Public Health England

ASSOCIATION OF BREAST SURGERY

NHS breast screening programme and Association of Breast Surgery

An audit of screen detected breast cancers for the year April 2015 to March 2016

Public Health England leads the NHS Screening Programmes

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Public Health England, Wellington House, 133-155 Waterloo Road, London SE1 8UG
Tel: 020 7654 8000 | www.gov.uk/phe | Twitter: @PHE_uk
Facebook: www.facebook.com/PublicHealthEngland

About the NHS Breast Screening Programme

Breast screening aims to find breast cancer early, enabling earlier treatment and better informed decisions. This national population screening programme is implemented in the NHS on the advice of the UK National Screening Committee (UK NSC), which makes independent, evidence-based recommendations to ministers in the four UK countries. The Screening Quality Assurance Service ensures programmes are safe and effective by checking that national standards are met. PHE leads the NHS Screening Programmes and hosts the UK NSC secretariat.

PHE Screening, Floor 2, Zone B, Skipton House, 80 London Road, London SE1 6LH
www.gov.uk/topic/population-screening-programmes Twitter: @PHE_Screening Blog: phescreening.blog.gov.uk

Prepared by: NHSBSP and ABS Breast Screening Audit Group For queries relating to this document, please contact: phe.nhsbspabs@nhs.net

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Foreword

The Association of Breast Surgery and PHE are pleased to present the results of the United Kingdom National Health Service Breast Screening Programme audit of screening results and outcomes for the year April 2015 to March 2016 inclusive.

Throughout the UK, staff within breast screening services have gone to tremendous lengths to ensure that the quality of data returned for the main audit is the best possible. Without their diligence and commitment it would not be possible to produce such a detailed and quality report. ABS and PHE gratefully acknowledge their vital contributions.

An accurate and well resourced audit is vital in ensuring that woman receive the highest possible standard of care when entering the breast screening programme. This is a truly nationwide audit and inclusion of data from the Celtic nations remains an essential component of the screening audit. It is pleasing to note the continuing improvement year on year of data quality within the main audit. We hope to extend this standard of data quality to the audit of adjuvant treatment given to women with screen detected breast cancer in future years.

Each clinical strand of the screening programme (surgery, radiology, pathology) has three new key performance indicators (KPIs) for this years audit. The introduction of KPIs to the audit allows for a focussed review of standards at varying points of the breast screening process and the examination of new KPIs in each audit ensures that essential components of the patients care are investigated in detail. Ideas for future KPIs are always welcome and members can contact us via the ABS offices.

I would like to offer my personal thanks to the members of the Screening Audit Group whose ideas and hard work steer this report. In particular I am grateful to Mark Sibbering for his friendship and guidance whilst I settle into my position as his successor.

Mr Ashu Gandhi

Chair, NHSBSP & ABS Breast Screening Audit Group

Acknowledgements

The 2015/16 UK NHS breast screening programme (UK NHSBSP) and Association of Breast Surgery (ABS) audit of screen-detected breast cancers was designed and directed by the NHSBSP and ABS Screening Audit Group:

Mr Ashu Gandhi	Chair of the UK NHSBSP & ABS Screening Audit Group Consultant Surgeon, University Hospital of South Manchester
Dr Pauline Carder	Consultant Histopathologist, Bradford Teaching Hospitals
Ms Shan Cheung	National Audit Project QA Facilitator, SQAS, PHE
Dr Eleanor Cornford	Consultant Radiologist, Nottingham University Hospitals
Mr Giles Cunnick	Consultant Surgeon, Buckinghamshire Hospitals
Dr Rahul Deb	Consultant Histopathologist, Royal Derby Hospital
Prof. David Dodwell	Consultant Clinical Oncology, St James's University Hospital Leeds
Mrs Jacquie Jenkins	National Programme Manager Breast Screening, PHE
Ms Olive Kearins	Head of QA (Midlands and East) and National Lead, Breast Screening QA, PHE
Miss Helen Price	National Audit Project QA Audit Officer, SQAS, PHE
Dr Nisha Sharma	Consultant Radiologist, Leeds Teaching Hospitals
Mr Mark Sibbering	Member, Advisory Committee for Breast Cancer Screening Consultant Surgeon, Royal Derby Hospital

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- clinical and administrative staff working in the NHS breast screening programme
- English Screening Quality Assurance Service Professional and Clinical Advisors and their Celtic country equivalents for the relevant disciplines
- PHE Screening Quality Assurance Service staff working in breast screening and their Celtic country equivalents
- PHE Chief Knowledge Officer Directorate staff in the West Midlands who extracted previous cancer data from the Cancer Analysis System
- NHSBSP National Office for financial support for the organisation and execution of the 2015/16 audit of screen detected breast cancer
- Lucy Davies, Association of Breast Surgery Manager, for providing organisational support to the Audit Group

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Executive summary

Cancer detection

Between 1 April 2015 and 31 March 2016 (2015/16), 2,503,938 women were screened by the UK NHSBSP in England, Northern Ireland, Scotland and Wales. This is a 3.7% increase compared to 2014/15 figures. There has been a steady increase year on year in the numbers of women screened since the start of the audit in 1995.

In 2015/16, approximately nine of every 1,000 women screened were diagnosed with cancer giving a total of 21,466 cancers detected. Of women given a cancer diagnosis, four of every five were diagnosed with invasive lesions and one of five with preinvasive/ microinvasive lesions. This data includes women screened in the English randomised controlled trial of age extension of the NHSBSP evaluating breast screening for women aged 47 to 49, and 71 to 73 years.

The cancer detection rates for small invasive cancers (<15mm in diameter) was 3.6 per 1,000 women screened. This has remained consistent over the past five years
In 2015/16, 1,132 (5%) women diagnosed through breast screening had a previous breast cancer recorded.

Randomised age extension trial

Data for 67 of the 80 breast screening services in England participating in this trial has been included. The number of cancers detected in the age groups 47 to 49 and 71 to 73 (as a proportion of all screen detected cancers) is 5.4% and 6.0% respectively.

Non-operative diagnosis

In 2015/16, 97% of cancers detected in the UK NHSBSP were diagnosed by needle biopsy (ie, non-operatively).

The non-operative diagnosis rate for invasive cancers was 99% with all services meeting both the minimum and target standards.

In 2015/16, 92% of non-invasive cancers were diagnosed non-operatively with needle biopsy. This is a 5% improvement from the preceding year and meets the target standard nationally. However, 14 of 92 UK services did not achieve the minimum standard of 85% of non-invasive cancers diagnosed non-operatively.

Number of assessment clinic visits

Increasing the number of visits to assessment clinic can cause anxiety and distress for women while a non-operative diagnosis is being secured. Keeping these visits to a minimum is an important element of the screening service.

In 2015/16, nine of every 10 women with a screen detected cancer required only one assessment clinic visit to establish a definitive diagnosis.

Diagnostic open biopsies

Continuing improvement in the number of pre-operative diagnoses has resulted in significant drops in operative surgical biopsies. In the current year the overall operative diagnostic biopsy rates was 0.5 for benign biopsies and 0.22 for malignant biopsies per 1,000 women screened. These are the best figures yet produced by the screening programme.

Tumour characteristics

There were 4,382 non-invasive cancers (DCIS & LCIS) and 17,081 invasive breast cancers diagnosed.

Out of 3,771 (98%) DCIS cases that underwent surgical treatment, 37% of tumours were less than 15mm in diameter, 16% were larger than 40mm and 62% were high nuclear grade. A total of 15,826 women (93%) with invasive breast cancer underwent surgical treatment. Of these, 53% had a tumour less than 15mm in maximum diameter and only 2% had a tumour larger than 50mm in diameter.

Axillary nodal status was available for 99% of all women with invasive cancers. 21% were node positive. There continues to be a wide variation of nodal positivity rates between services and this may partially be explained by the use of molecular methods for nodal assessment (which tend to give higher rates of nodal positivity than immunohistochemistry).

Using the Nottingham Prognostic Index to evaluate the clinical prognosis of screen detected tumours shows that 61% of women are diagnosed with good or excellent prognosis cancers.

Optimal multidisciplinary management of women with breast cancer requires knowledge of tumour receptor status. Both oestrogen receptor (ER) and HER2 receptor status were known for over 99% of invasive breast cancer cases. Of these, 92% were ER positive and 10% were HER2 positive.

Surgical treatment

The majority of women (75% of non-invasive cases and 79% of invasive cases) underwent breast conserving surgery as part of their treatment.

Variations in immediate reconstruction rates following mastectomy continue between services with the figures ranging from 4% to 75% for invasive cancers and 13% to 100% for non-invasive cancers. There are likely to be many differing reasons for this variance including differences in local surgical expertise, patient populations and MDT preferences. A more specific and focussed audit could be conducted on this finding in future years. The overall immediate reconstruction rate was 33% in all women undergoing mastectomy. This is similar to the previous years audit.

Neo-adjuvant therapy

The number of women receiving neo-adjuvant (pre-surgical) treatment rose slightly from the previous year to 1,051. Overall, 3% of women received neo-adjuvant chemotherapy and the same number received neo-adjuvant endocrine treatment.

Surgical caseload

During the current audit year, a total of 632 surgeons are recorded as treating women diagnosed with breast cancer within the NHSBSP. National guidance recommends that to maintain quality assurance, surgeons treating breast cancer patients should carry a caseload of 30 cases annually. 81% of women treated with screen detected breast cancer were treated by surgeons that meet this guidance.

Repeat operations

The importance of non-operative diagnosis is highlighted by looking at the numbers of women requiring repeat operations for definitive treatment of their cancer. In women without a non-operative diagnosis, 45% required more than one operation, whereas in those who did have a non-operative diagnosis, the figure was 18%.

In women having breast conserving surgery as their first operation, breast repeat operation rates were 14% for invasive cancers and 19% for non-invasive cancers.

The axilla

There continues to be a high compliance (99%) with guidance that pre-operative axillary ultrasound scans should be undertaken in women with a proven, non-operatively diagnosed, invasive breast cancer. In 17% of all such women, the ultrasound scan

detected an abnormal axillary node and of this group almost all (95%) proceeded to have ultrasound guided biopsy of the abnormal node(s).

The positive predictive value of an abnormal axillary ultrasound assessment is 48%, whilst the negative predictive value of a normal axillary scan is 78%.

Sentinel node biopsy was undertaken in 91% of all women with surgically treated invasive breast cancer with a median retrieval of two nodes. Of these 16% were node positive. In women proceeding directly to node sampling/clearance, 76% of these patients were node positive.

Adjuvant therapy

Due to changes in the audit process in England the quality of the data available for the audit period has reduced. As a result the report can only reliably look at radiotherapy after breast conserving surgery for invasive disease.

For the 2013/14 cases time to radiotherapy is variable and some services struggle to provide timely adjuvant radiotherapy. Only 54% of patients started their radiotherapy treatment within 60 days of final surgery.

Survival

The survival data examines the outcome of the 13,581 women with screen detected invasive breast cancer diagnosed between 1 April 2010 to 31 March 2011. In this cohort, a total of 859 deaths (6%) have occurred, which 43% were due to breast cancer, 26% due to another type of cancer and 26% due to non-cancer causes (unknown cause of death in 4%). The 5-year relative survival for screen detected invasive breast cancer in the UK is 98.8%. Unsurprisingly, survival is negatively affected by size (50mm vs smaller), grade (3 vs others) and nodal status (positive vs negative).

Introduction

Aims and objectives

The 2015/16 UK NHS Breast Screening Programme (NHSBSP) and Association of Breast Surgery (ABS) Audit of screen-detected breast cancer was undertaken to examine UK NHSBSP clinical practice in the period 1 April 2015 to 31 March 2016 and adjuvant therapy undertaken in the period 1 April 2013 to 31 March 2014. The audit is designed to assess clinical performance by comparison of data with as many as possible of the clinical 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, 4th edition, March 2009
- Guidelines for quality assurance visits, NHSBSP Publication No. 40, Revised, October 2000

Organisation of the audit

The format of the audit was designed by the NHSBSP & ABS Screening Audit Group. The organisation of data collection, data evaluation and publication are described in Appendix 1.

Use of the audit data

The annual NHSBSP & ABS Breast Screening Audit data should be used to celebrate high-quality services not just to focus on those not meeting screening QA standards. Achievement of standards and delivery of high quality services should also be recorded and recognised as a tribute to dedicated professionals working within breast services.

Actions following receipt of the audit

At national level

The NHSBSP & ABS Breast Screening Audit data should be considered formally at meetings of the Clinical Professional Groups for Surgery, Radiology and Pathology. This will provide opportunities to recognise areas of good practice and identify areas where breast screening performance could improve. Resultant recommendations for future modification of the audit including any suggested changes to key performance indicators should be communicated to PHE for discussion with the Audit Group by the relevant disciplinary representatives.

At local/sub regional/regional/Celtic country level

The annual NHSBSP & ABS Breast Screening Audit data should be discussed locally at a meeting of the lead breast surgeons as a minimum. Screening Quality Assurance Service (SQAS) staff and the relevant QA professional and clinical advisors should interact with individual screening services to recognise and congratulate high quality performance. When appropriate they should identify recommendations for action if it is confirmed that performance does not meet national screening QA standards and/or key performance indicators (KPIs). Recommendations for action could include training, improvements in the management and/or organisation of services and visits to high performing screening services from whom good practice could be learned.

Your comments

The NHSBSP & ABS Breast Screening Audit has developed over the years, with improvements in design and organisation resulting in improved data quality and increasingly useful results. We wish to continue this development process and your comments and suggestions are welcome.

If you have comments or suggestions about the 2015/16 audit report or the development of future NHSBSP & ABS Breast Screening Audits please contact:

Mr. Ashu Gandhi
Chair, UK NHSBSP & ABS Screening Audit Group
c/o Association of Breast Surgery
The Royal College of Surgeons of England
35-43 Lincoln’s Inn Fields
London WC2A 3PE

E-mail: phe.nhsbspabs@nhs.net

Provision of data for the 2015/16 audit

The map below shows the areas covered by the 8 English QA sub regions and the breast screening information centres in Wales, Scotland and Northern Ireland. There are now four QA regions in England combining the sub regions outside of London:

- London
- Midlands and East (East Midlands, West Midlands and East of England)
- North (North West and North East Yorkshire & Humber)
- South (South West and South East)

Screening service participating in the 2015/16 audit

Screening Units Participating in the NHSBSP & ABS Audit						
Subregion or Celtic Country	Unit code	Unit Name	Women Screened	Total Cancers	Invasive cancers	Non/micro-invasive cancers
East Midlands	CDN	Chesterfield/North Derby	16941	139	112	27
	CDS	Derby	28291	260	202	58
	CLE	Leicester	40740	354	293	61
	CLI	Lincolnshire	38587	310	256	54
	CNN	North Nottingham	11563	87	69	18
	CNO	Nottingham	28766	248	195	53
	KKE	Kettering	15988	142	111	31
	KMK	Milton Keynes	10271	76	70	6
	KNN	Northampton	17346	152	112	40
East of England	DCB	Cambridge & Huntingdon	19425	167	128	39
	DGY	James Paget	10969	89	74	15
	DKL	Kings Lynn	11960	103	88	15
	DNF	Norfolk & Norwich	29150	189	160	29
	DPT	Peterborough	16755	137	116	20
	DSU	East Suffolk	17214	133	100	33
	DSW	West Suffolk	12777	99	77	22
	ELD	Beds & Herts	59705	451	361	90
	FCO	Chelmsford & Colchester	31811	256	202	54
	FEP	Epping	12058	101	89	12
	FSO	South Essex	22361	179	147	32
London	EBA	North London	59130	500	357	143
	ECX	West London	39591	294	225	69
	FBH	Barking, Havering, Redbridge & Brentwood	28744	242	188	54
	FLO	Central & East London	38318	285	235	50
	GCA	South East London	57251	404	300	104
	HWA	South West London	41159	384	279	105
North East, Yorkshire & Humber	AGA	Gateshead	32535	268	222	46
	ANE	Newcastle	38239	310	257	52
	ANT	North Tees	43002	331	263	68
	AWC	North Cumbria	13934	121	94	27
	BHL	Humberside	39332	292	245	47
	BHU	Pennine	42918	377	283	94
	BLE	Leeds Wakefield	44323	338	254	84
	BYO	North Yorkshire	32579	280	228	52
	CBA	Barnsley	9419	73	59	14
	CDO	Doncaster/Bassetlaw	19758	170	143	27
	CRO	Rotherham	10122	60	51	9
	CSH	Sheffield	20625	163	127	36
North West	NCH	Chester	6891	57	50	7
	NCR	Crewe	13563	97	76	21
	NLI	Liverpool	32319	284	229	55
	NMA	East Cheshire	18557	167	128	39
	NWA	Warrington	23804	192	150	42
	NWI	Wirral	17002	159	117	41
	PBO	Bolton	29809	243	180	63
	PLE	East Lancashire	17253	149	123	26
	PLN	North Lancashire/South Cumbria	28428	243	187	56
	PMA	Greater Manchester	41326	410	338	72
	PWI	South Lanacashire	25413	208	185	23

Screening Units Participating in the NHSBSP & ABS Audit						
Subregion or Celtic Country	Unit code	Unit Name	Women Screened	Total Cancers	Invasive cancers	Non/micro-invasive cancers
South East	KHW	Aylesbury & Wycombe	21601	237	176	61
	KOX	Oxford	26490	215	160	55
	KRG	Reading (West Berkshire)	20123	165	134	31
	KWI	Windsor (East Berkshire)	18773	171	142	29
	GBR	Brighton	31520	292	228	64
	GCT1	Canterbury	30655	270	222	48
	GCT2	Maidstone	18521	162	124	38
	GCT3	Medway	25570	223	191	32
	HGU	Guildford	52406	553	422	131
	HWO	Worthing	36217	299	245	54
South West	JBA	North & Mid Hants	24669	206	157	49
	JDO	Dorset	34674	324	264	60
	JIW	Isle of Wight	9739	90	66	24
	JPO	Portsmouth	27817	239	178	61
	JSO	Southampton & Salisbury	33938	319	258	61
	JSW	Wiltshire	25801	205	167	38
	LAV	Avon	48355	475	381	94
	LCO	Cornwall	21948	186	141	45
	LED	East Devon	23513	182	143	39
	LGL	Gloucestershire	29052	264	210	54
	LPL	West Devon	20890	193	153	40
	LSO	Somerset	24605	202	151	51
	LTB	South Devon	13980	136	110	26
West Midlands	MAS	South Staffordshire	25704	236	195	41
	MBS	South Birmingham	12372	106	77	29
	MBW	City, Sandwell & Walsall	39159	284	234	50
	MCO	Warwickshire, Solihull & Coventry	41479	394	311	83
	MDU	Dudley & Wolverhampton	21638	197	157	40
	MHW	Hereford & Worcester	39701	310	248	62
	MSH	Shropshire	22707	222	181	41
	MST	North Staffordshire	20785	191	146	45
Northern Ireland	ZNE	Eastern	23943	224	177	47
	ZNI	Northern	13128	106	90	16
	ZNS	Southern	12834	79	63	16
	ZNW	Western	16091	134	109	25
Scotland*	Unit 1	Edinburgh (South East)	43827	386	320	66
	Unit 2	Dundee (East)	-	-	-	-
	Unit 4	Aberdeen (North East)	20394	214	171	43
	Unit 5	Irvine (South West)	18182	170	138	32
	Unit 7	Inverness (North)	10181	96	81	15
	Unit 8	Glasgow (West)	67140	570	483	87
Wales	WNM	North Wales	30203	321	274	47
	WSE	South Wales	54824	546	429	117
	WSW	West Wales	30767	299	239	60

*East of Scotland did not provide any data

Key performance indicators

As part of the 2015/2016 NHSBSP & ABS Breast Screening Audit, the performance of individual breast screening services was assessed against 12 key performance indicators identified by the clinical representatives on the UK NHSBSP & ABS Breast Screening Audit Group. Three measures were chosen for radiology, pathology, surgery and one for oncology.

Highlighting of outlier performance

Statistical methods allow for identification of services with outlier performance which are unlikely to occur by chance alone. There is a balance to be drawn between setting the confidence limits too narrowly, resulting in a higher chance of incorrectly identifying as outliers those whose performance is no worse than average; and setting the limits too widely, with the risk that sub-standard performance may be missed.

Identification of a service as an ‘outlier’ is not in itself evidence of poor practice, rather a reason to investigate the possible reasons for outlier performance in more detail. Any such investigation should be undertaken in a supportive and collaborative manner, so that best practice is ensured, and be fully documented. Issues of data quality are frequently the cause of outlying event rates.

Throughout the text where services have not achieved or are outliers for a quality assurance (QA) standard or key performance indicator this is highlighted in text boxes.

2017 key performance indicators

Radiology

R1: Recall rates of high risk women in the screening service: no more than 10% of high risk women should be referred for assessment (same as prevalent round recall targets).

R2: Repeat assessment clinic visits: at least 80% of women should have no more than one assessment clinic visit to obtain a non-operative diagnosis of cancer.

R3: Non-operative diagnosis for non-invasive cancers: one-year 95% low outlier services for non-operative diagnosis of non- invasive cancers (excluding LCIS).

Pathology

P1: Invasive cancers with positive ER status: one-year and three-year 99.7% high and low outlier services for positive invasive cancer ER status.

P2: Invasive cancers with positive lymph node status**:** one-year and three-year 99.7% high and low outlier services for lymph node positivity, excluding OSNA centres.

P3: Invasive cancer grade: one-year and three-year 99.7% high and low outlier services for invasive cancer grade status.

Surgery

S1: Re-excision following breast conserving surgery: three-year high outlier services for repeat operation on the breast for invasive cancers where whole tumour size equals invasive size.

S2: Surgical examination of axillary lymph nodes: three-year 95% high outlier services with more than five nodes obtained from node negative invasive cancers (excluding cases with neo-adjuvant therapy).

S3: Mastectomy for non-invasive cancers: three-year 95% high outlier services for mastectomy rate for non-invasive cancers

Oncology

O1: Radiotherapy after breast conserving surgery: one-year high outlier services for invasive cancers treated with breast conserving surgery with no adjuvant radiotherapy or unknown adjuvant radiotherapy

Radiology

Radiology KPI R1	**Recall rates of high risk women in screening service** No more than 10% of high risk women should be referred for assessment

In January 2012, the Advisory Committee on Breast Cancer Screening (ACBCS) agreed practical guidance for the NHS on the surveillance of women of all ages assessed to be at a higher risk of breast cancer. In 2015/2016, 72 out of 80 breast screening services had set up the family history surveillance programme within England. The recall rate for assessment in this cohort was set at <10% as acceptable and <7% as achievable target.

In 2015/16, in the 72 services 4,667 high risk women were screened. The cancer detection rate is 19 per 1,000 women screened. The average recall for assessment rate in England for these high risk women is 11%. This is over the 10% acceptable standard. 35 screening services did not achieve 10% standard.

Care should be exercised when reviewing the data as the numbers included are, as expected, very small.

Sub region	Service	Recall rate of high risk women 2015/16	
		No.	%
East Midlands	CDN	4/22	18.2
East Midlands	KKE	4/37	10.8
East Midlands	KMK	6/25	24.0
East Midlands	KNN	8/40	20.0
East of England	DGY	3/15	20.0
East of England	DSW	4/29	13.8
East of England	FSO	9/65	13.8
London	ECX	15/108	13.9
London	FLO	8/79	10.1
London	HWA	28/159	17.6
NEYH	ANE	20/172	11.6
NEYH	BHL	15/118	12.7
NEYH	BLE	9/75	12.0
NEYH	CDO	5/45	11.1
North West	NCR	4/30	13.3
North West	NWI	6/43	14.0
North West	PBO	23/185	12.4
North West	PLE	8/57	14.0
North West	PLN	8/62	12.9
North West	PMA	16/135	11.9
North West	PWI	13/105	12.4
South East	GBR	13/113	11.5
South East	HGU	39/144	27.1
South East	KHW	12/56	21.4
South East	KOX	23/171	13.5
South East	KWI	7/46	15.2
South West	JIW	3/16	18.8
South West	JPO	10/50	20.0
South West	JSO	14/107	13.1
South West	LAV	7/48	14.6
South West	LED	7/44	15.9
South West	LPL	4/37	10.8
South West	LSO	3/29	10.3
South West	LTB	4/22	18.2
West Midlands	MCO	1/9	11.1
England total		**514/4667**	**11.0**

Radiology KPI R2

Repeat assessment clinic visits
At least 80% of women should have no more than one assessment clinic visit to obtain a non-operative diagnosis of cancer

Recall for assessment following screening mammography can cause anxiety. This will be heightened if repeat assessment visits are required. This KPI applies to services that require more than one visit to the assessment clinic to obtain a B5 or C5 cancer diagnosis, but does not apply to services where women have had further workup following a cancer diagnosis to aid treatment planning.

Of the 87 screening services in the UK (except Scotland), all but one service achieved this KPI.

Sub region	Service	All cancers 2015/16		Invasive 2015/16	Non-invasive 2015/16
		No.	%	%	%
South East	GCT2	113	74.3	89.5	64.7
UK Total		**17365**	**91.5**	**95.2**	**82**

<80%

Radiology KPI R3

Non-operative diagnosis for non-invasive cancers
One-year 95% low outlier services for non-operative diagnosis of non-invasive cancers (excluding LCIS)

Non-operative rates for invasive cancers have been very high but for non-invasive cancers the numbers have been less consistent. This reduces the quality of experience of women being diagnosed with such a condition. This KPI aims to improve non-operative diagnoses for non-invasive cancers.

Four of the 92 UK services were 95% low outliers for this KPI. Two of these services were also low outliers in the previous years audit.

Sub region	Service	Non-invasive exc LCIS 2015/16		All non-invasive 2015/16	Non-invasive exc LCIS 3-year 2013/14-2015/16
		No.	%	%	%
South East	HWO	39	78.0	76.5	85.2
South West	JSW	27	77.1	75.0	82.2
West Midlands	MDU	25	73.5	81.7	80.2
Wales	WSE	89	81.7	73.5	85.2
UK Total		**3565**	**91.8**	**88.4**	**91.4**

99.7% low outlier
95% low outlier

Pathology

Pathology KPI P1

Invasive cancers with positive ER status
One-year and three-year 99.7% high and low outlier services for positive invasive cancer ER status

Oestrogen receptor (ER) status for invasive breast cancers plays an important role in treatment planning and use of endocrine treatment.

