



Public Health
England



NHS Breast Screening Programme & Association of Breast Surgery

An audit of screen detected breast cancers
for the year of screening April 2018 to March
2019

About Public Health England

Public Health England (PHE) exists to protect and improve the nation's health and wellbeing, and reduce health inequalities. We do this through world-leading science, knowledge and intelligence, advocacy, partnerships and the delivery of specialist public health services. We are an executive agency of the Department of Health and Social Care, and a distinct delivery organisation with operational autonomy to advise and support government, local authorities and the NHS in a professionally independent manner.

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About PHE Screening

PHE screening provides support and advice to the NHS-led national screening programmes. These programmes identify apparently healthy people who may be at increased risk of a disease or condition, enabling earlier treatment and informed decisions. National population screening programmes are 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.

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Foreword

We present the 24th annual audit of the NHS Breast Screening Programme (NHSBSP). Screening outcomes from April 2018 to March 2019 are presented as well as details of adjuvant therapy delivery for the year April 2017 to March 2018.

Readers will note that this year's report is truncated and contains the Quality Performance Indicators and data tables only, in contrast to the comprehensive annual publications the NHSBSP is renowned for. This abbreviation in narrative has been necessitated by the disruption caused throughout society by the Coronavirus pandemic. Healthcare staff, including clinicians and those within PHE usually involved with production of the annual screening audit report, have been understandably focusing on other areas as part of the nationwide response.

This has necessitated a shorter report, though one that still contains an immense amount of information. This year's Quality Performance Indicators show improved outcomes compared to previous years revealing the steady refinement of the screening process. There remains however, areas where a small handful of screening services could concentrate on those aspects of their performance that have not improved in line with the rest of the programme. The regional screening QA services will be aware of these few components of local services that need assistance and support to improve.

That a report of this granularity has been achieved despite the issues affecting the health service again underscores the commitment of all screening staff, from the frontline teams in the screening mobile vans, the administration support staff throughout the country and the PHE screening team to the values of a client centred, evidence based, self-analytical screening service.

I would like to thank all of these colleagues on behalf of the NHSBSP & ABS Screening Audit Committee for their esprit de corps, reflecting the dedication displayed by so many in the NHS during the past few exigent months.

Inevitably, the disruption caused by Covid-19 will last for many months. Women can be assured that the NHS is doing its utmost to restore breast screening whilst maintaining adherence to government directed advice on social distancing and local infection control. There will be challenges therefore in gathering and analysing the 2020-21 screening data for next year's audit report and the Screening Audit group will be fully cognisant of this when producing next year's audit publication.

Mr Ashu Gandhi
Chair, NHS BSP & ABS Screening Audit Group

Acknowledgements

The 2018/19 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:

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The NHSBSP & ABS Screening Audit Group would like to thank the following for their contributions to the 2018/19 audit of screen-detected breast cancer:

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Staff in the Celtic countries' information teams who provide data and liaise with their cancer registries.

Screening Quality Assurance Service Professional and Clinical Advisors in England 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 National Cancer Registration Analysis Service staff in the West Midlands who extracted adjuvant, survival and previous cancer data from the Cancer Analysis System.

The office staff of the Association of Breast Surgery for providing organisational support to the audit group.

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Introduction

Aims and objectives

The 2018/19 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 2018 to 31 March 2019 and adjuvant therapy undertaken in the period 1 April 2017 to 31 March 2018. 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 NHS Breast Screening Programme. These include the standards set in the following publications:

- **Best Practice Guidelines for Surgeons in Breast Cancer Screening**
Association of Breast Surgery, 2018
- **Early & Locally Advanced Breast Cancer: Diagnosis and Management.** NICE Guideline 101, 2018
- **NHS Breast Screening Programme: consolidated standards**
Public Health England, Updated 2019

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 and 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 quality performance indicators should be communicated to 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 multidisciplinary meeting of the lead clinicians as a minimum acknowledging that such discussions will be more challenging during the pandemic. SQAS staff and the relevant QA PCAs should take steps to acknowledge high quality performance of individual screening services in a variety of settings, such as programme boards. SQAS should disseminate the data locally therefore closing the audit loop.

Surgeons and local services are responsible for reviewing their own performance as outlined in the audit data. Instances where the data are found to be incorrect these should be corrected on the local National Breast Screening System and the audit group informed so that a decision regarding resubmission can be made.

A supportive document is included in appendix 3 to help services and responsible Trusts to act on performance outside the national norms for the QPIs. The responsibility of individual organisations with respect to following up these outliers is provided.

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.

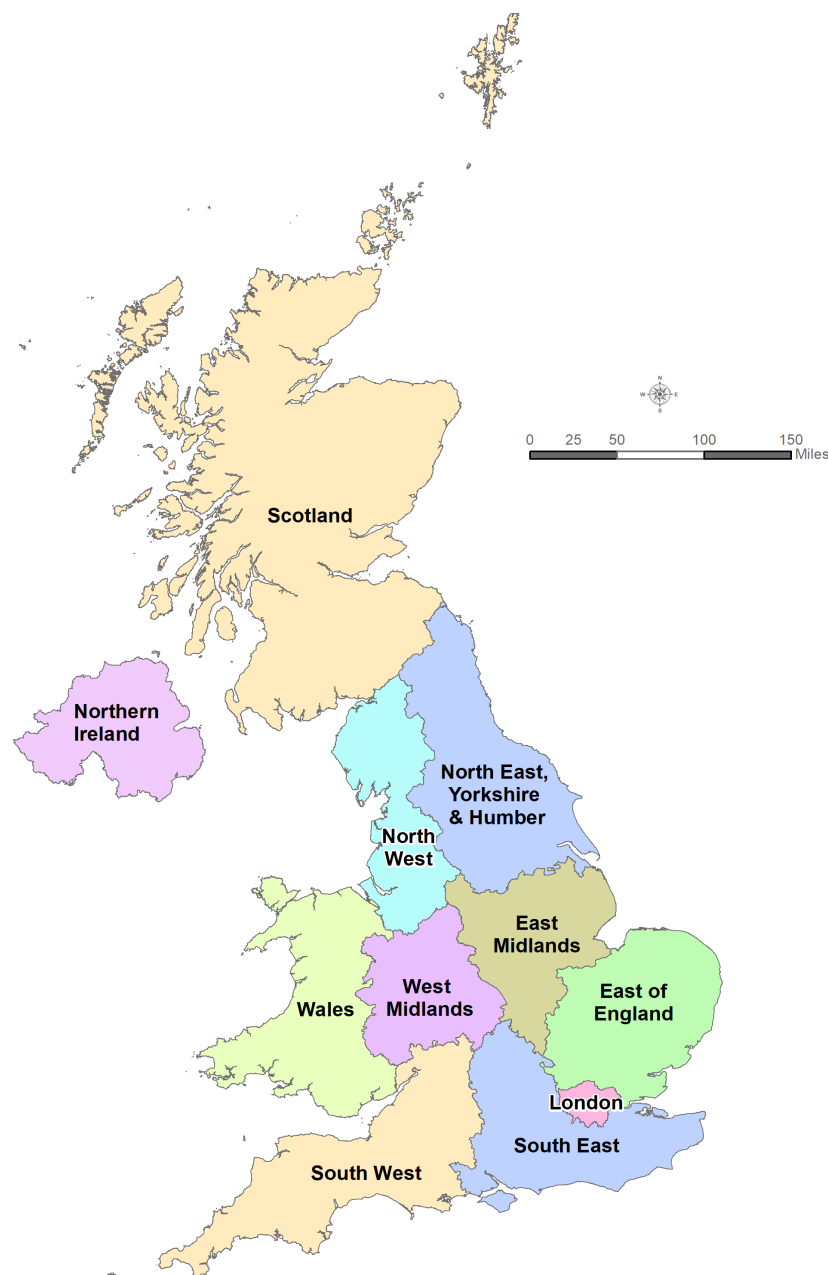
If you wish to communicate with us about the 2018/19 audit report or the development of future NHSBSP & ABS Breast Screening Audits please contact:

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Provision of data for the 2018/19 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 4 Screening Quality Assurance Services (SQAS) 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)



Breast screening services participating in the 2018/19 audit

Screening Units participating in the NHSBSP and ABS audit						
Subregion or Celtic Country	Unit code	Unit name	Women screened	Total cancers	Invasive cancers	Non/Micro invasive cancers
East Midlands	CDN	North Derbyshire & Chesterfield	17445	179	138	41
	CDS	Derby City & South Derbyshire	43329	367	278	89
	CLE	Leicestershire	36672	312	255	57
	CLI	Lincolnshire	36539	307	246	61
	CNN	North Nottingham	12057	78	61	17
	CNO	Nottingham City	29893	262	213	49
	KKE	Kettering	16881	119	97	22
	KMK	Milton Keynes	10484	77	61	16
	KNN	Northampton	18375	135	109	26
East of England	DCB	Cambs & Hunts	20831	190	148	42
	DGY	Great Yarmouth & Waveney	12380	120	106	14
	DKL	King's Lynn	11988	101	86	14
	DNF	Norfolk & Norwich	27371	250	200	50
	DPT	Peterborough	15545	147	120	27
	DSU	East Suffolk	16880	121	105	16
	DSW	West Suffolk	13240	99	80	19
	ELD	Beds & Herts	63373	539	442	95
	FCO	Chelmsford & Colchester	38234	323	286	37
	FEP	West Essex (Epping)	13853	124	103	21
	FSO	South Essex	23329	198	157	41
London	EBA	North London	59364	506	353	153
	ECX	West London	47376	359	262	97
	FBH	Outer North East London	27173	207	174	33
	FLO	Central and East London	20903	204	154	50
	GCA	South East London	61752	491	374	117
	HWA	South West London	52194	442	318	124
North East, Yorkshire & Humber	AGA	Gateshead	30882	260	194	66
	ANE	Newcastle	41411	375	293	81
	ANT	North Tees	41797	337	268	69
	AWC	North Cumbria	15459	139	105	34
	BHL	Humberside	42988	335	293	42
	BHU	Pennine	45505	375	281	94
	BLE	Leeds Wakefield	43793	431	326	104
	BYO	North Yorkshire	37466	325	253	72
	CBA	Barnsley	10016	78	63	15
	CDO	Doncaster	19413	139	115	24
	CRO	Rotherham	11394	101	83	18
	CSH	Sheffield	21691	177	148	29
North West	NCR	Crewe	13981	130	109	21
	NLI	Liverpool	34890	303	218	85
	NMA	East Cheshire & Stockport	20743	196	153	43
	NWA	Warrington, Halton, St Helens & K	25029	229	179	50
	NWI	Wirral	24899	263	212	51
	PBO	Bolton	29977	253	197	56
	PLE	East Lancashire	21000	176	150	26
	PLN	North Lancashire & South Cumbria	29070	267	204	62
	PMA	Manchester	43719	408	334	73
PWI	South Lancashire	11 27517	232	188	44	

Screening Units participating in the NHSBSP and ABS audit						
Subregion or Celtic Country	Unit code	Unit name	Women screened	Total cancers	Invasive cancers	Non/Micro invasive cancers
South East	GBR	Brighton	32461	303	234	69
	GCT1	Canterbury	30571	282	227	55
	GCT2	Maidstone	18552	182	145	37
	GCT3	Medway	24981	230	194	36
	HGU	Guildford (Jarvis)	57333	581	426	155
	HWO	Worthing	36098	357	284	73
	JBA	North & Mid Hants	27430	234	191	43
	JIW	Isle of Wight	6323	63	46	17
	JPO	Portsmouth	28271	237	190	47
	KHW	Aylesbury & Wycombe	23004	218	158	60
	KOX	Oxfordshire	28144	276	213	63
	KRG	West Berkshire	22075	170	135	34
	KWI	East Berkshire	19622	161	135	26
	South West	JDO	Dorset	36716	337	262
JSO		Southampton & Salisbury	28901	291	216	75
JSW		Wiltshire	26194	239	198	41
LAV		Avon	48557	474	368	106
LCO		Cornwall	24411	217	181	36
LED		North & East Devon	23380	190	152	38
LGL		Gloucestershire	29837	282	226	56
LPL		West Devon	22351	236	183	53
LSO		Somerset	23948	193	151	42
LTB		South Devon	15622	122	103	19
West Midlands	MBD	City, Sandwell & Walsall	42099	358	291	67
	MBS	South Birmingham	12594	96	81	15
	MCO	Warwickshire, Solihull & Coventry	41781	374	313	61
	MDU	Dudley & Wolverhampton	29464	302	240	62
	MHW	Hereford & Worcester	39795	315	243	72
	MSH	Shropshire	23706	200	168	32
	MST	North Staffordshire	27890	261	198	63
Northern Ireland	ZNE	Eastern	25656	175	144	31
	ZNI	Northern	11998	100	72	28
	ZNS	Southern	14358	105	90	15
	ZNW	Western	16550	147	117	30
Wales	WNM	North Wales	30749	291	249	42
	WSE	South Wales	53539	488	405	83
	WSW	West Wales	30680	297	233	64

Quality performance indicators

Breast screening services are benchmarked against important clinical and quality parameters. The discipline specific quality performance indicators (QPIs) are considered and chosen by the multidisciplinary Screening Audit Group based on consideration of the key moments of a patient's journey through the breast screening, diagnostic and treatment. The QPIs may refer to, but are not limited to, the **national consolidated standards for the NHSBSP**. QPIs may vary annually or the Screening Audit Group may wish to return to previously examined topics to examine year on year data.

QPIs for the 2018/19 audit are presented below.

Identifying outlier performance

Statistical methods allow for the identification of services with outlier performance which is 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 standard; 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, services that have not achieved or are outliers for a quality assurance (QA) standard or quality performance indicator are highlighted in text boxes. Services should use this information to instigate local investigation of their performance and to identify either errors in the data which should be fed back as previously outlined, factors which explain the performance demonstrated in the data or outlier performance which should be managed in line with their host trust clinical governance policies. Detailed guidance on the assessment of outliers is provided in Appendix 3.

2018/19 quality performance indicators

Radiology

- R1 Proportion of B3 diagnosed lesions eligible for VAE that proceed to surgery: <25% of B3 lesions eligible for VAE should be managed with surgical excision
- R2 Recall to assessment rate at prevalent round (age 45-52*): $\geq 10\%$ identified as outliers.
*Celtic countries are not part of the Age-X trial so provided data for age 50-52.
- R3 Recall to assessment rate within women at very high risk of breast cancer: $\geq 12\%$ identified as outliers.

Pathology

- P1 Invasive cancer grade: 1-year and 3-year 99.7% high and low outlier services for invasive cancer grade status.
- P2 Invasive cancers with positive lymph node status: 3-year 95% low outlier services for sensitivity and specificity of pre-operative diagnosis on axillary lymph nodes
- P3 Lymphovascular invasion rates for invasive cancers: 1-year 99.7% high and low outlier services for lymphovascular invasion found in invasive cancers (excluding services with $>10\%$ unknown lymphovascular status)

Surgery

- S1 Individual surgeon screening cancer caseload over a 3-year period
- S2a Surgical examination of axillary lymph nodes: 3-year high outlier services with more than 5 nodes obtained from node negative invasive cancers (excluding cases with neo-adjuvant therapy).
- S2b Surgical examination of axillary lymph nodes: 3-year high outlier services with cases of non-invasive cancers treated by breast conserving surgery that have any lymph nodes excised.
- S3 Reconstruction for non-invasive cancers: 5-year low outlier services with immediate reconstruction following mastectomy for non-invasive cancer cases.

Oncology

- O1 Radiotherapy after breast conserving surgery: 1-year 95% upper control limit outliers for patients with invasive cancer treated with breast conserving surgery with no adjuvant radiotherapy or unknown adjuvant radiotherapy excluding patients over 65, with an invasive tumour size of less than 20mm and an ER+, grade 1 or 2 cancer.

Radiology

Radiology QPI R1

Proportion of B3 diagnosed lesions which have open surgical biopsies.

<25% of B3 lesions eligible for Vacuum Assisted Excision (VAE) should be managed with surgical excision

This QPI examines data from England only. As this is a new dataset it is not sufficiently robust to label services as outliers in this audit cycle.

When reviewing the data it should be remembered that some women have more than one B3 lesion therefore the number of B3 lesions eligible for VAE is greater than the number of women eligible for VAE.

In England, 3355 women had B3 as the worst core biopsy result.

- 556 (16.5%) were diagnosed with malignancy (invasive or non-invasive) after surgery.

B3 cases can be divided into cases with and without atypia.

To be eligible for VAE, fibroepithelial and stromal lesions were excluded from cases without atypia and papilloma lesions were excluded from cases with atypia.

Excluding cases with incomplete data

- 2610 *women* were eligible for VAE of which
 - 23% underwent surgery
- 2951 B3 *lesions* were eligible for VAE, of which
 - 591 (20%) had surgery
 - 341 (12%) had incomplete data

Of 1827 B3 cases without atypia eligible for VAE (fibroepithelial and stromal lesions excluded)

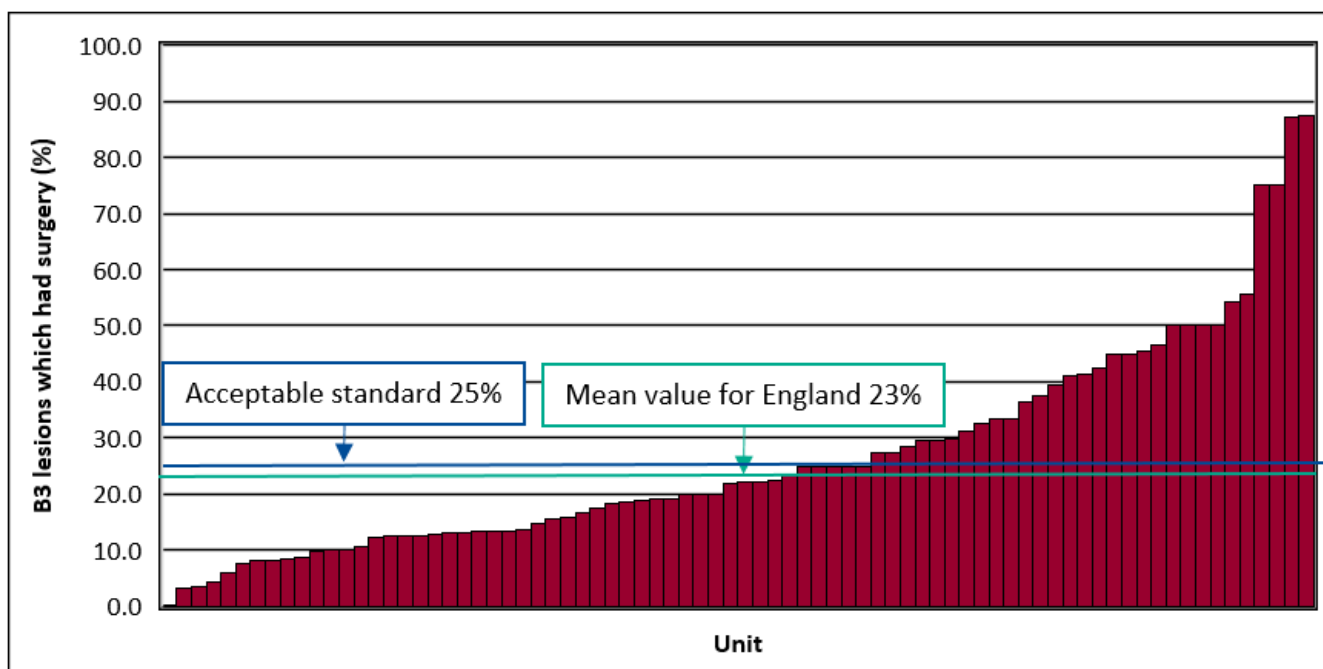
- 1616 (88%) had complete data
- 1189 (74%) had VAE and 123 (8%) cancers (invasive cancers and DCIS/LCIS) were diagnosed
 - 63 also had surgery in addition to VAE and a further 16 cancers were diagnosed
 - therefore, a total of 139 cancers were diagnosed in 1189 women (12%) who underwent VAE +/- surgery for B3 lesions without atypia
- 427 (26%) had surgery only and 75 cancers (5%) were diagnosed

Of 1124 B3 cases with atypia, eligible for VAE (papilloma lesions with atypia excluded)

- 994 (88%) had complete data
- 830 (84%) had VAE and 182 cancers (18%) were diagnosed
 - 61 also had surgery in addition to VAE and 28 cancers were diagnosed
 - therefore, a total of 243 cancers were diagnosed in 830 women (29%) who underwent VAE +/- surgery for B3 lesions with atypia
- 164 (16%) had surgery only and 77 cancers (8%) were diagnosed

This is an improvement compared to the previous year’s data as numbers of women eligible for VAE who proceed to surgery has decreased however data quality remains an issue and services should review their internal processes for entering these data onto NBSS and ensure that these are robust to provide accurate data.

