306	29	562	53	171	16	15	1	1	0	1055	100
West Midlands	311	30	501	49	213	21	3	0	4	0	1032	100
North West	420	35	577	48	183	15	11	1	17	1	1208	100
Wales	172	32	259	49	90	17	5	1	4	1	530	100
Northern Ireland	41	23	103	58	34	19	0	0	0	0	178	100
Scotland	267	29	432	46	211	23	13	1	10	1	933	100
United Kingdom	**3338**	**31**	**5222**	**49**	**1977**	**18**	**84**	**1**	**67**	**1**	**10688**	**100**

Table 60 : NPI Group of invasive cancers												
	EPG		GPG		MPG1		MPG2		PPG		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	369	26	510	35	350	24	150	10	68	5	1447	100
East Midlands	223	28	290	36	173	21	84	10	40	5	810	100
East of England	205	23	341	39	191	22	97	11	46	5	880	100
London	204	25	268	33	199	24	89	11	61	7	821	100
South East (East)	215	27	281	36	169	22	81	10	37	5	783	100
South East (West)	191	25	268	35	167	22	86	11	49	6	761	100
South West	239	23	406	40	219	21	102	10	58	6	1024	100
West Midlands	248	25	366	36	228	23	111	11	56	6	1009	100
North West	289	27	377	36	208	20	103	10	77	7	1054	100
Wales	145	28	177	34	110	21	47	9	36	7	515	100
Northern Ireland	28	16	68	39	40	23	19	11	21	12	176	100
Scotland	219	25	295	33	199	23	107	12	63	7	883	100
United Kingdom	**2575**	**25**	**3647**	**36**	**2253**	**22**	**1076**	**11**	**612**	**6**	**10163**	**100**

Table 61 : Annual screening surgical caseload per surgeon											
Region	Total surgeons	<10 cases		10-19 cases		20-29 cases		30-99 cases		100+ cases	
		No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	62	19	31	5	8	12	19	25	40	1	2
East Midlands	35	10	29	6	17	2	6	16	46	1	3
East of England	49	21	43	5	10	1	2	22	45	0	0
London	72	37	51	11	15	13	18	11	15	0	0
South East (East)	42	17	40	7	17	4	10	12	29	2	5
South East (West)	44	16	36	7	16	5	11	16	36	0	0
South West	40	8	20	7	18	3	8	22	55	0	0
West Midlands	48	10	21	4	8	14	29	20	42	0	0
North West	60	27	45	7	12	4	7	21	35	1	2
Wales	21	8	38	1	5	2	10	10	48	0	0
Northern Ireland	14	4	29	5	36	4	29	1	7	0	0
Scotland	36	11	31	7	19	4	11	12	33	2	6
United Kingdom	**484**	**151**	**31**	**68**	**14**	**69**	**14**	**189**	**39**	**7**	**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 62 : Screening cases per surgeon					
Region	Total surgeons	Mean	Min.	Median	Max.
N East, Yorks & Humber	62	31.5	1	28	132
East Midlands	35	31.7	1	29	123
East of England	49	25.1	1	17	83
London	72	16.3	1	9	78
South East (East)	42	26.2	1	15	121
South East (West)	44	23.0	1	17	78
South West	40	34.0	1	32	83
West Midlands	48	26.9	1	28	67
North West	60	26.7	1	12	106
Wales	21	32.9	1	26	95
Northern Ireland	14	16.1	1	16	33
Scotland	36	32.4	1	26	195
United Kingdom	**484**	**28.8**	**1**	**20**	**195**

Table 63 : 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	1945	18	1	1898	98	29	1	0	0
East Midlands	1072	0	0	1034	96	38	4	0	0
East of England	1213	7	1	1186	98	17	1	3	0
London	1171	16	1	1136	97	18	2	1	0
South East (East)	1118	16	1	1102	99	0	0	0	0
South East (West)	981	3	0	942	96	36	4	0	0
South West	1367	7	1	1360	99	0	0	0	0
West Midlands	1289	4	0	1280	99	5	0	0	0
North West	1543	6	0	1473	95	64	4	0	0
Wales	686	3	0	675	98	8	1	0	0
Northern Ireland	226	0	0	226	100	0	0	0	0
Scotland	1172	7	1	1165	99	0	0	0	0
United Kingdom	**13783**	**87**	**1**	**13477**	**98**	**215**	**2**	**4**	**0**

Table 64 : 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	1927	77	4	77	4	317	16	1353	69	132	7
East Midlands	1072	21	2	84	8	55	5	827	75	123	11
East of England	1206	56	5	73	6	27	2	1073	87	0	0
London	1155	127	11	162	14	322	27	564	48	0	0
South East (East)	1102	40	4	101	9	99	9	641	58	221	20
South East (West)	978	54	5	95	9	132	13	733	72	0	0
South West	1360	25	2	117	9	66	5	1152	85	0	0
West Midlands	1285	41	3	53	4	363	28	833	65	0	0
North West	1537	127	8	91	6	98	6	1179	74	106	7
Wales	683	15	2	14	2	47	7	615	89	0	0
Northern Ireland	226	12	5	74	33	107	47	33	15	0	0
Scotland	1165	34	3	91	8	97	8	638	55	305	26
United Kingdom	**13696**	**531**	**4**	**978**	**7**	**1769**	**13**	**9754**	**70**	**887**	**6**

Table 65 : Explanations for surgeons treating less than 10 screening cases in 2004/05										
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	18	15	1	0	0	0	1	0	0	1
East Midlands	7	4	0	0	0	2	0	0	0	1
East of England	14	6	1	0	1	3	0	0	3	0
London	32	17	3	2	4	1	3	0	2	0
South East (East)	11	1	1	2	0	0	0	4	3	0
South East (West)	10	1	1	1	1	4	0	0	0	2
South West	7	6	1	0	0	0	0	0	0	0
West Midlands	8	2	2	1	1	1	0	0	0	1
North West	27	3	1	4	17	0	0	0	1	1
Wales	7	5	0	0	0	1	0	0	1	0
Northern Ireland	4	4	0	0	0	0	0	0	0	0
Scotland	11	9	1	0	1	0	0	0	0	0
United Kingdom	**151**	**70**	**12**	**9**	**25**	**12**	**3**	**4**	**10**	**6**

Table 66 : Number of therapeutic operations for cancers with a non-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	37	2	1464	80	287	16	30	2	5	0	1823	100	317	17
East Midlands	18	2	831	81	163	16	11	1	0	0	1023	100	174	17
East of England	21	2	962	85	133	12	13	1	0	0	1129	100	146	13
London	35	3	846	77	187	17	13	1	13	1	1094	100	200	18
South East (East)	18	2	833	80	173	17	12	1	0	0	1036	100	185	18
South East (West)	9	1	753	83	137	15	10	1	0	0	909	100	147	16
South West	7	1	993	80	230	18	18	1	0	0	1248	100	248	20
West Midlands	9	1	1035	85	164	13	13	1	0	0	1221	100	177	14
North West	14	1	1252	87	152	11	11	1	2	0	1431	100	163	11
Wales	19	3	526	81	96	15	7	1	0	0	648	100	103	16
Northern Ireland	0	0	182	85	30	14	3	1	0	0	215	100	33	15
Scotland	12	1	923	86	137	13	5	0	2	0	1079	100	142	13
United Kingdom	**199**	**2**	**10600**	**82**	**1889**	**15**	**146**	**1**	**22**	**0**	**12856**	**100**	**2035**	**16**

Table 67 : Number of therapeutic operations (invasive cancers)														
	0		1		2		3+		Unknown		Total		Repeat (2+) rate	
Region	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	37	2	1224	82	214	14	20	1	4	0	1499	100	234	16
East Midlands	16	2	684	82	129	15	10	1	0	0	839	100	139	17
East of England	31	3	797	85	103	11	9	1	0	0	940	100	112	12
London	40	4	740	78	147	15	11	1	12	1	950	100	158	17
South East (East)	25	3	672	80	132	16	8	1	0	0	837	100	140	17
South East (West)	17	2	668	84	106	13	8	1	0	0	799	100	114	14
South West	18	2	856	81	171	16	16	2	0	0	1061	100	187	18
West Midlands	14	1	891	86	127	12	6	1	0	0	1038	100	133	13
North West	46	4	1047	86	117	10	7	1	1	0	1218	100	124	10
Wales	21	4	442	81	77	14	7	1	0	0	547	100	84	15
Northern Ireland	0	0	151	85	24	13	3	2	0	0	178	100	27	15
Scotland	25	3	805	85	106	11	5	1	2	0	943	100	111	12
United Kingdom	**290**	**3**	**8977**	**83**	**1453**	**13**	**110**	**1**	**19**	**0**	**10849**	**100**	**1563**	**14**