There were two 99.7% high outliers for this KPI, however in the previous years audit there were no outliers for this same KPI.

Sub region	Service	2015/16		3-year 2013-16
		No.	%	%
South West	JDO	242	96.0	94.3
South West	JIW	60	98.4	96.5
UK Total		14784	91.8	91.6

99.7% high outlier

Pathology KPI P2

Invasive cancers with positive lymph node status
One-year and three-year 99.7% high and low outlier services for lymph node positivity, excluding OSNA centres

This KPI looks at differences between screening services in axillary lymph node positivity rates. Centres using One Step Nucleic acid Amplification (OSNA) technique, or similar, are excluded from this particular KPI as this method is recognised to produce higher lymph node positivity rates than standard histochemistry.

Of the 92 screening services in the UK, one service was a low outlier for this KPI.

Sub region	Service	2015/16		3-year 2013/14-2015/16
		No.	%	%
North West	NMA	11	9.0	12.9
UK Total		**2636**	**19.7**	**20.1**

99.7% low outlier

Pathology KPI P3

Invasive cancer grade
One-year and three-year 99.7% high and low outlier services for invasive cancer grade status

Invasive cancer grade is a prognostic factor that plays an important role in pre- and post-operative treatment planning.

Of the 92 screening services in the UK, 18 services were outliers for this KPI. This is an increase from the previous years audit and requires follow up. Six of these services were outliers in the previous years audit.

Sub region	Service	Grade 1 2015/16 %	Grade 1 3-year 2013-16 %	Grade 2 2015/16 %	Grade 2 3-year 2013-16 %	Grade 3 2015/16 %	Grade 3 3-year 2013-16 %
East Midlands	KKE	12.1	13.9	70.7	68.7	16.2	17.0
East Midlands	CDN	37.4	39.2	37.4	43.0	24.3	17.5
East of England	DPT	19.3	20.3	68.8	63.3	11.9	16.0
London	FBH	14.5	17.8	60.9	59.0	24.0	22.2
London	EBA	26.9	26.7	59.4	57.6	13.0	14.3
NEYH	ANT	15.4	20.6	65.0	62.8	19.6	16.7
North West	PWI	35.8	36.2	52.6	50.3	11.6	13.5
North West	PLE	30.7	29.9	60.5	58.5	8.8	11.5
Scotland	Unit 5	12.7	18.7	60.3	58.5	25.4	21.6
South East	GBR	19.4	22.8	42.2	44.5	36.5	32.0
South East	HWO	33.2	31.3	44.2	48.3	21.7	19.7
South West	JIW	8.2	9.3	72.1	70.7	19.7	20.0
South West	LPL	31.4	32.9	56.2	52.1	10.2	14.2
South West	LAV	17.4	18.3	63.2	62.4	19.1	19.0
West Midlands	MSH	37.9	31.1	37.3	43.0	23.7	25.2
Northern Ireland	ZNW	12.5	13.2	56.7	56.6	29.8	29.2
Scotland	Unit 1	29.4	27.8	55.7	56.1	12.8	15.2
Wales	WSW	37.8	36.1	46.4	49.7	15.3	13.8
UK Total		**24.9**	**25.1**	**55.3**	**54.4**	**19.2**	**19.4**

99.7% low outlier
99.7% high outlier

Surgery

Surgery KPI S1

Re-excision following breast conserving surgery
Three-year high outlier services for repeat operation on the breast for invasive cancers where whole tumour size equals invasive size.

The presence of non-invasive disease is known to increase the likelihood of further surgery to achieve clear margin. Therefore, in the absence of a non-invasive component, re-excision rates should be lower.

In 2015/16, four services were 95% outliers for this KPI. During the three year period 2013-2016, a total of 13 services were 95% high outliers. These 13 services should examine their results and review areas for potential improvement.

Sub region	Service	3-year 2013-16		2015/16		Previous 2014/15
		No.	%	No.	%	%
East Midlands	CDS	45	17.0	11/102	10.8	16.9
East of England	DPT	27	18.5	10/55	18.2	13.5
East of England	DSW	24	19.7	9/36	25.0	20.4
East of England	ELD	71	14.3	21/180	11.7	11.4
London	ECX	48	13.9	8/100	8.0	15.3
North West	PLE	36	16.2	9/63	14.3	18.3
South East	GCT1	47	15.6	23/111	20.7	12.5
South East	KHW	38	15.7	13/85	15.3	18.2
South West	JSW	40	15.9	14/94	14.9	20.6
South West	LGL	47	17.5	16/102	15.7	18.3
West Midlands	MSH	52	19.3	20/99	20.2	18.0
Northern Ireland	ZNI	20	17.5	8/50	16.0	11.1
Scotland	Unit 1	67	13.7	26/156	16.7	11.1
UK total		**2534**	**10.1**	**796**	**9.3**	**10.0**

99.7% high outlier
95% high outlier

Surgery KPI S2

Surgical examination of axillary lymph nodes
Three-year 95% high outlier services with more than five nodes obtained from node negative invasive cancers (excluding cases with neo-adjuvant therapy)

Unnecessary removal of excessive axillary lymph nodes can cause potentially avoidable morbidity for patients.

In 2013-16, there were 10 services who were 95% high outliers and two of them are higher than the 99.7% control limit. These 10 services should examine their results and review areas for possible improvement. In 2015/16, four services were 95% high outliers for this KPI; two at 99.7% level.

Sub region	Service	3-year 2013-16		2015/16		Previous 2014/15
		No.	%	No.	%	%
East Midlands	CNN	22	15.3	3/43	7.0	18.3
East of England	ELD	71	9.8	26/239	10.9	10.0
East of England	DSW	18	9.3	6/58	10.3	7.7
East of England	FCO	34	7.1	12/146	8.2	6.5
London	ECX	47	9.3	10/146	6.8	10.1
NEYH	ANT	97	17.7	17/191	8.9	9.8
NEYH	BYO	34	6.9	7/158	4.4	8.0
North West	NWA	32	8.9	4/113	3.5	8.7
South East	GBR	54	10.7	7/153	4.6	12.4
South East	GCT3	34	10.7	19/132	14.4	8.2
UK total		**1625**	**4.7**	**442**	**3.7**	**4.6**

99.7% high outlier
95% high outlier

Surgery KPI S3

Mastectomy for non-invasive cancers
Three-year 95% high outlier services for mastectomy rate for non-invasive cancers

This KPI examines mastectomy rates for non-invasive cancers to look at the differences between services. It is recognised that such surgical decisions will have multifactorial and understandable reasons for such variation. However, outlier services may wish to confirm for themselves that there are clinically clear reasons for their figures. In 2013-16, there were eight services which were 95% high outliers.

Sub region	Service	3-year 2013-16		2015/16		Previous 2014/15
		No.	%	No.	%	%
East Midlands	KKE	31	35.2	11/29	37.9	34.5
East Midlands	CDS	58	36.9	24/57	42.1	32.6
NEYH	ANE	55	29.3	13/49	26.5	25.4
NEYH	BYO	53	30.5	16/50	32.0	31.4
EYH	CDO	32	32.7	8/26	30.8	30.3
South West	LSO	42	38.9	13/45	28.9	46.7
West Midlands	MSH	39	33.3	15/40	37.5	37.8
Wales	WSW	62	32.5	16/56	28.6	34.3
UK total		**2741**	**22.7**	**892/4034**	**22.1**	**22.8**

99.7% high outlier
95% high outlier

Oncology

Oncology KPI O1

Radiotherapy after breast conserving surgery
One-year 95% high outlier services for invasive cancers treated with breast conserving surgery with no or unknown adjuvant radiotherapy

Adjuvant radiotherapy is accepted as an essential part of treatment for the majority of women with invasive breast cancers treated by breast conserving surgery. In the 87 screening services in the UK (excluding Scotland), nine services were high outliers for this KPI.

Sub region	Service	2013/14		3-year 2011-14	Previous 2012/13
		No.	%	%	%
East of England	ELD	36	11.7	8.5	5.7
London	EBA	43	15.6	13.6	18.1
London	ECX	25	13.9	6.9	2.0
London	FBH	14	11.6	10.0	6.5
London	FLO	12	11.4	8.3	
South Central	JBA*	13	12.5	6.8	4.1
South East Coast[α]	GBR	20	11.1	9.5	9.1
South East Coast[α]	HGU	43	13.9	9.0	2.4
South East Coast[α]	HWO	27	16.5	10.9	4.0
UK Total		**556**	**4.9**	**3.9**	**3.5**

* Service JBA is located in South West region since 2014/15.
[α] South East Coast region has been renamed as South East since 2014/15.

Summary table of KPI outliers

Sub region - Service	Radiology			Pathology						Surgery			Oncology	Total outlier topics
	R1	R2	R3	P1	P2	P3	P3 - G1	P3 - G2	P3 - G3	S1	S2	S3	O1	
East Midlands - CDN	Y					Y		Y						2
East Midlands - CDS										Y		Y		2
East Midlands - CLE														0
East Midlands - CLI														0
East Midlands - CNN											Y			1
East Midlands - CNO														0
East Midlands - KKE	Y					Y	Y	Y				Y		3
East Midlands - KNN	Y													1
East of England - DCB														0
East of England - DGY	Y													1
East of England - DKL														0
East of England - DNF														0
East of England - DPT						Y		Y		Y				2
East of England - DSU														0
East of England - DSW	Y									Y	Y			3
East of England - ELD										Y	Y		Y	3
East of England - FCO											Y			1
East of England - FEP														0
East of England - FSO	Y													1
London - EBA						Y			Y				Y	2
London - ECX	Y									Y	Y		Y	4
London - FBH						Y	Y						Y	2
London - FLO	Y												Y	2
London - GCA														0
London - HWA	Y													1
NEYH - AGA														0
NEYH - ANE	Y											Y		2
NEYH - ANT						Y		Y			Y			2
NEYH - AWC														0
NEYH - BHL	Y													1
NEYH - BHU														0
NEYH - BLE	Y													1
NEYH - BYO											Y	Y		2
NEYH - CBA														0
NEYH - CDO	Y											Y		2
NEYH - CRO														0
NEYH - CSH														0
North West - NCH														0
North West - NCR	Y													1
North West - NLI														0
North West - NMA					Y									1
North West - NWA											Y			1
North West - NWI	Y													1
North West - PBO	Y													1
North West - PLE	Y					Y			Y	Y				3
North West - PLN	Y													1
North West - PMA	Y													1

Sub region - Service	Radiology			Pathology						Surgery			Oncology	Total outlier topics
	R1	R2	R3	P1	P2	P3	P3 - G1	P3 - G2	P3 - G3	S1	S2	S3	O1	
North West - PWI	Y					Y	Y		Y					2
South West - JBA													Y	1
South West - JIW	Y			Y		Y	Y							3
South West - JPO	Y													1
South West - JSO	Y													1
South East - KHW	Y									Y				2
East Midlands - KMK	Y													1
South East - KOX	Y													1
South East - KRG														0
South East - KWI	Y													1
South East - GBR	Y					Y		Y	Y		Y		Y	4
South East - GCT1										Y				1
South East - GCT2		Y												1
South East - GCT3											Y			1
South East - HGU	Y												Y	2
South East - HWO			Y			Y		Y					Y	3
South West - JDO				Y										1
South West - JSW			Y							Y				2
South West - LAV	Y					Y	Y	Y						2
South West - LCO														0
South West - LED	Y													1
South West - LGL										Y				1
South West - LPL	Y					Y								2
South West - LSO	Y											Y		2
South West - LTB	Y													1
West Midlands - MAS														0
West Midlands - MBS														0
West Midlands - MBW														0
West Midlands - MCO	Y													1
West Midlands - MDU			Y											1
West Midlands - MHW														0
West Midlands - MSH						Y		Y		Y		Y		3
West Midlands - MST														0
Northern Ireland - ZNE1														0
Northern Ireland - ZNI1										Y				1
Northern Ireland - ZNS1														0
Northern Ireland - ZNW1						Y	Y							1
Scotland - Unit 1						Y			Y	Y				2
Scotland - Unit 4														0
Scotland - Unit 5						Y	Y							1
Scotland - Unit 7														0
Scotland - Unit 8														0
Wales - WNM														0
Wales - WSE			Y											1
Wales - WSW						Y	Y					Y		2
United Kingdom	**35**	**1**	**4**	**2**	**1**	**18**	**8**	**8**	**6**	**13**	**10**	**8**	**9**	**101**

Audit results

Cancer detection

- 2,503,938 women were screened by the NHSBSP
- Data is included for 92 screening services (no data was received for East of Scotland Breast Screening Service)

19-year comparison: Number of cancers detected									
Year of data collection	Number of invasive cancers	Number of <15mm cancers	Number of non/ micro-invasive cancers	Total cancers	Number of women screened	Cancer detection rates per 1,000 women screened			
						Invasive	Invasive (<15mm)	Non/ micro-invasive	Total
1995/96	5,496	-	1,332	6,857	-	-	-	-	-
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	4,190	2,080	10,079	1,535,019	5.2	2.7	1.4	6.6
2001/02	7,911	4,244	2,218	10,191	1,507,987	5.2	2.8	1.5	6.8
2002/03	8,931	4,971	2,416	11,593	1,579,165	5.7	3.1	1.5	7.3
2003/04	10,400	5,488	2,868	13,290	1,685,661	6.2	3.3	1.7	7.9
2004/05	11,063	5,869	2,953	14,040	1,748,997	6.3	3.4	1.7	8.0
2005/06	12,600	6,673	3,317	15,944	1,942,449	6.5	3.4	1.7	8.2
2006/07	12,491	6,577	3,337	15,856	1,955,825	6.4	3.4	1.7	8.1
2007/08	13,305	7,005	3,466	16,792	2,042,497	6.5	3.4	1.7	8.2
2008/09	13,532	7,028	3,491	17,045	2,116,588	6.4	3.3	1.6	8.1
2009/10	13,672	7,169	3,333	17,013	2,133,189	6.4	3.4	1.6	8.0
2010/11	14,219	7,314	3,612	17,838	2,221,938	6.4	3.3	1.6	8.0
2011/12	14,911	7,764	3,810	18,745	2,261,942	6.6	3.4	1.7	8.3
2012/13	15,287	7,876	4,024	19,339	2,303,332	6.6	3.4	1.7	8.4
2013/14	16,768	8,626	4,421	21,195	2,447,675	6.9	3.5	1.8	8.7
2014/15*	16,231	8,435	4,378	20,613	2,414,795	6.7	3.5	1.8	8.5
2015/16*	17,081	8,916	4,382	21,466	2,503,938	6.9	3.6	1.8	8.7

* Data from Scotland are absent in 1998/99. West of Scotland screening service data is absent in 2014/15. East of Scotland screening service data absent in 2015/16.

Table 1: Number and rates of cancers detected by year from 1996/97 to present

21,466 new cancers were detected in women of all ages (this includes women with a previous breast cancer diagnosis):

- 17,081 (79.6%) invasive
- 4,237 (19.7%) non-invasive, 145 (0.7%) micro-invasive (three cancers - invasive status unknown).

UK Cancer detection rates:

- all cancers: 8.6 per 1,000 women screened
- small invasive cancers: 3.6 per 1,000 women screened

(<15mm in diameter)

> Five screening services had cancer detection rates for small invasive cancers (<15mm) below 3.0 per 1,000 women screened each year throughout the period 2013–16; 4 of these are significant low outliers in 2015/16. 2 of these 5 services screened fewer than 15,000 women in 2015/16.

Randomised controlled age extension trial in the NHSBSP

This is evaluating breast screening for women aged 47 to 49, and 71 to 73 years in England.

As of 31 March 2016, 67 of 80 screening services in England had started the trial. A further nine services were screening all women aged 47 to 49.

The proportion of cancers diagnosed in the age groups increased as follows from 2010/11 to 2015/16:

- 47-49 years: 2.8% to 5.4%
- 71-73 years: 4.1% to 6.0%

This trial is ongoing and results that would inform decision making regarding routine implementation of breast screening in these age groups are not expected until the 2020s. There is currently no equivalent trial in Northern Ireland, Scotland and Wales.

Previous breast cancer history

1,132 (5%) women had at least 1 previous breast cancer recorded:

- 82% had previous invasive/micro-invasive breast cancer
- 18% had previous non-invasive breast cancer
- the proportion of women with a previous breast cancer increased with age, the proportion for women aged >64 years being 8.1%

Women with a previous breast cancer history are included in the numbers for the cancer detection, diagnostic open biopsies and surgical caseload sections of the report (page 27,31,40). However, they have been excluded from some analyses where previous surgery and/or treatment may confound this years audit figures.

Diagnosis

Non-operative diagnosis

Quality Objective	**To minimise unnecessary surgery (ie to reduce diagnostic open surgical biopsies that prove to be malignant)**
Minimum Standard	**90% of all invasive cancers should have a non-operative pathological diagnosis** **85% of all non-invasive cancers should have a non-operative pathological diagnosis**
Target Standard	**95% of all invasive cancers should have a non-operative pathological diagnosis** **90% of all non-invasive cancers should have a non-operative pathological diagnosis**

(Quality Assurance Guidelines for Surgeons in Breast Cancer Screening, NHSBSP Publication No 20, 4th Edition, March 2009)

For the 20,334 cancers detected in women of all ages in 2015/16:

- 97% had a confirmed non-operative diagnosis by needle biopsy
- 3% did not have a non-operative diagnosis (n=537)
- 10 cases had C5 cytology only to achieve a non-operative diagnosis

For invasive cancers detected in 2015/16 (n=16,161):

- 99% had a confirmed non-operative diagnosis by needle biopsy
- all services met the 90% minimum standard and the 95% target standard

For non-invasive cancers excluding Lobular Carcinoma in Situ (LCIS) detected in 2015/16 (n=4,034):

- 92% had a confirmed non-operative diagnosis by needle biopsy
- 14 services did not meet the 85% minimum standard
- 27 services did not meet the 90% target standard
- one-year low outlier services (2015/16) for non-operative diagnosis of non-invasive cancers (excluding LCIS) have been identified in Radiology KPI R3 (Figure 1, page 18)

When examining variation between screening services for non-operative diagnosis of non-invasive cancers, 4 services were 95% low outliers in 2015/16.

Of these four services, two are 95% low outliers and two are 99.7% low outliers for the three year period 2013-16

The Scottish data did not specify whether non-invasive cases were LCIS or not and therefore it is not possible to calculate non-operative diagnosis rates excluding LCIS.

Core biopsy and surgical outcome

In 2015/16, 109 (1%) cancers had a malignant but B5c categorisation at core biopsy, (ie the invasive status was either not assessable or unknown)

738 (17%) of 4,438 cases diagnosed as non-invasive (B5a) on diagnostic core biopsy were upgraded from non-invasive to invasive cancer at surgery

155 (1%) of 15,231 cancers diagnosed as B5b (invasive) on non-operative diagnostic biopsy were found to have non-invasive or micro-invasive cancer with no associated invasive disease following surgery. The likely causes of this are either that the invasive focus was removed by the core biopsy or incorrect interpretation of the core biopsy as showing invasive disease. These cases require additional audit.

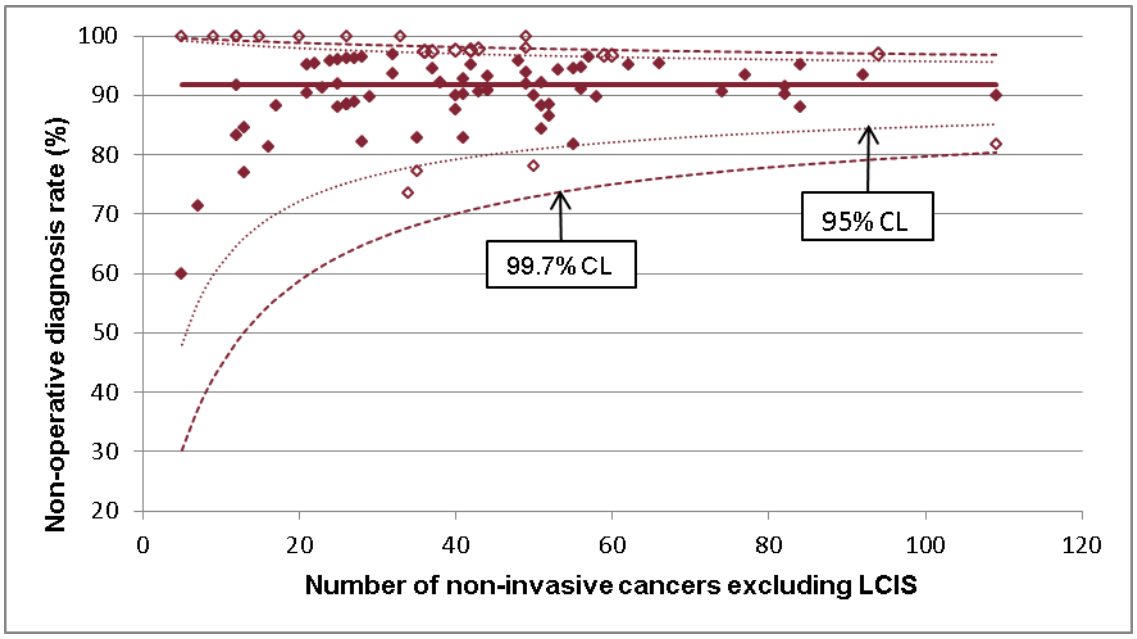

Figure 1: Screening service variation in non operative diagnosis rate of non-invasive cancers (excluding LCIS) (2015/16)

For the three-year period 2013 to 2016: nine services had a non-operative diagnosis rate for non-invasive cancers below 85%. Women with a previous diagnosis of breast cancer are excluded from the above.

Number of assessment clinic visits

It is possible that the drive to increase non-operative diagnosis could lead to increased anxiety, with women having to return to the assessment clinic for repeat diagnostic tests before receiving a definitive diagnosis.

In 2015/16, of the 18,981 women diagnosed with screen detected breast cancer in the UK (excluding Scotland), 17,365 (91%) had one assessment clinic visit to obtain the first malignant diagnosis.

571 (4%) of women with invasive cancer and 513 (13%) of women with non-invasive cancer had more than one visit to obtain a malignant diagnosis.

There was one outlier service in the 2015–16 audit where less than 80% of women with breast cancer had one assessment clinic visit to obtain a malignant diagnosis (Radiology KPI R2 - page 18).

In 2015/16, there were 1,507 (8%) invasive cancers and 403 (2%) non-invasive cancers where a malignant needle biopsy result (either B5 core biopsy or C5 cytology) was obtained at the first visit, but where a repeat needle biopsy was undertaken at a subsequent visit usually to aid surgical planning.

Diagnostic open biopsies

Quality Objective	**To minimise benign diagnostic open surgical biopsies**
Maximum Standard	**<15 per 10,000 prevalent screen (1.5 per 1,000)** **<10 per 10,000 incident screen (1.0 per 1,000)**
Target Standard	**<10 per 10,000 prevalent screen (1.0 per 1,000)** **<7.5 per 10,000 incident screen (0.75 per 1,000)**

(Quality Assurance Guidelines for Surgeons in Breast Cancer Screening, NHSBSP Publication No 20, 4th Edition, March 2009)

In 2015/16, 1,806 diagnostic open biopsies were performed. Of these:

- 69% were benign
- 31% were malignant

Benign open biopsies (n=1,248)

The overall benign biopsy rate has fallen from 1.5 per 1,000 women screened in 1996/97 to 0.5 per 1,000 screened in the current year. This reflects the improvement in non-operative diagnosis. The exact benign biopsy rates for this years audit are:

- 1.31 per 1,000 for prevalent (first) screens
- 0.35 per 1,000 for incident (subsequent) screens

For prevalent (first) screens, 50 services achieved the target standard of 1.0 per 1,000 women, but 30 services performed more biopsies than the maximum standard of 1.5 per 1,000 women (Figure 2).

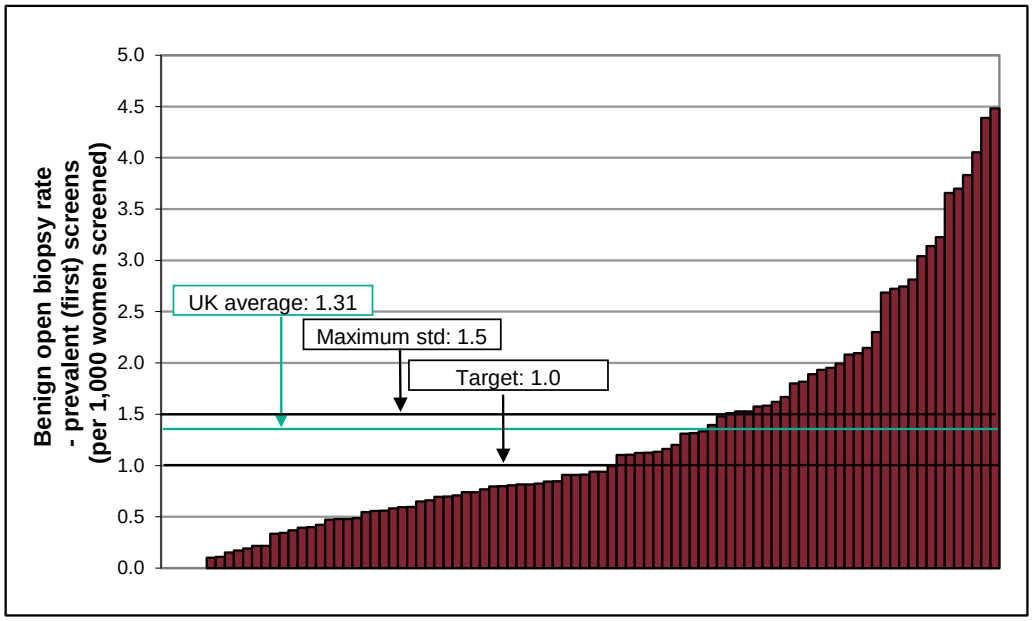

Figure 2: Variation between screening services in benign diagnostic open biopsy rates for prevalent (first) screens expressed as the number of diagnostic open biopsies undertaken per 1,000 women screened (2015/16)

For incident (subsequent screens after the first one) screens, 90 services achieved the target standard of 0.75 per 1,000 women, and one service performed more biopsies than the maximum standard of 1.0 per 1,000 women.