Figure 1: Percentage of women with B3 as their worst pre-operative diagnosis, eligible for VAE who proceeded to have surgery



Radiology QPI R2	<p>Recall to assessment at prevalent round (age 45-52): Acceptable: less than 10% recall rate Achievable: less than 7% recall rate</p>
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In England 778,825 women aged 45 to 52 and in Wales and Northern Ireland 25,292 women aged 49-52 were screened for the first time through NHSBSP in the 3-year period 2016 to 2019. Wales and Northern Ireland are not part of the AgeX trial and so all first screens are offered to women aged 49 to 52.

Of these 804,117 women, 7.3% were recalled for assessment

- 39 of 86 services met the achievable level of less than 7% in 2016 to 2019

- 3 services did not meet the acceptable level and had a recall rate more than or equal to 10%. Of these 3 services, 2 were outliers in last year's audit

This QPI has improved from 7 services in 2015 to 2018.

**Outlier services in QPI R2
and their prevalent recall rate (>=10%)**

Sub region	2016-2019		2015-2018
	Service	%	%
South West	JDO	11.2	10.9
South West	LED	10.2	8.9
South West	LPL	10.1	10.7
UK (excluding Scotland)		7.3	7.6

Services at or close to the 10% 'acceptable' level

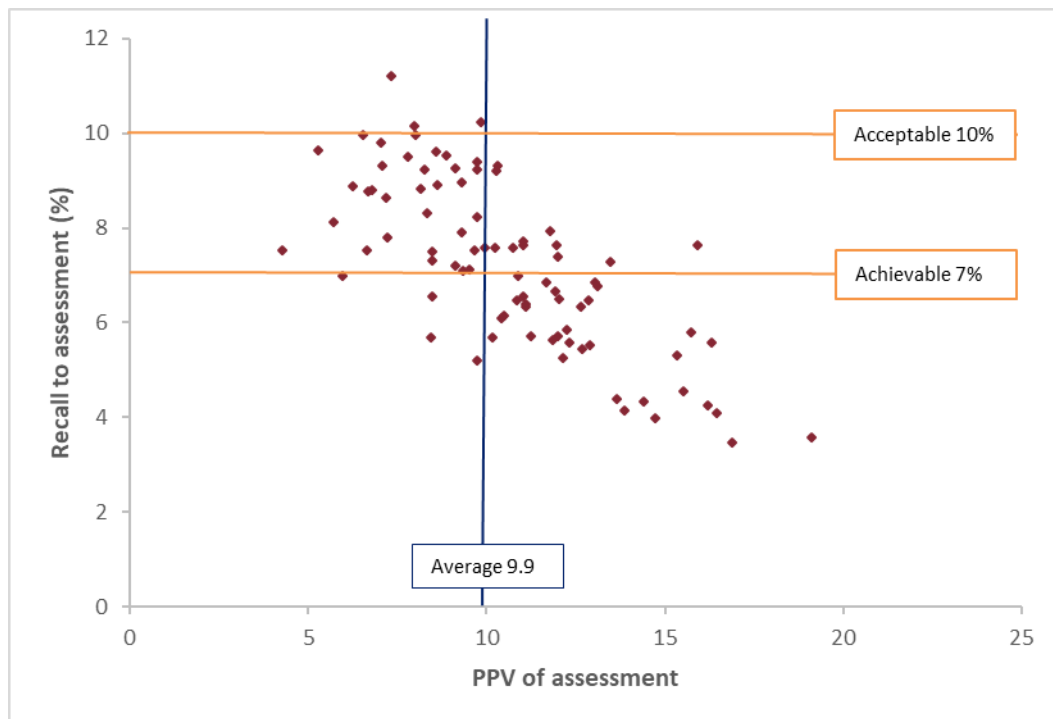
Subregion	2016-2019		2015-2018
	Service	%	%
London	FLO	9.96	8.4
North West	PBO	9.8	10.3
South West	LAV	10.0	10.6
UK		7.3	7.6

To examine the relationship between recall to assessment rates and positive predictive value (PPV) of assessment, the proportion of women recalled for assessment and diagnosed with cancer (including those with open biopsy) was explored for women aged 45 to 52 at the prevalent round (Figure 2).

- average PPV of assessment for UK excluding Scotland is 9.9%
- all 3 services with a high recall to assessment rate have a PPV for assessment lower than the average
- 35 of 39 services who met the achievable target have a PPV higher than the average

There is a trend that services with a higher recall to assessment rate have a lower positive predictive value (PPV) for assessment. Therefore, the higher recall rate is not associated with a higher cancer detection rate. Services are advised to audit their recalls and see if measures can be put in place to reduce the number of benign lesions being recalled back to assessment.

Figure 2: Recall to assessment rate vs PPV of assessment (prevalent round age 45 to 52), using UK data excluding Scotland from the audit period 2016 to 2019



Radiology QPI R3

Recall to assessment rate within women at very high risk of breast cancer:

Acceptable: less than 12% recall rate
Achievable: less than 10% recall rate

Over the three-year period 2016 to 2019, 15 of the 84 services in England and Northern Ireland recalled more than or equal to 12% of their very high-risk women for assessment.

- as expected, recall rate and cancer detection rate in this high risk group is higher than for the general population
- the average recall rate for England and Northern Ireland is 9.3%; range 0%-17.5%
- the cancer detection rate for England and Northern Ireland is 16.8 per 1000 screened; range 0 to 41 per 1000 screened
- the cancer detection rate for all non-high risk women is 8.8 per 1000 screened

As the number of women in this QPI is small it will take time to build up robust data on which reliable analysis can be undertaken.

**Outlier units for QPI R3 - Recall rates of family history patients: 3 year outliers
≥12%**

Sub region	Service	2016/19		Cancer detection per 1000 screened	PPV of assessment
		Number of high risk women screened	Recall rate (%)		
East Midlands	KMK	104	12.5	19.2	15.4
East of England	DCB	349	14.6	17.2	11.8
London	ECX	388	12.4	18.0	14.6
London	FBH	215	16.7	9.3	5.6
London	FLO	487	17.5	20.5	11.8
North West	NCH	58	13.8	17.2	12.5
North West	PLE	154	13	26.0	20.0
South East	GCT2	229	12.7	21.8	17.2
South East	KHW	205	12.2	34.1	28.0
South East	KWI	196	12.2	10.2	8.3
South West	JSO	362	15.5	24.9	16.1
South West	LAV	246	13.8	20.3	14.7
South West	LPL	151	13.2	6.6	5.0
West Midlands	MBS	39	12.8	0.0	0.0
West Midlands	MHW	49	16.3	40.8	25.0
England and NI		20172	9.3	16.7	18.0

Pathology

Pathology QPI P1

Invasive cancer grade

One-year and 3-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 86 screening services in the UK (excluding Scotland), 10 services were outliers for this QPI; 4 of these services were outliers in the previous year's audit.

For Grade 1 tumours there were 2 low and 1 high outlier services.

For Grade 2 tumours there were 1 low and 2 high outlier services.

For Grade 3 tumours there were 3 low and 1 high outlier services.

1-year and 3-year 99.7% high and low outlier services for invasive cancer grade

Sub region	Service	Grade 1	Grade 1	Grade 2	Grade 2	Grade 3	Grade 3
		2018/19	3-year 2016-19	2018/19	3-year 2016-19	2018/19	3-year 2016-19
		%	%	%	%	%	%
East of England	DNF	36.4	30.5	44.0	47.9	19.6	21.2
London	ECX	19.2	20.4	67.1	62.5	13.8	16.7
London	GCA*	19.0	21.0	64.4	63.7	16.5	15.2
NEYH	AGA	26.0	25.3	62.4	61.2	11.0	13.4
NEYH	AWC	29.8	30.8	61.7	57.7	8.5	11.1
North West	NMA*	28.5	29.5	63.2	60.8	8.3	9.4
North West	PMA	18.8	20.6	53.5	55.1	27.7	23.8
South East	KRG*	14.7	15.7	66.7	64.1	17.8	19.7
South West	LSO*	39.3	38.0	46.4	47.0	14.3	15.1
Northern Ireland	ZNW	11.2	12.0	62.9	59.0	25.0	28.6
UK (excluding Scotland)		24.6	24.5	56.3	55.6	18.7	19.1

99.7% low outlier

99.7% high outlier

* Outlier in 2017/18 audit

There has been a progressive reduction in the number of grade outliers since this QPI was first introduced (2015/16 audit, 19 outliers; 2016/17 audit, 12 outliers; 2017/18 audit 11 outliers).

Pathology QPI P2

Sensitivity and specificity of pre-operative diagnosis on axillary lymph nodes

Three-year 95% low outlier services for sensitivity or specificity

Axillary core biopsy and fine needle aspiration cytology (FNAC) are used to assess whether breast cancer has spread to a woman's axillary lymph nodes. When lymph node status is diagnosed pre-operatively, this can save women from having extra or unnecessary surgical procedures. The accuracy of pre-operative lymph node assessment is ascertained by its sensitivity and specificity and these are also presented below.

In the 3-year period 2016-2019, 48,118 invasive cancers were diagnosed of which 7479 patients (16%) with invasive breast cancer had positive (malignant) nodes found during surgery. This number excludes patients with previous breast cancers and those who had neo-adjuvant treatment.

Of these 7479 patients with malignant nodes found at surgery

- 7426 (99.3%) were recorded as having had pre-operative axillary ultrasound
- almost a third (32%, 2373) underwent an axillary biopsy during their assessment prior to surgery
- 5106 (68%) did not undergo an axillary biopsy during their assessment prior to surgery

- Of the 2373 patients who had an axillary biopsy prior to surgery
 - 42% (986/2373) were assessed with fine needle aspiration cytology (FNAC)
 - 58% (1387/2373) were assessed by core biopsy
 - Data is not available on how many patients had both an FNAC and a core biopsy
 - 73% (1721/2373) had a positive (malignant) diagnosis
 - in the majority of cases (65%; 1113/1721), this was achieved by core biopsy
 - the remaining 608 cases had FNAC

In the 3-year period 2016-2019, 4989 patients with invasive breast cancer (excluding those who had a previous breast cancer or neo-adjuvant therapy) had an axillary biopsy during pre-operative assessment

- of these, 36% (1795) received a positive needle biopsy result
 - 96% (1721) had positive nodes found at surgery

- 64% (3194) received a negative needle biopsy result
 - 20% (652) had positive nodes found at surgery

Of the 3194 women who had a negative (no malignancy) pre-operative assessment by FNAC or core biopsy;

- 53% (1692) were assessed by FNAC only
 - 75% (1264/1692) had negative nodes at surgery
- 48% (1547) were assessed by core biopsy only
 - 81% (1251/1547) had negative nodes at surgery
- therefore, in total, 79% (2515/3194) were found to have negative nodes at surgery.
- 2511 of the 2515 women who had a negative FNAC or core biopsy had an axillary ultrasound performed beforehand
 - In 4 cases whether an axillary ultrasound scan was performed was not recorded. Services should endeavour to ensure comprehensive data capture for each screening patient
- 96% (2409/2511) had an abnormal ultrasound result recorded

Of the 1795 patients diagnosed with positive (malignant) nodes pre-operatively either by FNAC or core biopsy:

- 1721 (96%) had positive nodes found at surgery
- 81 patients had no axillary surgery recorded
- 74 patients had no malignant disease recorded from an axillary node surgical procedure
 - 34 patients had a pre-operative positive axillary FNAC
 - 40 patients had pre-operative positive axillary core biopsy

Screening services should review these cases to ensure the data in these 74 cases are recorded correctly. If it is correct that a patient with a positive pre-operative diagnosis had no malignant nodes found at axillary surgery then this should be subject to a full investigation.

Sensitivity and specificity of needle biopsy of axilla

The sensitivity and specificity of a procedure are a measure of the accuracy of a procedure. In the case of axillary assessment, sensitivity is the proportion of women who had positive nodes at surgery who were diagnosed with positive nodes at pre-operative assessment. Specificity is the proportion of women who do not have positive nodes at surgery who were correctly assessed as such pre-operatively.

The decision to proceed with needle biopsy to establish the presence of axillary node metastases depends on appearance of axillary nodes on imaging and commonly includes assessment of lymph node cortical thickness. This parameter may vary between services and therefore influence the results presented below.

Table 1: Sensitivity and specificity for assessment by FNAC or core biopsy, FNAC only and core biopsy only.

	By FNAC or core	By FNAC only	By core biopsy only
Correct identification of presence of malignant axillary nodes (sensitivity)	72.5%	61.7%	80.2%
Correct identification of absence of malignant axillary nodes (specificity)	97.2%	97.5%	96.9%

Table 1 shows that overall, axillary assessment by either FNAC or core biopsy has a sensitivity of 72.5%. Core biopsy alone is more sensitive than FNAC alone at identifying positive nodes (80.2% v 61.7% respectively).

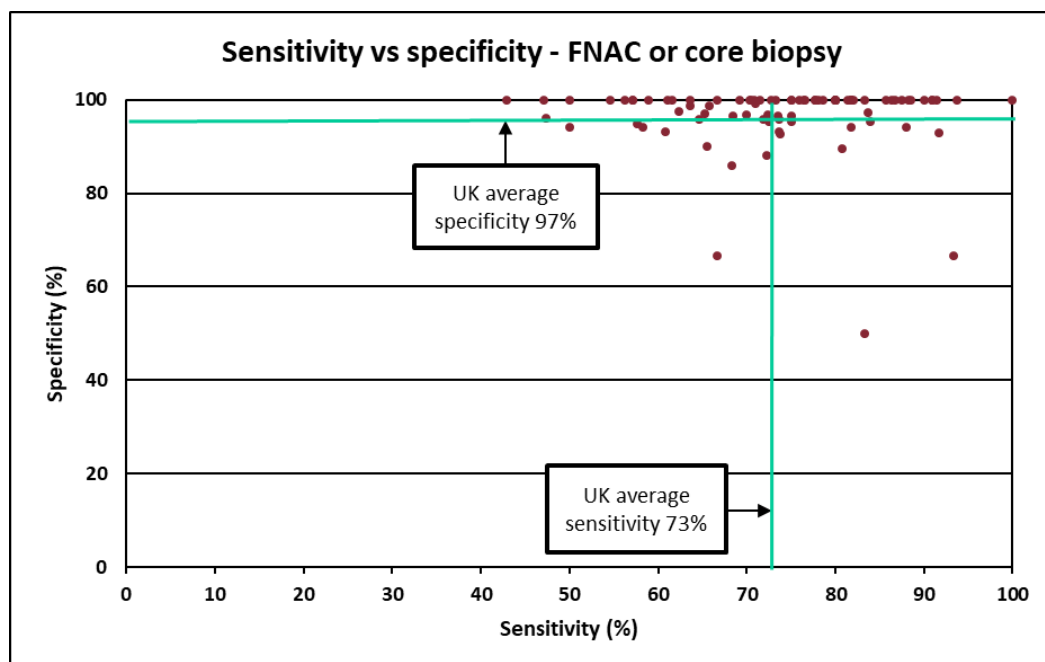
The specificity for axillary assessment by either FNAC or core biopsy is 97.2% (Figure 3), so false positive results are uncommon. Both, FNAC only and core biopsy only, have similar specificity values (97.5% and 96.9% respectively), so are equally accurate at identifying women with negative nodes.

Data is not available on women who had both an FNAC and a core biopsy, so it is not possible to know if a combination of both types of assessment increases sensitivity.

Overall, axillary assessment has high specificity but lower sensitivity, indicating that it rarely falsely identifies a woman as having positive nodes, but may miss some women with axillary metastases whom it should have identified. At service level, the sensitivity achieved is influenced by their agreed cortical thickness threshold on axillary node ultrasound assessment.

False positive biopsy results should be comprehensively investigated in each case.

Figure 3: Sensitivity versus specificity for pre-operative nodal assessment via FNAC or core biopsy by screening service, excluding services that did not have any positive pre-operative nodal assessments



In the UK (excluding Scotland), 5 services are low outliers for sensitivity of axillary needle biopsy and 1 service is low outlier for specificity of axillary needle biopsy.

Outlier service and their sensitivity and specificity of needle biopsy to the axilla (core biopsy or cytology)

Sub-region	Service	Sensitivity		Specificity	
		No.	%	No.	%
London	HWA	30/52	58	36/38	95
NEYH	BHU	36/64	56	92/92	100
South East	JBA	8/17	47	7/7	100
South West	LAV	18/38	47	71/74	96
Northern Ireland	ZNW	9/21	43	42/42	100
Northern Ireland	ZNE	41/60	68	110/128	86
UK (excluding Scotland)		1717/2368	73	2494/2567	97

99.7% low outlier
95% low outlier

Pathology QPI P3

Lymphovascular invasion

One-year 99.7% high and low outlier services for lymphovascular invasion found in invasive cancers (excluding services with >10% unknown lymphovascular status)

Excluding neoadjuvant chemotherapy cases, 7% of surgically treated invasive cancer had no information on lymphovascular invasion. This figure varied between 0% (3 services) to 62% of cases with no lymphovascular invasion information (1 service). 19 services had more than 10% and 7 services had more than 20% of cases with no lymphovascular invasion data.