Table 68 : Number of therapeutic operations (non-invasive cancers)														
	0		1		2		3+		Unknown		Total		Repeat (2+) rate	
Region	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	50	12	282	68	73	18	11	3	0	0	416	100	84	20
East Midlands	16	7	168	76	36	16	1	0	0	0	221	100	37	17
East of England	42	16	183	71	29	11	4	2	0	0	258	100	33	13
London	36	18	119	61	36	18	2	1	2	1	195	100	38	19
South East (East)	28	11	177	70	42	17	6	2	0	0	253	100	48	19
South East (West)	19	11	118	66	40	22	2	1	0	0	179	100	42	23
South West	45	15	190	64	59	20	2	1	0	0	296	100	61	21
West Midlands	21	9	172	73	35	15	7	3	0	0	235	100	42	18
North West	34	11	228	77	30	10	4	1	0	0	296	100	34	11
Wales	13	10	99	73	24	18	0	0	0	0	136	100	24	18
Northern Ireland	5	11	33	75	6	14	0	0	0	0	44	100	6	14
Scotland	39	18	149	69	29	13	0	0	0	0	217	100	29	13
United Kingdom	**348**	**13**	**1918**	**70**	**439**	**16**	**39**	**1**	**2**	**0**	**2746**	**100**	**478**	**17**

Table 69 : Number of therapeutic operations (B5b (invasive) core biopsies : invasive after surgery)												
	1		2		3+		Unknown		Total		Repeat (2+) rate	
Region	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	899	86	129	12	12	1	4	0	1044	100	141	14
East Midlands	651	85	105	14	7	1	0	0	763	100	112	15
East of England	757	90	81	10	6	1	0	0	844	100	87	10
London	656	84	110	14	5	1	11	1	782	100	115	15
South East (East)	569	86	89	13	4	1	0	0	662	100	93	14
South East (West)	573	88	71	11	8	1	0	0	652	100	79	12
South West	749	85	127	14	8	1	0	0	884	100	135	15
West Midlands	780	90	89	10	2	0	0	0	871	100	91	10
North West	855	91	80	9	4	0	1	0	940	100	84	9
Wales	410	87	55	12	5	1	0	0	470	100	60	13
Northern Ireland	61	81	12	16	2	3	0	0	75	100	14	19
Scotland	727	90	74	9	2	0	2	0	805	100	76	9
United Kingdom	**7687**	**87**	**1022**	**12**	**65**	**1**	**18**	**0**	**8792**	**100**	**1087**	**12**

Table 70 : Sequence of operations (B5b (invasive) core biopsies : invasive after surgery)																		
	Cons. & Ax		Mx. & Ax		Cons. & Ax then Cons.		Cons. & Ax then Mx		Other (Ax at 1st op)		Other (Ax at later op)		Other no Ax		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	633	61	261	25	67	6	40	4	32	3	2	0	5	0	4	0	1044	100
East Midlands	451	59	191	25	57	7	24	3	28	4	4	1	8	1	0	0	763	100
East of England	585	69	154	18	35	4	10	1	38	5	4	0	18	2	0	0	844	100
London	486	62	129	16	64	8	22	3	22	3	8	1	41	5	10	1	782	100
South East (East)	433	65	128	19	51	8	19	3	22	3	1	0	8	1	0	0	662	100
South East (West)	437	67	126	19	38	6	19	3	21	3	4	1	7	1	0	0	652	100
South West	596	67	149	17	62	7	28	3	40	5	5	1	4	0	0	0	884	100
West Midlands	594	68	177	20	44	5	22	3	24	3	2	0	8	1	0	0	871	100
North West	582	62	252	27	28	3	19	2	27	3	9	1	22	2	1	0	940	100
Wales	288	61	115	24	16	3	21	4	19	4	5	1	6	1	0	0	470	100
Northern Ireland	49	65	12	16	6	8	5	7	3	4	0	0	0	0	0	0	75	100
Scotland	508	63	198	25	36	4	20	2	15	2	5	1	21	3	2	0	805	100
United Kingdom	**5642**	**64**	**1892**	**22**	**504**	**6**	**249**	**3**	**291**	**3**	**49**	**1**	**148**	**2**	**17**	**0**	**8792**	**100**

Table 71 : Number of therapeutic operations (invasive cancers with C5 only, no B5)												
	1		2		3+		Unknown		Total		Repeat (2+) rate	
Region	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	162	76	48	22	4	2	0	0	214	100	52	24
East Midlands	8	89	1	11	0	0	0	0	9	100	1	11
East of England	9	90	1	10	0	0	0	0	10	100	1	10
London	30	75	10	25	0	0	0	0	40	100	10	25
South East (East)	69	75	21	23	2	2	0	0	92	100	23	25
South East (West)	51	98	1	2	0	0	0	0	52	100	1	2
South West	50	78	14	22	0	0	0	0	64	100	14	22
West Midlands	69	93	5	7	0	0	0	0	74	100	5	7
North West	159	88	19	10	3	2	0	0	181	100	22	12
Wales	2	100	0	0	0	0	0	0	2	100	0	0
Northern Ireland	86	90	9	9	1	1	0	0	96	100	10	10
Scotland	27	96	1	4	0	0	0	0	28	100	1	4
United Kingdom	**722**	**84**	**130**	**15**	**10**	**1**	**0**	**0**	**862**	**100**	**140**	**16**

Table 72 : Sequence of operations (invasive cancers with C5 only, no B5)																
	Cons. & Ax		Mx. & Ax		Cons. & Ax then Cons.		Cons. & Ax then Mx		Other (Ax at 1st op)		Other (Ax at later op)		Other no Ax		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	114	53	47	22	20	9	16	7	13	6	3	1	1	0	214	100
East Midlands	4	44	4	44	0	0	1	11	0	0	0	0	0	0	9	100
East of England	9	90	0	0	0	0	0	0	1	10	0	0	0	0	10	100
London	26	65	1	3	3	8	3	8	0	0	4	10	3	8	40	100
South East (East)	54	59	10	11	14	15	1	1	5	5	3	3	5	5	92	100
South East (West)	40	77	8	15	0	0	1	2	0	0	0	0	3	6	52	100
South West	47	73	2	3	6	9	1	2	6	9	1	2	1	2	64	100
West Midlands	52	70	17	23	0	0	2	3	3	4	0	0	0	0	74	100
North West	127	70	29	16	9	5	2	1	9	5	1	1	4	2	181	100
Wales	1	50	0	0	0	0	0	0	0	0	0	0	1	50	2	100
Northern Ireland	70	73	16	17	2	2	7	7	1	1	0	0	0	0	96	100
Scotland	21	75	6	21	0	0	0	0	0	0	1	4	0	0	28	100
United Kingdom	**565**	**66**	**140**	**16**	**54**	**6**	**34**	**4**	**38**	**4**	**13**	**2**	**18**	**2**	**862**	**100**

Table 73 : Number of therapeutic operations (B5a (non-invasive) core biopsies : invasive after surgery)												
	1		2		3+		Unknown		Total		Repeat (2+) rate	
Region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
N East, Yorks & Humber	32	48	31	47	3	5	0	0	66	100	34	52
East Midlands	18	41	23	52	3	7	0	0	44	100	26	59
East of England	18	45	19	48	3	8	0	0	40	100	22	55
London	31	50	25	40	6	10	0	0	62	100	31	50
South East (East)	19	44	22	51	2	5	0	0	43	100	24	56
South East (West)	15	38	25	63	0	0	0	0	40	100	25	63
South West	26	41	29	46	8	13	0	0	63	100	37	59
West Midlands	20	36	31	56	4	7	0	0	55	100	35	64
North West	14	50	14	50	0	0	0	0	28	100	14	50
Wales	23	53	18	42	2	5	0	0	43	100	20	47
Northern Ireland	2	40	3	60	0	0	0	0	5	100	3	60
Scotland	18	35	31	60	3	6	0	0	52	100	34	65
United Kingdom	**236**	**44**	**271**	**50**	**34**	**6**	**0**	**0**	**541**	**100**	**305**	**56**

Table 74 : Sequence of operations (B5a (non-invasive) core biopsies : invasive after surgery)																
	Mx. & Ax		Cons. & Ax		Cons. then Cons. & Ax		Cons. then Ax		Other (Ax at 1st op)		Other (Ax at later op)		Other no Ax		Total	
Region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
N East, Yorks & Humber	22	33	7	11	7	11	11	17	5	8	10	15	4	6	66	100
East Midlands	16	36	1	2	9	20	9	20	3	7	5	11	1	2	44	100
East of England	6	15	5	13	8	20	7	18	2	5	3	8	9	23	40	100
London	9	15	12	19	5	8	9	15	4	6	10	16	13	21	62	100
South East (East)	10	23	4	9	5	12	8	19	4	9	5	12	7	16	43	100
South East (West)	7	18	3	8	2	5	9	23	1	3	11	28	7	18	40	100
South West	14	22	6	10	9	14	9	14	4	6	14	22	7	11	63	100
West Midlands	12	22	4	7	12	22	11	20	3	5	9	16	4	7	55	100
North West	8	29	4	14	3	11	4	14	3	11	3	11	3	11	28	100
Wales	10	23	11	26	2	5	7	16	5	12	6	14	2	5	43	100
Northern Ireland	1	20	0	0	1	20	0	0	1	20	1	20	1	20	5	100
Scotland	12	23	4	8	5	10	15	29	5	10	9	17	2	4	52	100
United Kingdom	**127**	**23**	**61**	**11**	**68**	**13**	**99**	**18**	**40**	**7**	**86**	**16**	**60**	**11**	**541**	**100**