Malignant open biopsies (n=558)

The overall malignant open biopsy rate has fallen from 2.04 per 1,000 women screened in 1996/97 to 0.22 per 1,000 in the current year. Of the cases undergoing a malignant open biopsy.

122 were invasive cancers:

- 51 had a suspicious needle biopsy result (either B4 core biopsy or C4 cytology)
- 59 had an equivocal needle biopsy result (either B3 core biopsy or C3 cytology)
- six cases were B2/C2, 4 had no non-operative diagnosis results, 2 were B1/C1

435 were non-invasive/micro-invasive:

- 117 had a suspicious (B4/C4) needle biopsy result
- 295 had an equivocal (B3/C3) needle biopsy result
- 11 cases were B2/C2, 7 were B1/C1 and 5 had no non-operative diagnosis

Of 355 cancers which had B3/C3 non-operative results, 92 (26%) had only LCIS in the surgical specimen, and in one case the invasive status was unknown.

Tumour characteristics

Non-invasive cancers (n=4,034)

- 3,883 (96%) were Ductal Carcinoma in Situ (DCIS)
- 151 (4%) were Lobular Carcinoma in Situ (LCIS) only at surgery

Ductal Carcinoma in Situ (n=3,883)

- 3,771 (97%) underwent surgical treatment

Size:

- 95% had complete information on size, with 170 cases where size was unknown
- For 18 cases (0.5%) the size was not assessable
- In 174 cases (5%) no evidence of DCIS was found in the surgical specimen. In these cases the DCIS was presumably removed on the diagnostic needle biopsy. Each of these cases must be reviewed by the screening services involved.
- 37% were less than 15mm in diameter
- 16% were larger than 40mm

Grade:

- 99% had complete information on grade
- 62% were high nuclear grade
- 29% were intermediate nuclear grade
- 8% were low nuclear grade

In 2015/16, 20 services had significantly higher and 11 services had significantly lower proportions of high nuclear grade DCIS than the national average of 59% (95% confidence intervals).

Nodal status

Axillary staging surgery is not routinely recommended for patients having treatment for DCIS alone. It may be considered in patients at high risk of occult invasive disease, for example, cases with micro-invasion on core biopsy or mass lesion on radiology.

966 (26%) of the 3,771 surgically treated cases of DCIS had known nodal status:

- 89% (791/886) of women with DCIS treated with mastectomy had known nodal status
- 6% (175/2,883) of women with DCIS treated with breast conserving surgery had known nodal status
- eight had positive nodal status recorded (seven mastectomy, one breast conserving surgery)

In 2015/16, nodal status was known for more than 10% of DCIS treated by breast conserving surgery in 20 services and for more than 20% in 2 services.

Nodal status was known for 100% of cases of DCIS treated by mastectomy in 45 services and for less than 60% in five services.

Receptor status

- oestrogen receptor (ER) status was known for 1,303 (34%) of DCIS cases
- proportion of DCIS with ER status varied widely between services from 0 to 100%
- 83% of the DCIS cases with known ER status were ER positive
- progesterone receptor (PR) status was known for 17% of DCIS cases

Lobular Carcinoma in Situ (n=151) only at surgery

- 91 (60%) had a C3 or B3 non-operative diagnosis
- 55 (36%) had a B5a non-operative diagnosis
- 143 (95%) were treated with breast conserving surgery
- six were treated with mastectomy (5 B5a and 1 B3 on core biopsy)
- seven cases had 2 or more operations to the breast.
- six cases had axillary operations (4 B5a, 1 B5b and 1 B3 on core biopsy)

Invasive cancer (n=16,161)

- 15,826 invasive cancers (98%) were surgically treated

Size

- 8,434 (53%) had an invasive tumour diameter < 15mm
- 298 cases (2%) had an invasive tumour diameter > 50mm
- Whole tumour size was not provided for 199 (1%) cancers

Grade

- 25% grade 1
- 55% grade 2
- 19% grade 3
- grade was not assessable for 47 (0.3%) cancers and unknown for 48 (0.3%) cancers

There were 18 services which were 99.7% high or low outliers for invasive cancer grade for the 2015/16 audit and also over the period 2013-2016 (Pathology KPI P3 - page 20).

Nodal status:

- 15,663 (99%) had known nodal status (163 cases unknown)
- Overall, including all screening services, 21% were node positive (n=3,249)
- rates of node positivity varied from 9% to 34% in individual services
- 1,984 (13%) had one positive node at the first axillary operation
  - 713 (37%) contained micrometastasis
  - 1,114 (57%) contained macrometastasis

Excluding services using molecular assays (e.g. OSNA) for sentinel node assessment, there was one service which was a low outlier (99.7% C.I.) for positive nodal status for 2015/16 and 2013-2016 (Pathology KPI P2 - page 20)

It is known from previous audit that a number of the high outlier services are served by hospitals known to use molecular methods for nodal assessment, with higher rates of positive nodes containing micrometastases.

Nottingham Prognostic Index

The Nottingham Prognostic Index (NPI) may be used to estimate the prognosis of surgically treated invasive breast cancers.

For surgically treated invasive cancers (with no known neoadjuvant therapy) the NPI could be calculated for 14,678 (98%) but is unknown for 328 cases.

- 21% excellent prognostic group (EPG)
- 40% good prognostic group (GPG)
- 35% moderate prognostic group (MPG)
- 5% poor prognostic group (PPG)

Six screening services have over 5% of cases with unknown Nottingham Prognostic Index.

From 2015/16, three services were 95% high outliers for poor prognosis (PPG) cancers, two of which were also 95% low outliers for excellent/good prognosis (EPG/GPG) cancers.

Receptor status

Of the 16,161 invasive cancers, ER status was unknown for 64 (0.4%)
Of the 16,097 invasive cancers with known ER status, 92% were ER positive

In 2015/16, 4 screening services were high outliers for numbers of ER-positive invasive cancers diagnosed (99.7% C.I.). 2 of these were also outliers for the 3-year period 2013–16 (Pathology KPI P1 - page 19).

Progesterone receptor PR status was known for 9,534 (59%) of invasive cancers:

- 77% were positive

Of the 1,313 invasive cancers with negative ER status

- 81% had known PR status
- 4% were PR positive

HER2 status data were available for 99% (15,956 cases) of invasive cancers
34 services had complete HER2 status for all their invasive cancers

Of the invasive cancers with known HER2 status, 10% were positive, 88% were negative and 1% were borderline on immunohistochemistry. Borderline cases will usually undergo fluorescence in situ hybridization (FISH) testing. These 1% borderline cases include cases with HER2 test 2+ (borderline) without/awaiting FISH test results and cases which were HER2 FISH test borderline

Surgical treatment

Type of surgery

The data below exclude women with a previous diagnosis of breast cancer.

4,034 non-invasive cancers (including LCIS):

- 3,026 (75%) treated with breast conserving surgery
- 892 (22%) treated with mastectomy
- 114 had no surgery recorded within the audit period
- eight high outlier services (2015/16) for mastectomy rate for non-invasive cancers have been identified in Surgery KPI S3 - page 23

16,161 invasive breast cancers:

- 12,833 (79%) of patients had breast conserving surgery (12 had axillary surgery only)
- 2,981 (18%) had mastectomy
- 335 (2%) had no surgery recorded within the audit period (61% of these women had neo-adjuvant therapy)

Small (<15mm invasive size) invasive cancers (n= 8,461)

- 12% had mastectomy
- The presence of non-invasive disease which extends beyond the invasive lesion appears to account for a proportion of the mastectomies performed on small invasive cancers.

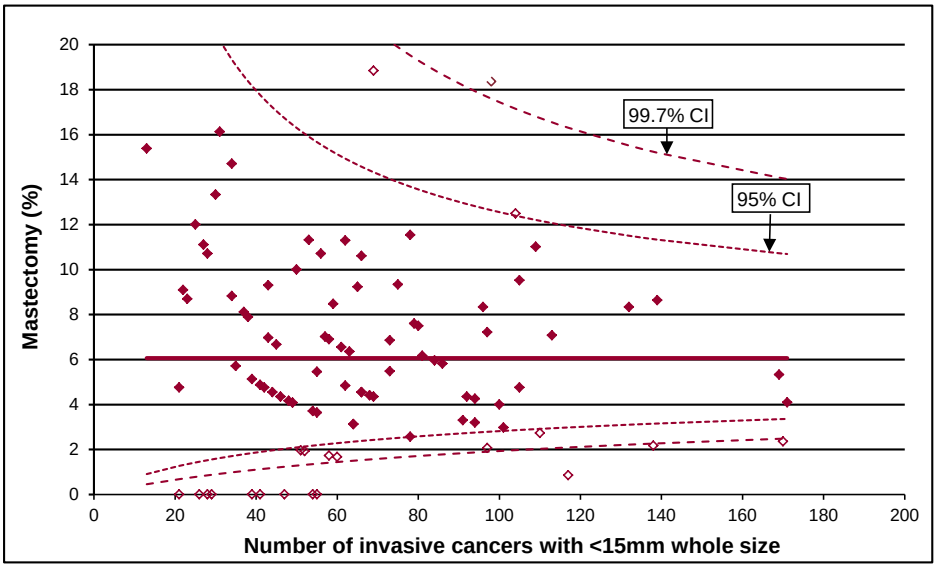

Figure 3: Screening service variation in proportion of mastectomies for whole tumour size <15mm (2015/16)

Whole tumour size refers to size of invasive component plus size of surrounding non-invasive component:

- 6% of cancers with whole tumour size <15mm were treated with mastectomy (Figure 3)
- 79% of small invasive (<15mm) cancers, but with whole tumour diameter >50mm due to surrounding non-invasive disease, were treated with mastectomy

From 2013–16, five services had significantly higher mastectomy rates for small <15mm whole size cancers and twelve had significantly lower rates at 95% confidence level.

Immediate breast reconstruction

- immediate reconstruction was recorded for 33% of cases undergoing mastectomy
- immediate reconstruction rates after mastectomy were almost twice as high for non-invasive cancers (52%) compared to invasive cancers (27%)

IMMEDIATE RECONSTRUCTION RATES FOR BREAST CANCER PATIENTS TREATED BY MASTECTOMY

Invasive status	2011/12	2012/13	2013/14	2014/15	2015/16
Invasive	23%	24%	24%	27%	27%
Non/micro-invasive	42%	44%	47%	54%	52%
Overall	**27%**	**29%**	**30%**	**34%**	**33%**

Table 2. Rate of mastectomies with immediate reconstruction by invasive status

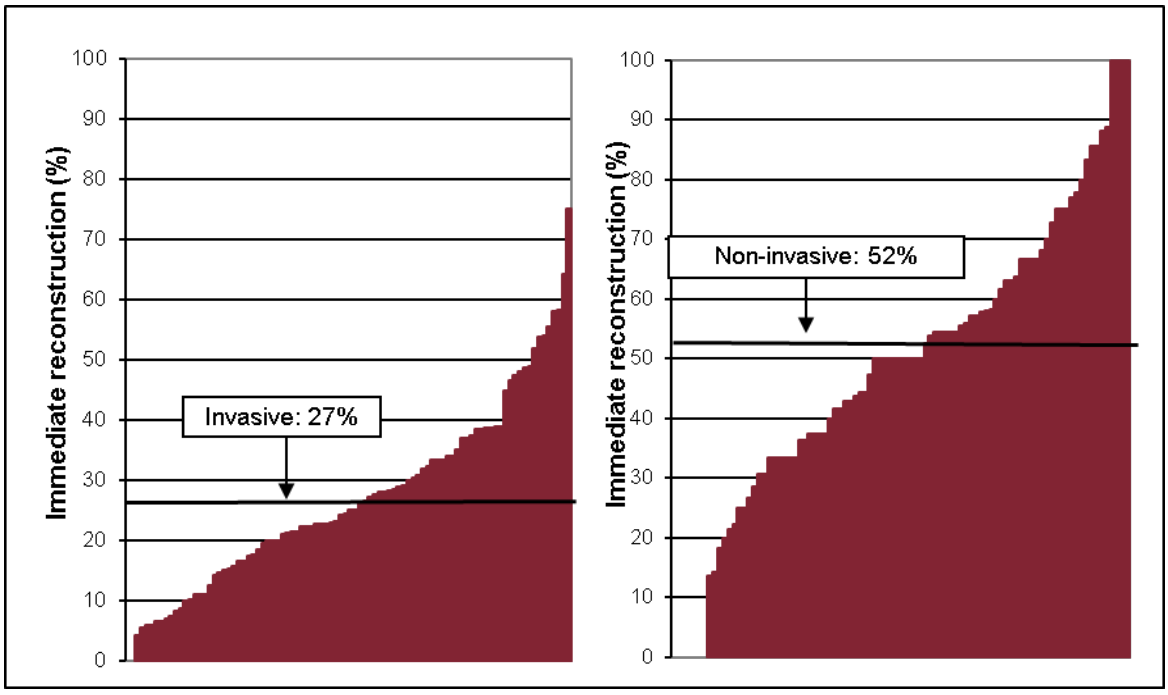

Figure 4: Variation between screening services in immediate reconstruction rates for invasive (left) and non-invasive cancers (right) (2015/16)

- for invasive cancers, breast service immediate reconstruction rates varied from 0 to 75% (Figure 4)
- for non-invasive cancers, breast service immediate reconstruction rates varied 0 to 100%

Neo-adjuvant therapy

1,051 women received neo-adjuvant therapy:

- 1,024 (97%) had invasive breast cancer
- 27 (2%) had micro/non-invasive breast cancer (predominantly endocrine therapy)

61% of the 335 women with invasive breast cancer who did not have surgery up to the end of the follow up period had neo-adjuvant therapy recorded.

Neo-adjuvant endocrine therapy was used in 560 (3%) of women:

- 158 (28%) of these women had no surgery in the audit period
- 96% had cancers that were ER and/or PR positive
- 8 cancers were recorded to be ER and PR negative
- 48 of 675 women (7%) aged more than 75 years had neo-adjuvant endocrine treatment (of these 48 women, 22 had surgery within the follow-up period)

Neo-adjuvant chemotherapy is recorded for 522 (3%) of invasive cancers:

- in this group, there were no cases that were 20mm or less on ultrasound, or which were grade one or did not have a B5 or C5 lymph node biopsy result.
- 53 women with invasive cancer were recorded as having received neo-adjuvant trastuzumab (of these, 11 women (21%) had no neo-adjuvant chemotherapy recorded)

Surgical caseload

Quality Objective	**To ensure specialist surgical care**
Outcome Measure	**Breast cancer surgery should be performed only by surgeons with a specialist interest in breast disease (defined as at least 30 surgically treated cases per annum [screening and symptomatic]). Each surgeon involved in the NHSBSP should maintain a surgical caseload of at least 10 screen-detected cancers per year averaged over a three-year period**

(Quality Assurance Guidelines for Surgeons in Breast Cancer Screening, NHSBSP Publication No 20, 4th Edition, March 2009)

In 2015/16, 632 consultant breast surgeons treated women diagnosed in the NHSBSP:

- 81% of women were treated by a surgeon with a screening caseload of more than 30 cases
- 133 surgeons treated fewer than 10 screen-detected cases (Table 55 of Appendix 2)
  - 21 of these surgeons had a symptomatic caseload of more than 30 cases
  - 22 (17%) either joined or left the NHSBSP during 2015/16

From April 2013 to March 2016, 792 surgeons treated women diagnosed in the NHSBSP:

- 289 surgeons (36%) had an annual average caseload of fewer than 10 cases:
- the highest proportions of surgeons with a screening caseload of fewer than 10 screening cases per year were in London (50%) and Scotland (48%)
- 35 (12%) of these treated more than 30 symptomatic breast cancers per year
- 19 (7%) either joined or left the NHSBSP
- 20 surgeons were plastic surgeons
- information was unavailable to explain the low caseload of 63 surgeons, treating a total of 380 women

Repeat operations

3,799 (19%) surgically treated breast cancers had more than one operation.

Of 534 surgically treated breast cancers without a non-operative diagnosis:

- 242 (45%) had more than 1 operation this includes further breast or axillary surgery
- 80% of invasive cancers and 36% of non/micro-invasive cancers without a non-operative diagnosis had a repeat operation
- repeat operations for cancers without a non-operative diagnosis formed only 3% of all repeat operations

Of 19,350 surgically treated breast cancers with a non-operative diagnosis:

- 3,557 (18%) had more than 1 operation this includes further breast or axillary surgery
- 18% of invasive cancers and 20% of non/micro-invasive cancers had more than 1 operation
- 32 cases (0.2% of surgically treated cancers with a non-operative diagnosis) initially treated by therapeutic breast conserving surgery had more than 3 therapeutic operations

743 invasive cancers had a B5a (non-invasive) core biopsy result:

- the repeat operation rate was 60%
- 190 (26%) had the first axillary operation preformed at the repeat operation

Quality objective	**To minimise the number of therapeutic operations in women undergoing conservation surgery for an invasive cancer**
Minimum standard	**> 95% of patients should have 3 or fewer operations**
Target standard	**100% of patients should have 3 or fewer operations**

(Quality Assurance Guidelines for Surgeons in Breast Cancer Screening, NHSBSP Publication No 20, 4th Edition, March 2009)

Of the 13,261 women who had breast conserving surgery as the first operation for an invasive cancer:

- the repeat operation rate was 19% (any type of operations)
- the breast repeat operation rate was 14% (n=1,904)
- 13,238 (99.8%) had 3 or fewer breast operations

In 2015/16, all screening services have achieved the >95% minimum standard for 3 or fewer operations, and 73 screening services achieved the 100% target.

Of the 9,816 surgically treated invasive cancers without non-invasive component (whole tumour size = invasive size), excluding neo-adjuvant treatment cases, 8,520 had breast conserving surgery as the first operation of which 1,118 (13%) required a repeat operation to the breast.

Of the 3,207 non-invasive cancers treated by breast conserving surgery, 614 (19%) required a repeat breast operation to obtain clear margins.

In 2013-16, 18 services had significantly lower repeat operation rates to the breast for invasive cancers without non-invasive component and 15 had significantly higher rates at 95% confidence level (Surgery KPI S1 - page 22).

Axilla

Non-operative assessment

Quality objective	**To increase the non-operative diagnosis of axillary node metastases**
Target standard	**All patients diagnosed with invasive breast cancer undergoing surgical treatment should have a pre-operative axillary ultrasound scan, and if appropriate fine needle aspiration (FNA) or core biopsy should be carried out**

(Quality Assurance Guidelines for Surgeons in Breast Cancer Screening, NHSBSP Publication No 20, 4th Edition, March 2009)

A total of 14,163 cancers in the UK (data excludes Scotland) had a non-operative diagnosis of invasive cancer on core biopsy (B5b): 14,020 (99%) had an axillary ultrasound recorded:

- 11,637 (83%) had a normal ultrasound result
- 2,360 (17%) had an abnormal ultrasound result (2,238 [95%] cases with an abnormal axillary ultrasound had a biopsy of an axillary node)

917 (6.5%) women with a non-operative diagnosis of the invasive cancer also had a non-operative confirmation of axillary lymph node metastasis.

2,055 invasive cancers cases had an abnormal axillary ultrasound (excluding neo-adjuvant therapy cases):1,948 had axillary surgery and 944 had one or more positive node obtained, giving a positive predictive value (probability of being node positive) of an abnormal ultrasound of 48%.

11,806 invasive cancers cases had a normal axillary ultrasound (excluding neo-adjuvant therapy cases):10,996 had axillary surgery and 9,253 had only negative nodes obtained, giving a negative predictive value (probability of being node negative) of a normal ultrasound of 78%.

Axillary surgery

Quality Objective	**To ensure adequate staging of the axilla in patients with invasive breast cancer**
Minimum Standard	**>90% of women treated for early invasive cancers should have an axillary staging procedure carried out if metastatic nodal metastasis is not confirmed non-operatively**
Target Standard	**100% of women treated for early invasive cancers should have an axillary staging procedure carried out if metastatic nodal metastasis is not confirmed non-operatively**

(Quality Assurance Guidelines for Surgeons in Breast Cancer Screening, NHSBSP Publication No 20, 4th Edition, March 2009)

In 2015/16 in the UK, of the 15,826 surgically treated invasive cancers:

- 15,679 (99%) had an axillary operation
- 15,663 (99%) had known nodal status
- 163 cases had unknown nodal status
- 20 cases had an axillary operation but the nodal status is unknown (16 cases: No nodes harvested; four cases: Unknown number)
- 65 cases had < 4 nodes obtained from sampling or clearance without sentinel lymph node biopsy (SLNB)

Of the 15,663 invasive cancers with known nodal status:

- 3,249 (21%) were node positive
- 717 (5%) were known to only have micro-metastases

Quality Objective	**To minimise morbidity from axillary surgery to obtain staging information**
Outcome Measure	**Sentinel node biopsy using the combined blue dye/radioisotope technique is a recommended axillary staging procedure for the majority of patients with early invasive breast cancer**

(Quality Assurance Guidelines for Surgeons in Breast Cancer Screening, NHSBSP Publication No 20, 4th Edition, March 2009)

14,342 (91%) had sentinel lymph node biopsy (SLNB):

- Median number of nodes taken: 2 nodes
- 2,238 (16%) were node positive
- 87% used isotope and blue dye
- 7% used isotope only
- 6% used blue dye only

1,337 (9%) had sampling or clearance without SLNB:

- 1,011 (76%) were node positive

Of the 15,663 invasive cancers with known nodal status: 14,846 (95%) had 1 axillary operation:

- 255 had a SLNB and sampling at the same operation (data excludes Scotland)
- 204 had a SLNB and clearance at the same operation (data excludes Scotland)
  - Of the 227 cases which had samping without SLNB, median: five nodes taken
  - Of the 1,104 cases which had clearance without SLNB, median:15 nodes taken
  - 813 (5%) had 2 or more axillary operations, 94% had positive nodes at the first axillary operation (data excludes Scotland)

Of the 16,161 invasive cancers: 27 cases had no nodes harvested at the first axillary operation (10 had a repeat axillary operation)

Of the 15,006 surgically treated invasive cancers without neo-adjuvant therapy:

- 442 (3%) of node negative invasive cancers had more than five nodes examined

Four services were 95% high outliers for KPI S2 in 2015/16.

Six services were 99.7% high outlier for KPI S2 in 2015/16.

Of the 136 surgically treated micro-invasive cancers: 74 (54%) had known nodal status:

- 93% treated with mastectomy had known nodal status
- 39% treated with breast conserving surgery had known nodal status

Of the 3,918 surgically treated non-invasive cancers:

- 972 (25%) had known nodal status
  - 89% treated with mastectomy had known nodal status
  - 6% treated with breast conserving surgery had known nodal status
  - 8 had positive nodal status recorded
- 942 (24%) had sentinel lymph node biopsy:
  - 89% treated with mastectomy had known nodal status
  - 6 cases had mastectomy and axillary clearance

Of the 3,026 non-invasive cancers treated with breast conserving surgery:

- 172 (6%) had axillary operations

Adjuvant Therapy

The adjuvant data audit, by convention, has been a year behind the main audit covering diagnostic and surgical interventions. Due to the reasons discussed below, 2013/14 adjuvant data was not available for presentation in the 2016 booklet and is presented this year.

The adjuvant audit for 2013/14 represented a transition from the use of manually collected data through SQAS to the use of 'routinely collected data' held by Public Health England (PHE) within the Cancer Analysis System (CAS). The sources for this include basic cancer registration data, the radiotherapy dataset (RTDS) and the national chemotherapy database (SACT) and the Cancer Outcomes and Services Dataset (COSD). A reduction in capacity resulted in reduced available resources and manpower with no option to continue with 'manual' data collection.

There were issues with the older 'manual' method of data collection. Scotland did not provide data for the adjuvant audit and some UK regions struggled to provide reasonably complete data which, in some circumstances, was supplemented with cancer registry data or data from other sources. Manual data entry performed by staff in screening services was a significant and often unwelcome burden fully dependent on motivated individuals who took on this responsibility. In addition, the distinction between an adjuvant treatment definitely not given (no) and the uncertainty as to whether an adjuvant treatment was given or not (unknown) was perhaps not made sufficiently prominent in previous years.

Unfortunately data completeness has decreased because of the transition between manual and passive data collection, and this has weakened the objectives of the audit to a significant degree. Data completeness is approximately 30-35% for systemic therapy and 95% for radiotherapy after breast conserving surgery (BCS). Therefore, the only area where data completeness is perhaps sufficient to conduct meaningful audit is radiotherapy after BCS for invasive disease (95%). Only Wales and Northern Ireland have very low data incompleteness.

The tables in Appendix 3 provide data for adjuvant therapies but the audit along with the associated outlier management is confined solely to the use of radiotherapy after breast conserving surgery.

As in previous years, the audit reports the number of patients who had a prior diagnosis of any cancer. This is around 10% of the total. Around a half of this group had a prior breast cancer and clearly previous surgical and adjuvant therapy will affect adjuvant therapy decisions for the screen-detected index breast cancer. The tables in Appendix 3 reveal a decreased use of adjuvant therapies in this group.

Time to radiotherapy is variable and it is clear that some services continue to struggle to provide timely adjuvant radiotherapy.

Of the 8,194 invasive cancer patients who had radiotherapy after an operation (excluding cases with chemotherapy):

- 54% of patients started their radiotherapy treatment within 60 days of final surgery; ranging from 3% in a service with 144 cases to 98% in a service with 48 cases
- Only 17 services had at least 80% of their patients starting their radiotherapy treatment within 60 days of final surgery
- 93% started their radiotherapy treatment within 90 days of final surgery; ranging from 69% in a service with 77 cases to 100% in 8 services

Five services are higher than 99.7% control limits and another four are higher 95% control limits for no or unknown radiotherapy after BCS for invasive disease (Oncology KPI O1 - page 24). These services need to review their data handling to identify whether the apparent low use of radiotherapy is a data problem or a governance concern. Most of these services have previously recorded lower than expected radiotherapy use.