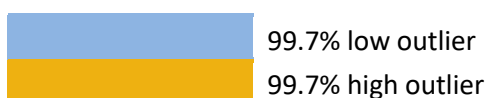
Services should ensure the lymphovascular invasion information is collected, as this is part of the minimum dataset and may contribute to management decisions.

Services with >10% of invasive cancers with unknown lymphovascular invasion status

Sub-region	Service	2018/19	
		No.	%
East Midlands	CNO	37	22.2
East of England	DKL	48	62.3
East of England	FSO	17	13.4
London	GCA	43	15.0
NEYH	AGA	18	10.2
NEYH	ANE	50	20.7
North West	NWA	36	23.2
North West	PLN	25	13.8
North West	PMA	67	22.0
South East	KWI	29	26.1
South West	JBA	21	12.9
South West	JSW	20	11.2
West Midlands	MBS	7	10.1
West Midlands	MDU	38	18.4
Northern Ireland	ZNI	11	15.5
Northern Ireland	ZNS	11	12.6
Wales	WNM	62	26.4
Wales	WSE	42	11.0
Wales	WSW	25	12.4
UK (excluding Scotland)		965	6.8

Outlier services and the proportion of invasive cancers with lymphovascular invasion

Sub-region	Service	2018/19	
		No.	%
East Midlands	CLE	11	5.1
East of England	FCO	16	7.1
NEYH	BHL	17	7.1
South East	GCT2	6	5.0
South East	JPO	6	3.6
South West	LAV	25	7.9
South West	LGL	43	22.2
South West	LSO	3	2.5
Northern Ireland	ZNE	37	26.6
Northern Ireland	ZNW	28	25.0
UK (excluding Scotland)		1783	12.5



Excluding neoadjuvant chemotherapy cases, 12% (range 2-34%) of surgically treated invasive cancers had lymphovascular invasion present.

The table to the right lists the outlier services who lie above the 99.7% upper or below the 99.7% lower control limits, and have less than 10% of cases with unknown lymphovascular invasion status. Issues affecting specimen fixation may affect this aspect of this QPI and should be considered when exploring reasons for outlier status.

The table to the left lists the services with >10% of of invasive cancers with unknown lymphovascular invasion status. Previously when this performance has been investigated the root cause has tended to be the translation of data onto NBSS. These services should investigate the entry of this data and identify opportunities to improve data ascertainment.

Surgery

Surgery QPI S1

Individual surgeon screening cancer caseload over a 3-year period

Published evidence⁽¹⁻⁴⁾ in peer reviewed journals indicates that patient outcomes for breast cancer care, including screening patients, are correlated with annual surgical caseload. The Association of Breast Surgery guidelines for screening unit surgeons therefore indicate that these surgeons should have an annual caseload of 10 screen detected cancers averaged over a 3-year period.

Between 2016-2019, of a total of 1323 surgeons, audit data shows that 319 surgeons had an average annual caseload of less than 10 screen detected cancers. These surgeons treated 2170 women across the UK (excluding Scotland).

Directors of Breast Screening may wish to review the surgical caseloads of the surgeons within their services to examine if the recommended annual number of cases is achieved. There may be valid reasons why this may not be the case e.g. maternity leave, illness, leavers, new starters etc. Further data is provided at a sub regional level in table 55 in appendix 4.

6 surgeons had an annual average caseload of 100 or more screen detected cancers. These surgeons treated 2364 women across the UK over the three year period 2016-2019. Whilst there currently isn't an upper limit to the amount of cases per surgeon, Directors of Breast Screening may wish to review how surgeon data is recorded.

Annual screening surgical caseload per surgeon 2016-19

Sub-region	Total surgeons	<10 cases		≥10 cases	
		No.	%	No.	%
East Midlands	67	23	34.3	44	65.7
East of England	86	34	39.5	52	60.5
London	134	74	55.2	60	44.8
N East, Yorks & Humber	101	32	31.7	69	68.3
North West	106	41	38.7	65	61.3
South East	100	33	33.0	67	67.0
South West	94	30	31.9	64	68.1
West Midlands	84	39	46.4	45	53.6
Northern Ireland	21	3	14.3	18	85.7
Wales	28	10	35.7	18	64.3
UK (excluding Scotland)	821	319	38.9	502	61.1

Proportion of women referred to surgeons according to annual caseload of surgeon 2016-19

Sub-region	Total (Referred)	<10 cases		≥10 cases	
		No.	%	No.	%
East Midlands	5041	175	3	4866	97
East of England	5386	110	2	5276	98
London	6518	450	7	6068	93
N East, Yorks & Humber	8506	206	2	8300	98
North West	7298	353	5	6945	95
South East	8498	223	3	8275	97
South West	6944	173	2	6771	98
West Midlands	5370	422	8	4948	92
Northern Ireland	1529	15	1	1514	99
Wales	3130	43	1	3087	99
UK (excluding Scotland)	58220	2170	4	56050	96

**Surgery QPI
S2a**

Surgical examination of axillary lymph nodes

3-year 95% high outlier services with more than 5 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.

During 2016 to 2019, there were 9 services who were 95% high outliers; of which 2 were higher than the 99.7% control limit. These 9 services should examine their results and review areas for possible improvement.

Six of these services were also outliers in the audit of 2015 - 2018 data.

Outlier services in QPI S2a and their proportion of node negative invasive cancers with more than 5 nodes obtained

Sub-region	Service	3-year data 2016-19		2018/19 data		2017/18 data
		No.	%	No.	%	%
East of England	ELD	51/768	6.6	13/279	4.7	8.8
East of England	FCO	29/478	6.1	7/191	3.7	8.6
East of England	FSO	21/362	5.8	5/104	4.8	4.7
NEYH	ANT	31/542	5.7	15/198	7.6	3.8
North West	NMA	20/322	6.2	9/106	8.5	4.8
South East	GBR	29/443	6.5	5/161	3.1	8.3
South East	KRG	15/238	6.3	5/87	5.7	2.6
Northern Ireland	ZNE	23/350	6.6	10/107	9.3	3.9
Wales	WNM	25/524	4.8	5/181	2.8	4.2
UK (excluding Scotland)		968/33514	2.9	331/11591	2.9	2.8

	99.7% high outlier
	95% high outlier

Surgery QPI S2b

Surgical examination of axillary lymph nodes:

3-year high outlier services with cases of non-invasive cancers treated by breast conserving surgery that have any lymph nodes excised.

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

In 2016 to 2019, 3 services were 95% high outliers for this QPI; no service was 99.7% high outlier. For the year 2018/19, 1 of these 3 services remains a 95% high outlier. These services should audit the reason for this.

Outlier services in QPI S2b and their proportion of preinvasive cancers treated by breast conserving surgery which have had lymph nodes excised. Some services had less than 5 cases for the year 2018/19

Sub-region	Service	3-year 2016-19				2018/19	
		No of patients*	%	average no. of nodes removed	Range	No.	%
East of England	DNF	12/71	17	1.83	1-3	<5	12
South West	JSW	14/78	18	2.43	1-7	<5	14
West Midlands	MCO	14/133	11	2.29	1-6	7/38	18
UK (excluding Scotland)		446/8682	5.1			139/2830	4.9



*numerator = number of patients with preinvasive cancer having BCS and lymph node excision, denominator = total number of patients having BCS for preinvasive disease

Surgery QPI S3

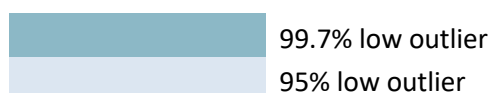
Reconstruction for non-invasive cancers

Five-year low outlier services with immediate reconstruction following mastectomy for non-invasive cancer cases.

The decision on whether to proceed with immediate breast reconstruction following mastectomy for non-invasive cancers, e.g. ductal carcinoma in situ (DCIS) is multifactorial. Therefore, it is not appropriate to have a target figure for this QPI. However, it is reasonable to expect most screening services to fall between 3 standard deviations of the mean figure for the UK (excluding Scotland). Outlying services are not inevitably practicing suboptimal surgery but may wish to reflect on their practice to establish the reason for their numbers and the accessibility of immediate breast reconstruction for their patients. Over the 5-year period of 2014 to 2019, 8 services were low outliers; 1 at the 99.7% confidence level. In 2018/19, none of the 8 services are outliers.

Outlier services and the reconstruction rates following mastectomy for pure DCIS (5 years). Some services had less than 5 cases for the year 2018/19.

Sub-region	Services	5 year 2014/15-2018/19		2018/19	
		No.	%	No.	%
London	FBH	18/48	37.5	<5	57.1
Northern Ireland	ZNS	4/16	25.0	<5	40.0
South East	GCT1	19/51	37.3	<5	40.0
South West	JSO	18/48	37.5	<5	33.3
South West	LPL	12/38	31.6	5/8	62.5
Wales	WNM	16/45	35.6	<5	37.5
Wales	WSW	42/109	38.5	7/16	43.8
West Midlands	MSH	19/58	32.8	<5	25.0
UK (excluding Scotland)		2217/4269	51.9	406/788	51.5



Oncology

Oncology QPI O1

Radiotherapy after breast conserving surgery

One-year 95% upper control limit outliers for patients with invasive cancer treated with breast conserving surgery with no adjuvant radiotherapy or unknown adjuvant radiotherapy excluding patients over 65 years, with an invasive tumour size of less than 20mm and an ER+, grade 1 or 2 cancer

Adjuvant radiotherapy is accepted as an essential part of locoregional treatment for the majority of women with invasive breast cancers treated by breast conserving surgery. In the 86 screening services in the UK (excluding Scotland), 9 services were outliers for this QPI; 3 of which were outside the 99.7% control limit.

Services should audit the reasons for these high outliers. It should be noted that services may be served by more than one radiotherapy centre so true outlier behaviour in terms of referral to radiotherapy may be masked by the presentation of these data at this level. Breast multidisciplinary teams should, through internal audit processes, be aware of any differences in the management of women with breast cancer who are referred for onward treatment to different cancer centres.

Patients over 65 years with an invasive tumour size of less than 20mm, ER positive and grade 1 or 2 were excluded from this cohort as they have a very low absolute risk of local recurrence as per NICE guidelines and omission of adjuvant radiotherapy is reasonable ⁽⁵⁾.

Outlier services and their proportion of invasive cancers treated with breast conserving surgery with no or unknown adjuvant radiotherapy, excluding patients over 65 years, with an invasive tumour size of less than 20mm and an ER+, grade 1 or 2 cancer.

Sub-region	Service	2017/18		3-year 2015-18	Previous 2016/17
		No.	%	%	%
East of England	ELD	22	10.3	11.9	12.4
London	EBA	30	14.2	16.3	13.3
London	HWA	26	12.0	12.5	10.4
North West	NCR	10	20.4	9.1	0
South East	GBR	14	12.4	14.0	13.6
South East	HGU	28	13.1	14.7	13.9
South East	KHW	13	14.1	17.6	21.1
South East	KOX	21	18.9	13.3	11.4
South East	KRG	12	18.8	11.6	4.8
UK (excluding Scotland)		546	6.2	7.0	6.3

	99.7% high outlier
	95% high outlier

Summary table of QPI outliers

The light blue columns indicate which histopathological grade is the outlier in QPI P1

Sub region - Service	Radiology			Pathology						Surgery				Oncology	Total outlier topics
	R1	R2	R3	P1	P1-G1	P1-G2	P1-G3	P2	P3	S1	S2a	S2b	S3	O1	
East Midlands – CDN															0
East Midlands – CDS															0
East Midlands – CLE									Y						1
East Midlands – CLI															0
East Midlands – CNN															0
East Midlands – CNO															0
East Midlands – KKE															0
East Midlands – KMK			Y												1
East Midlands – KNN															0
East of England – DCB			Y												1
East of England – DGY															0
East of England – DKL															0
East of England – DNF				Y		Y						Y			2
East of England – DPT															0
East of England – DSU															0
East of England – DSW															0
East of England – ELD											Y			Y	2
East of England – FCO									Y		Y				2
East of England – FEP															0
East of England – FSO											Y				1
London – EBA														Y	1
London – ECX			Y	Y		Y									2
London – FBH			Y										Y		2
London – FLO			Y												1
London – GCA				Y		Y									1
London – HWA								Y						Y	2
NEYH – AGA				Y			Y								1
NEYH – ANE															0
NEYH – ANT											Y				1
NEYH – AWC				Y			Y								1
NEYH – BHL									Y						1
NEYH – BHU								Y							1
NEYH – BLE															0
NEYH – BYO															0
NEYH – CBA															0
NEYH – CDO															0
NEYH – CRO															0
NEYH – CSH															0
North West – NCH			Y												1
North West – NCR														Y	1
North West – NLI															0
North West – NMA				Y			Y				Y				2
North West – NWA															0

An audit of screen detected breast cancers for the year of screening April 2018 to March 2019

Sub region - Service	Radiology			Pathology						Surgery				Oncology	Total outlier topics
	R1	R2	R3	P1	P1-G1	P1-G2	P1-G3	P2	P3	S1	S2a	S2b	S3	O1	
North West – NWI															0
North West – PBO															0
North West – PLE			Y												1
North West – PLN															0
North West – PMA				Y			Y								1
North West – PWI															0
South East – JBA								Y							1
South East – JIW															0
South East – JPO									Y						1
South East – KHW			Y											Y	2
South East – KOX														Y	1
South East – KRG				Y	Y						Y			Y	3
South East – KWI			Y												1
South East – GBR											Y			Y	2
South East - GCT1													Y		1
South East - GCT2			Y						Y						2
South East - GCT3															0
South East – HGU														Y	1
South East – HWO															0
South West – JDO		Y													1
South West – JSO			Y											Y	2
South West – JSW												Y			1
South West – LAV			Y					Y	Y						3
South West – LCO															0
South West – LED		Y													1
South West – LGL									Y						1
South West – LPL		Y	Y										Y		3
South West – LSO				Y	Y				Y						2
South West – LTB															0
West Midlands – MBS			Y												1
West Midlands – MBD															0
West Midlands – MCO												Y			1
West Midlands – MDU															0
West Midlands – MHW			Y												1
West Midlands – MSH														Y	1
West Midlands – MST															0
Northern Ireland - ZNE								Y	Y		Y				3
Northern Ireland - ZNI															0
Northern Ireland - ZNS														Y	1
Northern Ireland - ZNW				Y	Y			Y	Y						3
Wales – WNM											Y		Y		2
Wales – WSE															0
Wales – WSW													Y		1
United Kingdom	-	3	15	10	3	3	4	6	10	-	9	3	8	9	73

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 2018 to 31 March 2019, followed up until November 2019
- the adjuvant therapy audit: women that were offered a screening appointment in the period 1 April 2017 to 31 March 2018, followed up until March 2019

The responsibility for English regional and Celtic country data collection for the main audit was devolved to breast screening services in England and screening information centres in the Celtic countries. 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 services. 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.

Service level data

Data for 86 screening services were included in the 2018/19 NHSBSP & ABS Breast Screening Audit. No data was received from Scotland.

Responsibility for data collection

In England, breast screening services extracted the NHSBSP & ABS audit data from the National Breast Screening System (NBSS) and uploaded it on to the Breast Screening Information System (BSIS). Data quality was ensured by completing data validation checks within BSIS. In the Celtic countries, information centre staff were responsible for ensuring that data was collected from their breast screening services and submitted to the West Midlands SQAS for collation.

All data, excluding that from Celtic countries, was then downloaded from BSIS by the West Midlands SQAS Office for collation and assessment. Further checks and data evaluation were undertaken prior to analysis.

Publication of audit data

The NHSBSP & ABS 2018/19 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

This document should be cited in the following way: 'An audit of screen-detected breast cancers for the year of screening April 2018 to March 2019', NHSBSP & ABS, July 2020.

Appendix 2: References

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- (3) Staradub VL, Rademaker AW, Morrow M. Factors influencing outcomes for breast conservation therapy of mammographically detected malignancies. *J Am Coll Surg.* 2003 Apr;196(4):518-24.
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- (5) National Institute for Health and Care Excellence (2018) Early and locally advanced breast cancer: diagnosis and management (NICE guideline 101). Available at: www.nice.org.uk/guidance/ng101

Appendix 3: Quality Performance Indicators - outlier definitions and guidance for management

Background

The NHS Breast Screening Programme in collaboration with the Association of Breast Surgery undertake this annual audit of the of women with screen detected breast cancer. The audit covers and accordingly collects and presents back a large body of data. Each year the audit steering group identifies quality performance indicators (QPIs) for the core professional groups incorporated within the audit. This document details the use and follow up requirements of any outliers identified through this process.

Although the audit covers the UK this process applies only to providers working within England. All QPI data in this year's audit report is presented on screening service level, except QPI S1 which is presented at surgeon level.

Funnel plots are used as a method to compare individual service performance to the UK average for some QPIs. Control limits are calculated using the Wilson-score method at 95% and/or 99.7% confidence level. A '95% high outlier service' is a service whose data point lies above the 95% upper control limit in a funnel plot. A high outlier service has a significantly higher proportion/rate compared to the UK average at 95% confidence levels.

The lists of outlier services are released to the representatives of 4 disciplines -- radiology, pathology, surgery and oncology represented on the audit steering group. The representatives bring the relevant outlier list to their professional group for discussion with the primary purpose to identify any changes required in guidance.

The regional Screening QA Service (SQAS) will inform their local services/individuals when they have been identified as an outlier following the national analysis. The responsibility for action and follow up rests with the responsible provider organisation.

Radiology

R1 Women with a B3 pre-operative diagnosis to the breast that proceed to surgery

Please note:

Accurate recording of this data during this audit cycle was variable across the country. Due to this the following outlier management process will not be invoked for outliers identified in the 2018/2019 audit report. This year's data provides a benchmark for improvement in future audits.

Outlier definition

More than 25% of B3 lesions suitable for VAE were referred for surgery (B3 lesions where surgery is recommended e.g. fibroepithelial lesions, papilloma with atypia and spindle cell lesions are excluded from analysis).

Rationale

Vacuum assisted excision (VAE) enables the removal of most B3 lesions without the need for open surgical biopsy. This less invasive procedure should be utilised where clinically appropriate. If a service does not have the capability to offer VAE in house, referral arrangements should be put in place¹.

Data and calculation

Data is extracted from the national breast screening system (NBSS) using a purpose built crystal report. In this year's audit report proportions are calculated using 2018/19 data.

Denominator: count of women who had B3 pre-operative diagnosis as the worst core biopsy result on the breast.

Numerator: count of women who had B3 pre-operative diagnosis as the worst core biopsy result on the breast and had an open surgical biopsy to the breast.