Table 75 : Number of therapeutic operations (B5a (non-invasive) core biopsies: non-invasive or micro-invasive after surgery)												
	1		2		3+		Unknown		Total		Repeat (2+) rate	
Region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
N East, Yorks & Humber	224	73	72	24	10	3	0	0	306	100	82	27
East Midlands	152	82	33	18	1	1	0	0	186	100	34	18
East of England	165	83	30	15	4	2	0	0	199	100	34	17
London	120	74	39	24	2	1	1	1	162	100	41	25
South East (East)	169	79	40	19	4	2	0	0	213	100	44	21
South East (West)	105	73	36	25	2	1	0	0	143	100	38	27
South West	162	73	58	26	2	1	0	0	222	100	60	27
West Midlands	162	79	36	18	7	3	0	0	205	100	43	21
North West	209	85	33	13	4	2	0	0	246	100	37	15
Wales	88	81	21	19	0	0	0	0	109	100	21	19
Northern Ireland	27	84	5	16	0	0	0	0	32	100	5	16
Scotland	133	84	25	16	0	0	0	0	158	100	25	16
United Kingdom	**1716**	**79**	**428**	**20**	**36**	**2**	**1**	**0**	**2181**	**100**	**464**	**21**

Table 76 : Sequence of operations (B5a (non-invasive) core biopsies : non-invasive or micro-invasive after surgery)																		
	Cons.		Mx. & Ax		Cons. then Cons.		Mx		Other (Ax at 1st op)		Other (Ax at later op)		Other no Ax		Unknown		Total	
Region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
N East, Yorks & Humber	131	43	63	21	46	15	20	7	14	5	18	6	14	5	0	0	306	100
East Midlands	86	46	58	31	15	8	4	2	6	3	10	5	7	4	0	0	186	100
East of England	114	57	17	9	19	10	22	11	14	7	7	4	6	3	0	0	199	100
London	84	52	21	13	20	12	7	4	11	7	12	7	6	4	1	1	162	100
South East (East)	96	45	51	24	27	13	12	6	13	6	7	3	7	3	0	0	213	100
South East (West)	73	51	21	15	22	15	5	3	9	6	11	8	2	1	0	0	143	100
South West	114	51	25	11	36	16	21	9	4	2	8	4	14	6	0	0	222	100
West Midlands	102	50	31	15	21	10	12	6	22	11	8	4	9	4	0	0	205	100
North West	121	49	54	22	11	4	6	2	31	13	17	7	6	2	0	0	246	100
Wales	52	48	24	22	13	12	7	6	5	5	6	6	2	2	0	0	109	100
Northern Ireland	17	53	7	22	1	3	3	9	1	3	0	0	3	9	0	0	32	100
Scotland	88	56	39	25	12	8	3	2	6	4	6	4	4	3	0	0	158	100
United Kingdom	**1078**	**49**	**411**	**19**	**243**	**11**	**122**	**6**	**136**	**6**	**110**	**5**	**80**	**4**	**1**	**0**	**2181**	**100**

APPENDIX F

ADJUVANT THERAPY AUDIT FOR 1 APRIL 2003 – 31 MARCH 2004 WITH TUMOUR DATA FROM THE 2003/04 AUDIT OF SCREEN DETECTED BREAST CANCERS

Table 77 : 2003/04 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.	%
N East, Yorks & Humber	1692	0	0	422	25	1270	75	949	56
East Midlands	1036	0	0	15	1	1021	99	1021	99
East of England	1494	618	41	20	1	856	57	842	56
London	1138	1	0	156	14	981	86	800	70
South East (East)	1073	146	14	31	3	896	84	819	76
South East (West)	915	0	0	45	5	870	95	844	92
South West	1251	109	9	51	4	1091	87	957	76
West Midlands	1099	161	15	163	15	775	71	545	50
North West	1520	0	0	158	10	1362	90	950	63
Wales	742	0	0	7	1	735	99	618	83
Northern Ireland	269	91	34	10	4	168	62	155	58
Scotland	1054	0	0	10	1	1044	99	940	89
United Kingdom	**13283**	**1126**	**8**	**1088**	**8**	**11069**	**83**	**9440**	**71**

Table 78 : Data completeness for adjuvant therapy

Region	Total Eligible	Complete RT		Complete CT		Complete HT		Complete RT,CT & HT	
		No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	1270	963	76	1218	96	1249	98	949	75
East Midlands	1021	1021	100	1021	100	1021	100	1021	100
East of England	856	853	100	854	100	845	99	842	98
London	981	889	91	868	88	953	97	800	82
South East (East)	896	849	95	883	99	862	96	819	91
South East (West)	870	867	100	863	99	847	97	844	97
South West	1091	1057	97	1086	100	990	91	957	88
West Midlands	775	667	86	625	81	715	92	545	70
North West	1362	1118	82	1208	89	1226	90	950	70
Wales	735	618	84	735	100	735	100	618	84
Northern Ireland	168	159	95	168	100	163	97	155	92
Scotland	1044	943	90	1043	100	1042	100	940	90
United Kingdom	**11069**	**10004**	**90**	**10572**	**96**	**10648**	**96**	**9440**	**85**

Table 79 : ER status of included cases

Region	Invasive						Total Invasive	Non-invasive						Total non-invasive
	ER Positive		ER negative		Not done or unknown			ER Positive		ER negative		Not done or unknown		
	No.	%	No.	%	No.	%		No.	%	No.	%	No.	%	
N East, Yorks &Humber	769	76	124	12	125	12	1018	65	27	37	16	136	57	238
East Midlands	718	89	79	10	12	1	809	69	35	20	10	111	56	200
East of England	559	85	85	13	17	3	661	21	11	32	17	133	72	186
London	633	84	68	9	49	7	750	88	42	29	14	94	45	211
South East (East)	563	83	73	11	45	7	681	86	44	35	18	76	39	197
South East (West)	621	88	72	10	16	2	709	63	40	22	14	71	46	156
South West	679	82	86	10	66	8	831	73	31	23	10	141	59	237
West Midlands	562	84	69	10	35	5	666	43	43	18	18	40	40	101
North West	911	84	118	11	56	5	1085	140	56	26	10	85	34	251
Wales	467	83	46	8	50	9	563	32	19	11	7	124	74	167
Northern Ireland	114	85	16	12	4	3	134	26	79	4	12	3	9	33
Scotland	740	89	79	10	9	1	828	40	20	12	6	150	74	202
United Kingdom	**7336**	**84**	**915**	**10**	**484**	**6**	**8735**	**746**	**34**	**269**	**12**	**1164**	**53**	**2179**

Table 80 : 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	125	47	4	2	136	51	1	0	266	100
East Midlands	12	9	8	6	111	84	1	1	132	100
East of England	17	11	8	5	133	84	0	0	158	100
London	49	33	2	1	94	64	2	1	147	100
South East (East)	45	36	3	2	76	60	2	2	126	100
South East (West)	16	18	0	0	71	80	2	2	89	100
South West	66	31	7	3	141	66	0	0	214	100
West Midlands	35	45	2	3	40	51	1	1	78	100
North West	56	39	3	2	85	59	1	1	145	100
Wales	50	28	2	1	124	70	0	0	176	100
Northern Ireland	4	50	0	0	3	38	1	13	8	100
Scotland	9	6	4	2	150	92	0	0	163	100
United Kingdom	**484**	**28**	**43**	**3**	**1164**	**68**	**11**	**1**	**1702**	**100**

Table 81 : PgR status of included cases								
	Positive		Negative		Not Done or Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	432	34	203	16	635	50	1270	100
East Midlands	194	19	78	8	749	73	1021	100
East of England	153	18	79	9	624	73	856	100
London	504	51	190	19	287	29	981	100
South East (East)	219	24	164	18	513	57	896	100
South East (West)	479	55	165	19	226	26	870	100
South West	409	37	152	14	530	49	1091	100
West Midlands	175	23	76	10	524	68	775	100
North West	785	58	296	22	281	21	1362	100
Wales	120	16	48	7	567	77	735	100
Northern Ireland	44	26	25	15	99	59	168	100
Scotland	264	25	107	10	673	64	1044	100
United Kingdom	**3778**	**34**	**1583**	**14**	**5708**	**52**	**11069**	**100**

Table 82 : PgR status of ER negative invasive cases								
	Positive		Negative		Not Done or Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	5	4	99	80	20	16	124	100
East Midlands	4	5	35	44	40	51	79	100
East of England	5	6	46	54	34	40	85	100
London	5	7	59	87	4	6	68	100
South East (East)	4	5	56	77	13	18	73	100
South East (West)	5	7	63	88	4	6	72	100
South West	4	5	60	70	22	26	86	100
West Midlands	0	0	34	49	35	51	69	100
North West	4	3	104	88	10	8	118	100
Wales	1	2	27	59	18	39	46	100
Northern Ireland	1	6	7	44	8	50	16	100
Scotland	3	4	53	67	23	29	79	100
United Kingdom	**41**	**4**	**643**	**70**	**231**	**25**	**915**	**100**