Survival

Of the 17,768 women with breast cancer submitted to the survival audit for the period 1 April 2010 to 31 March 2011, 17,007 (96%) were eligible for inclusion in the analyses.

Of the 13,581 women with invasive breast cancer (followed-up to 31 March 2015):

- deaths were recorded for 859 (6%)
  - 43% were due to breast cancer
  - 26% due to another type of cancer
  - 26% to non-cancer related causes
  - 4% had an unknown cause
- the UK 5-year relative survival is 98.8% for invasive cancers
- East of England has a statistically significantly higher survival rates than the UK average

The five-year relative survival rates were strongly influenced by:

- size: 101% survival for tumours less than 15mm to 89% for tumours larger than 50m
- grade: 101% for grade one, 100% for grade two and 94% for grade three tumours
- nodal status: 96% for node positive cases, 100% for node negative cases

Appendix 1

Organisation of the audit

The format of the audit was designed by the UK NHSBSP & ABS Screening Audit Group.

Organisation of data collection

The audit includes:

- the main audit: women that were offered a screening appointment in the period 1 April 2015 to 31 March 2016, followed up until November 2016
- the adjuvant therapy audit: women that were offered a screening appointment in the period 1 April 2013 to 31 March 2014, followed up until March 2015
- the survival audit: women screened during the period 1 April 2010 to 31 March 2011, followed up until March 2016

The responsibility for English regional and Celtic country data collection for the main audit was devolved to Screening QA Services (SQAS). Data for the adjuvant and survival audit are obtained from the Cancer Analysis System within Public Health England (PHE). The format of the audits was designed by the UK NHSBSP & ABS Screening Audit Group and was subject to comment from surgery, radiology and pathology Professional and Clinical Advisors (PCAs) and Senior QA advisors in order to ensure that, as far as possible, ambiguities were eliminated. Guidance notes and data collection forms can be requested from phe.nhsbspabs@nhs.net. Data analyses were carried out by audit staff within SQAS. Control charts with Wilson-score control limits are used in this audit report to demonstrate the differences in proportions between screening units. For the survival audit, cumulative relative survival probabilities for women in the general UK population were calculated using the Ederer II method with probability of life tables supplied by the Government's Actuary Department.

Unit level data

Data for 92 screening units were included in the 2015/16 NHSBSP & ABS Breast Screening Audit. No data were received for the East of Scotland Breast Screening Service.

Responsibility for data collection

NHSBSP & ABS Breast Screening Audit information packs were sent to SQAS staff in QA offices in England, and to breast screening information centres in Northern Ireland, Scotland and Wales. In each English sub-region and Celtic country, SQAS staff and PCAs and their Celtic country equivalents were responsible for ensuring that data were collected from their breast screening units. Lead surgeons in each breast unit were responsible for making sure that the data were available and complete, and were asked to give confirmation to their Senior QA Advisor that the data for their unit were a fair representation of screening activity in the audit period (i.e. to 'sign off' the data). SQAS staff were given the responsibility of ensuring that all the data were signed off before submission. The identification of individuals with responsibility for ensuring that data are gathered and are a true reflection of clinical work is intended to clarify ownership of the information required for the audit. Ownership of the information is essential if a need for change is highlighted and change implemented. Data were submitted to the West Midlands SQAS Office for collation and evaluation.

Data evaluation

The West Midlands SQAS Office, guided by the NHSBSP & ABS Screening Audit Group, collated national data. Extensive validation checks were used to ensure that the data were an accurate reflection of clinical activity in the UK NHSBSP. Commentary and recommendations were made by the NHSBSP & ABS Screening Audit Group.

Publication of audit data

The NHSBSP & ABS 2014/15 Breast Screening Audit is published in electronic format (pdf) only. Once published, the booklet will be available to download from the Association of Breast Surgery website: www.associationofbreastsurgery.org.uk.

Referencing this document

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Appendix 2: Main audit data tables (1 - 93)

Data from the 2015/6 audit of screen-detected breast cancers in women of all ages for the period 1 April 2015 – 31 March 2016

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

Sub-region	Invasive		Invasive (<15mm)		Micro-invasive		Non-invasive		Status unknown		Total		Total women screened	Micro/ Non-invasive cancer rate	Invasive cancer rate	Invasive <15mm rate
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%				
East Midlands	1420	80	797	45	9	1	339	19	0	0	1768	100	208493	1.7	6.8	3.8
East of England	1542	81	850	45	16	1	345	18	1	0	1904	100	244185	1.5	6.3	3.5
London	1584	75	708	34	18	1	507	24	0	0	2109	100	264193	2.0	6.0	2.7
N East, Yorks & Humber	2226	80	1187	43	15	1	541	19	1	0	2783	100	346786	1.6	6.4	3.4
North West	1763	80	924	42	21	1	424	19	1	0	2209	100	254365	1.7	6.9	3.6
South East	2044	79	1026	40	20	1	523	20	0	0	2587	100	281876	1.9	7.3	3.6
South West	2379	79	1239	41	22	1	620	21	0	0	3021	100	338981	1.9	7.0	3.7
West Midlands	1549	80	821	42	11	1	380	20	0	0	1940	100	223545	1.7	6.9	3.7
Northern Ireland	439	81	225	41	3	1	101	19	0	0	543	100	65996	1.6	6.7	3.4
Scotland	1193	83	642	45	4	0	239	17	0	0	1436	100	159724	1.5	7.5	4.0
Wales	942	81	497	43	6	1	218	19	0	0	1166	100	115794	1.9	8.1	4.3
United Kingdom	**17081**	**80**	**8916**	**42**	**145**	**1**	**4237**	**20**	**3**	**0**	**21466**	**100**	**2503938**	**1.8**	**6.8**	**3.6**

Table 2: Age at first offered screening appointment

Sub-region	<50		50-64		65-70		71-75		76+		Total	>70	
	No.	%	No.	%	No.	%	No.	%	No.	%		No.	%
East Midlands	93	5	941	53	525	30	151	9	58	3	1768	209	12
East of England	114	6	965	51	588	31	138	7	99	5	1904	237	12
London	155	7	1217	58	541	26	141	7	55	3	2109	196	9
N East, Yorks & Humber	183	7	1487	53	815	29	199	7	99	4	2783	298	11
North West	121	5	1228	56	616	28	180	8	64	3	2209	244	11
South East	165	6	1389	54	738	29	198	8	97	4	2587	295	11
South West	201	7	1567	52	904	30	252	8	97	3	3021	349	12
West Midlands	126	6	1038	54	552	28	156	8	68	4	1940	224	12
Northern Ireland	10	2	352	65	148	27	19	3	14	3	543	33	6.1
Scotland	0	0	819	57	487	34	77	5	49	3	1432	126	8.8
Wales	23	2	638	55	373	32	83	7	49	4	1166	132	11.3
United Kingdom	**1191**	**6**	**11641**	**54**	**6287**	**29**	**1594**	**7**	**749**	**3**	**21462**	**2343**	**10.9**

Table 3: Cancers diagnosed on radiological/clinical grounds only			
Sub-region	Total cancers including radiological/clinical cancers	Cancers diagnosed on radiological/clinical grounds only	
		No.	%
East Midlands	1573	0	0.00
East of England	1680	0	0.00
London	1907	0	0.00
N East, Yorks & Humber	2394	0	0.00
North West	1993	0	0.00
South East	2267	0	0.00
South West	2702	0	0.00
West Midlands	1689	0	0.00
Northern Ireland	510	0	0.00
Scotland	1237	0	0.00
Wales	1089	0	0.00
United Kingdom	**19041**	**0**	**0.00**

Table 4: Number of cases with previous cancers							
Sub-region	Total cases	Total pt matched	% matched	Had previous cancers		No previous cancers	
				No.	%	No.	%
East Midlands	1678	1677	100	185	11	1492	89
East of England	1803	1803	100	210	12	1593	88
London	2109	2092	99	202	10	1890	90
NEYH	2783	2782	100	389	14	2393	86
North West	2209	2208	100	216	10	1992	90
South East	3441	3430	100	397	12	3033	88
South West	2167	2166	100	242	11	1924	89
West Midlands	1940	1938	100	251	13	1687	87
Northern Ireland	543	416	77	33	8	383	92
Scotland	866	708	82	133	19	575	81
WALES	1078	1018	94	75	7	943	93
United Kingdom	**20617**	**20238**	**98**	**2333**	**12**	**17905**	**88**

Table 5: Type of previous cancers									
Sub-region	Total matched	Total previous cancers	Invasive/micro-invasive					Non-invasive	
			Breast	Gynae-cological	Bowel	Haema-tological	Other	Breast	Other
East Midlands	1677	185	65	20	17	7	24	16	43
East of England	1803	210	83	21	8	10	20	31	55
London	2092	202	75	21	12	12	27	22	43
NEYH	2782	389	134	34	26	16	43	35	131
North West	2208	216	82	24	13	12	33	15	56
South East	3430	397	163	37	17	13	56	30	99
South West	2166	242	101	23	8	11	34	30	62
West Midlands	1938	251	98	43	15	7	25	13	69
Northern Ireland	416	33	16	6	4	0	3	3	1
Scotland	708	133	37	12	6	6	23	20	44
WALES	1018	75	61	18	10	6	22	19	51
United Kingdom	**20238**	**2333**	**915**	**259**	**136**	**100**	**310**	**234**	**654**
% of previous cancers	**-**	**100**	**39**	**11**	**6**	**4**	**13**	**10**	**28**
% of matched	**100**	**12**	**5**	**1**	**1**	**0**	**2**	**1**	**3**

Table 6: Non-operative diagnosis rate													
	Total	C5 only		C5 & B5		B5 only		Positive axillary biopsy only		Non-operative diagnosis		No non-operative diagnosis	
Sub-region	cancers	No	%	No	%	No	%	No	%	No	%	No	%
East Midlands	1686	0	0	3	0	1655	98	0	0	1658	98	28	2
East of England	1786	0	0	8	0	1741	97	0	0	1749	98	37	2
London	2015	0	0	23	1	1946	97	0	0	1969	98	46	2
N East, Yorks & Humber	2617	3	0	140	5	2422	93	1	0	2566	98	51	2
North West	2112	2	0	8	0	2059	97	3	0	2072	98	40	2
South East	2430	1	0	8	0	2313	95	1	0	2323	96	107	4
South West	2859	0	0	5	0	2751	96	1	0	2757	96	102	4
West Midlands	1829	1	0	2	0	1783	97	0	0	1786	98	43	2
Northern Ireland	524	3	1	251	48	254	48	0	0	508	97	16	3
Scotland	1353	0	0	5	0	1321	98	0	0	1326	98	27	2
Wales	1123	0	0	1	0	1079	96	3	0	1083	96	40	4
United Kingdom	**20334**	**10**	**0**	**454**	**2**	**19324**	**95**	**9**	**0**	**19797**	**97**	**537**	**3**

Table 7: Non-operative diagnosis rate (invasive cancers)													
	Total	C5 only		C5 & B5		B5 only		Positive axillary biopsy only		Non-operative diagnosis		No non-operative diagnosis	
Sub-region	cancers	No	%	No	%	No	%	No	%	No	%	No	%
East Midlands	1350	0	0	3	0	1343	99	0	0	1346	100	4	0
East of England	1452	0	0	7	0	1437	99	0	0	1444	99	8	1
London	1512	0	0	22	1	1479	98	0	0	1501	99	11	1
N East, Yorks & Humber	2083	3	0	136	7	1933	93	1	0	2073	100	10	0
North West	1686	1	0	8	0	1659	98	3	0	1671	99	15	1
South East	1917	1	0	8	0	1886	98	1	0	1896	99	21	1
South West	2249	0	0	4	0	2220	99	1	0	2225	99	24	1
West Midlands	1457	1	0	2	0	1448	99	0	0	1451	100	6	0
Northern Ireland	424	3	1	235	55	183	43	0	0	421	99	3	1
Scotland	1121	0	0	5	0	1109	99	0	0	1114	99	7	1
Wales	910	0	0	1	0	897	99	3	0	901	99	9	1
United Kingdom	**16161**	**9**	**0**	**431**	**3**	**15594**	**96**	**9**	**0**	**16043**	**99**	**118**	**1**

Table 8: Non-operative diagnosis rate (non-invasive cancers)											
	Total cancers	C5 only		C5 & B5		B5 only		Non-operative diagnosis		No non-operative diagnosis	
Sub-region		No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	327	0	0	0	0	304	93	304	93	23	7
East of England	319	0	0	1	0	289	91	290	91	29	9
London	485	0	0	1	0	449	93	450	93	35	7
N East, Yorks & Humber	518	0	0	4	1	474	92	478	92	40	8
North West	404	1	0	0	0	379	94	380	94	24	6
South East	496	0	0	0	0	412	83	412	83	84	17
South West	590	0	0	1	0	512	87	513	87	77	13
West Midlands	363	0	0	0	0	326	90	326	90	37	10
Northern Ireland	97	0	0	15	15	69	71	84	87	13	13
Scotland	228	0	0	0	0	208	91	208	91	20	9
Wales	207	0	0	0	0	176	85	176	85	31	15
United Kingdom	**4034**	**1**	**0**	**22**	**1**	**3598**	**89**	**3621**	**90**	**413**	**10**

Table 9: Invasive status of the diagnostic core biopsy							
	Total Cancers with B5	B5a (Non-invasive)		B5b (Invasive)		B5c (Micro-invasive, Not Assessable or Unknown)	
Sub-region		**No.**	**%**	**No.**	**%**	**No.**	**%**
East Midlands	1658	363	22	1277	77	18	1
East of England	1749	369	21	1369	78	11	1
London	1969	535	27	1423	72	11	1
N East, Yorks & Humber	2562	585	23	1969	77	8	0
North West	2067	468	23	1595	77	4	0
South East	2321	520	22	1796	77	5	0
South West	2756	630	23	2113	77	13	0
West Midlands	1785	388	22	1368	77	29	2
Northern Ireland	505	101	20	402	80	2	0
Scotland	1326	251	19	1068	81	7	1
Wales	1080	228	21	851	79	1	0
United Kingdom	**19778**	**4438**	**22**	**15231**	**77**	**109**	**1**

Table 10: B5a (Non-invasive) core biopsy: histological status of surgical specimen												
	Invasive		*Micro-invasive*		Non-invasive		No residual tumour		Unknown		Total with surgery	
Sub-region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
East Midlands	59	16	6	2	283	79	10	3	0	0	358	100
East of England	70	20	14	4	262	74	10	3	0	0	356	100
London	74	15	14	3	379	76	33	7	1	0	501	100
N East, Yorks & Humber	95	16	15	3	447	77	25	4	0	0	582	100
North West	70	15	19	4	340	75	26	6	0	0	455	100
South East	95	19	14	3	374	74	23	5	0	0	506	100
South West	105	17	17	3	481	77	19	3	0	0	622	100
West Midlands	68	18	6	2	280	75	20	5	0	0	374	100
Northern Ireland	15	15	3	3	75	77	5	5	0	0	98	100
Scotland	40	16	4	2	199	82	1	0	0	0	244	100
Wales	47	21	6	3	168	75	3	1	0	0	224	100
United Kingdom	**738**	**17**	**118**	**3**	**3288**	**76**	**175**	**4**	**1**	**0**	**4320**	**100**

No residual cases have non-invasive disease reported in the non-operative core biopsy but no malignant disease found in the surgical specimen

Table 11: B5b (Invasive) core biopsy: histological status of surgical specimen												
	Invasive		*Micro-invasive*		Non-invasive		No residual tumour		Unknown		Total with surgery	
Sub-region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
East Midlands	1231	98	1	0	8	1	13	1	1	0	1254	100
East of England	1315	98	1	0	13	1	12	1	1	0	1342	100
London	1303	97	1	0	18	1	27	2	1	0	1350	100
N East, Yorks & Humber	1900	98	0	0	20	1	11	1	0	0	1931	100
North West	1547	99	1	0	6	0	12	1	1	0	1567	100
South East	1734	98	2	0	16	1	13	1	0	0	1765	100
South West	2031	98	4	0	25	1	22	1	0	0	2082	100
West Midlands	1319	98	1	0	12	1	11	1	1	0	1344	100
Northern Ireland	387	98	0	0	5	1	2	1	0	0	394	100
Scotland	1016	99	2	0	10	1	1	0	0	0	1029	100
Wales	820	99	0	0	9	1	2	0	0	0	831	100
United Kingdom	**14603**	**98**	**13**	**0**	**142**	**1**	**126**	**1**	**5**	**0**	**14889**	**100**

No residual cases have invasive disease reported in the non-operative core biopsy but no malignant disease found in the surgical specimen

Table 12: Number of assessment visits for each patient														
	0		1		2		3+		Unknown		Total		Repeat (2+) visit	
Sub-region	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**
East Midlands	0	0	1423	84	226	13	37	2	0	0	1686	100	263	16
East of England	0	0	1625	91	147	8	14	1	0	0	1786	100	161	9
London	0	0	1724	86	272	13	19	1	0	0	2015	100	291	14
N East, Yorks & Humber	0	0	2265	87	328	13	24	1	0	0	2617	100	352	13
North West	0	0	1794	85	300	14	18	1	0	0	2112	100	318	15
South East	0	0	2094	86	316	13	20	1	0	0	2430	100	336	14
South West	0	0	2416	85	398	14	45	2	0	0	2859	100	443	15
West Midlands	0	0	1534	84	254	14	41	2	0	0	1829	100	295	16
Northern Ireland	0	0	485	93	35	7	4	1	0	0	524	100	39	7
Scotland	0	0	1290	95	62	5	1	0	0	0	1353	100	63	5
Wales	0	0	1025	91	90	8	8	1	0	0	1123	100	98	9
United Kingdom	**0**	**0**	**17675**	**87**	**2428**	**12**	**231**	**1**	**0**	**0**	**20334**	**100**	**2659**	**13**

Table 13: The assessment visit with the earliest core/cytology result										
	1		2		3+		Total		First core/cyt at 2+ visit	
Sub-region	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**
East Midlands	1628	97	58	3	0	0	1686	100	58	3
East of England	1757	98	29	2	0	0	1786	100	29	2
London	1950	97	62	3	1	0	2013	100	63	3
N East, Yorks & Humber	2560	98	56	2	0	0	2616	100	56	2
North West	2043	97	65	3	0	0	2108	100	65	3
South East	2326	96	98	4	4	0	2428	100	102	4
South West	2737	96	120	4	1	0	2858	100	121	4
West Midlands	1770	97	57	3	2	0	1829	100	59	3
Northern Ireland	523	100	1	0	0	0	524	100	1	0
Scotland	-	-	-	-	-	-	-	-	-	-
Wales	1111	99	9	1	0	0	1120	100	9	1
United Kingdom	**18405**	**97**	**555**	**3**	**8**	**0**	**18968**	**100**	**563**	**3**

*Excluded cases from Scotland

Table 14: Number of visits with a core biopsy/cytology result for cases with a non-operative diagnosis															
	Invasive					Non-Invasive					Overall				
	1		2+			1		2+			1		2+		
Sub-region	**No**	**%**	**No**	**%**	**Total**	**No**	**%**	**No**	**%**	**Total**	**No**	**%**	**No**	**%**	**Total**
East Midlands	1280	95	66	5	1346	244	80	60	20	304	1532	92	126	8	1658
East of England	1394	97	50	3	1444	260	90	30	10	290	1667	95	82	5	1749
London	1413	94	88	6	1501	385	86	65	14	450	1815	92	154	8	1969
N East, Yorks & Humber	1970	95	102	5	2072	393	82	85	18	478	2376	93	189	7	2565
North West	1580	95	88	5	1668	313	82	67	18	380	1909	92	160	8	2069
South East	1832	97	63	3	1895	370	90	42	10	412	2216	95	106	5	2322
South West	2120	95	104	5	2224	429	84	84	16	513	2568	93	188	7	2756
West Midlands	1380	95	71	5	1451	268	82	58	18	326	1656	93	130	7	1786
Northern Ireland	401	95	20	5	421	76	90	8	10	84	479	94	29	6	508
Scotland	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wales	859	96	39	4	898	154	88	22	13	176	1018	94	62	6	1080
United Kingdom	**14229**	**95**	**691**	**5**	**14920**	**2892**	**85**	**521**	**15**	**3413**	**17236**	**93**	**1226**	**7**	**18462**

*Excluded cases from Scotland

Table 15: Worst core/cytology biopsy results of the first non-operative needle biopsy visit for non-invasive cancers with a non-operative diagnosis											
	C5, B5 or both		C4, B4 or both		C3, B3 or both		C2, B2 or both		C1, B1 or both		
Sub-region	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**	**Total**
East Midlands	260	86	12	4	21	7	9	3	2	1	304
East of England	272	94	3	1	10	3	3	1	2	1	290
London	425	94	1	0	20	4	1	0	3	1	450
N East, Yorks & Humber	424	89	12	3	30	6	5	1	7	1	478
North West	344	91	13	3	14	4	5	1	4	1	380
South East	386	94	10	2	12	3	2	0	2	0	412
South West	456	89	19	4	22	4	7	1	9	2	513
West Midlands	291	89	7	2	16	5	4	1	8	2	326
Northern Ireland	81	96	0	0	1	1	0	0	2	2	84
Scotland	-	-	-	-	-	-	-	-	-	-	-
Wales	161	91	5	3	5	3	0	0	5	3	176
United Kingdom	**3100**	**91**	**82**	**2**	**151**	**4**	**36**	**1**	**44**	**1**	**3413**

*Excluded cases from Scotland

Table 16: Any further visits after core/cytology biopsy result															
	Invasive					Non-Invasive					Overall				
	Further visit		No further visit			Further visit		No further visit			Further visit		No further visit		
Sub-region	**No**	**%**	**No**	**%**	**Total**	**No**	**%**	**No**	**%**	**Total**	**No**	**%**	**No**	**%**	**Total**
East Midlands	71	5	1279	95	1350	20	6	307	94	327	92	5	1594	95	1686
East of England	27	2	1425	98	1452	13	4	306	96	319	40	2	1746	98	1786
London	56	4	1454	96	1510	19	4	466	96	485	77	4	1936	96	2013
N East, Yorks & Humber	84	4	1999	96	2083	18	3	499	97	517	103	4	2513	96	2616
North West	73	4	1610	96	1683	10	2	393	98	403	83	4	2025	96	2108
South East	83	4	1832	96	1915	24	5	472	95	496	107	4	2321	96	2428
South West	95	4	2153	96	2248	21	4	569	96	590	117	4	2741	96	2858
West Midlands	82	6	1375	94	1457	20	6	343	94	363	103	6	1726	94	1829
Northern Ireland	6	1	418	99	424	0	0	97	100	97	7	1	517	99	524
Scotland	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wales	14	2	894	98	908	4	2	202	98	206	18	2	1102	98	1120
United Kingdom	**591**	**4**	**14439**	**96**	**15030**	**149**	**4**	**3654**	**96**	**3803**	**747**	**4**	**18221**	**96**	**18968**

*Excluded cases from Scotland

Table 17: Status of diagnostic open biopsies			
	Benign biopsy rate		Malignant biopsy rate
Sub-region	**Prevalent**	**Incident**	
East Midlands	1.11	0.27	0.14
East of England	1.11	0.27	0.15
London	1.20	0.35	0.17
N East, Yorks & Humber	0.60	0.20	0.15
North West	1.15	0.33	0.17
South East	1.75	0.48	0.37
South West	1.10	0.41	0.30
West Midlands	1.15	0.33	0.19
Northern Ireland	1.36	0.38	0.24
Scotland	1.52	0.35	0.18
Wales	2.46	0.54	0.35
United Kingdom	**1.31**	**0.35**	**0.22**

Table 18: Number of clients with proven false positive C5 or B5 non-operative diagnosis				
	False positive C5 (CQA Report)		False positive B5 (BQA Report)	
Sub-region	No.	Per 100,000 screened	No.	Per 100,000 screened
East Midlands	1	0.50	1	0.50
East of England	0	0.00	0	0.00
London	0	0.00	0	0.00
N East, Yorks & Humber	0	0.00	0	0.00
North West	0	0.00	0	0.00
South East	0	0.00	0	0.00
South West	0	0.00	0	0.00
West Midlands	0	0.00	0	0.00
Northern Ireland	0	0.00	0	0.00
Scotland	0	0.00	5	0.00
Wales	0	0.00	0	0.00
United Kingdom	**1**	**0.04**	**6**	**0.04**

Table 19: Invasive status of malignant diagnostic open biopsies									
	Total malignant open biopsies	Invasive		Micro-invasive		Non-invasive		Status unknown	
Sub-region		No.	%	No.	%	No.	%	No.	%
East Midlands	28	4	14	1	4	23	82	0	0
East of England	37	8	22	0	0	29	78	0	0
London	46	11	24	0	0	35	76	0	0
N East, Yorks & Humber	51	10	20	0	0	40	78	1	2
North West	40	15	38	1	3	24	60	0	0
South East	107	21	20	2	2	84	79	0	0
South West	102	24	24	1	1	77	75	0	0
West Midlands	43	6	14	0	0	37	86	0	0
Northern Ireland	16	3	19	0	0	13	81	0	0
Scotland	27	7	26	0	0	20	74	0	0
Wales	40	9	23	0	0	31	78	0	0
United Kingdom	**537**	**118**	**22**	**5**	**1**	**413**	**77**	**1**	**0**

Table 20: Non-operative history for invasive cancers with malignant open biopsy									
	Total malignant open biopsies	No non-operative procedures		Cytology only		Core biopsy only		Both cytology and core biopsy	
Sub-region		No.	%	No.	%	No.	%	No.	%
East Midlands	4	0	0	0	0	4	100	0	0
East of England	8	0	0	0	0	7	88	1	13
London	11	2	18	0	0	9	82	0	0
N East, Yorks & Humber	10	0	0	0	0	9	90	1	10
North West	15	0	0	0	0	14	93	1	7
South East	21	1	5	0	0	20	95	0	0
South West	24	0	0	0	0	24	100	0	0
West Midlands	6	0	0	0	0	6	100	0	0
Northern Ireland	3	0	0	0	0	2	67	1	33
Scotland	7	1	14	0	0	5	71	1	14
Wales	9	0	0	0	0	9	100	0	0
United Kingdom	**118**	**4**	**3**	**0**	**0**	**109**	**92**	**5**	**4**