Statistical analysis: The data will be presented in a funnel plot relative to the mean for England. An outlier is a data point outside the 95% control limit.

How to investigate outliers

Outliers will not be investigated in this audit cycle for this QPI. The data for the QPI is gathered to establish baseline VAE activity in the UK to help the development of outlier definitions in future audits.

When robust data are available the Director of Breast Screening (DoBS) in an outlier service will be informed in writing by their local Screening QA Service (SQAS) that their performance for the audit period represents a variation that cannot be explained by chance alone.

The lead commissioner will be informed at the appropriate time point so that this item can be discussed within the appropriate programme board setting and any barriers to this aspect of the service identified and addressed.

- the screening office should provide the DoBS with a list of all cases
- the DoBS should audit all B3 lesions and confirm the accuracy of the data
- there should be analysis of why >25% of eligible B3 lesions suitable for VAE were referred for surgery
- this audit should be made available to SQAS and commissioners
- the programme board meeting may be a useful forum to discuss the findings and agree any action plans to ensure this KPI is met in the subsequent audit

R2 Recall for assessment rate for prevalent screen (aged 45-52) only

Outlier definition

Services where the proportion of recall for assessment rate for the prevalent (first) screen is over 10%.

Rationale

According to national standards the prevalent recall rate should ideally be less than 7% but 10% or less is acceptable. A recall rate greater than 10% will lead to an increased number of women being recalled for assessment. The aim of this quality indicator is to reduce the distress of women who are recalled for assessment but are not subsequently diagnosed with cancer. Data shows that a higher recall rate does not necessarily equate to a higher cancer detection rate.

Data and calculation

Data comes from KC62 Table A. Proportions are calculated using single year and 3 year rolling data, from:

Denominator: count of women who were aged 45 to 52 (inclusive) and were screened at their prevalent round.

Numerator: count of women who were aged 45 to 52 (inclusive), were screened at their prevalent round and had been referred to assessment clinic.

Proportions are calculated and displayed by screening service.

How to investigate outliers

The DoBS in an outlier service will be informed in writing by their local SQAS of their performance for the audit.

The lead commissioner will be informed at the appropriate time point so that this item can be discussed within the appropriate programme board setting and any barriers to this aspect of the service identified and addressed.

- the screening office should provide the screening director with a list of all cases recalled to be assessed where cancer was not diagnosed
- services with high recall rates should audit their recalls
- the audit should lead to measures being put in place to reduce the number of benign lesions being recalled back for assessment.
- the DoBS or audit lead should decide how best to share this data with all film readers and ensure clear learning objectives are identified and implemented
- the programme board and lead commissioner should be informed of the audit findings and resulting action plan

This QPI should not be looked at in isolation.

R3 Recall for assessment rate in women at very high risk of breast cancer

Outlier definition

Services where the proportion of recall for assessment rate is over 12%

Rationale

To reduce the distress of women identified as being at high risk of breast cancer who are recalled for assessment but are not subsequently diagnosed with cancer

Data and calculation

Data comes from KC62 Table U. Proportions are calculated using 3 year rolling data from:

Denominator: count of high risk/family history women screened.
Numerator: count of high risk/family history women screened and referred for assessment.

Proportions are calculated and displayed by screening service.

How to investigate outliers

The DoBS in an outlier service will be informed in writing by their local SQAS of their performance for the audit.

The lead commissioner will be informed at the appropriate time point so that this item can be discussed within the appropriate programme board setting and any barriers to this aspect of the service identified and addressed.

The screening office should provide the DoBS with a list of all cases.
The DoBS should audit cases recalled with a benign outcome.

The outcomes of the audit should be shared with all film readers and clear learning objectives identified.

The programme board and lead commissioner should be informed of the audit findings and resulting action plan.

A re-audit should be performed to ensure this has been effective in reducing recall rates.

If the audit identifies errors in the data recorded on NBSS these should be corrected as soon as possible and the method for updating NBSS for these cases reviewed and amended as indicated.

Pathology

P1 Invasive cancer grade

Outlier definition

A 99.7% high outlier service using one-year and 3-year data or a 99.7% low outlier service using one-year and 3-year data.

Rationale

Histological grade is a key factor in the decision-making process regarding optimal treatment.

Data and calculation

Data was extracted from the national breast screening system (NBSS) using the BASOX standard report.

The proportion for each grade is calculated relative to the total number of surgically treated cancers. For example, the proportion of Grade 1 invasive cancers is calculated from:

Denominator: count of surgically treated invasive cancer patients in the study period, excluding patients with a known previous breast cancer.
Numerator: count of surgically treated invasive cancer patients with Grade 1 cancer, excluding patients with a known previous breast cancer.

Proportions are calculated and displayed by screening service.

How to investigate outliers

The director of breast screening (DoBS) in an outlier service will be informed in writing by their local SQAS that their performance for the audit period represents a variation that cannot be explained by chance alone.

The lead commissioner will be informed at the appropriate time point so that this item can be discussed within the appropriate programme board setting and any barriers to this aspect of the service identified and addressed.

The DoBS should inform the lead breast screening pathologist(s). Where the service is supported by multiple laboratories the lead in each should be informed.

The screening office should provide the laboratory/laboratories with a list of cases and the grade recorded on NBSS with identifiers that enable identification in the respective laboratory system(s).

The lead Pathologist(s) should confirm the accuracy of the final grade data recorded on NBSS as the first step. If the data are inaccurate this should be immediately reported so that the revised grading proportions can be recalculated.

If the issue persists at the data checking stage then further local investigation is required. The format of the investigation should be locally agreed and in line with the trust clinical governance requirements.

If the pathology service is provided by multiple laboratories, the data for each laboratory should be checked by the service to assess whether it is all or only one

laboratory which is an outlier over the period. Caution should be applied when working with small numbers, data from additional time periods may be required.

All identified laboratories demonstrating this outlier data should be identified and the pathology lead for the screening service should work with lead pathologists at all relevant laboratories to agree a plan to investigate the reasons for the potential outlier status.

The plan could include reviewing grading criteria, microscope calibration and fixation processes and procedures, confirming compliance with current guidance and updating where necessary.

The programme board and lead commissioner should be informed of the audit findings and resulting action plan.

Establish whether individual consultants vary in their patterns of reporting (refer to Royal College of Pathologists' audit template on the RCPATH website as necessary).

If indicated a pathology review should include a minimum of three pathologists involved in the service (including the lead and deputy pathologist).

A review should reflect the outlier area concerned. For example, if the service is a grade 1 high outlier review all grade 1s; if the service is a low grade 1 outlier the review should include a list of grade 2 cases as these may be downgraded to grade 1.

Any changes of grade accepted by three pathologists should be discussed by the local multi-disciplinary team (MDT) to assess whether any changes to treatment regime are required. Duty of candour should be applied if indicated.

P2 Sensitivity and specificity of pre-operative diagnosis on axillary lymph nodes

Outlier definition

Three year 95% low outlier services for sensitivity or specificity of pre-operative needle biopsy of axillary node status in patients with invasive breast malignancy.

Sensitivity is the proportion of women who had positive nodes who were diagnosed with positive nodes at preoperative assessment. Specificity is the proportion of women who do not have positive nodes who were correctly assessed as such preoperatively.

Rationale

Lymph node status influences the management of women with invasive breast cancer triggering consideration of further surgery and/or systemic therapy as well as further diagnostic tests. Diagnosing lymph node status pre-operatively can save women from having extra or unnecessary surgical procedures.

It is recognised that a major determinant of the decision to proceed to needle biopsy of an axillary node is the ultrasound scan evaluation of cortical thickness of an abnormal appearing node. There is variation between services in the critical thickness which triggers needle biopsy. When assessing outlier units this should be considered. This data item is not available within the audit dataset.

Data and calculation

Data was extracted from NBSS using the BASOX standard report. Proportions are calculated from:

Denominator: number of women with axillary node metastases proven at axillary surgery who underwent pre-operative image guided axillary node needle biopsy
Numerator: number of women accurately identified by pre-operative image guided axillary node needle biopsy as having (sensitivity) or not having (specificity) axillary node metastases.

Proportions are calculated and displayed by screening service.

How to investigate outliers

The director of breast screening (DoBS) in an outlier service will be informed in writing by their local SQAS that their performance for the audit period represents a variation that cannot be explained by chance alone.

The DoBS should inform the lead breast screening pathologist(s) and radiologist(s).

The screening service leads should meet to consider the reasons why sensitivity / specificity values in their service are 2 or more standard deviations below national average and to consider plans for improvement. This meeting should be minuted for future reference.

The radiology service should review its compliance with the guidance contained within the document "Guidance on screening and symptomatic breast imaging" produced by the Royal College of Radiologists"³.

The pathology services should review their compliance with current guidance for lymph node cut-up and reporting protocols and update these where necessary².

The lead commissioner will be informed at the appropriate time point so that this item can be discussed within the appropriate programme board setting and any barriers to this aspect of the service identified and addressed.

After completion of the review of outlier status, ongoing (e.g. 4 monthly) audit by the service for a limited period is encouraged. SQAS should be kept informed of these results.

P3 Lymphovascular invasion (LVI) for invasive cancers

Outlier definition

A 99.7% high outlier service or a 99.7% low outlier service using one-year data.

Rationale

The existence of LVI may help identify who is at increased risk for axillary lymph node and distant metastasis and is a predictor of local recurrence. Therefore, it is important that this information is routinely included in reports.

Data and calculation

Data was extracted from NBSS using the BASOX standard report. Proportions are calculated from:

Denominator:	count of invasive cancer patients, excluding patients with a known previous breast cancer
Numerator:	count of invasive cancer patients where lymphovascular invasion was found in any operation, excluding patients with a known previous breast cancer

Proportions are calculated and displayed by screening service.

How to investigate outliers

The director of breast screening (DoBS) in an outlier service will be informed in writing by their local SQAS that their performance for the audit period represents a variation that cannot be explained by chance alone.

The lead commissioner will be informed at the appropriate time point so that this item can be discussed within the appropriate programme board setting and any barriers to this aspect of the service identified and addressed.

The DoBS should inform the lead breast screening pathologist(s). Where the service is supported by multiple laboratories the lead in each should be informed.

The screening office should provide the laboratory/laboratories with a list of cases and the LVI status recorded on NBSS with identifiers that enable identification in the respective laboratory system(s).

The lead Pathologist(s) should confirm the accuracy of the final LVI data recorded on NBSS as the first step. If the data are inaccurate this should be immediately reported so that the revised proportions can be recalculated.

If the issue persists at the data checking stage then further local investigation is required. The format of the investigation should be locally agreed and in line with the trust clinical governance requirements. Some areas that could be explored include:

Review of laboratory processes to ensure surgical resection specimens are fixed in a timely manner including review of arrangements for transport of specimens from theatres and specimen handling/fixation on receipt. Consideration should be given to theatre scheduling, laboratory opening times, staffing levels and training.

Consideration of whether there have been any changes in laboratory service provision e.g. outsourcing which may potentially have affected fixation processes e.g. vacuum packing for transportation.

The pathology services should review their compliance with current guidance for specimen fixation protocols and update these where necessary².

Consider whether individual laboratories vary in their pattern of laboratory handling; and reporting e.g. use of immunohistochemistry.

Consider whether individual laboratories or consultants vary in their patterns of reporting including variation in use of the “possible lymphovascular invasion” category.

Consider whether variation in the use of neoadjuvant chemotherapy and the approach to pathological examination e.g. extent of block taking in this context may have a bearing on the identification and recording of lymphovascular invasion.

If a pathology review is conducted, a minimum of three pathologists should be involved (including the lead breast pathologist for the centre and the regional PCA pathologist if required).

Particular consideration should be given to the reason for outlier status and this targeted in any review (i.e. low outlier versus high outlier).

The programme board and lead commissioner should be informed of the audit findings and resulting action plan.

A slide review, if undertaken, should be performed on sections anonymised for patients' details. Review should include compliance with guidelines and assessment of the extent of sampling to include whether the approach to block taking is compliant with guidelines².

Any diagnostic discrepancies of possible clinical relevance identified at slide review should be referred to the relevant Trust management. Duty of candour should be undertaken if indicated.

If, after a slide review has been undertaken, there are changes to lymphovascular space invasion in a significant number of cases, double reporting as normal practice should be considered for a limited period.

After completion of the review of outlier status, ongoing (e.g. monthly) audit by the service for a limited period is encouraged. SQAS should be kept informed of these results.

Surgery

S1 Screening cancer caseload

Outlier definition

Consultant surgeons that had managed less than an average of 10 cases of screen detected breast cancer per year over a 3-year period

Rationale

Surgeons should have a minimum caseload to maintain/improve standards

Data and calculation

Surgeon data was extracted from NBSS using the BASOX standard report. In this analysis, the surgeon recorded as undertaking the first operation is collated for a 3-year period.

The average annual caseload is displayed for individual surgeons. Where a surgeon has operated on women from more than one screening service these are collated to give a final caseload.

The analysis counts clients and not tumours or operations. Proportions are calculated and displayed by surgeon.

How to investigate outliers

The director of breast screening (DoBS) in an outlier service will be informed in writing by their local SQAS that their performance for the audit period represents a variation that cannot be explained by chance alone.

The lead commissioner will be informed at the appropriate time point so that this item can be discussed within the appropriate programme board setting and any barriers to this aspect of the service identified and addressed.

The DoBS should inform the appropriate lead breast screening surgeon(s) to conduct the review of the outlier surgeon's data.

The screening office should provide the lead surgeon with a list of cases and the allocated responsible surgeon recorded on NBSS with identifiers that enable identification in the respective operating system(s). The GMC numbers used for the surgeons should also be provided.

The lead surgeon(s) should confirm the accuracy of the data recorded on NBSS. If the data is inaccurate this should be immediately reported so that the revised caseload can be recalculated.

If the issue persists at the data checking stage then the DoBS and the Screening Lead Surgeon should meet with the surgeon involved to discuss a remedial action plan which should be supportive and constructive. This plan should be shared with relevant trust management.

The programme board and lead commissioner should be informed of the audit findings and remedial action.

Co-operation in this remedial action is expected from the surgeon(s) involved. Failure to co-operate should be escalated internally using internal systems and processes.

Progress on the remedial action should be assessed regularly, documented and shared with SQAS.

S2 Management of the axilla

S2a Cases with more than 5 axillary nodes obtained from node negative invasive cancers

Outlier definition

A 95% high outlier service taking more than 5 axillary lymph nodes in a node negative patient using 3-year data.

Rationale

Unnecessary removal of excessive axillary lymph nodes in patients with a node negative axilla can cause potentially avoidable morbidity.

Data and calculation

Data was extracted from NBSS using the BASOX standard report. Proportions are calculated from:

Denominator:	count of invasive cancer patients with negative nodal status, excluding patients with a known previous breast cancer and patients with known neo-adjuvant therapy
Numerator:	count of invasive cancer patients with negative nodal status and had more than 5 nodes obtained, excluding patients with a known previous breast cancer and patients with known neo-adjuvant therapy

Proportions are calculated and displayed by service.

How to investigate outliers

The director of breast screening (DoBS) in an outlier service will be informed in writing by their local SQAS that their performance for the audit period represents a variation that cannot be explained by chance alone.

The lead commissioner will be informed at the appropriate time point so that this item can be discussed within the appropriate programme board setting and any barriers to this aspect of the service identified and addressed.

The DoBS should confirm to SQAS copying in the relevant lead surgeon(s) that the inappropriately high node yields are not a surrogate marker for service level issues (e.g. lack of access to radio-isotope for sentinel node mapping).

In the absence of any service level issues, the DoBS should inform the appropriate lead breast screening surgeon(s) to conduct the review of the relevant cases to investigate the root cause (individual surgeon or global within the surgical department).

The screening office should provide the lead surgeon with a list of cases with more than 5 nodes obtained from node negative invasive cancers recorded on NBSS with identifiers that enable identification in the respective operating system(s). The GMC numbers used for the surgeons should also be provided.

The lead surgeon(s) should confirm the accuracy of the data recorded on NBSS as the first step. If the data are inaccurate this should be immediately reported so that the revised proportions can be recalculated.

If the issue persists at the data checking stage then the DoBS and the Screening Lead Surgeon should meet with the surgeon(s) involved to discuss a remedial action plan which should be supportive and constructive.

The programme board and lead commissioner should be informed of the audit findings and remedial action.

Examples of remedial action may include observed surgery or retraining. This plan should be shared with relevant trust management.

Co-operation in this remedial action is expected from the surgeon(s) involved. Failure to co-operate should be escalated internally using internal systems and processes.

Progress on the remedial action should be assessed regularly, documented and shared with SQAS.

In rare cases, serious concerns may require escalation. This would be an example of a metric that could be escalated to the Care Quality Commission (CQC). This would involve the transfer of service and surgeon identifiable data but not patient identifiable data to the CQC.

S2b Cases of non-invasive cancers treated by breast conserving surgery that have any lymph nodes excised

Outlier definition

A 95% high outlier service excising axillary lymph nodes in women diagnosed with non-invasive cancer treated with breast conserving surgery using 3-year data.

Rationale

Removal of axillary lymph nodes in patients with non-invasive disease undergoing a breast conserving procedure is not indicated and can cause potentially avoidable morbidity. Surgical screening guidance recommends that in the presence of suspected invasion (e.g. mass lesion with B5a core biopsy) repeat biopsies should be performed of the suspected lesion. Proceeding directly to sentinel node biopsy is not indicated in B5a cases undergoing breast conserving surgery.

Data and calculation

Data was extracted from NBSS using the BASOX standard report. Proportions are calculated from:

Denominator: count of non-invasive cancer patients treated by breast conserving surgery, excluding patients with a known previous breast cancer
Numerator: count of non-invasive cancer patients treated by breast conserving surgery and have lymph nodes excised, excluding patients with a known previous breast cancer

Proportions are calculated and displayed by service.

How to investigate outliers

The director of breast screening (DoBS) in an outlier service will be informed in writing by their local SQAS that their performance for the audit period represents a variation that cannot be explained by chance alone.

The lead commissioner will be informed at the appropriate time point so that this item can be discussed within the appropriate programme board setting and any barriers to this aspect of the service identified and addressed.

The DoBS should inform the appropriate lead breast screening surgeon(s) to conduct the investigation.

The screening office should provide the lead surgeon with a list of cases and the allocated responsible surgeon recorded on NBSS with identifiers that enable identification in the respective operating system(s). The GMC numbers used for the surgeons should also be provided.

The lead surgeon(s) should confirm the accuracy of the data recorded on NBSS as the first step. If the data are inaccurate this should be immediately reported so that the revised proportions can be recalculated.

If the issue persists at the data checking stage then the DoBS and the Screening Lead Surgeon should meet with the surgeon involved to agree a remedial action plan.

Examples of remedial action may include observed surgery or retraining. This plan should be shared with relevant trust management.