Table 83 : Cerb-B2/HER-2 status of invasive cancers								
	Positive		Negative		Not Done or Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	22	2	51	5	945	93	1018	100
East Midlands	1	0	0	0	808	100	809	100
East of England	13	2	37	6	611	92	661	100
London	46	6	168	22	536	71	750	100
South East (East)	15	2	96	14	570	84	681	100
South East (West)	44	6	233	33	432	61	709	100
South West	109	13	264	32	458	55	831	100
West Midlands	2	0	46	7	618	93	666	100
North West	142	13	236	22	707	65	1085	100
Wales	37	7	31	6	495	88	563	100
Northern Ireland	7	5	35	26	92	69	134	100
Scotland	69	8	187	23	572	69	828	100
United Kingdom	**507**	**6**	**1384**	**16**	**6844**	**78**	**8735**	**100**

Table 84 : Radiotherapy						
	Radiotherapy		No radiotherapy		Total	
Region	No.	%	No.	%	No.	%
N East, Yorks & Humber	576	60	387	40	963	100
East Midlands	701	69	320	31	1021	100
East of England	616	72	237	28	853	100
London	637	72	252	28	889	100
South East (East)	555	65	294	35	849	100
South East (West)	584	67	283	33	867	100
South West	723	68	334	32	1057	100
West Midlands	525	79	142	21	667	100
North West	777	69	341	31	1118	100
Wales	257	42	361	58	618	100
Northern Ireland	130	82	29	18	159	100
Scotland	712	76	231	24	943	100
United Kingdom	**6793**	**68**	**3211**	**32**	**10004**	**100**

Table 85 : Chemotherapy						
	Chemotherapy		No chemotherapy		Total	
Region	No.	%	No.	%	No.	%
N East, Yorks & Humber	261	21	957	79	1218	100
East Midlands	154	15	867	85	1021	100
East of England	116	14	738	86	854	100
London	183	21	685	79	868	100
South East (East)	150	17	733	83	883	100
South East (West)	134	16	729	84	863	100
South West	179	16	907	84	1086	100
West Midlands	158	25	467	75	625	100
North West	226	19	982	81	1208	100
Wales	98	13	637	87	735	100
Northern Ireland	33	20	135	80	168	100
Scotland	224	21	819	79	1043	100
United Kingdom	**1916**	**18**	**8656**	**82**	**10572**	**100**

Table 86 : Hormone therapy						
	Hormone therapy		No hormone therapy		Total	
Region	No.	%	No.	%	No.	%
N East, Yorks & Humber	909	73	340	27	1249	100
East Midlands	742	73	279	27	1021	100
East of England	536	63	309	37	845	100
London	681	71	272	29	953	100
South East (East)	624	72	238	28	862	100
South East (West)	633	75	214	25	847	100
South West	704	71	286	29	990	100
West Midlands	563	79	152	21	715	100
North West	894	73	332	27	1226	100
Wales	346	47	389	53	735	100
Northern Ireland	134	82	29	18	163	100
Scotland	752	72	290	28	1042	100
United Kingdom	**7518**	**71**	**3130**	**29**	**10648**	**100**

Table 87 : Completed cases with adjuvant therapy by age								
	Radiotherapy		Chemotherapy		Hormone Therapy		Total	
Age group	No.	%	No.	%	No.	%	No.	%
0-48	4	100	2	50	3	75	4	100
49	98	66	36	24	102	69	148	100
50-52	909	64	338	24	931	66	1420	100
53-55	844	69	269	22	819	67	1215	100
56-58	1113	70	327	21	1105	70	1586	100
59-61	1109	70	250	16	1146	72	1585	100
62-64	909	68	188	14	912	69	1329	100
65-67	594	65	113	12	661	73	911	100
68-70	495	64	55	7	586	76	769	100
71+	279	59	23	5	349	74	473	100
Total	**6354**	**67**	**1601**	**17**	**6614**	**70**	**9440**	**100**

Table 88: Adjuvant therapy for cases with complete data																			
	No surgery		Surgery only		Surgery & RT		Surgery & CT		Surgery & HT		Surgery & RT & CT		Surgery & RT & HT		Surgery & CT & HT		Surgery & RT & CT & HT		Total
Region	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
NEYH	18	2	134	14	81	9	20	2	185	19	29	3	362	38	26	3	94	10	949
East Midlands	13	1	119	12	105	10	8	1	169	17	42	4	466	46	13	1	86	8	1021
East of England	5	1	131	16	141	17	5	1	79	9	30	4	373	44	8	1	70	8	842
London	13	2	108	14	82	10	9	1	89	11	35	4	345	43	18	2	101	13	800
South East (E)	5	1	119	15	76	9	6	1	143	17	21	3	348	42	12	1	89	11	819
South East (W)	9	1	88	10	78	9	10	1	150	18	33	4	388	46	14	2	74	9	844
South West	4	0	139	15	103	11	6	1	120	13	32	3	447	47	24	3	82	9	957
West Midlands	4	1	63	12	31	6	3	1	65	12	33	6	280	51	5	1	61	11	545
North West	5	1	87	9	96	10	15	2	191	20	40	4	406	43	22	2	88	9	950
Wales	15	2	220	36	87	14	23	4	87	14	11	2	134	22	16	3	25	4	618
Northern Ireland	0	0	9	6	7	5	1	1	17	11	10	6	93	60	1	1	17	11	155
Scotland	3	0	76	8	119	13	11	1	111	12	46	5	420	45	29	3	125	13	940
United Kingdom	**94**	**1**	**1293**	**14**	**1006**	**11**	**117**	**1**	**1406**	**15**	**362**	**4**	**4062**	**43**	**188**	**2**	**912**	**10**	**9440**

Table 89 : Surgery for included cases								
	No surgery		1 operation		>1 operation		Total	
Region	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	20	2	994	78	256	20	1270	100
East Midlands	13	1	812	80	196	19	1021	100
East of England	5	1	714	83	137	16	856	100
London	14	1	790	81	177	18	981	100
South East (East)	8	1	704	79	184	21	896	100
South East (West)	10	1	714	82	146	17	870	100
South West	5	0	849	78	237	22	1091	100
West Midlands	6	1	636	82	133	17	775	100
North West	9	1	1156	85	197	14	1362	100
Wales	15	2	598	81	122	17	735	100
Northern Ireland	1	1	153	91	14	8	168	100
Scotland	6	1	859	82	179	17	1044	100
United Kingdom	**112**	**1**	**8979**	**81**	**1978**	**18**	**11069**	**100**

Table 90 : First surgery						
	Diagnostic (no non-operative diagnosis)		Therapeutic		Total	
Region	No.	%	No.	%	No.	%
N East, Yorks & Humber	70	6	1180	94	1250	100
East Midlands	59	6	949	94	1008	100
East of England	60	7	791	93	851	100
London	73	8	894	92	967	100
South East (East)	69	8	819	92	888	100
South East (West)	51	6	809	94	860	100
South West	100	9	986	91	1086	100
West Midlands	54	7	715	93	769	100
North West	100	7	1253	93	1353	100
Wales	47	7	673	93	720	100
Northern Ireland	7	4	160	96	167	100
Scotland	75	7	963	93	1038	100
United Kingdom	**765**	**7**	**10192**	**93**	**10957**	**100**

Table 91 : Surgery for cases with radiotherapy								
	No surgery		1 operation		>1 operation		Total	
Region	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	2	0	480	83	94	16	576	100
East Midlands	2	0	575	82	124	18	701	100
East of England	0	0	528	86	88	14	616	100
London	1	0	522	82	114	18	637	100
South East (East)	4	1	437	79	114	21	555	100
South East (West)	0	0	503	86	81	14	584	100
South West	2	0	578	80	143	20	723	100
West Midlands	1	0	449	86	75	14	525	100
North West	3	0	667	86	107	14	777	100
Wales	0	0	218	85	39	15	257	100
Northern Ireland	0	0	119	92	11	8	130	100
Scotland	1	0	600	84	111	16	712	100
United Kingdom	**16**	**0**	**5676**	**84**	**1101**	**16**	**6793**	**100**

Table 92 : Surgery for cases with chemotherapy								
	No surgery		1 operation		>1 operation		Total	
Region	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	7	3	213	82	41	16	261	100
East Midlands	5	3	122	79	27	18	154	100
East of England	1	1	93	80	22	19	116	100
London	2	1	144	79	37	20	183	100
South East (East)	4	3	118	79	28	19	150	100
South East (West)	1	1	115	86	18	13	134	100
South West	1	1	135	75	43	24	179	100
West Midlands	2	1	136	86	20	13	158	100
North West	2	1	195	86	29	13	226	100
Wales	0	0	89	91	9	9	98	100
Northern Ireland	0	0	31	94	2	6	33	100
Scotland	0	0	188	84	36	16	224	100
United Kingdom	**25**	**1**	**1579**	**82**	**312**	**16**	**1916**	**100**