Table 21: Non-operative history for micro/non-invasive cancers with malignant open biopsy									
	Total malignant open biopsies	No non-operative procedures		Cytology only		Core biopsy only		Both cytology and core biopsy	
Sub-region		No.	%	No.	%	No.	%	No.	%
East Midlands	24	0	0	0	0	24	100	0	0
East of England	29	0	0	0	0	29	100	0	0
London	35	0	0	0	0	35	100	0	0
N East, Yorks & Humber	40	1	3	0	0	37	93	2	5
North West	25	1	4	0	0	23	92	1	4
South East	86	0	0	0	0	85	99	1	1
South West	78	0	0	0	0	78	100	0	0
West Midlands	37	0	0	0	0	37	100	0	0
Northern Ireland	13	0	0	0	0	10	77	3	23
Scotland	20	1	5	0	0	18	90	1	5
Wales	31	1	3	0	0	30	97	0	0
United Kingdom	**418**	**4**	**1**	**0**	**0**	**406**	**97**	**8**	**2**

Table 22: Highest cytology and core biopsy result 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	
Sub-region		No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	4	0	0	0	0	4	100	0	0	0	0
East of England	8	0	0	4	50	4	50	0	0	0	0
London	11	2	18	2	18	6	55	1	9	0	0
N East, Yorks & Humber	10	0	0	6	60	3	30	0	0	1	10
North West	15	0	0	9	60	5	33	1	7	0	0
South East	21	1	5	9	43	9	43	2	10	0	0
South West	24	0	0	13	54	10	42	0	0	1	4
West Midlands	6	0	0	2	33	4	67	0	0	0	0
Northern Ireland	3	0	0	2	67	1	33	0	0	0	0
Scotland	7	1	14	2	29	4	57	0	0	0	0
Wales	9	0	0	1	11	7	78	1	11	0	0
United Kingdom	**118**	**4**	**3**	**50**	**42**	**57**	**48**	**5**	**4**	**2**	**2**

Table 23: Highest cytology and core biopsy result prior to malignant diagnostic open biopsies (micro/non-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	
Sub-region		No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	24	0	0	7	29	17	71	0	0	0	0
East of England	29	0	0	8	28	19	66	0	0	2	7
London	35	0	0	9	26	23	66	3	9	0	0
N East, Yorks & Humber	40	1	3	12	30	24	60	0	0	3	8
North West	25	1	4	8	32	14	56	2	8	0	0
South East	86	0	0	16	19	66	77	4	5	0	0
South West	78	0	0	27	35	51	65	0	0	0	0
West Midlands	37	0	0	10	27	25	68	1	3	1	3
Northern Ireland	13	0	0	2	15	11	85	0	0	0	0
Scotland	20	1	5	6	30	13	65	0	0	0	0
Wales	31	1	3	6	19	23	74	0	0	1	3
United Kingdom	**418**	**4**	**1**	**111**	**27**	**286**	**68**	**10**	**2**	**7**	**2**

Table 24: Data completeness for surgically treated non-invasive cancers							
	Unknown cytonuclear grade		Unknown size		Unknown cytonuclear grade and/or size		Total with surgery
Sub-region	No.	%	No.	%	No.	%	No.
East Midlands	0	0	11	3	11	3	323
East of England	1	0	8	3	8	3	306
London	10	2	39	9	40	9	451
N East, Yorks & Humber	2	0	25	5	25	5	515
North West	3	1	20	5	20	5	392
South East	3	1	17	4	17	4	480
South West	1	0	19	3	19	3	582
West Midlands	1	0	18	5	19	5	349
Northern Ireland	0	0	4	4	4	4	94
Scotland	4	2	4	2	6	3	224
Wales	0	0	6	3	6	3	204
United Kingdom	**25**	**0.6**	**171**	**4**	**175**	**4**	**3920**

Table 25: Size of surgically treated non-invasive cancers												
	<15mm		15-≤40mm		>40 mm		Size not assessable		Size unknown		Total non-invasive with surgery	
Sub-region	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	101	31	136	42	66	20	9	3	11	3	323	100
East of England	122	40	131	43	32	10	13	4	8	3	306	100
London	135	30	181	40	75	17	21	5	39	9	451	100
N East, Yorks & Humber	179	35	200	39	96	19	15	3	25	5	515	100
North West	142	36	174	44	50	13	6	2	20	5	392	100
South East	162	34	187	39	76	16	38	8	17	4	480	100
South West	208	36	247	42	78	13	30	5	19	3	582	100
West Midlands	132	38	124	36	62	18	13	4	18	5	349	100
Northern Ireland	31	33	37	39	14	15	8	9	4	4	94	100
Scotland	95	42	94	42	22	10	8	4	5	2	224	100
Wales	79	39	84	41	34	17	1	0	6	3	204	100
United Kingdom	**1387**	**35**	**1595**	**41**	**605**	**15**	**162**	**4**	**171**	**4**	**3920**	**100**

Table 26: Cytonuclear grade of surgically treated non-invasive cancers												
	High		Intermediate		Low		Not assessable		Unknown		Total non-invasive with surgery	
Sub-region	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	182	56	99	31	33	10	9	3	0	0	323	100
East of England	186	61	82	27	24	8	13	4	1	0	306	100
London	283	63	108	24	30	7	20	4	10	2	451	100
N East, Yorks & Humber	305	59	148	29	44	9	16	3	2	0	515	100
North West	225	57	130	33	28	7	6	2	3	1	392	100
South East	268	56	121	25	51	11	37	8	3	1	480	100
South West	368	63	144	25	37	6	32	5	1	0	582	100
West Midlands	202	58	104	30	29	8	13	4	1	0	349	100
Northern Ireland	40	43	34	36	12	13	8	9	0	0	94	100
Scotland	153	68	54	24	4	2	8	4	5	2	224	100
Wales	113	55	66	32	24	12	1	0	0	0	204	100
United Kingdom	**2325**	**59**	**1090**	**28**	**316**	**8**	**163**	**4**	**25**	**1**	**3920**	**100**

Table 27: Invasive size of surgically treated invasive breast cancers																
	<10mm		10-<15mm		15-≤20mm		>20-≤35mm		>35-≤50mm		>50mm		Unknown		Total	
Sub-region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
East Midlands	360	27	392	30	283	21	215	16	36	3	26	2	14	1	1326	100
East of England	386	27	416	29	329	23	219	15	41	3	23	2	11	1	1425	100
London	357	25	321	22	345	24	270	19	62	4	45	3	39	3	1439	100
N East, Yorks & Humber	562	27	547	27	481	24	333	16	68	3	30	1	24	1	2045	100
North West	431	26	456	28	418	25	236	14	63	4	36	2	17	1	1657	100
South East	505	27	457	24	425	23	360	19	81	4	38	2	20	1	1886	100
South West	594	27	571	26	535	24	388	17	77	3	32	1	21	1	2218	100
West Midlands	395	28	380	27	306	21	263	18	53	4	23	2	13	1	1433	100
Northern Ireland	109	26	108	26	90	22	72	17	23	6	10	2	4	1	416	100
Scotland	307	28	292	27	245	22	169	15	34	3	18	2	26	2	1091	100
Wales	265	30	218	24	198	22	150	17	27	3	17	2	15	2	890	100
United Kingdom	**4276**	**27**	**4158**	**26**	**3655**	**23**	**2675**	**17**	**565**	**4**	**298**	**2**	**199**	**1**	**15826**	**100**

Table 28: Whole size of surgically treated invasive breast cancers																
	<10mm		10-<15mm		15-≤20mm		>20-≤35mm		>35-≤50mm		>50mm		Unknown		Total	
Sub-region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
East Midlands	217	16	351	26	286	22	304	23	69	5	59	4	40	3	1326	100
East of England	231	16	371	26	327	23	314	22	93	7	70	5	19	1	1425	100
London	218	15	271	19	358	25	350	24	114	8	92	6	36	3	1439	100
N East, Yorks & Humber	344	17	468	23	496	24	473	23	143	7	107	5	14	1	2045	100
North West	292	18	396	24	414	25	330	20	114	7	95	6	16	1	1657	100
South East	304	16	383	20	445	24	486	26	146	8	86	5	36	2	1886	100
South West	338	15	481	22	558	25	541	24	157	7	95	4	48	2	2218	100
West Midlands	255	18	318	22	337	24	338	24	113	8	45	3	27	2	1433	100
Northern Ireland	71	17	89	21	96	23	105	25	28	7	24	6	3	1	416	100
Scotland	179	16	244	22	274	25	233	21	57	5	39	4	65	6	1091	100
Wales	153	17	193	22	227	26	192	22	74	8	41	5	10	1	890	100
United Kingdom	**2605**	**16**	**3565**	**23**	**3818**	**24**	**3666**	**23**	**1108**	**7**	**753**	**5**	**311**	**2**	**15826**	**100**

Table 29: Grade of surgically treated invasive cancers												
	Grade 1		Grade 2		Grade 3		Not assessable		Unknown		Total	
Sub-**region**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
East Midlands	355	27	711	54	255	19	2	0	3	0	1326	100
East of England	341	24	790	55	287	20	7	0	0	0	1425	100
London	331	23	821	57	272	19	6	0	9	1	1439	100
N East, Yorks & Humber	486	24	1178	58	375	18	3	0	3	0	2045	100
North West	416	25	942	57	294	18	3	0	2	0	1657	100
South East	473	25	998	53	399	21	10	1	6	0	1886	100
South West	560	25	1246	56	399	18	9	0	4	0	2218	100
West Midlands	375	26	789	55	263	18	3	0	3	0	1433	100
Northern Ireland	93	22	217	52	103	25	2	0	1	0	416	100
Scotland	248	23	600	55	223	20	2	0	18	2	1091	100
Wales	258	29	466	52	162	18	0	0	4	0	890	100
United Kingdom	**3936**	**25**	**8758**	**55**	**3032**	**19**	**47**	**0**	**48**	**0**	**15826**	**100**

Table 30: Data completeness for surgically treated invasive cancers (excluding cases with neo-adjuvant therapy)									
	Unknown invasive size		Unknown nodal status		Unknown grade		Unknown NPI*		Total invasive
Sub-region	No.	%	No.	%	No.	%	No.	%	
East Midlands	10	0.8	6	0.5	3	0.2	19	1.5	1261
East of England	11	0.8	11	0.8	0	0.0	25	1.9	1331
London	27	2.1	22	1.7	8	0.6	49	3.7	1315
N East, Yorks & Humber	24	1.2	17	0.9	3	0.2	43	2.2	1976
North West	11	0.7	7	0.4	1	0.1	18	1.1	1590
South East	15	0.8	7	0.4	4	0.2	28	1.5	1810
South West	18	0.9	24	1.2	3	0.1	48	2.3	2080
West Midlands	13	1.0	8	0.6	3	0.2	24	1.8	1344
Northern Ireland	3	0.7	11	2.7	1	0.2	15	3.6	415
Scotland	24	2.4	24	2.4	11	1.1	35	3.4	1019
Wales	13	1.5	15	1.7	3	0.3	28	3.2	865
United Kingdom	**164**	**1.1**	**152**	**1.0**	**35**	**0.2**	**328**	**2.2**	**15006**

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

Table 31: NPI Group of surgically treated invasive cancers (with known NPI excluding cases with neo-adjuvant therapy)												
	EPG		GPG		MPG1		MPG2		PPG		Total with known NPI	
Sub-region	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	287	23	486	39	317	26	101	8	51	4	1242	100
East of England	272	21	535	41	312	24	123	9	64	5	1306	100
London	236	19	492	39	319	25	156	12	63	5	1266	100
N East, Yorks & Humber	391	20	780	40	474	25	201	10	87	5	1933	100
North West	341	22	649	41	357	23	162	10	63	4	1572	100
South East	359	20	621	35	488	27	218	12	96	5	1782	100
South West	422	21	826	41	494	24	201	10	89	4	2032	100
West Midlands	281	21	536	41	320	24	125	9	58	4	1320	100
Northern Ireland	82	21	135	34	101	25	49	12	33	8	400	100
Scotland	204	21	409	42	228	23	98	10	45	5	984	100
Wales	199	24	329	39	189	23	81	10	39	5	837	100
United Kingdom	**3074**	**21**	**5799**	**40**	**3602**	**25**	**1515**	**10**	**688**	**5**	**14678**	**100**

Table 32: ER status (invasive cancers)							
	Positive		Negative		Not done or Unknown		Total
Sub-region	No.	%	No.	%	No.	%	
East Midlands	1232	91	117	9	1	0	1350
East of England	1321	91	126	9	5	0	1452
London	1359	90	137	9	16	1	1512
N East, Yorks & Humber	1887	91	188	9	8	0	2083
North West	1562	93	124	7	0	0	1686
South East	1768	92	145	8	4	0	1917
South West	2096	93	150	7	3	0	2249
West Midlands	1341	92	113	8	3	0	1457
Northern Ireland	387	91	35	8	2	0	424
Scotland	1009	90	93	8	19	2	1121
Wales	822	90	85	9	3	0	910
United Kingdom	**14784**	**91**	**1313**	**8**	**64**	**0.4**	**16161**

Table 33: PgR status (invasive)							
	Positive		Negative		Not done or Unknown		Total
Sub-region	No.	%	No.	%	No.	%	
East Midlands	420	31	151	11	779	58	1350
East of England	509	35	161	11	782	54	1452
London	777	51	235	16	500	33	1512
N East, Yorks & Humber	401	19	215	10	1467	70	2083
North West	1138	67	276	16	272	16	1686
South East	1148	60	238	12	531	28	1917
South West	949	42	285	13	1015	45	2249
West Midlands	543	37	212	15	702	48	1457
Northern Ireland	306	72	74	17	44	10	424
Scotland	730	65	221	20	170	15	1121
Wales	407	45	138	15	365	40	910
United Kingdom	**7328**	**45**	**2206**	**14**	**6627**	**41**	**16161**

Table 34: PgR status of invasive cancers with negative ER status							
	Positive		Negative		Not done or Unknown		Total
Sub-region	No.	%	No.	%	No.	%	
East Midlands	6	5	75	64	36	31	117
East of England	1	1	91	72	34	27	126
London	5	4	96	70	36	26	137
N East, Yorks & Humber	4	2	138	73	46	24	188
North West	4	3	116	94	4	3	124
South East	12	8	117	81	16	11	145
South West	6	4	104	69	40	27	150
West Midlands	2	2	99	88	12	11	113
Northern Ireland	2	6	32	91	1	3	35
Scotland	1	1	81	87	11	12	93
Wales	5	6	71	84	9	11	85
United Kingdom	**48**	**4**	**1020**	**78**	**245**	**19**	**1313**

Table 35: HER-2 status for invasive cancers									
	Positive		Negative		Borderline		Not done or Unknown		Total
Sub-region	No.	%	No.	%	No.	%	No.	%	
East Midlands	152	11	1185	88	1	0	12	1	1350
East of England	137	9	1273	88	9	1	33	2	1452
London	151	10	1281	85	48	3	32	2	1512
N East, Yorks & Humber	267	13	1793	86	7	0	16	1	2083
North West	163	10	1447	86	74	4	2	0	1686
South East	176	9	1695	88	17	1	29	2	1917
South West	216	10	1985	88	29	1	19	1	2249
West Midlands	148	10	1281	88	7	0	21	1	1457
Northern Ireland	46	11	366	86	8	2	4	1	424
Scotland	110	10	985	88	0	0	26	2	1121
Wales	99	11	783	86	17	2	11	1	910
United Kingdom	**1665**	**10**	**14074**	**87**	**217**	**1**	**205**	**1**	**16161**

Table 36: Size, grade and nodal status for invasive cancers with HER2 testing not done or unknown							
	Total HER2 unknown/not done	<10mm invasive size		Grade 1		Negative nodal status	
Sub-region		No	%	No	%	No	%
East Midlands	12	8	67	2	17	9	75
East of England	33	17	52	10	30	24	73
London	32	10	31	9	28	15	47
N East, Yorks & Humber	16	6	38	5	31	9	56
North West	2	2	100	1	50	2	100
South East	29	15	52	10	34	24	83
South West	19	14	74	6	32	14	74
West Midlands	21	10	48	8	38	17	81
Northern Ireland	4	1	25	1	25	1	25
Scotland	26	5	19	2	8	4	15
Wales	11	5	45	4	36	7	64
United Kingdom	**205**	**93**	**45**	**58**	**28**	**126**	**61**

Table 37: ER status (micro/non-invasive cancers)							
	Positive		Negative		Not done or Unknown		Total
Sub-region	No.	%	No.	%	No.	%	
East Midlands	56	17	19	6	261	78	336
East of England	43	13	9	3	281	84	333
London	164	33	36	7	303	60	503
N East, Yorks & Humber	164	31	33	6	336	63	533
North West	268	63	57	13	100	24	425
South East	133	26	21	4	359	70	513
South West	214	35	42	7	354	58	610
West Midlands	25	7	7	2	340	91	372
Northern Ireland	23	23	4	4	73	73	100
Scotland	43	19	13	6	176	76	232
Wales	15	7	7	3	191	90	213
United Kingdom	**1148**	**28**	**248**	**6**	**2774**	**67**	**4170**

Table 38: Treatment for non-invasive breast cancers										
	Conservation surgery		Mastectomy		No surgery		Unknown		Total	
Sub-region	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	230	70	93	28	4	1	0	0	327	100
East of England	239	75	67	21	13	4	0	0	319	100
London	350	72	101	21	34	7	0	0	485	100
N East, Yorks & Humber	385	74	130	25	3	1	0	0	518	100
North West	306	76	86	21	12	3	0	0	404	100
South East	372	75	108	22	16	3	0	0	496	100
South West	464	79	118	20	8	1	0	0	590	100
West Midlands	265	73	84	23	14	4	0	0	363	100
Northern Ireland	72	74	22	23	3	3	0	0	97	100
Scotland	193	85	30	13	4	2	1	0	228	100
Wales	150	72	53	26	3	1	1	0	207	100
United Kingdom	**3026**	**75**	**892**	**22**	**114**	**3**	**2**	**0**	**4034**	**100**

Table 39: Treatment for micro-invasive breast cancers										
	Conservation surgery		Mastectomy		No surgery		Unknown		Total	
Sub-region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
East Midlands	5	56	4	44	0	0	0	0	9	100
East of England	9	64	5	36	0	0	0	0	14	100
London	14	78	4	22	0	0	0	0	18	100
N East, Yorks & Humber	8	53	7	47	0	0	0	0	15	100
North West	14	67	7	33	0	0	0	0	21	100
South East	15	88	2	12	0	0	0	0	17	100
South West	16	80	4	20	0	0	0	0	20	100
West Midlands	6	67	3	33	0	0	0	0	9	100
Northern Ireland	3	100	0	0	0	0	0	0	3	100
Scotland	3	75	1	25	0	0	0	0	4	100
Wales	3	50	3	50	0	0	0	0	6	100
United Kingdom	**96**	**71**	**40**	**29**	**0**	**0**	**0**	**0**	**136**	**100**

Table 40: Treatment for non-invasive breast cancers size >40mm								
	Conservation surgery		Mastectomy		Unknown		Total	
Sub-region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
East Midlands	15	23	51	77	0	0	66	100
East of England	6	19	26	81	0	0	32	100
London	21	28	54	72	0	0	75	100
N East, Yorks & Humber	23	24	73	76	0	0	96	100
North West	14	28	36	72	0	0	50	100
South East	19	25	57	75	0	0	76	100
South West	20	26	58	74	0	0	78	100
West Midlands	17	27	45	73	0	0	62	100
Northern Ireland	2	14	12	86	0	0	14	100
Scotland	8	36	14	64	0	0	22	100
Wales	10	29	24	71	0	0	34	100
United Kingdom	**155**	**26**	**450**	**74**	**0**	**0**	**605**	**100**

Table 41: Treatment of high cytonuclear grade non-invasive cancers (>40mm)								
	Conservation surgery		Mastectomy		Unknown		Total	
Sub-region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
East Midlands	12	24	37	76	0	0	49	100
East of England	5	20	20	80	0	0	25	100
London	18	28	46	72	0	0	64	100
N East, Yorks & Humber	19	25	58	75	0	0	77	100
North West	12	32	26	68	0	0	38	100
South East	12	20	47	80	0	0	59	100
South West	16	25	49	75	0	0	65	100
West Midlands	10	24	32	76	0	0	42	100
Northern Ireland	0	0	9	100	0	0	9	100
Scotland	7	33	14	67	0	0	21	100
Wales	7	28	18	72	0	0	25	100
United Kingdom	**118**	**25**	**356**	**75**	**0**	**0**	**474**	**100**

Table 42: Treatment for invasive breast cancers										
	Conservation surgery		Mastectomy		No Surgery		Unknown		Total	
Sub-region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
East Midlands	1058	78	268	20	24	2	0	0	1350	100
East of England	1165	80	260	18	27	2	0	0	1452	100
London	1169	77	270	18	73	5	0	0	1512	100
N East, Yorks & Humber	1652	79	393	19	38	2	0	0	2083	100
North West	1319	78	338	20	29	2	0	0	1686	100
South East	1571	82	315	16	31	2	0	0	1917	100
South West	1794	80	424	19	31	1	0	0	2249	100
West Midlands	1161	80	272	19	24	2	0	0	1457	100
Northern Ireland	336	79	80	19	8	2	0	0	424	100
Scotland	936	83	143	13	30	3	12	1	1121	100
Wales	672	74	218	24	20	2	0	0	910	100
United Kingdom	**12833**	**79**	**2981**	**18**	**335**	**2**	**12**	**0**	**16161**	**100**

Table 43: Mastectomy rate with invasive tumour size										
	<15mm		15-≤20mm		>20-≤35mm		>35-≤50mm		>50mm	
Sub-region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
East Midlands	103	14	56	20	61	28	23	64	23	88
East of England	85	11	61	19	66	30	26	63	19	83
London	79	12	44	13	66	24	32	52	38	84
N East, Yorks & Humber	128	12	89	19	106	32	42	62	27	90
North West	121	14	69	17	69	29	39	62	36	100
South East	93	10	54	13	92	26	40	49	31	82
South West	149	13	92	17	113	29	41	53	27	84
West Midlands	84	11	55	18	77	29	33	62	20	87
Northern Ireland	24	11	17	19	17	24	12	52	10	100
Scotland	39	6	25	10	44	26	22	65	13	72
Wales	86	18	41	21	55	37	16	59	16	94
United Kingdom	**991**	**12**	**603**	**16**	**766**	**29**	**326**	**58**	**260**	**87**

Table 44: Mastectomy rate with whole tumour size										
	<15mm		15-≤20mm		>20-≤35mm		>35-≤50mm		>50mm	
Sub-region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
East Midlands	37	7	40	14	83	27	43	62	51	86
East of England	33	5	36	11	71	23	57	61	57	81
London	24	5	37	10	73	21	54	47	69	75
N East, Yorks & Humber	46	6	57	11	111	23	82	57	93	87
North West	43	6	61	15	76	23	66	58	86	91
South East	38	6	35	8	102	21	66	45	64	74
South West	55	7	67	12	138	26	80	51	76	80
West Midlands	34	6	46	14	77	23	65	58	41	91
Northern Ireland	12	8	14	15	21	20	13	46	20	83
Scotland	10	2	19	7	44	19	31	54	30	77
Wales	42	12	39	17	53	28	41	55	38	93
United Kingdom	**374**	**6**	**451**	**12**	**849**	**23**	**598**	**54**	**625**	**83**

Table 45: Mastectomy rate for <15mm invasive cancers by whole tumour size										
	Whole Size <15mm		Whole size 15-≤20mm		Whole size >20-≤35mm		Whole size >35-≤50mm		Whole size >50mm	
Sub-region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
East Midlands	37	7	9	13	18	29	18	64	19	83
East of England	33	6	2	3	16	21	16	59	17	74
London	23	5	14	16	12	22	15	52	14	64
N East, Yorks & Humber	45	6	9	7	18	17	21	54	34	94
North West	43	6	13	16	19	31	17	61	28	90
South East	37	5	11	9	18	18	17	50	9	60
South West	55	7	14	9	31	27	26	57	21	72
West Midlands	33	6	12	12	12	17	13	62	13	87
Northern Ireland	12	8	1	3	3	18	3	75	5	71
Scotland	10	2	4	5	9	17	8	53	8	62
Wales	42	12	11	16	8	22	14	61	10	91
United Kingdom	**370**	**6**	**100**	**10**	**164**	**22**	**168**	**57**	**178**	**79**

Table 46: Immediate reconstruction with mastectomy (all cancers)								
	Immediate reconstruction		No immediate reconstruction		Unknown		Total mastectomies	
Sub-region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
East Midlands	95	26	269	74	1	0	365	100
East of England	124	37	199	60	9	3	332	100
London	154	41	221	59	0	0	375	100
N East, Yorks & Humber	197	37	333	63	0	0	530	100
North West	166	39	265	61	0	0	431	100
South East	127	30	298	70	0	0	425	100
South West	176	32	370	68	0	0	546	100
West Midlands	119	33	240	67	0	0	359	100
Northern Ireland	24	24	77	75	1	1	102	100
Scotland	34	20	121	70	19	11	174	100
Wales	64	23	210	77	0	0	274	100
United Kingdom	**1280**	**33**	**2603**	**67**	**30**	**1**	**3913**	**100**