The programme board and lead commissioner should be informed of the audit findings and remedial action.

Co-operation in this remedial action is expected from the surgeon(s) involved. Failure to co-operate should be escalated internally using internal systems and processes.

Progress on the remedial action should be assessed regularly, documented and shared with SQAS.

In rare cases, serious concerns may require escalation. This would be an example of a metric that could be escalated to the Care Quality Commission (CQC). This would involve the transfer of service and surgeon identifiable data but not patient identifiable data to the CQC.

S3 Reconstruction after mastectomy for non-invasive cancers

Outlier definition

The decision on whether to proceed with immediate breast reconstruction following mastectomy for non-invasive cancers, e.g. ductal carcinoma in situ (DCIS) is multifactorial. Therefore, it is not appropriate to have a target figure for this QPI. However, it is reasonable to expect most screening services to fall between 3 standard deviations of the mean figure for the nation.

Rationale

NICE guidelines state that women having a mastectomy should be offered an immediate or delayed breast reconstruction, unless they have significant comorbidities that rule out reconstructive surgery.

Data and calculation

Data was extracted from NBSS using the BASOX standard report. Proportions are calculated and displayed by screening service.

Denominator: count of non-invasive cancer patients treated by mastectomy, excluding patients with a known previous breast cancer.

Numerator: count of non-invasive cancer patients treated by mastectomy and had immediate reconstruction, excluding patients with a known previous breast cancer.

How to investigate outliers

The director of breast screening (DoBS) in an outlier service will be informed in writing by their local SQAS that their performance for the audit period represents a variation that cannot be explained by chance alone.

The lead commissioner will be informed at the appropriate time point so that this item can be discussed within the appropriate programme board setting and any barriers to this aspect of the service identified and addressed.

The DoBS should confirm to SQAS, copying in the lead screening surgeon(s), that there are no service level issues preventing discussion of breast reconstruction with patients (e.g. lack of access to breast reconstruction surgeons or facilities).

In the absence of service level issues, the DoBS should inform the appropriate lead breast screening surgeon(s) to conduct the investigation.

The screening office should provide the lead surgeon with a list of cases and the allocated responsible surgeon recorded on NBSS with identifiers that enable identification in the respective operating system(s). The GMC numbers used for the surgeons should also be provided.

The lead Surgeon(s) should confirm the accuracy of the data recorded on NBSS as the first step. If the data is inaccurate this should be immediately reported so that the revised proportions can be recalculated.

The case review will involve evaluation of each patient's notes to assess if there is documented evidence that breast reconstruction was discussed with the patient, or whether a documented reason for not discussing this option is provided (e.g. co-morbidity, tumour biology).

The results of the case review should be discussed between the Lead Surgeon and the DoBS. There should be consideration whether there is an individual surgical element or multiple surgeons contributing to the outlier status. In the latter case the lead surgeon and the DoBS should meet with the involved surgeons.

Subsequent remedial actions may include, for example, retraining or communication skills training. This plan should be shared with relevant trust management.

Co-operation in this remedial action is expected from the surgeon(s) involved. Failure to co-operate should be escalated internally using internal systems and processes.

Progress on the remedial action should be assessed regularly, documented and shared with SQAS.

In rare cases, serious concerns may require escalation. This would be an example of a metric that could be escalated to the Care Quality Commission (CQC). This would involve the transfer of service and surgeon identifiable data but not patient identifiable data to the CQC.

Oncology

O1 No radiotherapy given after breast conserving surgery to patients with invasive cancer excluding patients aged >65 years, with T1, N0, G1/2, ER+ cancer.

Outlier definition

A 95% high outlier service using 1-year data not receiving radiotherapy following breast conserving surgery for invasive disease.

Rationale

Adjuvant radiotherapy is recommended treatment for the majority of women with invasive breast cancers treated by breast conserving surgery.

Data and calculation

Adjuvant data collection is usually 1 year behind the main audit data collection. This allows longer follow-up time for the adjuvant treatment. For example, the 2018/19 audit report contains analysis of adjuvant data from the 2017/18 audit period with follow-up up to June 2018. The patient and tumour information were extracted from NBSS using BASOX standard report. This information was then matched to the cancer records in the Cancer Analysis System (CAS) database and adjuvant treatment data was extracted from the CAS database. Radiotherapy data comes from cancer registry, Cancer Outcomes and Services Dataset (COSD), Radiotherapy Treatment Dataset (RTDS), Cancer Waiting Times (CWT), and Hospital Episode Statistics (HES) data sets.

It is recognised that there may be discrepancies in data retrieved from COSD and CWT (representing intention to treat information) and the RTDS and HES datasets (treatment actually received)

Proportions are calculated and displayed by screening service.

Denominator: count of invasive cancer patients treated by breast conserving surgery, excluding patients >65 years of age, with T1, N0, G1/2 and ER+ cancer or patients with previous breast cancer.

Numerator: count of invasive cancer patients treated by breast conserving surgery and had no radiotherapy treatment or unknown if she had radiotherapy treatment, excluding patients >65 years of age, with T1, N0, G1/2 and ER+ cancer or patients with previous breast cancer.

How to investigate outliers

The director of breast screening (DoBS) in an outlier service will be informed in writing by their local SQAS that their performance for the audit period represents a variation that cannot be explained by chance alone.

The lead commissioner will be informed at the appropriate time point so that this item can be discussed within the appropriate programme board setting and any barriers to this aspect of the service identified and addressed.

The DoBS should inform the appropriate MDT Lead to lead the investigation.

The screening office should provide the MDT lead with a list of cases and the allocated responsible surgeon recorded on NBSS with identifiers that enable identification in the MDT recording system(s). If women who are diagnosed with screen detected breast cancer at a service are referred to more than one cancer centre for their radiotherapy then the data should be analysed to ascertain if the pattern of care is consistent at all sites.

If the service is a hub and spoke model the data should be sent to the relevant MDT leads at the spoke sites.

The MDT Lead(s) should confirm the accuracy of the data recorded on NBSS as the first step. This could be that radiotherapy was given or that the patient had a mastectomy. If the data is inaccurate this should be immediately reported so that the revised proportions can be recalculated.

The MDT lead should conduct an audit to establish why radiotherapy was not administered in cases clinically requiring this adjuvant treatment.

If the further investigation identifies that the level of treatment was inadequate and unjustifiable then the trust management should be informed and Duty of candour should be applied where indicated.

The results of the case review should be discussed by the relevant MDT. Changes to local protocols should be agreed as indicated.

After changes to internal protocols, ongoing (e.g. monthly) audit by the MDT for 12 months is required.

Progress should be assessed regularly, documented and shared with SQAS and commissioners via the programme boards.

In rare cases, serious concerns may require escalation. This would be an example of a metric that could be escalated to the Care Quality Commission (CQC). This would involve the transfer of service and trust level data but not patient identifiable data to the CQC.

References

1. [Clinical guidance for breast cancer screening assessment](#), NHSBSP publication number 49, Nov 2016
2. [Royal College of Pathologists Cancer Datasets and Tissue Pathways Guidance](#).
3. The Royal College of Radiologists. [Guidance on screening and symptomatic breast imaging, fourth edition](#). London: The Royal College of Radiologists, 2019. Ref No. BFCR(19)9

Appendix 4: Main audit data tables (1 - 91)

DATA FROM THE 2018/19 AUDIT OF SCREEN-DETECTED BREAST CANCERS IN WOMEN ALL AGES FOR THE PERIOD 1 APRIL 2018 – 31 MARCH 2019

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	1462	79	820	45	11	1	367	20	0	0	1840	100	221675	1.7	6.6	3.7
East of England	1834	83	925	42	28	1	349	16	3	0	2214	100	257024	1.5	7.1	3.6
London	1637	74	702	32	22	1	552	25	0	0	2211	100	268762	2.1	6.1	2.6
N East, Yorks & Humber	2425	79	1314	43	27	1	622	20	2	0	3076	100	361815	1.8	6.7	3.6
North West	1944	79	996	41	19	1	493	20	2	0	2458	100	269239	1.9	7.2	3.7
South East	2579	78	1304	40	21	1	695	21	1	0	3296	100	354865	2.0	7.3	3.7
South West	2041	79	1107	43	27	1	513	20	1	0	2582	100	279917	1.9	7.3	4.0
West Midlands	1535	80	769	40	15	1	359	19	0	0	1909	100	217329	1.7	7.1	3.5
England	14477	79	7428	40	159	1	3722	20	6	0	18364	100	2230626	1.7	6.5	3.3
Northern Ireland	423	80	223	42	0	0	104	20	0	0	527	100	68562	1.5	6.2	3.3
Wales	887	82	443	41	4	0	185	17	0	0	1076	100	114968	1.6	7.7	3.9
UK excl. Scotland	16767	79.1	8603	41	174	0.8	4239	20.0	9	0	21189	100	2414156	1.8	6.9	3.6

Sub-region	<50		50-64		65-70		71-75		76+		Total	>70	
	No.	%	No.	%	No.	%	No.	%	No.	%		No.	%
East Midlands	90	5	970	53	460	25	233	13	87	5	1840	282	16
East of England	42	2	1100	50	622	28	302	14	148	7	2214	407	20
London	129	6	1278	58	516	23	203	9	85	4	2211	257	12
N East, Yorks & Humber	146	5	1631	53	807	26	342	11	150	5	3076	425	15
North West	125	5	1292	53	655	27	306	12	80	3	2458	359	16
South East	181	5	1653	50	821	25	444	13	197	6	3296	571	19
South West	87	3	1327	51	685	27	365	14	118	5	2582	424	17
West Midlands	106	6	964	50	526	28	229	12	84	4	1909	276	15
England	901	5	9822	53	4640	25	2165	12	836	5	18364	3001	16
Northern Ireland	6	1	336	64	132	25	40	8	13	2	527	53	10
Wales	12	1	589	55	332	31	91	8	52	5	1076	143	13
UK excl. Scotland	924	4	11140	53	5556	26	2555	12	1014	5	21189	3197	16

Sub-region	Total cases	Total pt matched	% matched	Had previous cancers		No previous cancers	
				No.	%	No.	%
East Midlands	1840	1837	100	263	14	1574	86
East of England	2214	2174	98	314	14	1860	86
London	2211	2146	97	253	12	1893	88
NEYH	3076	2999	97	484	16	2515	84
North West	2458	2453	100	333	14	2120	86
South East	3296	3261	99	477	15	2784	85
South West	2582	2573	100	356	14	2217	86
West Midlands	1909	1900	100	264	14	1636	86
England	19586	19343	99	2744	14	16599	86

* Celtic countries did not supply previous cancer data in 17/18. All Wales and Northern Ireland cases are included in the analysis.

Sub-region	Total matched	Total previous cancers	Invasive/micro-invasive					Non-invasive	
			Breast	Gynaecological	Bowel	Haematological	Other	Breast	Other
East Midlands	1837	263	94	35	10	14	32	22	84
East of England	2174	314	114	32	14	12	44	43	89
London	2146	253	79	33	14	12	35	35	66
NEYH	2999	484	169	45	26	24	53	43	153
North West	2453	333	122	50	15	13	45	23	90
South East	3261	477	169	52	31	21	70	45	133
South West	2573	356	112	37	22	18	39	43	124
West Midlands	1900	264	85	30	14	7	35	25	82
England	19343	2744	944	314	146	121	353	279	821
% of previous cancers	-	100	34	11	5	4	13	10	30
% of matched	100	14	5	2	1	1	2	1	4

* Celtic countries did not supply previous cancer data in 17/18. All Wales and Northern Ireland cases are included in the analysis.

Sub-region	Total cancers	C5 only		C5 & B5		B5 only		Positive axillary biopsy only		Pre-operative diagnosis		No pre-operative diagnosis	
		No	%	No	%	No	%	No	%	No	%	No	%
		East Midlands	1723	0	0	2	0	1649	96	3	0	1693	98
East of England	2059	1	0	2	0	2007	97	1	0	2031	99	28	1
London	2096	0	0	3	0	1988	95	4	0	2062	98	34	2
N East, Yorks & Humber	2863	0	0	6	0	2782	97	3	0	2822	99	41	1
North West	2314	0	0	5	0	2254	97	1	0	2282	99	32	1
South East	3085	0	0	1	0	2959	96	6	0	2999	97	86	3
South West	2428	0	0	1	0	2350	97	2	0	2378	98	50	2
West Midlands	1796	0	0	0	0	1725	96	1	0	1766	98	30	2
England	18364	1	0	20	0	17714	96	21	0	18033	98	331	2
Northern Ireland	527	0	0	249	47	269	51	0	0	518	98	9	2
Wales	1076	0	0	0	0	1057	98	0	0	1057	98	19	2
UK excl. Scotland	19967	1	0	269	1	19040	95	21	0	19608	98	359	2

Sub-region	Total cancers	C5 only		C5 & B5		B5 only		E5* only		B5 & E5		Positive axillary biopsy only		Pre-operative diagnosis		No pre-operative diagnosis	
		No	%	No	%	No	%	No	%	No	%	%	%	No	%	No	%
		East Midlands	1365	0	0	2	0	1342	98	8	1	3	0	3	0	1358	99
East of England	1704	0	0	2	0	1688	99	3	0	0	0	1	0	1694	99	10	1
London	1546	0	0	3	0	1517	98	10	1	2	0	4	0	1536	99	10	1
N East, Yorks & Humber	2257	0	0	6	0	2232	99	1	0	2	0	3	0	2244	99	13	1
North West	1825	0	0	4	0	1804	99	5	0	2	0	1	0	1816	100	9	0
South East	2416	0	0	1	0	2389	99	4	0	3	0	5	0	2402	99	14	1
South West	1923	0	0	1	0	1909	99	3	0	0	0	1	0	1914	100	9	0
West Midlands	1441	0	0	0	0	1423	99	6	0	1	0	1	0	1431	99	10	1
England	14477	0	0	19	0	14304	99	40	0	13	0	19	0	14395	99	5	1
Northern Ireland	423	0	0	240	57	182	43	0	0	0	0	0	0	422	100	1	0
Wales	887	0	0	0	0	882	99	0	0	0	0	0	0	882	99	5	1
UK excl. Scotland	15787	0	0	259	2	15368	97	40	0	13	0	19	0	15699	99	88	1

*E5 relates to cancers identified at VAE

Table 7: Pre-operative diagnosis rate (non-invasive cancers)

Sub-region	Total cancers	C5 only		C5 & B5		B5 only		E5 only		B5 & E5		Positive axillary biopsy only		Pre-operative diagnosis		No pre-operative diagnosis	
		No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
East Midlands	347	0	0	0	0	296	85	25	7	3	1	0	0	324	93	23	7
East of England	326	0	0	0	0	293	90	17	5	0	0	0	0	310	95	16	5
London	530	0	0	0	0	451	85	53	10	2	0	0	0	506	95	24	5
N East, Yorks & Humber	578	0	0	0	0	523	90	26	4	2	0	0	0	551	95	27	5
North West	472	0	0	1	0	433	92	14	3	1	0	0	0	449	95	23	5
South East	648	0	0	0	0	550	85	25	4	1	0	0	0	576	89	72	11
South West	481	0	0	0	0	420	87	18	4	2	0	1	0	441	92	40	8
West Midlands	340	0	0	0	0	287	84	33	10	0	0	0	0	320	94	20	6
England	3722	0	0	1	0	3253	87	211	6	11	0	1	0	3477	93	245	7
Northern Ireland	104	0	0	9	9	87	84	0	0	0	0	0	0	96	92	8	8
Wales	185	0	0	0	0	171	92	0	0	0	0	0	0	171	92	14	8
UK excl. Scotland	4011	0	0	10	0	3511	88	211	5	11	0	1	0	3744	93	267	7

*E5 relates to cancers identified at VAE

Table 8 : Invasive status of the diagnostic core biopsy VAB only and VAE only

Region	Total Cancers with B5	WBN or VAB only						VAE only					
		B5a (Non-invasive)		B5b (Invasive)		B5c (Micro-invasive, not assessable or unknown)		E5a (Non-invasive)		E5b (Invasive)		E5c (Micro-invasive, not assessable or unknown)	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	1657	396	24	1252	76	2	0.1	3	0.2	0	0.00	0	0.00
East of England	2009	401	20	1598	80	8	0.4	1	0.0	1	0.05	0	0.00
London	1995	592	30	1389	70	1	0.1	3	0.2	0	0.00	1	0.05
N East, Yorks & Humber	2792	694	25	2079	74	9	0.3	2	0.1	1	0.04	1	0.04
North West	2262	538	24	1713	76	6	0.3	0	0.0	0	0.00	0	0.00
South East	2964	737	25	2213	75	7	0.2	0	0.0	1	0.03	0	0.00
South West	2354	554	24	1778	76	19	0.8	0	0.0	0	0.00	0	0.00
West Midlands	1726	386	22	1324	77	14	0.8	2	0.1	0	0.00	0	0.00
England	17759	4298	24	13346	75	66	0.4	11	0.1	3	0.02	2	0.01
Northern Ireland	518	122	24	394	76	2	0.4						
Wales	1057	221	21	835	79	1	0.1						
UK excl. Scotland	19334	4641	24	14575	75	69	0.4						

There is no VAE data for Northern Ireland or Wales, this data was taken from the assessment audit which was England only.