Table 93 : Invasive status of included cases										
	Invasive		Micro-invasive		Non-invasive		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	1018	80	13	1	238	19	1	0	1270	100
East Midlands	809	79	11	1	200	20	1	0	1021	100
East of England	661	77	9	1	186	22	0	0	856	100
London	750	76	16	2	211	22	4	0	981	100
South East (East)	681	76	16	2	197	22	2	0	896	100
South East (West)	709	81	3	0	156	18	2	0	870	100
South West	831	76	23	2	237	22	0	0	1091	100
West Midlands	666	86	7	1	101	13	1	0	775	100
North West	1085	80	23	2	251	18	3	0	1362	100
Wales	563	77	5	1	167	23	0	0	735	100
Northern Ireland	134	80	0	0	33	20	1	1	168	100
Scotland	828	79	14	1	202	19	0	0	1044	100
United Kingdom	**8735**	**79**	**140**	**1**	**2179**	**20**	**15**	**0**	**11069**	**100**

Table 94 : Time from assessment to first diagnostic surgery (cases with no non-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	4	6	33	47	60	86	65	93	68	97	70	100	33
East Midlands	3	5	24	41	49	83	56	95	57	97	58	98	34
East of England	5	8	35	58	56	93	60	100	60	100	60	100	28
London	1	1	27	37	61	84	68	93	70	96	72	99	36
South East (East)	3	4	13	19	50	72	65	94	67	97	69	100	49
South East (West)	6	12	26	51	45	88	51	100	51	100	51	100	31
South West	2	2	30	30	79	79	97	97	99	99	100	100	40
West Midlands	4	7	27	50	45	83	52	96	54	100	54	100	30
North West	8	8	54	54	86	86	96	96	99	99	100	100	30
Wales	6	13	31	66	46	98	47	100	47	100	47	100	22
Northern Ireland	2	29	6	86	7	100	7	100	7	100	7	100	21
Scotland	4	5	28	37	62	83	70	93	72	96	74	99	36
United Kingdom	**48**	**6**	**334**	**44**	**646**	**84**	**734**	**96**	**751**	**98**	**762**	**100**	**34**

Table 95 : Time from assessment to first therapeutic surgery (cases with non-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	122	10	717	61	1125	95	1158	98	1166	99	1177	100	27
East Midlands	105	11	651	69	911	96	932	98	935	99	943	99	25
East of England	79	10	458	58	747	94	771	97	776	98	785	99	28
London	50	6	438	49	817	91	867	97	876	98	888	99	31
South East (East)	50	6	259	32	721	88	798	97	802	98	816	100	38
South East (West)	116	14	498	62	763	94	793	98	799	99	808	100	26
South West	55	6	393	40	910	92	967	98	975	99	986	100	35
West Midlands	80	11	497	70	677	95	700	98	707	99	713	100	24
North West	92	7	666	53	1209	96	1242	99	1250	100	1252	100	29
Wales	91	14	481	71	656	97	670	100	671	100	672	100	24
Northern Ireland	78	49	143	89	157	98	157	98	160	100	160	100	15
Scotland	125	13	551	57	887	92	923	96	933	97	955	99	29
United Kingdom	**1043**	**10**	**5752**	**56**	**9580**	**94**	**9978**	**98**	**10050**	**99**	**10155**	**100**	**28**

Table 96 : 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	9	2	119	21	311	54	406	71	524	91	85
East Midlands	0	0	15	2	382	55	564	81	592	85	660	94	58
East of England	0	0	9	1	274	44	456	74	516	84	553	90	63
London	6	1	22	3	167	26	378	60	469	74	569	90	80
South East (East)	0	0	11	2	98	18	183	33	273	50	476	87	123
South East (West)	1	0	3	1	61	10	203	35	369	63	539	92	105
South West	0	0	5	1	187	26	464	64	543	75	662	92	77
West Midlands	3	1	15	3	203	39	366	70	401	77	461	88	69
North West	13	2	54	7	237	31	364	48	542	71	663	87	94
Wales	0	0	1	0	76	30	190	74	219	85	241	94	70
Northern Ireland	0	0	0	0	23	18	73	56	103	79	119	92	85
Scotland	0	0	8	1	260	37	500	70	543	76	625	88	68
United Kingdom	**24**	**0**	**152**	**2**	**2087**	**31**	**4052**	**60**	**4976**	**74**	**6092**	**90**	**77**

Table 97 : 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	0	0	1	0	15	3	139	24	277	48	478	83	122
East Midlands	1	0	1	0	47	7	306	44	499	71	609	87	97
East of England	0	0	0	0	43	7	237	38	420	68	525	85	101
London	0	0	3	0	30	5	140	22	301	47	503	79	125
South East (East)	1	0	2	0	9	2	59	11	143	26	349	63	176
South East (West)	0	0	1	0	7	1	69	12	206	35	485	83	141
South West	0	0	1	0	17	2	130	18	352	49	603	83	123
West Midlands	0	0	0	0	34	6	209	40	324	62	431	82	104
North West	5	1	10	1	77	10	226	29	354	46	631	81	126
Wales	0	0	0	0	7	3	79	31	183	71	225	88	104
Northern Ireland	0	0	0	0	4	3	42	32	87	67	115	88	105
Scotland	0	0	0	0	13	2	199	28	435	61	569	80	107
United Kingdom	**7**	**0**	**19**	**0**	**303**	**4**	**1835**	**27**	**3581**	**53**	**5523**	**81**	**117**

Table 98 : 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	741	77	8	1	213	22	1	0	963	100
East Midlands	809	79	11	1	200	20	1	0	1021	100
East of England	658	77	9	1	186	22	0	0	853	100
London	674	76	14	2	197	22	4	0	889	100
South East (East)	642	76	15	2	190	22	2	0	849	100
South East (West)	707	82	3	0	155	18	2	0	867	100
South West	801	76	22	2	234	22	0	0	1057	100
West Midlands	567	85	6	1	93	14	1	0	667	100
North West	899	80	22	2	194	17	3	0	1118	100
Wales	459	74	3	0	156	25	0	0	618	100
Northern Ireland	125	79	0	0	33	21	1	1	159	100
Scotland	754	80	14	1	175	19	0	0	943	100
United Kingdom	**7836**	**78**	**127**	**1**	**2026**	**20**	**15**	**0**	**10004**	**100**

Table 99 : 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	477	64	246	33	18	2	0	0	741	100
East Midlands	558	69	240	30	11	1	0	0	809	100
East of England	504	77	149	23	5	1	0	0	658	100
London	516	77	144	21	14	2	0	0	674	100
South East (East)	508	79	128	20	6	1	0	0	642	100
South East (West)	549	78	151	21	7	1	0	0	707	100
South West	617	77	181	23	3	0	0	0	801	100
West Midlands	416	73	148	26	3	1	0	0	567	100
North West	662	74	233	26	4	0	0	0	899	100
Wales	256	56	190	41	12	3	1	0	459	100
Northern Ireland	106	85	19	15	0	0	0	0	125	100
Scotland	548	73	192	25	6	1	8	1	754	100
United Kingdom	**5717**	**73**	**2021**	**26**	**89**	**1**	**9**	**0**	**7836**	**100**

Table 100 : Radiotherapy for invasive cancers treated by conservation surgery						
	Radiotherapy		No radiotherapy		Total	
Region	No.	%	No.	%	No.	%
N East, Yorks & Humber	440	92	37	8	477	100
East Midlands	532	95	26	5	558	100
East of England	480	95	24	5	504	100
London	479	93	37	7	516	100
South East (East)	441	87	67	13	508	100
South East (West)	468	85	81	15	549	100
South West	568	92	49	8	617	100
West Midlands	404	97	12	3	416	100
North West	594	90	68	10	662	100
Wales	205	80	51	20	256	100
Northern Ireland	98	92	8	8	106	100
Scotland	516	94	32	6	548	100
United Kingdom	**5225**	**91**	**492**	**9**	**5717**	**100**

Table 101 : 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	18	49	9	24	8	22	1	3	1	3	37	100
East Midlands	20	77	3	12	2	8	0	0	1	4	26	100
East of England	15	63	3	13	5	21	1	4	0	0	24	100
London	18	49	7	19	10	27	2	5	0	0	37	100
South East (East)	53	79	8	12	3	4	0	0	3	4	67	100
South East (West)	61	75	13	16	6	7	0	0	1	1	81	100
South West	30	61	6	12	11	22	2	4	0	0	49	100
West Midlands	10	83	0	0	2	17	0	0	0	0	12	100
North West	42	62	9	13	15	22	1	1	1	1	68	100
Wales	36	71	12	24	3	6	0	0	0	0	51	100
Northern Ireland	3	38	2	25	3	38	0	0	0	0	8	100
Scotland	22	69	7	22	3	9	0	0	0	0	32	100
United Kingdom	**328**	**67**	**79**	**16**	**71**	**14**	**7**	**1**	**7**	**1**	**492**	**100**