Table 47: Any neo-adjuvant therapy							
	Had treatment		Did not have treatment		Unknown		Total
Sub-region	**No.**	**%**	**No.**	**%**	**No.**	**%**	
East Midlands	84	5	1602	95	0	0	1686
East of England	107	6	1679	94	0	0	1786
London	162	8	1851	92	2	0	2015
N East, Yorks & Humber	93	4	2524	96	0	0	2617
North West	94	4	2018	96	0	0	2112
South East	90	4	2340	96	0	0	2430
South West	162	6	2694	94	3	0	2859
West Midlands	108	6	1721	94	0	0	1829
Northern Ireland	4	1	520	99	0	0	524
Scotland	103	8	1245	92	5	0	1353
Wales	44	4	1079	96	0	0	1123
United Kingdom	**1051**	**5**	**19273**	**95**	**10**	**0**	**20334**

Table 48: Neo-adjuvant endocrine therapy							
	Had treatment		Did not have treatment		Unknown		Total
Sub-region	No.	%	No.	%	No.	%	
East Midlands	47	3	1639	97	0	0	1686
East of England	51	3	1735	97	0	0	1786
London	71	4	1942	96	2	0	2015
N East, Yorks & Humber	47	2	2570	98	0	0	2617
North West	65	3	2047	97	0	0	2112
South East	49	2	2381	98	0	0	2430
South West	71	2	2785	97	3	0	2859
West Midlands	60	3	1769	97	0	0	1829
Northern Ireland	3	1	521	99	0	0	524
Scotland	64	5	1284	95	5	0	1353
Wales	32	3	1091	97	0	0	1123
United Kingdom	**560**	**3**	**19764**	**97**	**10**	**0**	**20334**

Table 49: Neo-adjuvant chemotherapy for invasive cancers							
	Had treatment		Did not have treatment		Unknown		Total
Sub-region	No.	%	No.	%	No.	%	
East Midlands	43	3	1307	97	0	0	1350
East of England	56	4	1396	96	0	0	1452
London	94	6	1418	94	0	0	1512
N East, Yorks & Humber	46	2	2037	98	0	0	2083
North West	36	2	1650	98	0	0	1686
South East	43	2	1874	98	0	0	1917
South West	97	4	2149	96	3	0	2249
West Midlands	54	4	1403	96	0	0	1457
Northern Ireland	2	0	422	100	0	0	424
Scotland	38	3	1078	96	5	0	1121
Wales	13	1	897	99	0	0	910
United Kingdom	**522**	**3**	**15631**	**97**	**8**	**0**	**16161**

Table 50: Neo-adjuvant Traztuzumab							
	Had treatment		Did not have treatment		Unknown		Total
Sub-region	No.	%	No.	%	No.	%	
East Midlands	4	0	1682	100	0	0	1686
East of England	5	0	1781	100	0	0	1786
London	7	0	2006	100	2	0	2015
N East, Yorks & Humber	13	0	2604	100	0	0	2617
North West	7	0	2105	100	0	0	2112
South East	1	0	2429	100	0	0	2430
South West	3	0	2853	100	3	0	2859
West Midlands	8	0	1821	100	0	0	1829
Northern Ireland	0	0	524	100	0	0	524
Scotland	5	0	1343	99	5	0	1353
Wales	1	0	1122	100	0	0	1123
United Kingdom	**54**	**0**	**20270**	**100**	**10**	**0**	**20334**

Table 51: Annual screening surgical caseload per surgeon (2015/16)														
		<10 cases		10-29 cases		30-49 cases		50-79 cases		80-99 cases		100+ cases		
Sub-region	Total surgeons	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	Median
East Midlands	46	6	13	9	20	18	39	12	26	0	0	1	2	37
East of England	52	9	17	10	19	20	38	11	21	1	2	1	2	35
London	89	30	34	31	35	17	19	8	9	3	3	0	0	16
N East, Yorks & Humber	72	10	14	19	26	19	26	19	26	3	4	2	3	35
North West	69	13	19	22	32	22	32	12	17	0	0	0	0	29
South East	67	13	19	22	33	12	18	15	22	1	1	4	6	28
South West	74	10	14	12	16	25	34	21	28	6	8	0	0	41
West Midlands	66	17	26	21	32	14	21	13	20	1	2	0	0	22
Northern Ireland	17	2	12	7	41	6	35	2	12	0	0	0	0	28
Scotland	56	19	34	18	32	12	21	5	9	0	0	2	4	15.5
Wales	24	4	17	4	17	2	8	8	33	5	21	1	4	54
United Kingdom	**632**	**133**	**21**	**175**	**28**	**167**	**26**	**126**	**20**	**20**	**3**	**11**	**2**	**30**

The surgeons in each sub-region are credited with their total UK screening caseload.

Table 52: Proportion of women referred to consultant surgeons according to annual caseload of surgeon (2015/16)													
	Total (referred)	<10 cases		10-29 cases		30-49 cases		50-79 cases		80-99 cases		100+ cases	
Sub-region		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	1748	19	1	192	11	723	41	707	40	0	0	107	6
East of England	1901	33	2	198	10	837	44	648	34	83	4	102	5
London	2055	108	5	573	28	653	32	458	22	262	13	1	0
N East, Yorks & Humber	2744	31	1	359	13	751	27	1140	42	258	9	205	7
North West	2186	40	2	476	22	880	40	789	36	1	0	0	0
South East	2566	43	2	484	19	543	21	905	35	95	4	496	19
South West	3012	48	2	256	8	933	31	1264	42	511	17	0	0
West Midlands	1931	68	4	385	20	555	29	825	43	98	5	0	0
Northern Ireland	532	13	2	165	31	242	45	112	21	0	0	0	0
Scotland	1424	50	4	300	21	458	32	320	22	0	0	296	21
Wales	1166	8	1	76	7	74	6	476	41	428	37	104	9
United Kingdom	**21265**	**461**	**2**	**3464**	**16**	**6649**	**31**	**7644**	**36**	**1736**	**8**	**1311**	**6**

Table 53: Annual screening surgical caseload per surgeon (2013/14-2015/16)														
		<10 cases		10-29 cases		30-49 cases		50-79 cases		80-99 cases		100+ cases		
Sub-region	Total surgeons	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	Median
East Midlands	59	18	31	14	24	16	27	10	17	1	2	0	0	83.0
East of England	71	24	34	12	17	26	37	8	11	1	1	0	0	86.0
London	110	55	50	23	21	21	19	9	8	2	2	0	0	29.0
N East, Yorks & Humber	94	28	30	23	24	26	28	14	15	1	1	2	2	84.0
North West	87	35	40	16	18	23	26	9	10	4	5	0	0	72.0
South East	82	23	28	20	24	23	28	12	15	1	1	3	4	79.5
South West	94	29	31	20	21	20	21	22	23	3	3	0	0	86.0
West Midlands	76	28	37	22	29	14	18	11	14	1	1	0	0	67.0
Northern Ireland	19	5	26	6	32	8	42	0	0	0	0	0	0	80.0
Scotland	69	33	48	16	23	15	22	4	6	0	0	1	1	36.0
Wales	31	11	35	3	10	2	6	11	35	4	13	0	0	149.0
United Kingdom	**792**	**289**	**36**	**175**	**22**	**194**	**24**	**110**	**14**	**18**	**2**	**6**	**1**	**69.0**

Table 54: Proportion of women referred to consultant surgeons according to annual caseload of surgeon (2013/14-2015/16)												
	Total (referred)	<10 cases		10-29 cases		30-49 cases		50-79 cases		80-99 cases		100+ cases	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	5001	211	4	877	18	1911	38	1759	35	243	5	0	0
East of England	5755	166	3	658	11	3197	56	1461	25	263	5	10	0
London	6015	499	8	1233	20	2300	38	1455	24	526	9	2	0
N East, Yorks & Humber	8221	212	3	1390	17	3141	38	2598	32	256	3	624	8
North West	6895	347	5	1068	15	2826	41	1619	23	1035	15	0	0
South East	7653	125	2	1061	14	2723	36	2427	32	281	4	1036	14
South West	8569	238	3	1219	14	2488	29	3830	45	794	9	0	0
West Midlands	5711	230	4	1482	26	1780	31	1933	34	286	5	0	0
Northern Ireland	1303	50	4	419	32	834	64	0	0	0	0	0	0
Scotland	4049	325	8	946	23	1678	41	787	19	0	0	313	8
Wales	3609	103	3	157	4	240	7	2086	58	1023	28	0	0
United Kingdom	**62781**	**2506**	**4**	**10510**	**17**	**23118**	**37**	**19955**	**32**	**4707**	**7**	**1985**	**3**

Table 55: Explanations for surgeons treating less than 10 screening cases (2015/16)								
Sub-region	Number surgeons with caseload <10	Other caseload >30 year	Joined NHSBSP	Left NHSBSP	Plastic surgeon	Private practice	No information	Other
East Midlands	6	1	0	0	0	0	1	4
East of England	9	2	1	1	3	1	0	1
London	30	8	0	0	4	1	6	11
N East, Yorks & Humber	10	0	0	1	3	1	5	0
North West	13	2	1	1	3	1	0	5
South East	13	0	1	2	1	3	4	2
South West	10	1	0	2	1	1	2	3
West Midlands	17	5	2	3	4	3	0	0
Northern Ireland	2	0	1	0	0	0	0	1
Scotland	19	1	6	0	0	0	10	2
Wales	4	1	0	0	1	0	2	0
United Kingdom	**133**	**21**	**12**	**10**	**20**	**11**	**30**	**29**

Table 56: Explanations for surgeons treating less than 10 screening cases annually (2013/14-2015/16)								
Sub-region	Number surgeons with caseload <10	Other caseload >30 year	Joined NHSBSP	Left NHSBSP	Plastic surgeon	Private practice	No information	Other
East Midlands	18	1	0	2	0	1	4	10
East of England	24	2	1	0	0	1	5	15
London	55	10	2	0	4	3	9	27
N East, Yorks & Humber	28	2	1	3	1	1	2	18
North West	35	9	0	0	4	1	7	14
South East	23	0	0	1	3	1	11	7
South West	29	3	3	0	5	1	7	10
West Midlands	28	5	1	3	2	1	2	14
Northern Ireland	5	0	0	1	0	1	2	1
Scotland	33	3	1	0	1	2	11	15
Wales	11	0	0	0	0	0	3	8
United Kingdom	**289**	**35**	**9**	**10**	**20**	**13**	**63**	**139**

Table 57: Repeat operations of surgically treated invasive and non/micro-invasive cancers						
	Invasive			Non/micro-invasive		
Sub-region	**Total**	**No.**	**%**	**Total**	**No.**	**%**
East Midlands	1326	190	14	332	57	17
East of England	1425	310	22	320	79	25
London	1439	254	18	469	98	21
N East, Yorks & Humber	2045	313	15	530	123	23
North West	1657	292	18	413	94	23
South East	1886	435	23	497	117	24
South West	2218	401	18	602	145	24
West Midlands	1433	283	20	358	89	25
Northern Ireland	416	77	19	97	19	20
Scotland	1091	150	14	228	36	16
Wales	890	172	19	210	65	31
United Kingdom	**15826**	**2877**	**18**	**4056**	**922**	**23**

Table 58: Repeat operations of surgically treated invasive and non/micro-invasive cancers without a non-op diagnosis						
	Invasive			Non/micro-invasive		
Sub-region	**Total**	**Re-op**	**%**	**Total**	**Re-op**	**%**
East Midlands	4	4	100	24	11	46
East of England	8	6	75	29	7	24
London	11	6	55	35	15	43
N East, Yorks & Humber	10	8	80	40	13	33
North West	15	11	73	25	11	44
South East	21	17	81	84	25	30
South West	24	21	88	78	27	35
West Midlands	6	6	100	37	17	46
Northern Ireland	3	1	33	13	2	15
Scotland	6	6	100	20	2	10
Wales	9	8	89	31	18	58
United Kingdom	**117**	**94**	**80**	**416**	**148**	**36**

Table 59: Number of therapeutic operations (invasive cancers) with initial BCS and a non-operative diagnosis														
	1		2		3		4+		Unknown		Total cancers		Repeat 2+ ops	
Sub-region	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**
East Midlands	924	85	149	14	9	1	2	0	0	0	1084	100	160	15
East of England	936	78	234	20	25	2	1	0	0	0	1196	100	260	22
London	985	84	170	14	21	2	1	0	0	0	1177	100	192	16
N East, Yorks & Humber	1438	85	226	13	26	2	1	0	0	0	1691	100	253	15
North West	1109	82	218	16	21	2	1	0	0	0	1349	100	240	18
South East	1234	76	343	21	39	2	5	0	0	0	1621	100	387	24
South West	1491	81	293	16	42	2	5	0	0	0	1831	100	340	19
West Midlands	961	80	214	18	23	2	3	0	0	0	1201	100	240	20
Northern Ireland	282	80	67	19	3	1	0	0	0	0	352	100	70	20
Scotland	821	86	111	12	17	2	1	0	0	0	950	100	129	14
Wales	552	80	129	19	11	2	2	0	0	0	694	100	142	20
United Kingdom	**10733**	**82**	**2154**	**16**	**237**	**2**	**22**	**0**	**0**	**0**	**13146**	**100**	**2413**	**18**

Table 60: Number of therapeutic operations (non/micro-invasive cancers) with initial BCS and a non-operative diagnosis														
	1		2		3		4+		Unknown		Total cancers		Repeat 2+ ops	
Sub-region	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**
East Midlands	180	81	37	17	6	3	0	0	0	0	223	100	43	19
East of England	178	75	50	21	8	3	0	0	0	0	236	100	58	25
London	275	80	61	18	7	2	0	0	0	0	343	100	68	20
N East, Yorks & Humber	293	76	77	20	15	4	3	1	0	0	388	100	95	24
North West	239	75	69	22	9	3	0	0	0	0	317	100	78	25
South East	245	75	71	22	11	3	0	0	0	0	327	100	82	25
South West	322	75	92	21	12	3	2	0	0	0	428	100	106	25
West Midlands	191	77	51	20	5	2	2	1	0	0	249	100	58	23
Northern Ireland	54	77	14	20	1	1	1	1	0	0	70	100	16	23
Scotland	144	81	29	16	3	2	1	1	0	0	177	100	33	19
Wales	93	67	39	28	6	4	1	1	0	0	139	100	46	33
United Kingdom	**2214**	**76**	**590**	**20**	**83**	**3**	**10**	**0**	**0**	**0**	**2897**	**100**	**683**	**24**

Table 61: Number of therapeutic operations for invasive cancers with B5b (invasive) core biopsy result												
	1		2		3+		Unknown		Total		Repeat (2+) rate	
Sub-region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
East Midlands	1105	88	139	11	9	1	0	0	1253	100	148	12
East of England	1083	81	236	18	23	2	0	0	1342	100	259	19
London	1146	85	186	14	18	1	0	0	1350	100	204	15
N East, Yorks & Humber	1676	87	230	12	25	1	0	0	1931	100	255	13
North West	1328	85	222	14	16	1	0	0	1566	100	238	15
South East	1420	80	305	17	40	2	0	0	1765	100	345	20
South West	1772	85	270	13	39	2	0	0	2081	100	309	15
West Midlands	1116	83	209	16	18	1	0	0	1343	100	227	17
Northern Ireland	327	83	65	16	2	1	0	0	394	100	67	17
Scotland	899	87	113	11	15	1	10	1	1037	100	128	12
Wales	692	83	129	16	10	1	0	0	831	100	139	17
United Kingdom	**12564**	**84**	**2104**	**14**	**215**	**1**	**10**	**0**	**14893**	**100**	**2319**	**16**

Table 62: Number of therapeutic operations of invasive cancers with C5 only (no B5) cytology non-op result												
	1		2		3+		Unknown		Total		Repeat (2+) rate	
Sub-region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
East Midlands	0	-	0	-	0	-	0	-	0	-	0	-
East of England	0	-	0	-	0	-	0	-	0	-	0	-
London	0	-	0	-	0	-	0	-	0	-	0	-
N East, Yorks & Humber	3	100	0	0	0	0	0	0	3	100	0	0
North West	1	100	0	0	0	0	0	0	1	100	0	0
South East	0	0	1	100	0	0	0	0	1	100	1	100
South West	0	-	0	-	0	-	0	-	0	-	0	-
West Midlands	1	100	0	0	0	0	0	0	1	100	0	0
Northern Ireland	2	67	1	33	0	0	0	0	3	100	1	33
Scotland	0	-	0	-	0	-	0	-	0	-	0	-
Wales	0	-	0	-	0	-	0	-	0	-	0	-
United Kingdom	**7**	**78**	**2**	**22**	**0**	**0**	**0**	**0**	**9**	**100**	**2**	**22**

Table 63: Number of therapeutic operations for invasive cancers with B5a (non-invasive) core biopsy result												
	1		2		3+		Unknown		Total		Repeat (2+) rate	
Sub-region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
East Midlands	26	44	32	54	1	2	0	0	59	100	33	56
East of England	27	39	40	57	3	4	0	0	70	100	43	61
London	30	41	38	51	6	8	0	0	74	100	44	59
N East, Yorks & Humber	45	47	48	51	2	2	0	0	95	100	50	53
North West	29	41	35	50	6	9	0	0	70	100	41	59
South East	23	24	68	72	4	4	0	0	95	100	72	76
South West	36	34	60	57	9	9	0	0	105	100	69	66
West Midlands	24	35	35	51	9	13	0	0	68	100	44	65
Northern Ireland	8	53	7	47	0	0	0	0	15	100	7	47
Scotland	27	63	11	26	3	7	2	5	43	100	14	33
Wales	23	49	21	45	3	6	0	0	47	100	24	51
United Kingdom	**298**	**40**	**395**	**53**	**46**	**6**	**2**	**0**	**741**	**100**	**441**	**60**

Table 64: Number of therapeutic operations for non-invasive or micro-invasive cancers with B5a (non-invasive) core biopsy result												
	1		2		3+		Unknown		Total		Repeat (2+) rate	
Sub-region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
East Midlands	254	85	40	13	5	2	0	0	299	100	45	15
East of England	214	75	64	22	8	3	0	0	286	100	72	25
London	345	81	75	18	7	2	0	0	427	100	82	19
N East, Yorks & Humber	378	78	91	19	18	4	0	0	487	100	109	22
North West	302	78	74	19	9	2	0	0	385	100	83	22
South East	319	78	81	20	11	3	0	0	411	100	92	22
South West	400	77	102	20	15	3	0	0	517	100	117	23
West Midlands	239	78	59	19	8	3	0	0	306	100	67	22
Northern Ireland	66	80	15	18	2	2	0	0	83	100	17	20
Scotland	172	84	27	13	4	2	1	0	204	100	31	15
Wales	130	73	40	22	7	4	1	1	178	100	47	26
United Kingdom	**2819**	**79**	**668**	**19**	**94**	**3**	**2**	**0**	**3583**	**100**	**762**	**21**

Table 65: Repeat BCS (all cancers) with initial BCS and a non-operative diagnosis			
	All cancers with initial BCS (with non-op diagnosis)	Repeat BCS	
Sub-region		**No**	**%**
East Midlands	1307	121	9
East of England	1432	177	12
London	1520	162	11
N East, Yorks & Humber	2079	211	10
North West	1667	192	12
South East	1948	288	15
South West	2259	295	13
West Midlands	1450	188	13
Northern Ireland	422	37	9
Scotland	1127	124	11
Wales	833	109	13
United Kingdom	**16044**	**1904**	**12**

Table 66: Converted to mastectomy (all cancers) with initial BCS and a non-operative diagnosis			
Sub-region	All cancers with initial BCS (with non-op diagnosis)	Converted to Mx	
		No	%
East Midlands	1307	41	3
East of England	1432	59	4
London	1520	44	3
N East, Yorks & Humber	2079	79	4
North West	1667	65	4
South East	1948	90	5
South West	2259	84	4
West Midlands	1450	57	4
Northern Ireland	422	26	6
Scotland	1127	19	2
Wales	833	44	5
United Kingdom	**16044**	**608**	**4**

Table 67: Data completeness of margin information				
Sub-region	Total cases with surgery to the breast	Complete margin data	% complete margin data	Not complete margin data
East Midlands	1634	1429	87	205
East of England	1722	1569	91	153
London	1845	1723	93	122
N East, Yorks & Humber	2538	2497	98	41
North West	2029	1986	98	43
South East	2345	2160	92	185
South West	2776	2670	96	106
West Midlands	1759	1705	97	54
Northern Ireland	506	482	95	24
Scotland	-	-	-	-
Wales	1092	1025	94	67
United Kingdom	**18246**	**17246**	**95**	**1000**

*Excluded cases from Scotland

Table 68: Margin information of final operations for cases treated by BCS							
Sub-region	Total cases with surgery	Margin clear		Margin not clear		Margin unknown	
		No.	%	No.	%	No.	%
East Midlands	1269	1265	100	4	0	0	0
East of England	1395	1378	99	14	1	2	0
London	1481	1443	97	23	2	15	1
N East, Yorks & Humber	2010	1985	99	22	1	3	0
North West	1602	1594	100	8	0	0	0
South East	1925	1865	97	55	3	5	0
South West	2233	2205	99	24	1	4	0
West Midlands	1402	1383	99	19	1	0	0
Northern Ireland	404	396	98	6	1	2	0
Scotland	-	-	-	-	-	-	-
Wales	819	808	99	11	1	0	0
United Kingdom	**14540**	**14322**	**99**	**186**	**1**	**31**	**0**

*Excluded cases from Scotland

Table 69: Margin information of final operations for cases treated by mastectomy							
	Total cases with surgery	Margin clear		Margin not clear		Margin unknown	
Sub-region		No.	%	No.	%	No.	%
East Midlands	365	362	99	1	0	2	1
East of England	327	322	98	5	2	0	0
London	364	359	99	5	1	0	0
N East, Yorks & Humber	528	511	97	12	2	5	1
North West	427	412	96	15	4	0	0
South East	420	400	95	16	4	4	1
South West	543	527	97	15	3	1	0
West Midlands	357	348	97	8	2	1	0
Northern Ireland	102	96	94	4	4	2	2
Scotland	-	-	-	-	-	-	-
Wales	273	263	96	6	2	4	1
United Kingdom	**3706**	**3600**	**97**	**87**	**2**	**19**	**1**

*Excluded cases from Scotland

Table 70: Axillary ultrasound record for invasive cancers							
	Had axillary ultrasound		Did not have axillary ultrasound		Unknown		Total
Sub-region	No.	%	No.	%	No.	%	
East Midlands	1341	99	9	1	0	0	1350
East of England	1410	97	41	3	1	0	1452
London	1471	97	17	1	24	2	1512
N East, Yorks & Humber	2049	98	34	2	0	0	2083
North West	1661	99	14	1	11	1	1686
South East	1912	100	2	0	3	0	1917
South West	2218	99	30	1	1	0	2249
West Midlands	1438	99	19	1	0	0	1457
Northern Ireland	415	98	8	2	1	0	424
Scotland	-	-	-	-	-	-	-
Wales	866	95	39	4	5	1	910
United Kingdom	**14781**	**98**	**213**	**1**	**46**	**0**	**15040**

*Scotland did not supply any axillary ultrasound information

Table 71: Axillary ultrasound result for invasive cancers					
	Normal		Abnormal		Total
Sub-region	No.	%	No.	%	
East Midlands	1100	82	241	18	1341
East of England	1185	84	225	16	1410
London	1194	81	277	19	1471
N East, Yorks & Humber	1643	80	406	20	2049
North West	1412	85	249	15	1661
South East	1674	88	238	12	1912
South West	1886	85	332	15	2218
West Midlands	1237	86	201	14	1438
Northern Ireland	298	72	117	28	415
Scotland	-	-	-	-	-
Wales	722	83	144	17	866
United Kingdom	**12351**	**84**	**2430**	**16**	**14781**

*Excluded cases from Scotland

Table 72: Axillary biopsy for invasive cancers with an abnormal axillary ultrasound result							
	Had axillary biopsy		Did not have axillary biopsy		Unknown		Total
Sub-region	No.	%	No.	%	No.	%	
East Midlands	237	98	4	2	0	0	241
East of England	220	98	5	2	0	0	225
London	264	95	13	5	0	0	277
N East, Yorks & Humber	400	99	6	1	0	0	406
North West	242	97	6	2	1	0	249
South East	202	85	35	15	1	0	238
South West	289	87	43	13	0	0	332
West Midlands	192	96	9	4	0	0	201
Northern Ireland	116	99	1	1	0	0	117
Scotland	-	-	-	-	-	-	-
Wales	142	99	2	1	0	0	144
United Kingdom	**2304**	**95**	**124**	**5**	**2**	**0**	**2430**

*Excluded cases from Scotland

Table 73: Worst axillary biopsy result for invasive cancer cases with an abnormal axillary ultrasound result											
	C1/B1		C2/B2		C3/B3		C4/B4		C5/B5		Total
Sub-region	No.	%	No.	%	No.	%	No.	%	No.	%	
East Midlands	23	10	112	47	1	0	1	0	100	42	237
East of England	17	8	108	49	2	1	1	0	92	42	220
London	15	6	127	48	8	3	5	2	109	41	264
N East, Yorks & Humber	19	5	221	55	10	3	5	1	145	36	400
North West	16	7	131	54	2	1	7	3	86	36	242
South East	15	7	93	46	0	0	4	2	90	45	202
South West	53	18	109	38	2	1	1	0	124	43	289
West Midlands	22	11	83	43	1	1	0	0	86	45	192
Northern Ireland	7	6	77	66	2	2	3	3	27	23	116
Scotland	-	-	-	-	-	-	-	-	-	-	-
Wales	10	7	69	49	4	3	0	0	59	42	142
United Kingdom	**197**	**9**	**1130**	**49**	**32**	**1**	**27**	**1**	**918**	**40**	**2304**

*Excluded cases from Scotland

Table 74: Worst axillary biopsy result for invasive cancer cases with a normal axillary ultrasound result											
Sub-region	C1/B1		C2/B2		C3/B3		C4/B4		C5/B5		Total
	No.	%	No.	%	No.	%	No.	%	No.	%	
East Midlands	0	0	2	67	1	33	0	0	0	0	3
East of England	0	0	3	60	0	0	0	0	2	40	5
London	0	0	2	40	0	0	1	20	2	40	5
N East, Yorks & Humber	0	0	5	63	0	0	0	0	3	38	8
North West	1	13	2	25	0	0	2	25	3	38	8
South East	1	11	5	56	0	0	0	0	3	33	9
South West	4	31	8	62	1	8	0	0	0	0	13
West Midlands	4	50	1	13	0	0	0	0	3	38	8
Northern Ireland	1	20	4	80	0	0	0	0	0	0	5
Scotland	-	-	-	-	-	-	-	-	-	-	-
Wales	0	0	3	60	0	0	0	0	2	40	5
United Kingdom	**11**	**16**	**35**	**51**	**2**	**3**	**3**	**4**	**18**	**26**	**69**