*E5 relates to cancers identified at VAE

Region	WBN/VAB & VAE					
	B5a/E5a (Non-invasive)		B5b/E5b (Invasive)		B5C/E5c (Micro-invasive, not assessable or unknown)	
	No.	%	No.	%	No.	%
East Midlands	2	0.1	2	0.1	0	0
East of England	0	0.0	0	0.0	0	0
London	6	0.3	3	0.2	0	0
N East, Yorks & Humber	2	0.1	4	0.1	0	0
North West	2	0.1	3	0.1	0	0
South East	1	0.0	5	0.2	0	0
South West	3	0.1	0	0.0	0	0
West Midlands	0	0.0	0	0.0	0	0
England	16	0.1	17	0	0	0
Northern Ireland						
Wales						
United Kingdom						

There is no VAE data for Northern Ireland or Wales, this data was taken from the assessment audit which was England only.
*E5 relates to cancers identified at VAE

Sub-region	Invasive		Micro-invasive		Non-invasive		Benign		Unknown		Total with surgery	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	69	19	11	3	281	76	7	2	0	0	368	100
East of England	66	18	24	6	272	73	12	3	1	0	375	100
London	102	19	20	4	373	70	40	7	0	0	535	100
N East, Yorks & Humber	121	19	26	4	473	73	23	4	1	0	644	100
North West	70	14	16	3	387	77	31	6	0	0	504	100
South East	130	19	20	3	510	75	18	3	0	0	678	100
South West	88	17	21	4	381	74	26	5	0	0	516	100
West Midlands	67	19	15	4	257	74	6	2	2	1	347	100
England	713	18	153	4	2934	74	163	4	4	0	3967	100
Northern Ireland	26	22	0	0	86	73	5	4	1	1	118	100
Wales	46	21	4	2	159	74	5	2	0	0	214	100
UK excl. Scotland	785	18	157	4	3179	74	173	4	5	0	4299	100

Sub-region	Invasive		Micro-invasive		Non-invasive		Benign		Unknown		Total with surgery	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	1209	97	1	0	8	1	18	1	5	0	1241	100
East of England	1498	97	2	0	19	1	23	1	6	0	1548	100
London	1243	94	4	0	33	2	38	3	4	0	1322	100
N East, Yorks & Humber	1985	97	2	0	37	2	27	1	4	0	2055	100
North West	1631	96	2	0	24	1	40	2	1	0	1698	100
South East	2113	97	1	0	32	1	29	1	5	0	2180	100
South West	1712	97	2	0	25	1	26	1	3	0	1768	100
West Midlands	1272	97	1	0	16	1	26	2	3	0	1318	100
England	12663	96	15	0	194	1	227	2	31	0	13130	100
Northern Ireland	381	98	0	0	5	1	2	1	0	0	388	100
Wales	796	97	0	0	10	1	13	2	0	0	819	100
UK excl. Scotland	13840	97	15	0	209	1	242	2	31	0	14337	100

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

Table 12: Number of assessment visits for each patient

Sub-region	0		1		2		3+		Unknown		Total		Repeat (2+) visit	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%
East Midlands	0	0	1388	81	292	17	43	2	0	0	1723	100	335	19
East of England	0	0	1816	88	233	11	10	0	0	0	2059	100	243	12
London	0	0	1743	83	319	15	34	2	0	0	2096	100	353	17
N East, Yorks & Humber	0	0	2446	85	360	13	57	2	0	0	2863	100	417	15
North West	0	0	1929	83	328	14	57	2	0	0	2314	100	385	17
South East	0	0	2667	86	381	12	37	1	0	0	3085	100	418	14
South West	0	0	1970	81	410	17	48	2	0	0	2428	100	458	19
West Midlands	0	0	1456	81	295	16	45	3	0	0	1796	100	340	19
England	0	0	15415	84	2618	14	331	2	0	0	18364	100	2949	16
Northern Ireland	0	0	474	90	51	10	2	0	0	0	527	100	53	10
Wales	0	0	971	90	98	9	7	1	0	0	1076	100	105	10
UK excl. Scotland	0	0	16860	84	2767	14	340	2	0	0	19967	100	3107	16

Table 13: The assessment visit with the earliest core/cytology result

Sub-region	1		2		3+		Total		First core/cyt/VAE at 2+ visit	
	No	%	No	%	No	%	No	%	No	%
East Midlands	1613	94	106	6	1	0	1720	100	107	6
East of England	1993	97	64	3	1	0	2058	100	65	3
London	1979	95	110	5	3	0	2092	100	113	5
N East, Yorks & Humber	2772	97	84	3	2	0	2858	100	86	3
North West	2212	96	97	4	4	0	2313	100	101	4
South East	2969	97	103	3	3	0	3075	100	106	3
South West	2253	93	173	7	2	0	2428	100	175	7
West Midlands	1729	96	64	4	1	0	1794	100	65	4
England	17520	96	801	4	17	0	18338	100	818	4
Northern Ireland	523	99	4	1	0	0	527	100	4	1
Wales	1066	99	10	1	0	0	1076	100	10	1
UK excl. Scotland	19109	96	815	4	17	0	19941	100	832	4

Table 14: Number of visits with a core biopsy/cytology/VAE result for cases with a pre-operative diagnosis in the breast.

Sub-region	Invasive					Non-Invasive					Overall				
	1		2+		Total	1		2+		Total	1		2+		Total
	No	%	No	%		No	%	No	%		No	%	No	%	
East Midlands	1269	94	86	6	1355	263	81	61	19	324	1541	91	149	9	1690
East of England	1643	97	50	3	1693	268	86	42	14	310	1935	95	95	5	2030
London	1479	97	53	3	1532	424	84	82	16	506	1922	93	136	7	2058
N East, Yorks & Humber	2173	97	68	3	2241	467	85	84	15	551	2666	95	153	5	2819
North West	1723	95	92	5	1815	372	83	77	17	449	2109	92	172	8	2281
South East	2306	96	91	4	2397	495	86	81	14	576	2816	94	177	6	2993
South West	1831	96	82	4	1913	361	82	79	18	440	2210	93	166	7	2376
West Midlands	1373	96	57	4	1430	243	76	77	24	320	1630	92	135	8	1765
England	13797	96	579	4	14376	2893	83	583	17	3476	16829	93	1183	7	18012
Northern Ireland	410	97	12	3	422	78	81	18	19	96	488	94	30	6	518
Wales	842	95	40	5	882	137	80	34	20	171	982	93	75	7	1057
UK excl. Scotland	15049	96	631	4	15680	3108	83	635	17	3743	18299	93	1288	7	19587

Table 15: Worst core/cytology biopsy results of the first pre-operative needle biopsy visit for non-invasive cancers with a pre-operative diagnosis

Sub-region	C5, B5, E5 or a combination thereof		C4, B4, E4 or a combination thereof		C3, B3, E3 or a combination thereof		C2, B2, E2 or a combination thereof		C1, B1, E1 or a combination thereof		Total
	No	%	No	%	No	%	No	%	No	%	
East Midlands	284	88	4	1	25	8	8	2	3	1	324
East of England	276	89	2	1	20	6	4	1	8	3	310
London	435	86	3	1	54	11	5	1	9	2	506
N East, Yorks & Humber	489	89	13	2	31	6	7	1	11	2	551
North West	404	90	12	3	27	6	2	0	4	1	449
South East	517	90	11	2	34	6	8	1	6	1	576
South West	387	88	9	2	32	7	6	1	7	2	441
West Midlands	259	81	15	5	40	13	3	1	3	1	320
England	3051	88	69	2	263	8	43	1	51	1	3477
Northern Ireland	85	89	0	0	8	8	2	2	1	1	96
Wales	152	89	3	2	11	6	1	1	4	2	171
UK excl. Scotland	3288	88	72	2	282	8	46	1	56	1	3744

*E5 relates to cancers identified at VAE

Table 16: Any further visits after core/cytology/vacuum biopsy result

Sub-region	Invasive					Non-Invasive					Overall				
	Further visit		No further visit		Total	Further visit		No further visit		Total	Further visit		No further visit		Total
	No	%	No	%		No	%	No	%		No	%	No	%	
East Midlands	70	5	1292	95	1362	19	5	328	95	347	91	5	1629	95	1720
East of England	59	3	1644	97	1703	22	7	304	93	326	83	4	1975	96	2058
London	74	5	1468	95	1542	45	8	485	92	530	120	6	1972	94	2092
N East, Yorks & Humber	155	7	2098	93	2253	34	6	543	94	577	190	7	2668	93	2858
North West	93	5	1731	95	1824	31	7	441	93	472	125	5	2188	95	2313
South East	100	4	2308	96	2408	35	5	612	95	647	135	4	2940	96	3075
South West	104	5	1819	95	1923	23	5	458	95	481	128	5	2300	95	2428
West Midlands	117	8	1323	92	1440	27	8	312	92	339	146	8	1648	92	1794
England	772	5	13683	95	14455	236	6	3483	94	3719	1018	6	17320	94	18338
Northern Ireland	13	3	410	97	423	3	3	101	97	104	16	3	511	97	527
Wales	14	2	873	98	887	2	1	183	99	185	16	1	1060	99	1076
UK excl. Scotland	799	5	14966	95	15765	241	6	3767	94	4008	1050	5	18891	95	19941

Table 17: Status of diagnostic open biopsies

Sub-region	Benign biopsy rate		Malignant biopsy rate
	Prevalent	Incident	
East Midlands	0.71	0.23	0.14
East of England	0.62	0.24	0.11
London	0.81	0.23	0.13
N East, Yorks & Humber	0.57	0.11	0.11
North West	0.83	0.20	0.12
South East	1.16	0.35	0.24
South West	0.98	0.25	0.18
West Midlands	0.83	0.20	0.14
England	0.84	0.23	0.15
Northern Ireland	1.03	0.33	0.13
Wales	0.65	0.19	0.17
UK excl. Scotland	0.84	0.23	0.15

Sub-region	Total malignant open biopsies	Invasive		Micro-invasive		Non-invasive		Status unknown	
		No.	%	No.	%	No.	%	No.	%
East Midlands	30	7	23	0	0	23	77	0	0
East of England	28	10	36	2	7	16	57	0	0
London	34	10	29	0	0	24	71	0	0
N East, Yorks & Humber	41	13	32	0	0	27	66	1	2
North West	32	9	28	0	0	23	72	0	0
South East	86	14	16	0	0	72	84	0	0
South West	50	9	18	1	2	40	80	0	0
West Midlands	30	10	33	0	0	20	67	0	0
England	331	82	25	3	1	245	74	1	0
Northern Ireland	9	1	11	0	0	8	89	0	0
Wales	19	5	26	0	0	14	74	0	0
UK excl. Scotland	359	88	25	3	1	267	74	1	0

Sub-region	Total malignant open biopsies	No pre-operative procedures		Cytology only		Core biopsy/VAB only		Both cytology and core biopsy/VAB		VAE and other pre-biopsy	
		No.	%	No.	%		%	No.	%	No.	%
East Midlands	7	0	0	0	0		71	2	29	0	0
East of England	10	0	0	1	10	9	90	0	0	0	0
London	10	0	0	0	0	10	100	0	0	0	0
N East, Yorks & Humber	13	1	8	0	0	12	92	0	0	0	0
North West	9	0	0	0	0	9	100	0	0	0	0
South East	14	3	21	0	0	11	79	0	0	0	0
South West	9	0	0	0	0	9	100	0	0	0	0
West Midlands	10	0	0	0	0	7	70	2	20	1	10
England	82	4	5	1	1	72	88	4	5	1	1
Northern Ireland	1	0	0	0	0	0	0	1	100	0	0
Wales	5	0	0	0	0	5	100	0	0	0	0
UK excl. Scotland	88	4	5	1	1	77	88	5	6	1	1

Sub-region	Total malignant open biopsies	No pre-operative procedures		Cytology only		Core biopsy/VAB only		Both cytology and core biopsy/VAB		VAE and other pre-biopsy	
		No.	%	No.	%		%	No.	%	No.	%
East Midlands	23	0	0	1	4	19	83	0	0	3	13
East of England	18	0	0	1	6	16	89	0	0	1	6
London	24	0	0	0	0	24	100	0	0	0	0
N East, Yorks & Humber	27	1	4	0	0	22	81	1	4	3	11
North West	23	0	0	0	0	23	100	0	0	0	0
South East	72	1	1	0	0	70	97	0	0	1	1
South West	41	0	0	0	0	39	95	1	2	1	2
West Midlands	20	1	5	0	0	19	95	0	0	0	0
England	248	3	1	2	1	232	94	2	1	9	4
Northern Ireland	8	0	0	0	0	6	75	2	25	0	0
Wales	14	0	0	0	0	14	100	0	0	0	0
UK excl. Scotland	270	3	1	2	1	252	93	4	1	9	3

Sub-region	Total	No Pre-operative diagnosis		C4, B4, E4 or a combination thereof		C3, B3, E3 or a combination thereof		C2, B2, E2 or a combination thereof		C1, B1, E1 or a combination thereof	
		No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	7	0	0	4	57	3	43	0	0	0	0
East of England	10	0	0	7	70	2	20	0	0	1	10
London	10	0	0	6	60	4	40	0	0	0	0
N East, Yorks & Humber	13	1	8	8	62	4	31	0	0	0	0
North West	9	0	0	6	67	2	22	0	0	1	11
South East	14	3	21	3	21	7	50	0	0	1	7
South West	9	0	0	8	89	0	0	1	11	0	0
West Midlands	10	0	0	5	50	3	30	2	20	0	0
England	82	4	5	47	57	25	30	3	4	3	4
Northern Ireland	1	0	0	1	100	0	0	0	0	0	0
Wales	5	0	0	2	40	1	20	1	20	1	20
UK excl. Scotland	88	4	5	50	57	26	30	4	5	4	5

Sub-region	Total malignant open biopsies	No pre-operative procedures		C4, B4 or both		C3, B3 or both		C2, B2 or both		C1, B1 or both	
		No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	23	0	0	7	30	16	70	0	0	0	0
East of England	18	0	0	6	33	12	67	0	0	0	0
London	24	0	0	7	29	16	67	1	4	0	0
N East, Yorks & Humber	27	1	4	7	26	17	63	1	4	1	4
North West	23	0	0	10	43	12	52	1	4	0	0
South East	72	1	1	20	28	48	67	2	3	1	1
South West	41	0	0	21	51	18	44	1	2	1	2
West Midlands	20	1	5	3	15	16	80	0	0	0	0
England	248	3	1	81	33	155	63	6	2	3	1
Northern Ireland	8	0	0	0	0	8	100	0	0	0	0
Wales	14	0	0	5	36	9	64	0	0	0	0
UK excl. Scotland	270	3	1	86	32	172	64	6	2	3	1

Sub-region	Unknown cytonuclear grade		Unknown size		Unknown cytonuclear grade and/or size		Total with surgery
	No.	%	No.	%	No.	%	No.
East Midlands	0	0	10	3	10	3	330
East of England	3	1	14	5	15	5	310
London	5	1	48	10	49	10	473
N East, Yorks & Humber	1	0	27	5	27	5	546
North West	2	0	35	8	35	8	451
South East	7	1	21	3	24	4	615
South West	0	0	30	6	30	6	468
West Midlands	0	0	10	3	10	3	307
England	18	1	195	6	200	6	3500
Northern Ireland	2	2	6	6	6	6	100
Wales	1	1	6	3	7	4	178
UK excl. Scotland	21	0.6	207	5	213	6	3778

Sub-region	<15mm		15-≤40mm		>40 mm		Size not assessable		Size unknown		Total non-invasive with surgery	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	105	32	143	43	64	19	8	2	10	3	330	100
East of England	109	35	128	41	45	15	14	5	14	5	310	100
London	147	31	180	38	83	18	15	3	48	10	473	100
N East, Yorks & Humber	174	32	224	41	105	19	16	3	27	5	546	100
North West	144	32	169	37	92	20	11	2	35	8	451	100
South East	204	33	280	46	81	13	29	5	21	3	615	100
South West	174	37	184	39	65	14	15	3	30	6	468	100
West Midlands	101	33	128	42	64	21	4	1	10	3	307	100
England	1158	33	1436	41	599	17	112	3	195	6	3500	100
Northern Ireland	38	38	36	36	13	13	7	7	6	6	100	100
Wales	59	33	78	44	35	20	0	0	6	3	178	100
UK excl. Scotland	1255	33	1550	41	647	17	119	3	207	5	3778	100

Sub-region	High		Intermediate		Low		Not assessable		Unknown		Total non-invasive with surgery	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	192	58	106	32	24	7	8	2	0	0	330	100
East of England	186	60	82	26	25	8	14	5	3	1	310	100
London	269	57	145	31	39	8	15	3	5	1	473	100
N East, Yorks & Humber	352	64	140	26	37	7	16	3	1	0	546	100
North West	292	65	110	24	35	8	12	3	2	0	451	100
South East	359	58	172	28	46	7	31	5	7	1	615	100
South West	285	61	139	30	29	6	15	3	0	0	468	100
West Midlands	203	66	75	24	25	8	4	1	0	0	307	100
England	2138	61	969	28	260	7	115	3	18	1	3500	100
Northern Ireland	55	55	24	24	12	12	7	7	2	2	100	100
Wales	105	59	55	31	17	10	0	0	1	1	178	100
UK excl. Scotland	2298	61	1048	28	289	8	122	3	21	1	3778	100

Sub-region	<10mm		10- <15mm		15- ≤20mm		>20- ≤35mm		>35- ≤50mm		>50mm		Unknown		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	395	30	367	28	267	20	204	15	49	4	32	2	12	1	1326	100
East of England	412	25	443	27	417	26	249	15	57	3	33	2	18	1	1629	100
London	326	23	330	23	327	23	311	22	70	5	50	3	30	2	1444	100
N East, Yorks & Humber	647	29	575	26	481	22	343	16	70	3	45	2	37	2	2198	100
North West	482	27	455	26	411	23	281	16	79	4	55	3	20	1	1783	100
South East	618	26	608	26	525	22	404	17	88	4	64	3	31	1	2338	100
South West	526	28	519	28	374	20	328	17	73	4	37	2	19	1	1876	100
West Midlands	333	24	392	28	298	21	273	19	53	4	41	3	14	1	1404	100
England	3739	27	3689	26	3100	22	2393	17	539	4	357	3	181	1	13998	100
Northern Ireland	108	26	115	28	84	20	78	19	17	4	8	2	7	2	417	100
Wales	223	26	220	25	193	22	159	18	37	4	16	2	23	3	871	100
UK excl. Scotland	4070	27	4024	26	3377	22	2630	17	593	4	381	2	211	1	15286	100

Sub-region	<10mm		10- <15mm		15- ≤20mm		>20- ≤35mm		>35- ≤50mm		>50mm		Unknown		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	228	17	297	22	305	23	274	21	95	7	70	5	57	4	1326	100
East of England	238	15	353	22	415	25	369	23	99	6	69	4	86	5	1629	100
London	181	13	255	18	303	21	351	24	128	9	119	8	107	7	1444	100
N East, Yorks & Humber	388	18	482	22	494	22	469	21	159	7	115	5	91	4	2198	100
North West	308	17	387	22	437	25	357	20	121	7	89	5	84	5	1783	100
South East	338	14	522	22	557	24	515	22	165	7	129	6	112	5	2338	100
South West	301	16	433	23	401	21	438	23	123	7	92	5	88	5	1876	100
West Midlands	177	13	337	24	286	20	332	24	106	8	89	6	77	5	1404	100
England	2159	15	3066	22	3198	23	3105	22	996	7	772	6	702	5	13998	100
Northern Ireland	64	15	100	24	89	21	110	26	35	8	17	4	2	0	417	100
Wales	123	14	187	21	174	20	205	24	76	9	54	6	52	6	871	100
UK excl. Scotland	2346	15	3353	22	3461	23	3420	22	1107	7	843	6	756	5	15286	100

Sub-region	Grade 1		Grade 2		Grade 3		Not assessable		Unknown		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	363	27	710	54	251	19	1	0	1	0	1326	100
East of England	378	23	914	56	324	20	9	1	4	0	1629	100
London	317	22	877	61	248	17	1	0	1	0	1444	100
N East, Yorks & Humber	529	24	1266	58	392	18	9	0	2	0	2198	100
North West	464	26	974	55	341	19	2	0	2	0	1783	100
South East	577	25	1343	57	404	17	6	0	8	0	2338	100
South West	518	28	1008	54	344	18	3	0	3	0	1876	100
West Midlands	305	22	814	58	277	20	5	0	3	0	1404	100
England	3451	25	7906	56	2581	18	36	0	24	0	13998	100
Northern Ireland	95	23	221	53	100	24	0	0	1	0	417	100
Wales	212	24	483	55	176	20	0	0	0	0	871	100
UK excl. Scotland	3758	25	8610	56	2857	19	36	0	25	0	15286	100