Table 102 : 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	125	59	86	40	2	1	0	0	213	100
East Midlands	132	66	67	34	1	1	0	0	200	100
East of England	139	75	47	25	0	0	0	0	186	100
London	145	74	49	25	3	2	0	0	197	100
South East (East)	143	75	47	25	0	0	0	0	190	100
South East (West)	110	71	43	28	2	1	0	0	155	100
South West	181	77	51	22	2	1	0	0	234	100
West Midlands	66	71	27	29	0	0	0	0	93	100
North West	148	76	45	23	1	1	0	0	194	100
Wales	89	57	65	42	2	1	0	0	156	100
Northern Ireland	27	82	6	18	0	0	0	0	33	100
Scotland	127	73	46	26	2	1	0	0	175	100
United Kingdom	**1432**	**71**	**579**	**29**	**15**	**1**	**0**	**0**	**2026**	**100**

Table 103 : Radiotherapy for non-invasive cancers treated by conservation surgery						
	Radiotherapy		No radiotherapy		Total	
Region	**No.**	**%**	**No.**	**%**	**No.**	**%**
N East, Yorks & Humber	60	48	65	52	125	100
East Midlands	79	60	53	40	132	100
East of England	73	53	66	47	139	100
London	79	54	66	46	145	100
South East (East)	63	44	80	56	143	100
South East (West)	53	48	57	52	110	100
South West	82	45	99	55	181	100
West Midlands	31	47	35	53	66	100
North West	75	51	73	49	148	100
Wales	35	39	54	61	89	100
Northern Ireland	19	70	8	30	27	100
Scotland	94	74	33	26	127	100
United Kingdom	**743**	**52**	**689**	**48**	**1432**	**100**

Table 104 : 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	13	20	50	77	0	0	2	3	65	100
East Midlands	14	26	34	64	4	8	1	2	53	100
East of England	11	17	53	80	2	3	0	0	66	100
London	14	21	36	55	2	3	14	21	66	100
South East (East)	33	41	43	54	0	0	4	5	80	100
South East (West)	28	49	26	46	3	5	0	0	57	100
South West	39	39	54	55	6	6	0	0	99	100
West Midlands	11	31	23	66	0	0	1	3	35	100
North West	16	22	56	77	0	0	1	1	73	100
Wales	11	20	41	76	0	0	2	4	54	100
Northern Ireland	5	63	2	25	1	13	0	0	8	100
Scotland	11	33	19	58	1	3	2	6	33	100
United Kingdom	**206**	**30**	**437**	**63**	**19**	**3**	**27**	**4**	**689**	**100**

Table 105 : 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	38	58	20	31	1	2	0	0	6	9	65	100
East Midlands	36	68	10	19	0	0	4	8	3	6	53	100
East of England	31	47	9	14	1	2	13	20	12	18	66	100
London	28	42	4	6	2	3	3	5	29	44	66	100
South East (East)	44	55	21	26	4	5	0	0	11	14	80	100
South East (West)	35	61	14	25	4	7	3	5	1	2	57	100
South West	62	63	19	19	7	7	8	8	3	3	99	100
West Midlands	26	74	6	17	1	3	0	0	2	6	35	100
North West	42	58	16	22	5	7	0	0	10	14	73	100
Wales	36	67	8	15	0	0	2	4	8	15	54	100
Northern Ireland	5	63	1	13	1	13	1	13	0	0	8	100
Scotland	25	76	4	12	4	12	0	0	0	0	33	100
United Kingdom	**408**	**59**	**132**	**19**	**30**	**4**	**34**	**5**	**85**	**12**	**689**	**100**

Table 106 : 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	84	7	36	3	848	70	13	1	236	19	1	0	1218	100
East Midlands	52	5	26	3	731	72	11	1	200	20	1	0	1021	100
East of England	68	8	11	1	580	68	9	1	186	22	0	0	854	100
London	41	5	17	2	598	69	16	2	192	22	4	0	868	100
South East (East)	52	6	14	2	609	69	15	2	191	22	2	0	883	100
South East (West)	51	6	18	2	635	74	3	0	154	18	2	0	863	100
South West	68	6	18	2	741	68	23	2	236	22	0	0	1086	100
West Midlands	41	7	20	3	468	75	6	1	89	14	1	0	625	100
North West	71	6	21	2	870	72	20	2	223	18	3	0	1208	100
Wales	27	4	16	2	520	71	5	1	167	23	0	0	735	100
Northern Ireland	11	7	3	2	120	71	0	0	33	20	1	1	168	100
Scotland	50	5	27	3	750	72	14	1	202	19	0	0	1043	100
United Kingdom	**616**	**6**	**227**	**2**	**7470**	**71**	**135**	**1**	**2109**	**20**	**15**	**0**	**10572**	**100**

Table 107 : Chemotherapy for ER negative node positive invasive cancers						
	Chemotherapy		No chemotherapy		Total	
Region	No.	%	No.	%	No.	%
N East, Yorks & Humber	28	78	8	22	36	100
East Midlands	25	96	1	4	26	100
East of England	11	100	0	0	11	100
London	14	82	3	18	17	100
South East (East)	11	79	3	21	14	100
South East (West)	12	67	6	33	18	100
South West	16	89	2	11	18	100
West Midlands	18	90	2	10	20	100
North West	17	81	4	19	21	100
Wales	13	81	3	19	16	100
Northern Ireland	3	100	0	0	3	100
Scotland	20	74	7	26	27	100
United Kingdom	**188**	**83**	**39**	**17**	**227**	**100**

Table 108 : Chemotherapy for ER negative node negative invasive cancers						
	Chemotherapy		No chemotherapy		Total	
Region	No.	%	No.	%	No.	%
N East, Yorks & Humber	31	37	53	63	84	100
East Midlands	23	44	29	56	52	100
East of England	20	29	48	71	68	100
London	24	59	17	41	41	100
South East (East)	20	38	32	62	52	100
South East (West)	24	47	27	53	51	100
South West	24	35	44	65	68	100
West Midlands	27	66	14	34	41	100
North West	27	38	44	62	71	100
Wales	11	41	16	59	27	100
Northern Ireland	9	82	2	18	11	100
Scotland	31	62	19	38	50	100
United Kingdom	**271**	**44**	**345**	**56**	**616**	**100**

Table 109 : 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	1	3	30	97	0	0	31	100
East Midlands	0	0	1	4	22	96	0	0	23	100
East of England	0	0	3	15	17	85	0	0	20	100
London	0	0	4	17	19	79	1	4	24	100
South East (East)	0	0	2	10	18	90	0	0	20	100
South East (West)	0	0	4	17	20	83	0	0	24	100
South West	0	0	2	8	22	92	0	0	24	100
West Midlands	0	0	4	15	23	85	0	0	27	100
North West	1	4	6	22	20	74	0	0	27	100
Wales	0	0	3	27	8	73	0	0	11	100
Northern Ireland	0	0	0	0	9	100	0	0	9	100
Scotland	0	0	3	10	27	87	1	3	31	100
United Kingdom	**1**	**0**	**33**	**12**	**235**	**87**	**2**	**1**	**271**	**100**

Table 110 : ER status of cases with complete hormone therapy data								
	Positive		Negative		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	835	67	164	13	250	20	1249	100
East Midlands	790	77	99	10	132	13	1021	100
East of England	579	69	117	14	149	18	845	100
London	725	76	94	10	134	14	953	100
South East (East)	645	75	111	13	106	12	862	100
South East (West)	669	79	94	11	84	10	847	100
South West	750	76	112	11	128	13	990	100
West Midlands	572	80	78	11	65	9	715	100
North West	956	78	138	11	132	11	1226	100
Wales	502	68	57	8	176	24	735	100
Northern Ireland	140	86	20	12	3	2	163	100
Scotland	784	75	96	9	162	16	1042	100
United Kingdom	**7947**	**75**	**1180**	**11**	**1521**	**14**	**10648**	**100**

Table 111 : Hormone therapy for cases with ER not done or unknown						
	Hormone therapy		No hormone therapy		Total	
Region	No.	%	No.	%	No.	%
N East, Yorks & Humber	101	40	149	60	250	100
East Midlands	26	20	106	80	132	100
East of England	12	8	137	92	149	100
London	36	27	98	73	134	100
South East (East)	26	25	80	75	106	100
South East (West)	15	18	69	82	84	100
South West	10	8	118	92	128	100
West Midlands	25	38	40	62	65	100
North West	37	28	95	72	132	100
Wales	25	14	151	86	176	100
Northern Ireland	2	67	1	33	3	100
Scotland	9	6	153	94	162	100
United Kingdom	**324**	**21**	**1197**	**79**	**1521**	**100**

Table 112 : Invasive status of ER positive cases with known hormone therapy data										
	Invasive		Micro-invasive		Non-invasive		Unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	764	91	6	1	65	8	0	0	835	100
East Midlands	718	91	3	0	69	9	0	0	790	100
East of England	557	96	1	0	21	4	0	0	579	100
London	624	86	11	2	88	12	2	0	725	100
South East (East)	553	86	8	1	84	13	0	0	645	100
South East (West)	607	91	1	0	61	9	0	0	669	100
South West	671	89	10	1	69	9	0	0	750	100
West Midlands	526	92	4	1	42	7	0	0	572	100
North West	814	85	11	1	130	14	1	0	956	100
Wales	467	93	3	1	32	6	0	0	502	100
Northern Ireland	114	81	0	0	26	19	0	0	140	100
Scotland	740	94	5	1	39	5	0	0	784	100
United Kingdom	**7155**	**90**	**63**	**1**	**726**	**9**	**3**	**0**	**7947**	**100**