*Excluded cases from Scotland

Table 75: Positive predictive value of the axillary biopsy results for invasive cancers with an abnormal or normal axillary ultrasound result										
Sub-region	**C1/B1**		**C2/B2**		**C3/B3**		**C4/B4**		**C5/B5**	
	No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
East Midlands	6	26	25	24	0	0	0	0	63	97
East of England	5	36	28	28	1	50	1	100	56	98
London	1	13	24	22	2	40	2	40	65	98
N East, Yorks & Humber	1	5	39	18	7	70	4	80	109	96
North West	4	25	19	15	1	50	6	86	60	95
South East	8	50	19	22	0	-	3	100	67	97
South West	12	23	23	23	1	100	1	100	80	96
West Midlands	7	28	12	16	1	100	0	-	60	97
Northern Ireland	2	25	12	15	2	100	1	50	26	100
Scotland	-	-	-	-	-	-	-	-	-	-
Wales	2	20	15	22	2	50	0	-	51	100
United Kingdom	**48**	**25**	**216**	**20**	**17**	**59**	**18**	**72**	**637**	**97**

*Excluded cases from Scotland
*Excluded cases with neo-adjuvant therapy

Table 76: Positive predictivity for invasive cancers with positive nodal status*			
Sub-region	**Total with positive nodal status**	**Had positive pre-op ax assessment**	
		No	**%**
East Midlands	224	63	28
East of England	243	56	23
London	277	65	23
N East, Yorks & Humber	386	109	28
North West	298	60	20
South East	431	67	16
South West	414	80	19
West Midlands	242	60	25
Northern Ireland	89	26	29
Scotland	-	-	-
Wales	158	51	32
United Kingdom	**2770**	**637**	**23**

*Excluded cases from Scotland
*Excluded cases with neo-adjuvant therapy

Table 77: Nodal positivity for invasive cancers without neo-adjuvant therapy and without/with unknown pre-op axillary assessment			
Sub-region	**Total without/unknown pre-op ax**	**Positive nodal status**	
		No	**%**
East Midlands	1059	130	12
East of England	1145	152	13
London	1098	183	17
N East, Yorks & Humber	1595	226	14
North West	1368	208	15
South East	1629	334	21
South West	1819	296	16
West Midlands	1173	162	14
Northern Ireland	290	46	16
Scotland	999	166	17
Wales	720	88	12
United Kingdom	**12895**	**1991**	**15**

*Excluded cases with neo-adjuvant therapy

Table 78: Axillary biopsy results for invasive cancers with positive nodal status											
Sub-region	**C1/B1**		**C2/B2**		**C3/B3**		**C4/B4**		**C5/B5**		**Invasive cases with positive nodal status**
	No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	
East Midlands	6	3	25	11	0	0	0	0	63	28	224
East of England	5	2	28	12	1	0	1	0	56	23	243
London	1	0	24	9	2	1	2	1	65	23	277
N East, Yorks & Humber	1	0	39	10	7	2	4	1	109	28	386
North West	4	1	19	6	1	0	6	2	60	20	298
South East	8	2	19	4	0	0	3	1	67	16	431
South West	12	3	24	6	1	0	1	0	80	19	414
West Midlands	7	3	12	5	1	0	0	0	60	25	242
Northern Ireland	2	2	12	13	2	2	1	1	26	29	89
Scotland	0	0	0	0	0	0	0	0	0	0	166
Wales	2	1	15	9	2	1	0	0	51	32	158
United Kingdom	**48**	**2**	**217**	**7**	**17**	**1**	**18**	**1**	**637**	**22**	**2928**

*Excluded cases from Scotland

Table 79: Availability of lymph node status for surgically treated invasive cancers									
Sub-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.**	**%**
East Midlands	1326	1318	99	0	0	8	1	0	0
East of England	1425	1412	99	0	0	13	1	0	0
London	1439	1415	98	0	0	24	2	0	0
N East, Yorks & Humber	2045	2028	99	0	0	17	1	0	0
North West	1657	1650	100	0	0	6	0	1	0
South East	1886	1876	99	0	0	10	1	0	0
South West	2218	2194	99	0	0	24	1	0	0
West Midlands	1433	1425	99	0	0	8	1	0	0
Northern Ireland	416	405	97	0	0	11	3	0	0
Scotland	1091	1065	98	0	0	11	1	15	1
Wales	890	875	98	0	0	15	2	0	0
United Kingdom	**15826**	**15663**	**99**	**0**	**0**	**147**	**1**	**16**	**0.1**

Table 80: Sentinel lymph node procedure for invasive cancers with axillary surgery								
Sub-region	**With SLNB**		**Without SLNB**		**Unknown nodal procedure type**		**Total**	
	No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
East Midlands	1165	88	155	12	0	0	1320	100
East of England	1278	91	134	9	0	0	1412	100
London	1277	90	138	10	0	0	1415	100
N East, Yorks & Humber	1844	91	184	9	0	0	2028	100
North West	1534	93	117	7	0	0	1651	100
South East	1727	92	151	8	0	0	1878	100
South West	2042	93	154	7	0	0	2196	100
West Midlands	1305	92	121	8	0	0	1426	100
Northern Ireland	366	90	41	10	0	0	407	100
Scotland	1003	94	66	6	0	0	1069	100
Wales	801	91	76	9	0	0	877	100
United Kingdom	**14342**	**91**	**1337**	**9**	**0**	**0**	**15679**	**100**

Table 81: Nodal status of invasive cancers with known status					
	Total known nodal status	Positive		Negative	
Sub-region		No.	%	No.	%
East Midlands	1318	255	19	1063	81
East of England	1412	278	20	1134	80
London	1415	323	23	1092	77
N East, Yorks & Humber	2028	413	20	1615	80
North West	1650	330	20	1320	80
South East	1876	464	25	1412	75
South West	2194	467	21	1727	79
West Midlands	1425	265	19	1160	81
Northern Ireland	405	90	22	315	78
Scotland	1065	192	18	873	82
Wales	875	172	20	703	80
United Kingdom	**15663**	**3249**	**21**	**12414**	**79**

Table 82: Number of nodes taken for invasive cases without SLNB/ with unknown nodal procedure type									
	Total with axillary surgery	0 node obtained		1,2,3 nodes obtained		≥4nodes obtained		Unknown	
Sub-region		No.	%	No.	%	No.	%	No.	%
East Midlands	155	1	1	6	4	148	95	0	0
East of England	134	1	1	5	4	128	96	0	0
London	138	0	0	5	4	133	96	0	0
N East, Yorks & Humber	184	0	0	8	4	176	96	0	0
North West	117	0	0	4	3	113	97	0	0
South East	151	1	1	12	8	138	91	0	0
South West	154	0	0	7	5	147	95	0	0
West Midlands	121	0	0	10	8	111	92	0	0
Northern Ireland	41	1	2	1	2	39	95	0	0
Scotland	66	0	0	0	0	65	98	1	2
Wales	76	1	1	2	3	73	96	0	0
United Kingdom	**1337**	**5**	**0**	**60**	**4**	**1271**	**95**	**1**	**0**

Table 83: Nodal status of invasive cancers with/without SLNB								
	With SLNB				Without SLNB			
	Positive		Negative		Positive		Negative	
Sub-region	No.	%	No.	%	No.	%	No.	%
East Midlands	153	13	1011	87	102	66	52	34
East of England	190	15	1087	85	88	66	47	35
London	206	16	1071	84	117	85	21	15
N East, Yorks & Humber	278	15	1566	85	135	73	49	27
North West	239	16	1293	84	91	78	27	23
South East	350	20	1376	80	114	75	36	24
South West	346	17	1694	83	121	79	33	21
West Midlands	181	14	1123	86	84	69	37	31
Northern Ireland	55	15	310	85	35	85	5	12
Scotland	134	13	866	86	58	88	7	11
Wales	106	13	694	87	66	87	9	12
United Kingdom	**2238**	**16**	**12091**	**84**	**1011**	**76**	**323**	**24**

Table 84: Number of nodes obtained for invasive cancers with positive nodal status determined from SLNB										
	1-<4 nodes obtained					4+ nodes obtained				
	1 Ax op		2+ Ax ops		Total	1 Ax op		2+ Ax ops		Total
Sub-region	No.	%	No.	%		No.	%	No.	%	
East Midlands	95	100	0	0	95	13	22	45	78	58
East of England	65	100	0	0	65	29	23	96	77	125
London	78	99	1	1	79	41	32	86	68	127
N East, Yorks & Humber	128	100	0	0	128	67	45	83	55	150
North West	114	100	0	0	114	39	31	86	69	125
South East	152	100	0	0	152	96	48	102	52	198
South West	142	99	2	1	144	128	63	74	37	202
West Midlands	81	100	0	0	81	28	28	72	72	100
Northern Ireland	15	100	0	0	15	10	25	30	75	40
Scotland	92	100	0	0	92	19	45	23	55	42
Wales	51	100	0	0	51	13	24	42	76	55
United Kingdom	**1013**	**100**	**3**	**0**	**1016**	**483**	**40**	**739**	**60**	**1222**

Table 85: Status of invasive cases with <4 nodes obtained													
	Total with nodes obtained	Nodal status determined on basis of <4 nodes		Positive sentinel procedure(s)		Positive (Other)		Negative sentinel procedure(s)		Negative (Other)		Unknown status	
Sub-region		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	1318	970	73.6	95	7.2	1	0.1	869	66	5	0.4	0	0
East of England	1412	918	65.0	65	4.6	0	0.0	847	60	6	0.4	0	0
London	1415	1003	70.9	79	5.6	1	0.1	919	65	4	0.3	0	0
N East, Yorks & Humber	2028	1441	71.1	128	6.3	1	0.0	1305	64	7	0.3	0	0
North West	1650	1238	75.0	114	6.9	0	0.0	1119	68	5	0.3	0	0
South East	1876	1276	68.0	152	8.1	3	0.2	1112	59	9	0.5	0	0
South West	2194	1644	74.9	144	6.6	0	0.0	1493	68	7	0.3	0	0
West Midlands	1425	1051	73.8	81	5.7	1	0.1	960	67	9	0.6	0	0
Northern Ireland	405	284	70.1	15	3.7	1	0.2	268	66	0	0.0	0	0
Scotland	1065	842	79.1	92	8.6	0	0.0	750	70	0	0.0	0	0
Wales	875	663	75.8	51	5.8	1	0.1	610	70	1	0.1	0	0
United Kingdom	**15663**	**11330**	**72**	**1016**	**6.5**	**9**	**0.1**	**10252**	**65**	**53**	**0.3**	**0**	**0**

Table 86: Availability of lymph node status for surgically treated non-invasive cancers									
	Total non-invasive cancers	Nodal status known		Nodes obtained but status unknown		No nodes obtained		Unknown if nodes obtained	
Sub-region		No.	%	No.	%	No.	%	No.	%
East Midlands	323	96	30	0	0	227	70	0	0
East of England	306	74	24	0	0	232	76	0	0
London	451	113	25	0	0	338	75	0	0
N East, Yorks & Humber	515	136	26	0	0	379	74	0	0
North West	392	82	21	0	0	310	79	0	0
South East	480	121	25	0	0	359	75	0	0
South West	582	140	24	0	0	442	76	0	0
West Midlands	349	98	28	0	0	251	72	0	0
Northern Ireland	94	25	27	0	0	69	73	0	0
Scotland	224	31	14	0	0	192	86	1	0
Wales	204	56	27	0	0	147	72	1	0
United Kingdom	**3920**	**972**	**25**	**0**	**0**	**2946**	**75**	**2**	**0**

Table 87: Treatment for non-invasive cancers with known nodal status						
	Conservation with known nodal status		Total Conservation	Mastectomy with known nodal status		Total mastectomy
Sub-region	No.	%		No.	%	
East Midlands	9	4	230	87	94	93
East of England	19	8	239	55	82	67
London	28	8	350	85	84	101
N East, Yorks & Humber	25	6	385	111	85	130
North West	7	2	306	75	87	86
South East	19	5	372	102	94	108
South West	33	7	464	107	91	118
West Midlands	21	8	265	77	92	84
Northern Ireland	4	6	72	21	95	22
Scotland	3	2	193	28	93	30
Wales	9	6	150	47	89	53
United Kingdom	**177**	**6**	**3026**	**795**	**89**	**892**

Table 88: Nodal status of non-invasive cancers					
	Total known nodal status	Positive		Negative	
Sub-region		No.	%	No.	%
East Midlands	96	0	0	96	100
East of England	74	0	0	74	100
London	113	0	0	113	100
N East, Yorks & Humber	136	2	1	134	99
North West	82	1	1	81	99
South East	121	2	2	119	98
South West	140	2	1	138	99
West Midlands	98	1	1	97	99
Northern Ireland	25	0	0	25	100
Scotland	31	0	0	31	100
Wales	56	0	0	56	100
United Kingdom	**972**	**8**	**1**	**964**	**99**

Table 89: Sentinel lymph node procedure for non-invasive cancers with a mastectomy and known nodal status													
	With SLNB		Without SLNB								Total with mastectomy	Total known nodal status	% determined on basis of SLNB
			Ax sampling		Ax clearance		Unknown procedure		No intended Ax procedure				
Sub-region	No.	%	No.	%	No.	%	No.	%	No.	%			
East Midlands	86	92	1	1	0	0.0	0	0.0	0	0.0	93	87	99
East of England	53	79	0	0	0	0.0	0	0.0	2	3.0	67	55	96
London	84	83	1	1	0	0.0	0	0.0	0	0.0	101	85	99
N East, Yorks & Humber	106	82	4	3	0	0.0	0	0.0	1	0.8	130	111	95
North West	74	86	0	0	1	1.2	0	0.0	0	0.0	86	75	99
South East	97	90	2	2	2	1.9	0	0.0	1	0.9	108	102	95
South West	101	86	4	3	0	0.0	0	0.0	2	1.7	118	107	94
West Midlands	74	88	2	2	0	0.0	0	0.0	1	1.2	84	77	96
Northern Ireland	20	91	1	5	0	0.0	0	0.0	0	0.0	22	21	95
Scotland	27	90	1	3	0	0.0	0	0.0	0	0.0	30	28	96
Wales	45	85	0	0	2	3.8	0	0.0	0	0.0	53	47	96
United Kingdom	**767**	**86**	**16**	**2**	**5**	**0.6**	**0**	**0.0**	**7**	**0.8**	**892**	**795**	**96**

Table 90: Sentinel lymph node procedure for non-invasive cancers with BCS and known nodal status

Sub-region	With SLNB		Without SLNB								Total with BCS	Total known nodal status	% determined on basis of SLNB
			Ax sampling		Ax clearance		Unknown procedure		No intended Ax procedure				
	No.	%	No.	%	No.	%	No.	%	No.	%			
East Midlands	8	3	1	0	0	0.0	0	0.0	0	0.0	230	9	89
East of England	16	7	1	0	0	0.0	0	0.0	2	0.8	239	19	84
London	28	8	0	0	0	0.0	0	0.0	0	0.0	350	28	100
N East, Yorks & Humber	23	6	1	0	0	0.0	0	0.0	1	0.3	385	25	92
North West	6	2	0	0	0	0.0	0	0.0	1	0.3	306	7	86
South East	17	5	0	0	1	0.3	0	0.0	1	0.3	372	19	89
South West	31	7	0	0	0	0.0	0	0.0	2	0.4	464	33	94
West Midlands	21	8	0	0	0	0.0	0	0.0	0	0.0	265	21	100
Northern Ireland	4	6	0	0	0	0.0	0	0.0	0	0.0	72	4	100
Scotland	3	2	0	0	0	0.0	0	0.0	0	0.0	193	3	100
Wales	9	6	0	0	0	0.0	0	0.0	0	0.0	150	9	100
United Kingdom	**166**	**5**	**3**	**0**	**1**	**0.0**	**0**	**0.0**	**7**	**0.2**	**3026**	**177**	**94**

Table 91: Mean, median & maximum number of nodes obtained (non-invasive cancers)

Sub-region	Total known nodal status	Conservation			Mastectomy		
		Mean	Median	Maximum	Mean	Median	Maximum
East Midlands	96	4	3	9	2	2	10
East of England	74	2	2	5	3	2	14
London	113	2	2	4	2	2	6
N East, Yorks & Humber	136	2	2	5	2	2	12
North West	82	2	2	5	3	2	21
South East	121	3	2	18	3	2	18
South West	140	2	2	5	2	2	8
West Midlands	98	2	2	6	3	2	18
Northern Ireland	25	2	2	4	2	2	4
Scotland	31	2	2	2	3	3	9
Wales	56	2	1	4	2	2	7
United Kingdom	**972**	**2**	**2**	**18**	**2**	**2**	**21**

Table 92: Proportion of invasive cancers with axillary surgery at the first and later operation (excluding no surgery/unknown surgery cases)

Sub-region	B5b						C5 only						B5a					
	Total B5b	% had Ax	Ax in 1st op		Ax in later op		Total C5	% had Ax	Ax in 1st op		Ax in later op		Total B5a	% had Ax	Ax in 1st op		Ax in later op	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	1253	100	1249	100	0	0	0	-	0	-	0	-	59	98	26	44	32	54
East of England	1342	100	1337	100	1	0	0	-	0	-	0	-	70	93	26	37	39	56
London	1350	99	1340	99	2	0	0	-	0	-	0	-	74	81	27	36	33	45
N East, Yorks & Humber	1931	100	1923	100	1	0	3	100	3	100	0	0	95	92	45	47	42	44
North West	1566	100	1566	100	0	0	1	100	1	100	0	0	70	97	32	46	36	51
South East	1765	100	1759	100	1	0	1	100	0	0	1	100	95	99	31	33	63	66
South West	2081	99	2065	99	1	0	0	-	0	-	0	-	105	95	43	41	57	54
West Midlands	1343	100	1337	100	1	0	1	100	1	100	0	0	68	97	31	46	35	51
Northern Ireland	394	99	391	99	0	0	3	67	1	33	1	33	15	80	7	47	5	33
Scotland	1027	100	1023	100	0	0	0	-	0	-	0	-	41	85	26	63	9	22
Wales	831	99	825	99	0	0	0	-	0	-	0	-	47	87	22	47	19	40
United Kingdom	**14883**	**100**	**14815**	**100**	**7**	**0**	**9**	**89**	**6**	**67**	**2**	**22**	**739**	**93**	**316**	**43**	**370**	**50**

Table 93: First axillary operation type for invasive cancers with positive nodal status and repeat axillary operations							
	SLNB at 1st Ax op		No SLNB at 1st Ax op		Total node positive invasive	Total with repeat Ax op	% repeat Ax op after SLNB
Sub-region	**No**	**%**	**No**	**%**			
East Midlands	43	17	4	2	255	47	91
East of England	96	35	4	1	278	100	96
London	87	27	1	0	323	88	99
N East, Yorks & Humber	83	20	3	1	413	86	97
North West	86	26	2	1	330	88	98
South East	101	22	4	1	464	105	96
South West	76	16	3	1	467	79	96
West Midlands	72	27	3	1	265	75	96
Northern Ireland	30	33	2	2	90	32	94
Scotland	23	12	8	4	192	31	74
Wales	42	24	2	1	172	44	95
United Kingdom	**739**	**23**	**36**	**1**	**3249**	**775**	**95**

Appendix 3: Adjuvant therapy data tables (94 – 118)

Adjuvant Therapy Unit with tumour data from the 2013/14 audit of screen-detected breast cancers

*Scotland have not submitted any adjuvant cases in 2013/14

Table 94: Number of cases with previous cancers							
	Total submitted cases	Total pt matched	% matched	Had previous cancers		No previous cancers	
Sub-region				No.	%	No.	%
East Midlands	1520	1519	100	135	9	1384	91
East of England	1921	1921	100	186	10	1735	90
London	2013	1998	99	200	10	1798	90
N East, York's & Humber	2812	2812	100	349	12	2463	88
North West	2381	2380	100	266	11	2114	89
South Central	1521	1518	100	166	11	1352	89
South East	1724	1718	100	223	13	1495	87
South West	2141	2140	100	223	10	1917	90
West Midlands	1912	1910	100	242	13	1668	87
Northern Ireland	374	373	100	22	6	351	94
Wales	1235	1233	100	167	14	1066	86
United Kingdom	**19554**	**19522**	**100**	**2179**	**11**	**17343**	**89**

Table 95: Type of previous cancers									
		Total previous cancers	Invasive/micro-invasive*					Non-invasive*	
Sub-region	Total matched		Breast	Gynae-cological	Bowel	Haema-tological	Other	Breast	Other
East Midlands	1519	135	59	18	8	3	17	16	23
East of England	1921	186	72	25	13	9	20	26	41
London	1998	200	89	21	11	11	17	24	42
N East, York's & Humber	2812	349	109	36	16	5	56	42	112
North West	2380	266	91	38	16	13	32	20	67
South Central	1518	166	55	15	12	10	21	21	47
South East	1718	223	99	21	16	17	23	24	43
South West	2140	223	68	32	18	10	28	26	56
West Midlands	1910	242	80	27	15	12	28	23	77
Northern Ireland	373	22	11	2	4	1	2	2	0
WALES	1233	167	63	17	6	3	17	18	51
United Kingdom	**19522**	**2179**	**796**	**252**	**135**	**94**	**261**	**242**	**559**
% of previous cancers	**-**	**100**	**37**	**12**	**6**	**4**	**12**	**11**	**26**
% of matched	**100**	**11**	**4**	**1**	**1**	**0**	**1**	**1**	**3**

* a patient can have more than one previous cancer

Table 96: Adjuvant treatment of cases with previous breast cancers							
	Women with previous breast cancers	Had RT		Had CT		Had ET	
Sub-region		No.	%	No.	%	No.	%
East Midlands	73	21	29	20	27	16	22
East of England	95	42	44	29	31	33	35
London	112	51	46	20	18	24	21
N East, York's & Humber	148	48	32	42	28	77	52
North West	109	42	39	21	19	17	16
South Central	74	25	34	15	20	32	43
South East	123	53	43	30	24	20	16
South West	92	41	45	17	18	34	37
West Midlands	102	34	33	24	24	21	21
Northern Ireland	13	6	46	5	38	11	85
Wales	80	45	56	21	26	58	73
United Kingdom	**1021**	**408**	**40**	**244**	**24**	**343**	**34**

Table 97: 2013/14 cases supplied to the NHSBSP adjuvant audit									
	Total Cancers	No data supplied		Excluded cases		Total Eligible		Complete data*	
Sub-region		No.	%	No.	%	No.	%	No.	%
East Midlands	1520	0	0	73	5	1447	95	154	10
East of England	1921	0	0	95	5	1826	95	219	11
London	2013	0	0	112	6	1901	94	53	3
N East, York's & Humber	2812	0	0	148	5	2664	95	463	16
North West	2381	0	0	109	5	2272	95	174	7
South Central	1521	0	0	74	5	1447	95	46	3
South East	1724	0	0	123	7	1601	93	53	3
South West	2141	0	0	92	4	2049	96	96	4
West Midlands	1912	0	0	102	5	1810	95	84	4
Northern Ireland	374	0	0	13	3	361	97	354	95
Wales	1235	0	0	80	6	1155	94	1128	91
United Kingdom	**19554**	**0**	**0**	**1021**	**5**	**18533**	**95**	**2824**	**14**

* cases which are eligible and with complete RT, CT and HT data

Table 98: Data completeness for adjuvant therapy									
	Total Eligible	Complete RT		Complete CT		Complete ET		Complete RT, CT & ET	
Sub-region		No.	%	No.	%	No.	%	No.	%
East Midlands	1447	1079	75	394	27	372	26	154	11
East of England	1826	1397	77	461	25	811	44	219	12
London	1901	1313	69	377	20	344	18	53	3
N East, York's & Humber	2664	1961	74	828	31	1496	56	463	17
North West	2272	1701	75	561	25	515	23	174	8
South Central	1447	1015	70	270	19	526	36	46	3
South East	1601	1151	72	356	22	214	13	53	3
South West	2049	1534	75	386	19	690	34	96	5
West Midlands	1810	1380	76	475	26	399	22	84	5
Northern Ireland	361	357	99	358	99	356	99	354	98
Wales	1155	1142	99	1133	98	1139	99	1128	98
United Kingdom	**18533**	**14030**	**76**	**5599**	**30**	**6862**	**37**	**2824**	**15**

Table 99: Radiotherapy														
	Invasive							Non-invasive						
	RT		No RT		Unknown RT		Invasive total	RT		No RT		Unknown RT		Non-invasive total
Sub-region	No.	%	No.	%	No.	%		No.	%	No.	%	No.	%	
East Midlands	931	82	0	0	202	18	1133	144	47	0	0	162	53	306
East of England	1188	83	0	0	250	17	1438	200	54	0	0	167	46	367
London	1098	77	0	0	330	23	1428	205	45	0	0	250	55	455
N East, York's & Humber	1714	81	0	0	395	19	2109	238	44	0	0	298	56	536
North West	1516	83	0	0	301	17	1817	174	40	0	0	259	60	433
South Central	887	78	0	0	246	22	1133	125	41	0	0	181	59	306
South East	1014	80	0	0	258	20	1272	132	41	0	0	191	59	323
South West	1356	84	0	0	249	16	1605	172	40	0	0	263	60	435
West Midlands	1218	84	0	0	226	16	1444	158	45	0	0	196	55	354
Northern Ireland	253	83	49	16	2	1	304	28	52	24	44	2	4	54
Wales	720	79	179	20	8	1	907	95	39	146	59	5	2	246
United Kingdom	**11895**	**82**	**228**	**2**	**2467**	**17**	**14590**	**1671**	**44**	**170**	**4**	**1974**	**52**	**3815**