Sub-region	Unknown invasive size		Unknown nodal status		Unknown grade		Unknown NPI*		Total invasive
	No.	%	No.	%	No.	%	No.	%	
East Midlands	11	0.9	3	0.2	1	0.1	13	1.0	1247
East of England	14	0.9	13	0.9	3	0.2	32	2.2	1474
London	27	2.0	22	1.7	0	0.0	50	3.8	1322
N East, Yorks & Humber	29	1.4	24	1.2	1	0.0	57	2.7	2084
North West	19	1.1	16	1.0	0	0.0	36	2.2	1665
South East	26	1.2	32	1.5	7	0.3	62	2.8	2200
South West	17	1.0	18	1.0	1	0.1	36	2.1	1756
West Midlands	12	0.9	12	0.9	2	0.2	25	1.9	1319
England	155	1.2	140	1.1	15	0.1	311	2.4	13067
Northern Ireland	5	1.2	10	2.4	0	0.0	15	3.7	409
Wales	8	1.0	14	1.7	0	0.0	21	2.6	818
UK excl. Scotland	168	1.2	164	1.1	15	0.1	347	2.4	14294

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

Sub-region	EPG		GPG		MPG1		MPG2		PPG		Total with known NPI	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	278	23	509	41	265	21	125	10	57	5	1234	100
East of England	275	19	631	44	351	24	138	10	47	3	1442	100
London	215	17	519	41	320	25	154	12	64	5	1272	100
N East, Yorks & Humber	417	21	845	42	485	24	205	10	75	4	2027	100
North West	371	23	640	39	394	24	150	9	74	5	1629	100
South East	440	21	901	42	511	24	198	9	88	4	2138	100
South West	421	24	655	38	420	24	154	9	70	4	1720	100
West Midlands	239	18	519	40	330	26	155	12	51	4	1294	100
England	2656	21	5219	41	3076	24	1279	10	526	4	12756	100
Northern Ireland	77	20	138	35	112	28	43	11	24	6	394	100
Wales	167	21	315	40	199	25	70	9	46	6	797	100
UK excl. Scotland	2900	21	5672	41	3387	24	1392	10	596	4	13947	100

Sub-region	Positive		Negative		Not done or Unknown		Total
	No.	%	No.	%	No.	%	
East Midlands	1250	92	110	8	5	0	1365
East of England	1581	93	118	7	5	0	1704
London	1411	91	131	8	4	0	1546
N East, Yorks & Humber	2050	91	200	9	7	0	2257
North West	1669	91	154	8	2	0	1825
South East	2231	92	181	7	4	0	2416
South West	1789	93	133	7	1	0	1923
West Midlands	1317	91	121	8	3	0	1441
England	13298	92	1148	8	31	0	14477
Northern Ireland	383	91	39	9	1	0	423
Wales	804	91	83	9	0	0	887
UK excl. Scotland	14485	92	1270	8	32	0.2	15787

Sub-region	Positive		Negative		Not done or Unknown		Total
	No.	%	No.	%	No.	%	
East Midlands	623	46	165	12	577	42	1365
East of England	922	54	240	14	542	32	1704
London	1059	68	249	16	238	15	1546
N East, Yorks & Humber	581	26	270	12	1406	62	2257
North West	1158	63	329	18	338	19	1825
South East	1856	77	382	16	178	7	2416
South West	660	34	200	10	1063	55	1923
West Midlands	887	62	249	17	305	21	1441
England	7746	54	2084	14	4647	32	14477
Northern Ireland	231	55	79	19	113	27	423
Wales	393	44	142	16	352	40	887
UK excl. Scotland	8370	53	2305	15	5112	32	15787

Sub-region	Positive		Negative		Not done or Unknown		Total
	No.	%	No.	%	No.	%	
East Midlands	8	7	72	65	30	27	110
East of England	5	4	95	81	18	15	118
London	5	4	115	88	11	8	131
N East, Yorks & Humber	8	4	154	77	38	19	200
North West	9	6	137	89	8	5	154
South East	18	10	162	90	1	1	181
South West	3	2	86	65	44	33	133
West Midlands	7	6	110	91	4	3	121
England	63	5	931	81	154	13	1148
Northern Ireland	2	5	34	87	3	8	39
Wales	1	1	73	88	9	11	83
UK excl. Scotland	66	5	1038	82	166	13	1270

Sub-region	Positive		Negative		Borderline		Not done or Unknown		Total
	No.	%	No.	%	No.	%	No.	%	
East Midlands	166	12	1185	87	3	0	11	1	1365
East of England	179	11	1428	84	4	0	93	5	1704
London	195	13	1306	84	33	2	12	1	1546
N East, Yorks & Humber	270	12	1953	87	8	0	26	1	2257
North West	195	11	1623	89	1	0	6	0	1825
South East	253	10	2133	88	10	0	20	1	2416
South West	194	10	1696	88	7	0	26	1	1923
West Midlands	147	10	1265	88	10	1	19	1	1441
England	1599	11	12589	87	76	1	213	1	14477
Northern Ireland	44	10	366	87	12	3	1	0	423
Wales	94	11	781	88	9	1	3	0	887
UK excl. Scotland	1737	11	13736	87	97	1	217	1	15787

Sub-region	Total HER2 unknown/not done	<10mm invasive size		Grade 1		Negative nodal status	
		No	%	No	%	No	%
East Midlands	11	6	55	6	55	7	64
East of England	93	18	19	27	29	43	46
London	12	7	58	5	42	7	58
N East, Yorks & Humber	26	10	38	6	23	18	69
North West	6	3	50	1	17	4	67
South East	20	16	80	4	20	12	60
South West	26	11	42	8	31	17	65
West Midlands	19	8	42	7	37	16	84
England	213	79	37	64	30	124	58
Northern Ireland	1	0	0	0	0	0	0
Wales	3	1	33	2	67	3	100
UK excl. Scotland	217	80	37	66	30	127	59

Sub-region	Positive		Negative		Not done or Unknown		Total
	No.	%	No.	%	No.	%	
East Midlands	12	3	5	1	341	95	358
East of England	40	11	6	2	306	87	352
London	199	36	29	5	322	59	550
N East, Yorks & Humber	128	21	27	4	450	74	605
North West	267	55	38	8	183	38	488
South East	245	37	38	6	385	58	668
South West	246	49	46	9	213	42	505
West Midlands	31	9	8	2	316	89	355
England	1168	30	197	5	2516	65	3881
Northern Ireland	6	6	4	4	94	90	104
Wales	14	7	7	4	168	89	189
UK excl. Scotland	1188	28	208	5	2778	67	4174

Sub-region	Conservation surgery		Mastectomy		No surgery		Unknown		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	255	73	75	22	17	5	0	0	347	100
East of England	246	75	64	20	16	5	0	0	326	100
London	375	71	98	18	57	11	0	0	530	100
N East, Yorks & Humber	416	72	130	22	32	6	0	0	578	100
North West	337	71	114	24	21	4	0	0	472	100
South East	517	80	98	15	33	5	0	0	648	100
South West	386	80	82	17	13	3	0	0	481	100
West Midlands	239	70	68	20	33	10	0	0	340	100
England	2771	74	729	20	222	6	0	0	3722	100
Northern Ireland	82	79	18	17	4	4	0	0	104	100
Wales	137	74	41	22	7	4	0	0	185	100
UK excl. Scotland	2990	75	788	20	233	6	0	0	4011	100

Sub-region	Conservation surgery		Mastectomy		No surgery		Unknown		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	7	64	4	36	0	0	0	0	11	100
East of England	18	69	8	31	0	0	0	0	26	100
London	14	70	6	30	0	0	0	0	20	100
N East, Yorks & Humber	20	74	7	26	0	0	0	0	27	100
North West	6	38	10	63	0	0	0	0	16	100
South East	16	80	4	20	0	0	0	0	20	100
South West	12	50	12	50	0	0	0	0	24	100
West Midlands	9	60	6	40	0	0	0	0	15	100
England	102	64	57	36	0	0	0	0	159	100
Northern Ireland	0	-	0	-	0	-	0	-	0	-
Wales	2	50	2	50	0	0	0	0	4	100
UK excl. Scotland	104	64	59	36	0	0	0	0	163	100

Sub-region	Conservation surgery		Mastectomy		Unknown		Total	
	No.	%	No.	%	No.	%	No.	%
East Midlands	16	25	48	75	0	0	64	100
East of England	14	31	31	69	0	0	45	100
London	24	29	59	71	0	0	83	100
N East, Yorks & Humber	29	28	76	72	0	0	105	100
North West	19	21	73	79	0	0	92	100
South East	29	36	52	64	0	0	81	100
South West	21	32	44	68	0	0	65	100
West Midlands	24	38	40	63	0	0	64	100
England	176	29	423	71	0	0	599	100
Northern Ireland	6	46	7	54	0	0	13	100
Wales	13	37	22	63	0	0	35	100
UK excl. Scotland	195	30	452	70	0	0	647	100

Sub-region	Conservation surgery		Mastectomy		Unknown		Total	
	No.	%	No.	%	No.	%	No.	%
East Midlands	10	23	34	77	0	0	44	100
East of England	9	26	26	74	0	0	35	100
London	17	25	50	75	0	0	67	100
N East, Yorks & Humber	21	25	62	75	0	0	83	100
North West	16	22	58	78	0	0	74	100
South East	22	35	41	65	0	0	63	100
South West	15	29	36	71	0	0	51	100
West Midlands	16	31	35	69	0	0	51	100
England	126	27	342	73	0	0	468	100
Northern Ireland	5	50	5	50	0	0	10	100
Wales	10	42	14	58	0	0	24	100
UK excl. Scotland	141	28	361	72	0	0	502	100

Sub-region	Conservation surgery		Mastectomy		No Surgery		Unknown		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	1078	79	248	18	39	3	0	0	1365	100
East of England	1379	81	250	15	75	4	0	0	1704	100
London	1172	76	272	18	102	7	0	0	1546	100
N East, Yorks & Humber	1846	82	352	16	59	3	0	0	2257	100
North West	1442	79	341	19	42	2	0	0	1825	100
South East	1974	82	364	15	78	3	0	0	2416	100
South West	1601	83	275	14	47	2	0	0	1923	100
West Midlands	1123	78	281	20	37	3	0	0	1441	100
England	1123	78	281	20	37	3	0	0	1441	100
Northern Ireland	339	80	78	18	6	1	0	0	423	100
Wales	677	76	194	22	16	2	0	0	887	100
UK excl. Scotland	12631	80	2655	17	501	3	0	0	15787	100

Sub-region	<15mm		15-≤20mm		>20-≤35mm		>35-≤50mm		>50mm	
	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	94	12	39	15	61	30	28	57	23	72
East of England	79	9	45	11	57	23	37	65	30	91
London	82	13	48	15	64	21	33	47	37	74
N East, Yorks & Humber	123	10	68	14	80	23	33	47	36	80
North West	100	11	65	16	74	26	50	63	49	89
South East	121	10	65	12	79	20	43	49	51	80
South West	89	9	48	13	72	22	33	45	30	81
West Midlands	82	11	48	16	88	32	23	43	36	88
England	770	10	426	14	575	24	280	52	292	82
Northern Ireland	26	12	13	15	20	26	11	65	7	88
Wales	59	13	35	18	56	35	19	51	13	81
UK excl. Scotland	855	11	474	14	651	25	310	52	312	82

Sub-region	<15mm		15-≤20mm		>20-≤35mm		>35-≤50mm		>50mm	
	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	32	6	31	10	64	23	50	53	54	77
East of England	23	4	33	8	62	17	50	51	57	83
London	23	5	32	11	65	19	47	37	81	68
N East, Yorks & Humber	46	5	39	8	86	18	66	42	89	77
North West	47	7	54	12	73	20	68	56	75	84
South East	45	5	39	7	87	17	69	42	98	76
South West	25	3	36	9	76	17	52	42	68	74
West Midlands	29	6	27	9	85	26	48	45	68	76
England	270	5	291	9	598	19	450	45	590	76
Northern Ireland	11	7	10	11	25	23	18	51	13	76
Wales	17	5	26	15	54	26	35	46	44	81
UK excl. Scotland	298	5	327	9	677	20	503	45	647	77

Sub-region	Whole Size <15mm		Whole size 15-≤20mm		Whole size >20-≤35mm		Whole size >35-≤50mm		Whole size >50mm	
	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	31	6	10	11	17	23	15	52	19	79
East of England	23	4	7	6	14	17	9	39	18	82
London	23	5	9	14	14	22	16	46	17	59
N East, Yorks & Humber	46	5	12	8	18	17	17	39	27	71
North West	47	7	10	9	10	14	18	62	12	75
South East	45	5	7	4	18	18	22	42	27	71
South West	25	3	8	7	18	17	18	47	18	67
West Midlands	29	6	7	10	11	16	15	45	13	72
England	269	5	70	8	120	18	130	46	151	71
Northern Ireland	11	7	4	14	3	15	5	50	3	60
Wales	17	6	6	15	5	13	9	53	17	89
UK excl. Scotland	297	5	80	8	128	18	144	46	171	72

Sub-region	Immediate reconstruction		No immediate reconstruction		Unknown		Total mastectomies	
	No.	%	No.	%	No.	%	No.	%
East Midlands	91	28	236	72	0	0	327	100
East of England	125	39	166	52	31	10	322	100
London	215	57	161	43	0	0	376	100
N East, Yorks & Humber	175	36	314	64	0	0	489	100
North West	163	35	302	65	0	0	465	100
South East	143	31	321	69	2	0	466	100
South West	117	32	252	68	0	0	369	100
West Midlands	108	30	247	70	0	0	355	100
England	1137	36	1999	63	33	1	3169	100
Northern Ireland	21	22	75	78	0	0	96	100
Wales	68	29	169	71	0	0	237	100
UK excl. Scotland	1226	35	2243	64	33	1	3502	100

Sub-region	Had treatment		Did not have treatment		Unknown		Total
	No.	%	No.	%	No.	%	
East Midlands	103	6	1620	94	0	0	1723
East of England	204	10	1855	90	0	0	2059
London	180	9	1916	91	0	0	2096
N East, Yorks & Humber	158	6	2705	94	0	0	2863
North West	151	7	2163	93	0	0	2314
South East	161	5	2924	95	0	0	3085
South West	162	7	2266	93	0	0	2428
West Midlands	109	6	1687	94	0	0	1796
England	1228	7	17136	93	0	0	18364
Northern Ireland	15	3	512	97	0	0	527
Wales	70	7	1006	93	0	0	1076
UK excl. Scotland	1313	7	18654	93	0	0	19967

Sub-region	Had treatment		Did not have treatment		Unknown		Total
	No.	%	No.	%	No.	%	
East Midlands	47	3	1676	97	0	0	1723
East of England	106	5	1953	95	0	0	2059
London	75	4	2021	96	0	0	2096
N East, Yorks & Humber	66	2	2797	98	0	0	2863
North West	83	4	2231	96	0	0	2314
South East	61	2	3024	98	0	0	3085
South West	66	3	2362	97	0	0	2428
West Midlands	33	2	1763	98	0	0	1796
England	537	3	17827	97	0	0	18364
Northern Ireland	6	1	521	99	0	0	527
Wales	36	3	1040	97	0	0	1076
UK excl. Scotland	579	3	19388	97	0	0	19967

Sub-region	Had treatment		Did not have treatment		Unknown		Total
	No.	%	No.	%	No.	%	
East Midlands	56	4	1309	96	0	0	1365
East of England	103	6	1601	94	0	0	1704
London	113	7	1433	93	0	0	1546
N East, Yorks & Humber	87	4	2170	96	0	0	2257
North West	70	4	1755	96	0	0	1825
South East	106	4	2310	96	0	0	2416
South West	98	5	1825	95	0	0	1923
West Midlands	75	5	1366	95	0	0	1441
England	708	5	13769	95	0	0	14477
Northern Ireland	8	2	415	98	0	0	423
Wales	33	4	854	96	0	0	887
UK excl. Scotland	749	5	15038	95	0	0	15787

Sub-region	Had treatment		Did not have treatment		Unknown		Total
	No.	%	No.	%	No.	%	
East Midlands	2	0	1721	100	0	0	1723
East of England	20	1	2039	99	0	0	2059
London	6	0	2090	100	0	0	2096
N East, Yorks & Humber	20	1	2843	99	0	0	2863
North West	11	0	2303	100	0	0	2314
South East	18	1	3067	99	0	0	3085
South West	13	1	2415	99	0	0	2428
West Midlands	16	1	1780	99	0	0	1796
England	106	1	18258	99	0	0	18364
Northern Ireland	0	0	527	100	0	0	527
Wales	8	1	1068	99	0	0	1076
UK excl. Scotland	114	1	19853	99	0	0	19967

Sub-region	Total surgeons	<10 cases		10-29 cases		30-49 cases		50-79 cases		80-99 cases		100+ cases		Median
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
East Midlands	54	10	19	16	30	17	31	9	17	2	4	0	0	32
East of England	66	18	27	13	20	21	32	13	20	0	0	1	2	33
London	100	39	39	28	28	20	20	12	12	1	1	0	0	14
N East, Yorks & Humber	79	13	16	17	22	26	33	18	23	3	4	2	3	37
North West	81	15	19	25	31	30	37	10	12	1	1	0	0	29
South East	82	17	21	20	24	19	23	21	26	2	2	3	4	34
South West	77	14	18	17	22	31	40	12	16	3	4	0	0	33
West Midlands	61	14	23	17	28	19	31	8	13	3	5	0	0	29
England	600	140	23	153	26	183	31	103	17	15	3	6	1	30
Northern Ireland	19	3	16	9	47	5	26	1	5	1	5	0	0	25
Wales	24	7	29	2	8	2	8	11	46	1	4	1	4	52
UK excl. Scotland	643	150	23	164	26	190	30	115	18	17	3	7	1	30

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

Sub-region	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	1777	38	2	370	21	653	37	543	31	173	10
East of England	2099	71	3	322	15	812	39	778	37	0	0	116	6
London	2045	147	7	656	32	511	25	731	36	0	0	0	0
N East, Yorks & Humber	2976	59	2	387	13	1010	34	1030	35	264	9	226	8
North West	2385	47	2	620	26	1038	44	588	25	92	4	0	0
South East	3175	114	4	392	12	773	24	1293	41	187	6	416	13
South West	2522	50	2	331	13	1307	52	575	23	259	10	0	0
West Midlands	1835	53	3	358	20	719	39	445	24	260	14	0	0
England	18814	579	3	3436	18	6823	36	5983	32	1235	7	758	4
Northern Ireland	527	15	3	191	36	173	33	62	12	86	16	0	0
Wales	1076	24	2	42	4	75	7	731	68	89	8	115	11
UK excl. Scotland	20417	618	3	3669	18	7071	35	6776	33	1410	7	873	4

Sub-region	All surgeons screening caseload <10	Surgeon from another region		Symptomatic caseload >30 pa*		Joined NHSBSP		Left NHSBSP		Plastic surgeon		Private practice		No information/ data errors	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
		East Midlands	22	5	23	0	0	1	5	0	0	2	9	0	0
East of England	32	10	31	4	13	2	6	0	0	4	13	1	3	3	9
London	61	14	23	3	5	2	3	1	2	14	23	4	7	7	11
N East, Yorks & Humber	28	6	21	7	25	0	0	1	4	0	0	0	0	2	7
North West	22	1	5	4	18	0	0	1	5	4	18	3	14	0	0
South East	46	17	37	3	7	1	2	0	0	1	2	3	7	7	15
South West	28	5	18	0	0	3	11	1	4	2	7	4	14	5	18
West Midlands	23	0	0	2	9	5	22	1	4	3	13	1	4	0	0
England	262	58	22	23	9	14	5	5	2	30	11	16	6	27	10
Northern Ireland	3	0	0	0	0	2	67	0	0	1	33	0	0	0	0
Wales	10	1	10	0	0	3	30	2	20	2	20	0	0	0	0
UK excl. Scotland	275	59	21	23	8	19	7	7	3	33	12	16	6	27	10

*pa= per annual

Sub-region	Total surgeons	<10 cases		10-29 cases		30-49 cases		50-79 cases		80-99 cases		100+ cases		3 years median
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
		East Midlands	67	23	34	15	22	21	31	8	12	0	0	
East of England	86	34	40	25	29	20	23	5	6	2	2	0	0	51
London	134	74	55	29	22	18	13	11	8	1	1	1	1	19
N East, Yorks & Humber	101	32	32	26	26	24	24	16	16	1	1	2	2	80
North West	106	41	39	26	25	30	29	8	8	1	1	0	0	71
South East	100	33	33	29	30	17	17	17	17	1	1	3	3	75
South West	94	30	32	27	29	23	25	14	15	0	0	0	0	66
West Midlands	84	39	46	16	19	20	24	8	10	1	1	0	0	47
England	772	306	40	193	25	173	22	87	11	7	1	6	1	69
Northern Ireland	21	3	14	10	48	6	29	2	10	0	0	0	0	68
Wales	28	10	36	1	4	7	25	9	32	1	4	0	0	120
UK excl. Scotland	821	319	39	204	25	186	23	98	12	8	1	6	1	62

*No data were submitted from Scotland for 16/17, 17/18 and 18/19 audit.