Table 113 : Invasive status of ER negative cases with known hormone therapy data										
	Invasive		Micro-invasive		Non-invasive		Unknown		Total	
Region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
N East, Yorks & Humber	124	76	3	2	37	23	0	0	164	100
East Midlands	79	80	0	0	20	20	0	0	99	100
East of England	85	73	0	0	32	27	0	0	117	100
London	64	68	3	3	27	29	0	0	94	100
South East (East)	71	64	5	5	35	32	0	0	111	100
South East (West)	71	76	2	2	21	22	0	0	94	100
South West	83	74	6	5	23	21	0	0	112	100
West Midlands	61	78	1	1	16	21	0	0	78	100
North West	107	78	7	5	23	17	1	1	138	100
Wales	46	81	0	0	11	19	0	0	57	100
Northern Ireland	16	80	0	0	4	20	0	0	20	100
Scotland	79	82	5	5	12	13	0	0	96	100
United Kingdom	**886**	**75**	**32**	**3**	**261**	**22**	**1**	**0**	**1180**	**100**

Table 114 : Hormone therapy for ER positive cancers						
	Hormone therapy		No hormone therapy		Total	
Region	**No.**	**%**	**No.**	**%**	**No.**	**%**
N East, Yorks & Humber	794	95	41	5	835	100
East Midlands	705	89	85	11	790	100
East of England	516	89	63	11	579	100
London	633	87	92	13	725	100
South East (East)	589	91	56	9	645	100
South East (West)	606	91	63	9	669	100
South West	689	92	61	8	750	100
West Midlands	537	94	35	6	572	100
North West	842	88	114	12	956	100
Wales	317	63	185	37	502	100
Northern Ireland	132	94	8	6	140	100
Scotland	738	94	46	6	784	100
United Kingdom	**7098**	**89**	**849**	**11**	**7947**	**100**

Table 115 : Hormone therapy for ER positive invasive cancers						
	Hormone therapy		No hormone therapy		Total	
Region	**No.**	**%**	**No.**	**%**	**No.**	**%**
N East, Yorks & Humber	749	98	15	2	764	100
East Midlands	640	89	78	11	718	100
East of England	503	90	54	10	557	100
London	584	94	40	6	624	100
South East (East)	538	97	15	3	553	100
South East (West)	568	94	39	6	607	100
South West	653	97	18	3	671	100
West Midlands	515	98	11	2	526	100
North West	724	89	90	11	814	100
Wales	301	64	166	36	467	100
Northern Ireland	112	98	2	2	114	100
Scotland	710	96	30	4	740	100
United Kingdom	**6597**	**92**	**558**	**8**	**7155**	**100**

Table 116 : Hormone therapy for ER positive non-invasive cancers						
	Hormone therapy		No hormone therapy		Total	
Region	No.	%	No.	%	No.	%
N East, Yorks & Humber	41	63	24	37	65	100
East Midlands	62	90	7	10	69	100
East of England	12	57	9	43	21	100
London	39	44	49	56	88	100
South East (East)	45	54	39	46	84	100
South East (West)	37	61	24	39	61	100
South West	28	41	41	59	69	100
West Midlands	20	48	22	52	42	100
North West	107	82	23	18	130	100
Wales	15	47	17	53	32	100
Northern Ireland	20	77	6	23	26	100
Scotland	25	64	14	36	39	100
United Kingdom	**451**	**62**	**275**	**38**	**726**	**100**

Table 117 : Hormone therapy for ER negative cancers						
	Hormone therapy		No hormone therapy		Total	
Region	No.	%	No.	%	No.	%
N East, Yorks & Humber	14	9	150	91	164	100
East Midlands	11	11	88	89	99	100
East of England	8	7	109	93	117	100
London	12	13	82	87	94	100
South East (East)	9	8	102	92	111	100
South East (West)	12	13	82	87	94	100
South West	5	4	107	96	112	100
West Midlands	1	1	77	99	78	100
North West	15	11	123	89	138	100
Wales	4	7	53	93	57	100
Northern Ireland	0	0	20	100	20	100
Scotland	5	5	91	95	96	100
United Kingdom	**96**	**8**	**1084**	**92**	**1180**	**100**

Table 118 : ER status for non-invasive cancers with hormone therapy								
	ER positive		ER negative		ER unknown/ not done		Total	
Region	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	41	17	0	0	7	3	48	20
East Midlands	62	31	0	0	12	6	74	37
East of England	12	6	0	0	6	3	18	10
London	39	18	2	1	7	3	48	23
South East (East)	45	23	1	1	5	3	51	26
South East (West)	37	24	0	0	12	8	49	31
South West	28	12	0	0	4	2	32	14
West Midlands	20	20	0	0	0	0	20	20
North West	107	43	1	0	11	4	119	47
Wales	15	9	0	0	3	2	18	11
Northern Ireland	20	61	0	0	1	3	21	64
Scotland	25	12	1	0	1	0	27	13
United Kingdom	**451**	**21**	**5**	**0**	**69**	**3**	**525**	**24**

Table 119 : PgR status of ER negative cancers with known hormone therapy data								
	Positive		Negative		Not Done or unknown		Total	
Region	No.	%	No.	%	No.	%	No.	%
N East, Yorks & Humber	6	4	133	81	25	15	164	100
East Midlands	4	4	43	43	52	53	99	100
East of England	5	4	48	41	64	55	117	100
London	6	6	81	86	7	7	94	100
South East (East)	5	5	80	72	26	23	111	100
South East (West)	7	7	81	86	6	6	94	100
South West	3	3	76	68	33	29	112	100
West Midlands	0	0	38	49	40	51	78	100
North West	4	3	119	86	15	11	138	100
Wales	2	4	31	54	24	42	57	100
Northern Ireland	1	5	9	45	10	50	20	100
Scotland	4	4	65	68	27	28	96	100
United Kingdom	**47**	**4**	**804**	**68**	**329**	**28**	**1180**	**100**

Table 120 : Hormone therapy for ER negative, PgR positive invasive cancers						
	Hormone therapy		No hormone therapy		Total	
Region	No.	%	No.	%	No.	%
N East, Yorks & Humber	3	60	2	40	5	100
East Midlands	2	50	2	50	4	100
East of England	5	100	0	0	5	100
London	2	50	2	50	4	100
South East (East)	2	50	2	50	4	100
South East (West)	3	60	2	40	5	100
South West	2	67	1	33	3	100
West Midlands	0	-	0	-	0	-
North West	2	50	2	50	4	100
Wales	0	0	1	100	1	100
Northern Ireland	0	0	1	100	1	100
Scotland	1	33	2	67	3	100
United Kingdom	**22**	**56**	**17**	**44**	**39**	**100**

Table 121 : Hormone therapy for ER negative invasive cancers with PgR negative						
	Hormone therapy		No hormone therapy		Total	
Region	No.	%	No.	%	No.	%
N East, Yorks & Humber	9	9	90	91	99	100
East Midlands	7	20	28	80	35	100
East of England	0	0	46	100	46	100
London	8	14	50	86	58	100
South East (East)	4	7	50	93	54	100
South East (West)	7	11	55	89	62	100
South West	2	3	58	97	60	100
West Midlands	0	0	33	100	33	100
North West	11	12	82	88	93	100
Wales	3	11	24	89	27	100
Northern Ireland	0	0	7	100	7	100
Scotland	2	4	51	96	53	100
United Kingdom	**53**	**8**	**574**	**92**	**627**	**100**

Table 122 : Chemotherapy for ER negative invasive cancers with PgR negative						
	Chemotherapy		No Chemotherapy		Total	
Region	**No.**	**%**	**No.**	**%**	**No.**	**%**
N East, Yorks & Humber	45	45	54	55	99	100
East Midlands	26	74	9	26	35	100
East of England	26	57	20	43	46	100
London	36	65	19	35	55	100
South East (East)	26	46	30	54	56	100
South East (West)	33	53	29	47	62	100
South West	26	43	34	57	60	100
West Midlands	24	71	10	29	34	100
North West	43	47	48	53	91	100
Wales	19	70	8	30	27	100
Northern Ireland	5	71	2	29	7	100
Scotland	35	66	18	34	53	100
United Kingdom	**344**	**55**	**281**	**45**	**625**	**100**

APPENDIX G

DATA OBTAINED FROM THE SURVIVAL AUDIT OF SCREEN DETECTED BREAST CANCERS FOR CANCERS DIAGNOSED BETWEEN 1 APRIL 1999 AND 31 MARCH 2000

Table 123 : Cause of death of eligible invasive cancers with death before 31/03/2005