Table 100: Radiotherapy							
	Overall						
	RT		No RT		Unknown RT		Overall total
Sub-region	No.	%	No.	%	No.	%	
East Midlands	1079	75	0	0	368	25	1447
East of England	1397	77	0	0	429	23	1826
London	1313	69	0	0	588	31	1901
N East, York's & Humber	1961	74	0	0	703	26	2664
North West	1701	75	0	0	571	25	2272
South Central	1015	70	0	0	432	30	1447
South East	1151	72	0	0	450	28	1601
South West	1534	75	0	0	515	25	2049
West Midlands	1380	76	0	0	430	24	1810
Northern Ireland	284	79	73	20	4	1	361
Wales	816	71	326	28	13	1	1155
United Kingdom	**13631**	**74**	**399**	**2**	**4503**	**24**	**18533**

Table 101: Chemotherapy														
	Invasive							Micro/non-invasive						
	CT		No CT		Unknown CT		Invasive total	CT		No CT		Unknown CT		Micro/non-invasive total
Sub-region	No.	%	No.	%	No.	%		No.	%	No.	%	No.	%	
East Midlands	389	34	0	0	744	66	1133	5	2	0	0	309	98	314
East of England	459	32	0	0	979	68	1438	2	1	0	0	385	99	387
London	370	26	0	0	1058	74	1428	7	1	0	0	466	99	473
N East, York's & Humber	818	39	0	0	1291	61	2109	10	2	0	0	545	98	555
North West	548	30	0	0	1269	70	1817	13	3	0	0	440	97	453
South Central	265	23	0	0	868	77	1133	5	2	0	0	309	98	314
South East	353	28	0	0	919	72	1272	3	1	0	0	326	99	329
South West	382	24	0	0	1223	76	1605	4	1	0	0	440	99	444
West Midlands	467	32	0	0	977	68	1444	7	2	0	0	358	98	365
Northern Ireland	87	29	216	71	1	0	304	0	0	55	96	2	4	57
Wales	228	25	662	73	17	2	907	0	0	243	98	5	2	248
United Kingdom	**4366**	**30**	**878**	**6**	**9346**	**64**	**14590**	**56**	**1**	**298**	**8**	**3585**	**91**	**3939**

Table 102: Chemotherapy							
	Overall						
	CT		No CT		Unknown CT		Overall total
Sub-region	No.	%	No.	%	No.	%	
East Midlands	394	27	0	0	1053	73	1447
East of England	461	25	0	0	1365	75	1826
London	377	20	0	0	1524	80	1901
N East, York's & Humber	828	31	0	0	1836	69	2664
North West	561	25	0	0	1711	75	2272
South Central	270	19	0	0	1177	81	1447
South East	356	22	0	0	1245	78	1601
South West	386	19	0	0	1663	81	2049
West Midlands	475	26	0	0	1335	74	1810
Northern Ireland	87	24	271	75	3	1	361
Wales	228	20	905	78	22	2	1155
United Kingdom	**4423**	**24**	**1176**	**6**	**12934**	**70**	**18533**

Table 103: Endocrine Therapy														
	Invasive							Micro/non-invasive						
	ET		No ET		Unknown ET		Invasive total	ET		No ET		Unknown ET		Micro/non-invasive total
Sub-region	No.	%	No.	%	No.	%		No.	%	No.	%	No.	%	
East Midlands	368	32	0	0	765	68	1133	4	1	0	0	310	99	314
East of England	805	56	0	0	633	44	1438	6	2	0	0	381	98	387
London	329	23	0	0	1099	77	1428	15	3	0	0	458	97	473
N East, York's & Humber	1470	70	0	0	639	30	2109	26	5	0	0	529	95	555
North West	490	27	0	0	1327	73	1817	25	6	0	0	428	94	453
South Central	516	46	0	0	617	54	1133	10	3	0	0	304	97	314
South East	198	16	0	0	1074	84	1272	16	5	0	0	313	95	329
South West	672	42	0	0	933	58	1605	18	4	0	0	426	96	444
West Midlands	394	27	0	0	1050	73	1444	4	1	0	0	361	99	365
Northern Ireland	275	90	28	9	1	0	304	5	9	48	84	4	7	57
Wales	812	90	87	10	8	1	907	11	4	229	92	8	3	248
United Kingdom	**6329**	**43**	**115**	**1**	**8146**	**56**	**14590**	**140**	**4**	**277**	**7**	**3522**	**89**	**3939**

Table 104: Endocrine Therapy							
	Overall						
	ET		No ET		Unknown ET		Overall total
Sub-region	No.	%	No.	%	No.	%	
East Midlands	372	26	0	0	1075	74	1447
East of England	811	44	0	0	1015	56	1826
London	344	18	0	0	1557	82	1901
N East, York's & Humber	1496	56	0	0	1168	44	2664
North West	515	23	0	0	1757	77	2272
South Central	526	36	0	0	921	64	1447
South East	214	13	0	0	1387	87	1601
South West	690	34	0	0	1359	66	2049
West Midlands	399	22	0	0	1411	78	1810
Northern Ireland	280	78	76	21	5	1	361
Wales	823	71	316	27	16	1	1155
United Kingdom	**6470**	**35**	**392**	**2**	**11671**	**63**	**18533**

Table 105: Time from final surgery to radiotherapy (excluding neo-adjuvant and intra-operative RT cases and cases with chemotherapy) – non -invasive														
	≤ 14 days		≤ 30 days		≤ 60 days		≤ 90 days		≤ 120 days		≤ 200 days		Median	Total
Sub-region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**		**No.**
East Midlands	1	1	2	1	81	57	134	94	140	98	143	100	57	143
East of England	1	1	2	1	112	57	185	93	194	98	196	99	56	198
London	2	1	3	2	127	64	182	91	192	96	199	100	54	199
N East, York's & Humber	0	0	1	0	124	53	223	96	231	99	231	99	58.5	233
North West	0	0	3	2	116	70	158	95	164	99	165	99	51	166
South Central	0	0	2	2	68	55	108	87	123	99	124	100	58	124
South East	0	0	1	1	45	34	107	82	124	95	131	100	66	131
South West	0	0	1	1	84	50	155	92	167	99	169	100	60	169
West Midlands	0	0	0	0	55	35	139	90	153	99	155	100	64	155
Northern Ireland	0	0	1	4	16	62	25	96	26	100	26	100	56	26
Wales	0	0	0	0	27	30	83	92	90	100	90	100	68	90
United Kingdom	**4**	**0**	**16**	**1**	**855**	**52**	**1499**	**92**	**1604**	**98**	**1629**	**100**	**59**	**1634**

Table 106: Time from assessment to radiotherapy (excluding cases with chemotherapy) - invasive														
	≤ 14 days		≤ 30 days		≤ 60 days		≤ 90 days		≤ 120 days		≤ 200 days		Median	Total
Sub-region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**		**No.**
East Midlands	0	0	0	0	17	3	251	42	492	82	575	96	96	599
East of England	0	0	1	0	29	4	351	44	624	78	757	95	94	800
London	0	0	0	0	18	2	327	41	619	78	750	95	96	793
N East, York's & Humber	0	0	0	0	8	1	437	42	861	82	1020	97	95	1052
North West	0	0	0	0	58	5	526	50	911	86	1028	97	91	1059
South Central	0	0	0	0	15	2	256	39	497	75	628	95	98	662
South East	0	0	0	0	3	0	120	17	416	58	678	94	114	718
South West	0	0	1	0	13	1	292	29	762	74	970	95	103	1023
West Midlands	0	0	0	0	9	1	284	35	603	74	787	96	99	816
Northern Ireland	0	0	0	0	18	10	125	69	166	92	179	99	79	180
Wales	0	0	0	0	5	1	144	27	388	74	519	99	103	525
United Kingdom	**0**	**0**	**2**	**0**	**193**	**2**	**3113**	**38**	**6339**	**77**	**7891**	**96**	**98**	**8227**

Table 107: Time from assessment to radiotherapy – Non - invasive														
	≤ 14 days		≤ 30 days		≤ 60 days		≤ 90 days		≤ 120 days		≤ 200 days		Median	Total
Sub-region	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**		**No.**
East Midlands	0	0	1	1	4	3	58	41	116	81	140	98	98	143
East of England	0	0	0	0	4	2	80	40	163	82	198	99	97	200
London	0	0	0	0	3	2	61	31	158	79	194	97	101	199
N East, York's & Humber	0	0	0	0	3	1	74	32	173	74	231	99	102	233
North West	0	0	0	0	6	4	83	50	138	83	165	99	90.5	166
South Central	0	0	0	0	4	3	30	24	77	62	120	97	112	124
South East	0	0	0	0	1	1	17	13	69	53	125	95	119	131
South West	0	0	0	0	0	0	36	21	115	68	163	96	110	169
West Midlands	0	0	0	0	3	2	36	23	103	66	152	98	105	155
Northern Ireland	0	0	0	0	2	8	14	54	22	85	26	100	88.5	26
Wales	0	0	0	0	1	1	23	25	53	58	91	100	112	91
United Kingdom	**0**	**0**	**1**	**0**	**31**	**2**	**512**	**31**	**1187**	**73**	**1605**	**98**	**103**	**1637**

Table 108: Median days from final surgery to radiotherapy for women with invasive breast cancer			
Sub-region	**Median**	**First quartile**	**Third quartile**
East Midlands	57	49	69
East of England	55	47	68
London	54	47	65
N East, York's & Humber	58	50	69
North West	54	43	65
South Central	57	46	72
South East	66	53	79
South West	62	52	73
West Midlands	63	54	75
Northern Ireland	52	45	61
Wales	67	57	78
United Kingdom	**58**	**49**	**71**

Table 109: Invasive cancer patients who had breast conserving surgery and received radiotherapy within 52 days of their final surgery			
	Within 52 days		Total invasive with BCS
Sub-region	**No**	**%**	
East Midlands	218	38	569
East of England	318	42	754
London	350	47	743
N East, York's & Humber	314	31	1022
North West	488	48	1020
South Central	256	41	628
South East	162	24	685
South West	263	27	980
West Midlands	178	23	773
Northern Ireland	89	51	174
Wales	83	16	514
United Kingdom	**2719**	**35**	**7862**

Table 110: Invasive status of cancers										
	Invasive		Micro-invasive		Non-invasive		Unknown		Total	
Sub-region	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	1133	78	8	1	306	21	0	0	1447	100
East of England	1438	79	20	1	367	20	1	0	1826	100
London	1428	75	18	1	455	24	0	0	1901	100
N East, York's & Humber	2109	79	19	1	536	20	0	0	2664	100
North West	1817	80	20	1	433	19	2	0	2272	100
South Central	1133	78	8	1	306	21	0	0	1447	100
South East	1272	79	6	0	323	20	0	0	1601	100
South West	1605	78	9	0	435	21	0	0	2049	100
West Midlands	1444	80	11	1	354	20	1	0	1810	100
Northern Ireland	304	84	3	1	54	15	0	0	361	100
Wales	907	79	2	0	246	21	0	0	1155	100
United Kingdom	**14590**	**79**	**124**	**1**	**3815**	**21**	**4**	**0**	**18533**	**100**

Table 111: Treatment of invasive cancers										
	Conservation surgery		Mastectomy		No Surgery		Unknown		Total	
Sub-region	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	843	74	269	24	21	2	0	0	1133	100
East of England	1140	79	267	19	31	2	0	0	1438	100
London	1084	76	286	20	55	4	3	0	1428	100
N East, York's & Humber	1643	78	436	21	30	1	0	0	2109	100
North West	1418	78	380	21	19	1	0	0	1817	100
South Central	854	75	253	22	26	2	0	0	1133	100
South East	1004	79	244	19	24	2	0	0	1272	100
South West	1288	80	281	18	36	2	0	0	1605	100
West Midlands	1113	77	314	22	17	1	0	0	1444	100
Northern Ireland	232	76	70	23	2	1	0	0	304	100
Wales	685	76	212	23	10	1	0	0	907	100
United Kingdom	**11304**	**77**	**3012**	**21**	**271**	**2**	**3**	**0**	**14590**	**100**

Table 112: Radiotherapy for invasive cancers treated by conservation surgery						
	Radiotherapy		No/unknown radiotherapy		Total	
Sub-region	No.	%	No.	%	No.	%
East Midlands	820	97	23	3	843	100
East of England	1087	95	53	5	1140	100
London	969	89	115	11	1084	100
N East, York's & Humber	1586	97	57	3	1643	100
North West	1383	98	35	2	1418	100
South Central	788	92	66	8	854	100
South East	900	90	104	10	1004	100
South West	1237	96	51	4	1288	100
West Midlands	1077	97	36	3	1113	100
Northern Ireland	230	99	2	1	232	100
Wales	672	98	13	2	685	100
United Kingdom	**10749**	**95**	**555**	**5**	**11304**	**100**

Table 113: Radiotherapy for non-invasive cancers treated by conservation surgery

Sub-region	Radiotherapy		No/unknown radiotherapy		Total	
	No.	%	No.	%	No.	%
East Midlands	143	70	62	30	205	100
East of England	198	71	82	29	280	100
London	201	59	140	41	341	100
N East, York's & Humber	234	61	149	39	383	100
North West	173	53	156	47	329	100
South Central	120	52	113	48	233	100
South East	129	50	130	50	259	100
South West	172	52	157	48	329	100
West Midlands	154	57	115	43	269	100
Northern Ireland	28	72	11	28	39	100
Wales	94	53	83	47	177	100
United Kingdom	**1646**	**58**	**1198**	**42**	**2844**	**100**

Table 114: Cytonuclear grade of non-invasive cancers treated by conservation surgery with no/unknown radiotherapy

Sub-region	High		Intermediate		Low		Not assessable		Unknown		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	10	16	22	35	22	35	8	13	0	0	62	100
East of England	8	10	29	35	25	30	20	24	0	0	82	100
London	23	16	52	37	36	26	26	19	3	2	140	100
N East, York's & Humber	18	12	85	57	31	21	11	7	4	3	149	100
North West	21	13	86	55	36	23	13	8	0	0	156	100
South Central	27	24	44	39	26	23	15	13	1	1	113	100
South East	39	30	38	29	28	22	25	19	0	0	130	100
South West	28	18	72	46	30	19	26	17	1	1	157	100
West Midlands	13	11	39	34	40	35	22	19	1	1	115	100
Northern Ireland	2	18	1	9	6	55	2	18	0	0	11	100
Wales	7	8	39	47	34	41	3	4	0	0	83	100
United Kingdom	**196**	**16**	**507**	**42**	**314**	**26**	**171**	**14**	**10**	**1**	**1198**	**100**

Table 115: Size of non-invasive cancers treated by conservation surgery with no/unknown radiotherapy

Sub-region	<15mm		15-≤40mm		>40mm		Not assessable		Unknown		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	37	60	11	18	2	3	8	13	4	6	62	100
East of England	44	54	8	10	1	1	20	24	9	11	82	100
London	64	46	27	19	6	4	26	19	17	12	140	100
N East, York's & Humber	88	59	28	19	1	1	11	7	21	14	149	100
North West	91	58	27	17	4	3	12	8	22	14	156	100
South Central	62	55	25	22	2	2	15	13	9	8	113	100
South East	78	60	20	15	3	2	25	19	4	3	130	100
South West	82	52	34	22	1	1	25	16	15	10	157	100
West Midlands	58	50	20	17	1	1	20	17	16	14	115	100
Northern Ireland	7	64	0	0	0	0	3	27	1	9	11	100
Wales	47	57	23	28	1	1	3	4	9	11	83	100
United Kingdom	**658**	**55**	**223**	**19**	**22**	**2**	**168**	**14**	**127**	**11**	**1198**	**100**

Table 116: ER status of all cases								
	ER Positive		ER Negative		Unknown		Total	
Sub-region	No.	%	No.	%	No.	%	No.	%
East Midlands	1098	76	115	8	234	16	1447	100
East of England	1376	75	124	7	326	18	1826	100
London	1424	75	177	9	300	16	1901	100
N East, York's & Humber	2144	80	215	8	305	11	2664	100
North West	1934	85	200	9	138	6	2272	100
South Central	1095	76	90	6	262	18	1447	100
South East	1318	82	124	8	159	10	1601	100
South West	1649	80	159	8	241	12	2049	100
West Midlands	1373	76	129	7	308	17	1810	100
Northern Ireland	306	85	31	9	24	7	361	100
Wales	850	74	75	6	230	20	1155	100
United Kingdom	**14567**	**79**	**1439**	**8**	**2527**	**14**	**18533**	**100**

Table 117: Invasive status of ER positive cases										
	Invasive		Micro-invasive		Non-invasive		Unknown		Total	
Sub-region	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	1035	94	3	0	60	5	0	0	1098	100
East of England	1318	96	5	0	53	4	0	0	1376	100
London	1276	90	7	0	141	10	0	0	1424	100
N East, York's & Humber	1939	90	6	0	199	9	0	0	2144	100
North West	1669	86	10	1	255	13	0	0	1934	100
South Central	1053	96	2	0	40	4	0	0	1095	100
South East	1166	88	6	0	146	11	0	0	1318	100
South West	1484	90	5	0	160	10	0	0	1649	100
West Midlands	1323	96	4	0	46	3	0	0	1373	100
Northern Ireland	277	91	2	1	27	9	0	0	306	100
Wales	833	98	0	0	17	2	0	0	850	100
United Kingdom	**13373**	**92**	**50**	**0**	**1144**	**8**	**0**	**0**	**14567**	**100**

Table 118: Chemotherapy for node positive invasive cancers							
	CT		No CT		Unknown CT		Total
Sub-region	No.	%	No.	%	No.	%	
East Midlands	163	66	0	0	83	34	246
East of England	172	59	0	0	120	41	292
London	179	58	0	0	128	42	307
N East, York's & Humber	292	67	0	0	147	33	439
North West	218	54	0	0	183	46	401
South Central	135	50	0	0	133	50	268
South East	180	62	0	0	110	38	290
South West	171	49	0	0	179	51	350
West Midlands	197	65	0	0	107	35	304
Northern Ireland	52	72	20	28	0	0	72
Wales	117	66	57	32	4	2	178
United Kingdom	**1876**	**60**	**77**	**2**	**1194**	**38**	**3147**

Appendix 4: Survival analysis data tables (119-127)

Data obtained from the survival audit of screen-detected breast cancers for cancer patients screened between April 2010 and 31 March 2011

Table 119: Cause of death of eligible invasive cancers with death before 31/03/2016											
	Breast cancer		Other cancer		Non-cancer		Unknown		Total deaths		No. of eligible cases
Sub-region	No.	%	No.	%	No.	%	No.	%	No.	%	
East Midlands	27	40	20	30	17	25	3	4	67	7	976
East of England	25	44	21	37	10	18	1	2	57	5	1214
London	29	40	20	28	21	29	2	3	72	5	1318
N East, Yorks & Humber	45	45	28	28	27	27	1	1	101	6	1739
North West	40	37	31	29	31	29	6	6	108	7	1487
South East	45	45	30	30	22	22	2	2	99	6	1597
South West	53	50	22	21	25	24	5	5	105	7	1615
West Midlands	37	43	22	26	20	23	7	8	86	7	1200
Northern Ireland	7	58	0	0	2	17	3	25	12	4	272
Scotland	40	43	20	22	25	27	7	8	92	7	1362
Wales	23	38	13	22	23	38	1	2	60	7	801
United Kingdom	**371**	**43**	**227**	**26**	**223**	**26**	**38**	**4**	**859**	**6**	**13581**

Table 120: Cause of death of eligible micro-invasive cancers with death before 31/03/2016											
	Breast cancer		Other cancer		Non-cancer		Unknown		Total deaths		No. of eligible cases
Sub-region	No.	%	No.	%	No.	%	No.	%	No.	%	
East Midlands	0	-	0	-	0	-	0	-	0	0	7
East of England	0	-	0	-	0	-	0	-	0	0	20
London	1	100	0	0	0	0	0	0	1	5	19
N East, Yorks & Humber	0	-	0	-	0	-	0	-	0	0	31
North West	0	-	0	-	0	-	0	-	0	0	15
South East	0	0	1	100	0	0	0	0	1	5	21
South West	0	-	0	-	0	-	0	-	0	0	21
West Midlands	0	-	0	-	0	-	0	-	0	0	10
Northern Ireland	0	-	0	-	0	-	0	-	0	0	6
Scotland	0	-	0	-	0	-	0	-	0	0	9
Wales	0	0	0	0	1	100	0	0	1	17	6
United Kingdom	**1**	**33**	**1**	**33**	**1**	**33**	**0**	**0**	**3**	**2**	**165**

Table 121: Cause of death of eligible non-invasive cancers with death before 31/03/2016											
	Breast cancer		Other cancer		Non-cancer		Unknown		Total deaths		
Sub-region	No.	%	No.	%	No.	%	No.	%	No.	%	Total
East Midlands	0	0	3	33	6	67	0	0	9	4	213
East of England	0	0	2	25	6	75	0	0	8	3	298
London	0	0	2	25	5	63	1	13	8	2	341
N East, Yorks & Humber	1	9	5	45	5	45	0	0	11	3	436
North West	2	20	6	60	2	20	0	0	10	3	348
South East	1	11	4	44	4	44	0	0	9	2	381
South West	0	0	2	40	3	60	0	0	5	1	387
West Midlands	1	6	9	56	4	25	2	13	16	5	291
Northern Ireland	1	33	1	33	1	33	0	0	3	4	78
Scotland	4	29	7	50	2	14	1	7	14	5	283
Wales	1	33	0	0	1	33	1	33	3	1	205
United Kingdom	**11**	**11**	**41**	**43**	**39**	**41**	**5**	**5**	**96**	**3**	**3261**

Table 122: 5-year relative survival by region – primary invasive cancers only		
Sub-region	Un-adjusted	Adjusted
East Midlands	98.2 (96.5,99.6)	98.1 (96.3,99.5)
East of England	100.4 (99.1,101.5)	100.3 (98.9,101.3)
London	99.8 (98.5,100.9)	99.7 (98.4,100.7)
N East, Yorks & Humber	99.0 (97.7,100.0)	98.8 (97.6,99.8)
North West	97.9 (96.5,99.1)	97.8 (96.3,99.0)
South East	98.8 (97.5,99.9)	98.7 (97.4,99.8)
South West	98.9 (97.5,99.9)	98.7 (97.4,99.8)
West Midlands	97.6 (96.0,99.0)	97.5 (95.8,98.8)
Northern Ireland	99.9 (96.6,101.8)	100.1 (96.8,102.0)
Scotland	98.9 (97.4,100.0)	100.0 (98.5,101.2)
Wales	98.1 (96.1,99.7)	98.4 (96.4,100.0)
United Kingdom	**98.8 (98.4,99.2)**	**98.8 (98.4,99.2)**

Table 123: 5-year relative survival by age for primary invasive cancers		
Age	Un-adjusted	Adjusted
<50	98.7 (96.2,99.9)	98.6 (96.2,99.9)
50-52	98.2 (97.3,99.0)	98.2 (97.3,99.0)
53-55	97.4 (96.1,98.4)	97.4 (96.1,98.4)
56-58	97.6 (96.3,98.6)	97.6 (96.3,98.6)
59-61	98.4 (97.3,99.3)	98.4 (97.3,99.3)
62-64	99.1 (98.2,100.0)	99.2 (98.2,100.0)
65-67	98.9 (97.7,100.0)	98.9 (97.7,100.0)
68-70	98.9 (97.4,100.3)	98.9 (97.4,100.3)
71+	103.4 (100.9,105.5)	103.5 (101.0,105.6)
All invasive cancers	**98.8 (98.4,99.2)**	**98.8 (98.4,99.2)**

Table 124: 5-year relative survival by invasive tumor size for primary invasive cancers		
Size	**Un-adjusted**	**Adjusted**
<15mm	101.0 (100.5,101.4)	101.0 (100.5,101.4)
15-≤20mm	98.9 (98.0,99.7)	98.9 (98.0,99.7)
>20-≤35mm	96.9 (95.8,98.0)	96.9 (95.8,98.0)
>35-≤50mm	92.3 (89.0,94.9)	92.3 (89.0,94.9)
>50mm	88.9 (83.8,92.9)	88.9 (83.8,92.9)
Unknown	82.3 (76.7,87.0)	82.3 (76.7,87.0)
All invasive cancers	**98.8 (98.4,99.2)**	**98.8 (98.4,99.2)**

Table 125: 5-year relative survival by invasive grade for primary invasive cancers		
Grade	**Un-adjusted**	**Adjusted**
Grade 1	100.9 (100.1,101.5)	100.9 (100.2,101.5)
Grade 2	100.0 (99.5,100.5)	100.0 (99.5,100.5)
Grade 3	94.2 (93.0,95.3)	94.2 (93.0,95.3)
Not assessable	101.4 (83.5,104.2)	101.4 (83.5,104.2)
Unknown	80.2 (71.2,87.3)	80.2 (71.2,87.3)
All invasive cancers	**98.8 (98.4,99.2)**	**98.8 (98.4,99.2)**

Table 126: 5-year relative survival by nodal status for primary invasive cancers		
Nodal status	**Un-adjusted**	**Adjusted**
Positive	95.8 (94.7,96.8)	95.8 (94.7,96.8)
Negative	100.1 (99.7,100.5)	100.2 (99.7,100.6)
Unknown	69.4 (60.5,77.2)	69.3 (60.4,77.0)
All invasive cancers	**98.8 (98.4,99.2)**	**98.8 (98.4,99.2)**

Table 127: 5-year relative survival by NPI prognostic group for primary invasive cancers		
NPI group	**Un-adjusted**	**Adjusted**
EPG	101.4 (100.6,102.0)	101.4 (100.6,102.0)
GPG	100.8 (100.2,101.3)	100.8 (100.2,101.4)
MPG1	99.5 (98.6,100.2)	99.5 (98.6,100.2)
MPG2	96.8 (95.2,98.1)	96.8 (95.2,98.1)
PPG	86.0 (83.1,88.5)	86.0 (83.1,88.5)
Unknown	84.9 (80.1,89.0)	84.9 (80.0,89.0)
All invasive cancers	**98.8 (98.4,99.2)**	**98.8 (98.4,99.2)**