Region	Breast Cancer*		Other cancer		Non-cancer		Not Collected		Unknown		Total deaths		Total cancers
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
N East, Yorks & Humber	44	62	20	28	7	10	0	0	0	0	71	7	958
East Midlands	33	75	4	9	7	16	0	0	0	0	44	8	535
East of England	29	53	13	24	12	22	1	2	0	0	55	8	676
London	42	71	9	15	6	10	1	2	1	2	59	9	674
South East (East)	32	67	4	8	12	25	0	0	0	0	48	8	608
South East (West)	27	68	9	23	4	10	0	0	0	0	40	8	507
South West	41	68	4	7	10	17	0	0	5	8	60	8	775
West Midlands	33	57	15	26	8	14	0	0	2	3	58	9	622
North West	31	56	11	20	11	20	2	4	0	0	55	7	811
Wales	18	45	6	15	16	40	0	0	0	0	40	9	425
Northern Ireland	12	75	2	13	2	13	0	0	0	0	16	9	170
Scotland	-	-	-	-	-	-	-	-	-	-	-	-	-
United Kingdom	**342**	**63**	**97**	**18**	**95**	**17**	**4**	**1**	**8**	**1**	**546**	**8**	**6761**

* Death from the screen detected breast cancer

Table 124 : 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	2	67	1	33	0	0	0	0	0	0	3	19	16
East Midlands	0	-	0	-	0	-	0	-	0	-	0	0	10
East of England	0	-	0	-	0	-	0	-	0	-	0	0	10
London	0	-	0	-	0	-	0	-	0	-	0	0	12
South East (East)	1	33	0	0	2	67	0	0	0	0	3	19	16
South East (West)	0	-	0	-	0	-	0	-	0	-	0	0	5
South West	0	-	0	-	0	-	0	-	0	-	0	0	16
West Midlands	0	-	0	-	0	-	0	-	0	-	0	0	10
North West	0	-	0	-	0	-	0	-	0	-	0	0	8
Wales	1	100	0	0	0	0	0	0	0	0	1	11	9
Northern Ireland	0	0	1	100	0	0	0	0	0	0	1	11	9
Scotland	-	-	-	-	-	-	-	-	-	-	-	-	-
United Kingdom	**4**	**50**	**2**	**25**	**2**	**25**	**0**	**0**	**0**	**0**	**8**	**7**	**121**

* Death from the screen detected breast cancer

Table 125 : 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	1	13	5	63	2	25	0	0	0	0	8	3	259
East Midlands	1	33	0	0	2	67	0	0	0	0	3	2	135
East of England	2	29	2	29	1	14	0	0	2	29	7	4	186
London	2	29	2	29	3	43	0	0	0	0	7	4	198
South East (East)	1	25	1	25	2	50	0	0	0	0	4	3	153
South East (West)	0	0	1	100	0	0	0	0	0	0	1	1	133
South West	1	25	2	50	1	25	0	0	0	0	4	2	179
West Midlands	0	-	0	-	0	-	0	-	0	-	0	0	123
North West	2	22	5	56	2	22	0	0	0	0	9	5	191
Wales	2	50	1	25	1	25	0	0	0	0	4	5	84
Northern Ireland	1	50	0	0	0	0	0	0	1	50	2	5	44
Scotland	-	-	-	-	-	-	-	-	-	-	-	-	-
United Kingdom	**13**	**27**	**19**	**39**	**14**	**29**	**0**	**0**	**3**	**6**	**49**	**3**	**1685**

* Death from the screen detected breast cancer

Table 126 : 5 year relative survival by region – primary invasive cancers only			
Region	**1997/98**	**1998/99**	**1999/00**
N East, Yorks & Humber	95.7 (93.4,98.0)	94.3 (92.3,96.4)	97.3 (95.7,99.0)
East Midlands	95.2 (92.4,97.9)	95.4 (92.8,98.0)	95.9 (93.5,98.4)
East of England	96.8 (94.3,99.3)	97.4 (95.3,99.5)	96.6 (94.4,98.7)
London	95.1 (92.6,97.5)	97.2 (95.1,99.3)	96.1 (94.0,98.3)
South East (East)	97.4 (95.1,99.6)	96.4 (94.0,98.7)	96.4 (94.1,98.8)
South East (West)	96.2 (93.7,98.8)	96.7 (94.5,99)	96.7 (94.3,99.2)
South West	96.9 (94.6,99.3)	97.6 (95.6,99.6)	97.4 (95.5,99.3)
West Midlands	94.5 (91.9,97.1)	95.4 (93.0,97.8)	94.2 (91.8,96.6)
North West	95.3 (93.1,97.6)	94.6 (92.4,96.8)	97.5 (95.7,99.4)
Wales	94.6 (91.0,98.1)	95.3 (92.2,98.4)	96.1 (93.3,98.9)
Northern Ireland	91.5 (85.1,97.9)	92.1 (86.3,97.8)	93.8 (89.1,98.4)
Scotland	-	94.4 (91.8,97.1)	-
United Kingdom	**95.7 (94.9,96.5)**	**95.8 (95.1,96.5)**	**96.5 (95.8,97.2)**

Table 127 : 5 year relative survival by age for primary invasive cancers			
Age	**1997/98**	**1998/99**	**1999/00**
<50	97.1 (93.7,100.5)	93.1 (88.5,97.7)	94.6 (90.3,99.0)
50-52	96.1 (94.8,97.5)	96.4 (95.2,97.6)	96.1 (94.8,97.4)
53-55	95.2 (93.3,97.1)	92.9 (91.1,94.8)	95.2 (93.6,96.9)
56-58	94.3 (92.2,96.3)	93.8 (92.0,95.7)	95.4 (93.7,97.0)
59-61	96.5 (94.7,98.4)	95.7 (94.1,97.4)	95.8 (94.1,97.5)
62-64	93.5 (91.2,95.8)	96 (94.2,97.8)	96.1 (94.3,97.9)
65+	96.9 (93.6,100.2)	98.9 (97,100.8)	98.9 (96.3,101.6)
All invasive cancers	**95.7 (94.9,96.5)**	**95.8 (95.1,96.5)**	**96.5 (95.8,97.2)**

Table 128 : 5 year relative survival by invasive size for primary invasive cancers			
Size	**1997/98**	**1998/99**	**1999/00**
<10mm	98.8 (97.5,100.1)	99.4 (98.3,100.5)	99.8 (98.7,100.9)
10-<20mm	97.6 (96.6,98.6)	97.4 (96.5,98.3)	98.6 (97.8,99.4)
20-<49mm	90.6 (88.6,92.6)	90.5 (88.7,92.3)	90.4 (88.7,92.2)
50+mm	76.8 (66.9,86.8)	81.2 (72.4,90.0)	73.8 (64,83.6)
Unknown	88.6 (80.9,96.3)	68.8 (56.1,81.4)	86.1 (75.8,96.5)
All invasive cancers	**95.7 (94.9,96.5)**	**95.8 (95.1,96.5)**	**96.5 (95.8,97.2)**

Table 129 : 5 year relative survival by grade for primary invasive cancers			
Grade	**1997/98**	**1998/99**	**1999/00**
I	100.4 (99.5,101.3)	100.2 (99.4,101.0)	101 (100.2,101.8)
II	96.4 (95.3,97.6)	96.1 (95.1,97.1)	97.1 (96.2,98.1)
III	84.9 (82.1,87.7)	86.7 (84.4,89.0)	87.2 (85.0,89.4)
Unknown	88 (77.2,98.9)	99.1 (93.5,104.7)	96.3 (88.9,103.7)
All invasive cancers	**95.7 (94.9,96.5)**	**95.8 (95.1,96.5)**	**96.5 (95.8,97.2)**

Table 130 : 5 year relative survival by nodal status for primary invasive cancers			
Nodal status	**1997/98**	**1998/99**	**1999/00**
Positive	87.6 (85.4,89.9)	89.3 (87.5,91.2)	88 (86.1,89.9)
Negative	98.5 (97.6,99.3)	98.2 (97.4,98.9)	99.2 (98.5,99.8)
Unknown	95.9 (93.9,97.9)	95.4 (93.2,97.7)	98.6 (96.2,101.1)
All invasive cancers	**95.7 (94.9,96.5)**	**95.8 (95.1,96.5)**	**96.5 (95.8,97.2)**

Table 131 : 5 year relative survival by NPI prognostic group for primary invasive cancers			
NPI group	**1997/98**	**1998/99**	**1999/00**
EPG	101 (100,102.1)	100.4 (99.4,101.3)	101.1 (100.2,102)
GPG	99.6 (98.5,100.7)	98.7 (97.7,99.8)	100.2 (99.3,101.1)
MPG1	94.7 (92.7,96.7)	94.7 (93.1,96.4)	96.4 (94.9,98.0)
MPG2	88.6 (85.0,92.2)	89.3 (86.3,92.2)	88.7 (85.8,91.6)
PPG	67.3 (61.1,73.5)	74.8 (70.0,79.6)	70.5 (65.7,75.3)
Unknown	95.5 (93.6,97.3)	95.1 (92.7,97.6)	97.8 (95.6,99.9)
All invasive cancers	**95.7 (94.9,96.5)**	**95.8 (95.1,96.5)**	**96.5 (95.8,97.2)**