Sub-region	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	5041	175	3	989	20	2392	47	1485	29	0	0	0	0
East of England	5386	110	2	1502	28	2349	44	875	16	550	10	0	0
London	6518	450	7	1531	23	1990	31	1931	30	299	5	317	5
N East, Yorks & Humber	8506	206	2	1729	20	2769	33	2890	34	266	3	646	8
North West	7298	353	5	1695	23	3456	47	1541	21	253	3	0	0
South East	8498	223	3	1942	23	2004	24	2954	35	286	3	1089	13
South West	6944	173	2	1544	22	2715	29	2512	36	0	0	0	0
West Midlands	5370	422	8	1004	19	2256	51	1427	27	261	5	0	0
England	53561	2112	4	11936	22	19931	4	15615	29	1915	4	2052	4
Northern Ireland	1529	15	1	536	35	611	40	367	24	0	0	0	0
Wales	3130	43	1	77	2	873	28	1825	58	0	0	312	10
UK excl. Scotland	58220	2170	4	12549	22	21415	37	17807	31	1915	3	2364	4

*No data were submitted from Scotland for 16/17, 17/18 and 18/19 audit

Sub-region	Number surgeons screening caseload <10	Surgeon from another region		Symptomatic caseload >30 pa*		Joined NHSBSP		Left NHSBSP		Plastic surgeon		Private practice		No information/data errors	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	44	7	16	0	0	1	2	0	0	4	9	2	5	6	14
East of England	56	12	21	4	7	1	2	3	5	5	9	4	7	8	14
London	96	13	14	2	2	2	2	4	4	17	18	14	15	12	13
N East, Yorks & Humber	49	7	14	6	12	4	8	4	8	2	4	0	0	2	4
North West	49	2	4	7	14	0	0	5	10	6	12	11	22	0	0
South East	67	16	24	2	3	1	1	1	1	3	4	7	10	8	12
South West	42	7	17	3	7	3	7	2	5	4	10	3	7	6	14
West Midlands	49	1	2	2	4	5	10	2	4	12	24	1	2	3	6
England	451	65	14	26	6	17	4	21	5	53	12	42	9	45	10
Northern Ireland	3	0	0	0	0	2	67	0	0	1	33	0	0	0	0
Wales	14	2	14	0	0	3	21	1	7	3	21	0	0	1	7
UK excl. Scotland	469	67	14	26	6	22	5	22	5	57	12	42	9	46	10

*pa= per annum

Sub-region	Invasive			Non/micro-invasive		
	Total	No	%	Total	No	%
East Midlands	1326	233	18	341	70	21
East of England	1629	317	19	336	75	22
London	1444	236	16	493	91	18
N East, Yorks & Humber	2198	365	17	573	96	17
North West	1783	280	16	467	90	19
South East	2338	433	19	635	150	24
South West	1876	319	17	492	127	26
West Midlands	1404	259	18	322	77	24
England	13998	2442	17	3659	776	21
Northern Ireland	417	94	23	100	16	16
Wales	871	159	18	182	43	24
UK excl. Scotland	15286	2695	18	3941	835	21

Sub-region	Invasive			Non/micro-invasive		
	Total	No	%	Total	No	%
East Midlands	7	7	100	23	9	39
East of England	10	8	80	18	3	17
London	10	7	70	23	10	43
N East, Yorks & Humber	13	11	85	27	7	26
North West	9	8	89	23	8	35
South East	14	11	79	72	22	31
South West	9	8	89	41	12	29
West Midlands	10	6	60	20	5	25
England	82	66	80	247	76	31
Northern Ireland	1	1	100	8	0	0
Wales	5	3	60	14	6	43
UK excl. Scotland	88	70	80	269	82	30

Sub-region	1		2		3		4+		Unknown		Total cancers		Repeat 2+ ops	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%
East Midlands	896	82	180	16	17	2	2	0	0	0	1095	100	199	18
East of England	1156	82	224	16	22	2	3	0	0	0	1405	100	249	18
London	985	84	182	15	10	1	0	0	0	0	1177	100	192	16
N East, Yorks & Humber	1569	83	271	14	36	2	5	0	0	0	1881	100	312	17
North West	1223	83	220	15	25	2	2	0	0	0	1470	100	247	17
South East	1625	81	336	17	47	2	6	0	0	0	2014	100	389	19
South West	1338	83	252	16	23	1	6	0	0	0	1619	100	281	17
West Midlands	920	81	187	16	26	2	4	0	0	0	1137	100	217	19
England	9712	82	1852	16	206	2	28	0	0	0	11798	100	2086	18
Northern Ireland	264	75	83	24	4	1	1	0	0	0	352	100	88	25
Wales	554	79	128	18	13	2	3	0	0	0	698	100	144	21
UK excl. Scotland	10530	82	2063	16	223	2	32	0	0	0	12848	100	2318	18

Sub-region	1		2		3		4+		Unknown		Total cancers		Repeat 2+ ops	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%
East Midlands	191	76	54	22	4	2	1	0	0	0	250	100	59	24
East of England	191	75	61	24	4	2	0	0	0	0	256	100	65	25
London	313	82	65	17	3	1	0	0	0	0	381	100	68	18
N East, Yorks & Humber	347	81	67	16	15	3	1	0	0	0	430	100	83	19
North West	266	77	69	20	9	3	3	1	0	0	347	100	81	23
South East	366	76	96	20	17	4	4	1	0	0	483	100	117	24
South West	282	73	83	22	15	4	4	1	0	0	384	100	102	27
West Midlands	175	74	53	22	7	3	2	1	0	0	237	100	62	26
England	2131	77	548	20	74	3	15	1	0	0	2768	100	637	23
Northern Ireland	61	80	12	16	3	4	0	0	0	0	76	100	15	20
Wales	100	74	29	21	4	3	3	2	0	0	136	100	36	26
UK excl. Scotland	2292	77	589	20	81	3	18	1	0	0	2980	100	688	23

Sub-region	1		2		3+		Unknown		Total		Repeat (2+) rate	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	1062	86	164	13	15	1	0	0	1241	100	179	14
East of England	1281	83	244	16	23	1	0	0	1548	100	267	17
London	1147	87	167	13	8	1	0	0	1322	100	175	13
N East, Yorks & Humber	1765	86	254	12	36	2	0	0	2055	100	290	14
North West	1461	86	215	13	22	1	0	0	1698	100	237	14
South East	1835	84	302	14	43	2	0	0	2180	100	345	16
South West	1519	86	226	13	23	1	0	0	1768	100	249	14
West Midlands	1109	84	182	14	27	2	0	0	1318	100	209	16
England	11179	85	1754	13	197	2	0	0	13130	100	1951	15
Northern Ireland	309	80	76	20	3	1	0	0	388	100	79	20
Wales	688	84	116	14	15	2	0	0	819	100	131	16
UK excl. Scotland	12176	85	1946	14	215	1	0	0	14337	100	2161	15

Sub-region	1		2		3+		Unknown		Total		Repeat (2+) rate*	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	21	30	43	62	4	6	1	1	69	100	47	68
East of England	25	38	38	58	3	5	0	0	66	100	41	62
London	49	48	50	49	3	3	0	0	102	100	53	52
N East, Yorks & Humber	57	47	59	49	5	4	0	0	121	100	64	53
North West	36	51	29	41	5	7	0	0	70	100	34	49
South East	56	43	63	48	11	8	0	0	130	100	74	57
South West	29	33	53	60	6	7	0	0	88	100	59	67
West Midlands	25	37	38	57	4	6	0	0	67	100	42	63
England	298	42	373	52	41	6	1	0	713	100	414	58
Northern Ireland	12	46	12	46	2	8	0	0	26	100	14	54
Wales	22	48	23	50	1	2	0	0	46	100	24	52
UK excl. Scotland	332	42	408	52	44	6	1	0	785	100	452	58

*mixture of breast and axillary operations

Sub-region	1		2		3+		Unknown		Total		Repeat (2+) rate*	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	242	81	52	17	5	2	0	0	299	100	57	19
East of England	238	77	67	22	4	1	0	0	309	100	71	23
London	355	82	75	17	3	1	0	0	433	100	78	18
N East, Yorks & Humber	435	83	73	14	15	3	0	0	523	100	88	17
North West	353	81	69	16	12	3	0	0	434	100	81	19
South East	422	77	104	19	22	4	0	0	548	100	126	23
South West	317	74	92	21	19	4	0	0	428	100	111	26
West Midlands	210	75	62	22	8	3	0	0	280	100	70	25
England	2572	79	594	18	88	3	0	0	3254	100	682	21
Northern Ireland	76	83	13	14	3	3	0	0	92	100	16	17
Wales	131	78	30	18	7	4	0	0	168	100	37	22
UK excl. Scotland	2779	79	637	18	98	3	0	0	3514	100	735	21

*mixture of breast and axillary operations

Sub-region	All cancers with initial BCS (with pre- diagnosis)	Repeat BCS	
		No	%
East Midlands	1345	178	13
East of England	1661	206	12
London	1558	175	11
N East, Yorks & Humber	2311	258	11
North West	1817	226	12
South East	2497	353	14
South West	2003	280	14
West Midlands	1374	196	14
England	14566	1872	13
Northern Ireland	428	66	15
Wales	834	119	14
UK excl. Scotland	15828	2057	13

Sub-region	All cancers with initial BCS (with pre- diagnosis)	Converted to Mx	
		No	%
East Midlands	1345	37	3
East of England	1661	50	3
London	1558	27	2
N East, Yorks & Humber	2311	69	3
North West	1817	60	3
South East	2497	77	3
South West	2003	57	3
West Midlands	1374	36	3
England	14566	413	3
Northern Ireland	428	16	4
Wales	834	34	4
UK excl. Scotland	15828	463	3

Sub-region	Total cases with surgery to the breast	Complete margin data	% complete margin data	Not complete margin data
East Midlands	1630	1417	87	213
East of England	1923	1834	95	89
London	1842	1729	94	113
N East, Yorks & Humber	2712	2666	98	46
North West	2175	2061	95	114
South East	2916	2761	95	155
South West	2309	2209	96	100
West Midlands	1684	1661	99	23
England	17191	16338	95	853
Northern Ireland	509	488	96	21
Wales	1035	911	88	124
UK excl. Scotland	18735	17737	95	998

Sub-region	Total cases with surgery	Margin clear		Margin not clear		Margin unknown	
		No.	%	No.	%	No.	%
East Midlands	1310	1300	99	9	1	1	0
East of England	1610	1584	98	26	2	0	0
London	1474	1465	99	8	1	1	0
N East, Yorks & Humber	2232	2198	98	24	1	10	0
North West	1722	1659	96	61	4	2	0
South East	2457	2413	98	43	2	1	0
South West	1946	1909	98	30	2	7	0
West Midlands	1338	1314	98	24	2	0	0
England	14089	13842	98	225	2	22	0
Northern Ireland	414	403	97	8	2	3	1
Wales	804	781	97	21	3	2	0
UK excl. Scotland	15307	15026	98	254	2	27	0

Sub-region	Total cases with surgery	Margin clear		Margin not clear		Margin unknown	
		No.	%	No.	%	No.	%
East Midlands	320	313	98	7	2	0	0
East of England	313	302	96	11	4	0	0
London	368	357	97	10	3	1	0
N East, Yorks & Humber	480	457	95	20	4	3	1
North West	453	436	96	16	4	1	0
South East	459	440	96	19	4	0	0
South West	363	350	96	12	3	1	0
West Midlands	346	328	95	18	5	0	0
England	3102	2983	96	113	4	6	0
Northern Ireland	95	94	99	1	1	0	0
Wales	231	225	97	5	2	1	0
UK excl. Scotland	3428	3302	96	119	3	7	0

Sub-region	Had axillary ultrasound		Did not have axillary ultrasound		Unknown		Total
	No.	%	No.	%	No.	%	
East Midlands	1350	99	15	1	0	0	1365
East of England	1675	98	29	2	0	0	1704
London	1542	100	4	0	0	0	1546
N East, Yorks & Humber	2225	99	32	1	0	0	2257
North West	1815	99	10	1	0	0	1825
South East	2411	100	3	0	2	0	2416
South West	1905	99	18	1	0	0	1923
West Midlands	1432	99	9	1	0	0	1441
England	14355	99	120	1	2	0	14477
Northern Ireland	409	97	14	3	0	0	423
Wales	832	94	53	6	2	0	887
UK excl. Scotland	15596	99	187	1	4	0	15787

Sub-region	Normal		Abnormal		Total
	No.	%	No.	%	
East Midlands	1155	86	195	14	1350
East of England	1463	87	212	13	1675
London	1315	85	227	15	1542
N East, Yorks & Humber	1885	85	340	15	2225
North West	1527	84	288	16	1815
South East	2139	89	272	11	2411
South West	1696	89	209	11	1905
West Midlands	1208	84	224	16	1432
England	12388	86	1967	14	14355
Northern Ireland	310	76	99	24	409
Wales	679	82	153	18	832
UK excl. Scotland	13377	86	2219	14	15596

Sub-region	Had axillary biopsy		Did not have axillary biopsy		Unknown		Total
	No.	%	No.	%	No.	%	
East Midlands	186	95	9	5	0	0	195
East of England	199	94	13	6	0	0	212
London	221	97	6	3	0	0	227
N East, Yorks & Humber	310	91	30	9	0	0	340
North West	236	82	52	18	0	0	288
South East	249	92	23	8	0	0	272
South West	187	89	22	11	0	0	209
West Midlands	212	95	12	5	0	0	224
England	1800	92	167	8	0	0	1967
Northern Ireland	88	89	11	11	0	0	99
Wales	148	97	5	3	0	0	153
UK excl. Scotland	2036	92	183	8	0	0	2219

Sub-region	C1/B1		C2/B2		C3/B3		C4/B4		C5/B5		Total
	No.	%	No.	%	No.	%	No.	%	No.	%	
East Midlands	5	3	75	40	0	0	9	5	97	52	186
East of England	9	5	80	40	2	1	3	2	105	53	199
London	19	9	62	28	1	0	5	2	134	61	221
N East, Yorks & Humber	11	4	166	54	5	2	2	1	126	41	310
North West	9	4	117	50	1	0	7	3	102	43	236
South East	20	8	110	44	1	0	4	2	114	46	249
South West	26	14	71	38	2	1	4	2	84	45	187
West Midlands	8	4	99	47	1	0	0	0	104	49	212
England	107	6	780	43	13	1	34	2	866	48	1800
Northern Ireland	4	5	59	67	1	1	0	0	24	27	88
Wales	10	7	80	54	0	0	0	0	58	39	148
UK excl. Scotland	121	6	919	45	14	1	34	2	948	47	2036

Sub-region	C1/B1		C2/B2		C3/B3		C4/B4		C5/B5		Total
	No.	%	No.	%	No.	%	No.	%	No.	%	
East Midlands	0	0	2	40	0	0	1	20	2	40	5
East of England	1	17	3	50	1	17	0	0	1	17	6
London	0	0	4	100	0	0	0	0	0	0	4
N East, Yorks & Humber	0	0	1	100	0	0	0	0	0	0	1
North West	0	0	3	75	0	0	0	0	1	25	4
South East	2	40	1	20	0	0	0	0	2	40	5
South West	1	10	6	60	1	10	0	0	2	20	10
West Midlands	0	0	3	75	0	0	0	0	1	25	4
England	4	10	23	59	2	5	1	3	9	23	39
Northern Ireland	0	0	4	40	0	0	1	10	5	50	10
Wales	0	0	1	100	0	0	0	0	0	0	1
UK excl. Scotland	4	8	28	56	2	4	2	4	14	28	50

Sub-region	C1/B1		C2/B2		C3/B3		C4/B4		C5/B5	
	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	1	25	12	19	0	-	8	100	64	98
East of England	2	25	13	20	1	50	1	50	48	96
London	3	23	11	21	0	0	2	100	69	97
N East, Yorks & Humber	2	22	26	18	1	20	2	100	86	99
North West	2	29	14	13	0	-	2	40	62	94
South East	9	56	21	23	1	100	3	75	65	97
South West	2	11	12	18	0	0	3	75	37	93
West Midlands	2	33	16	18	0	-	0	-	57	95
England	24	28	128	18	3	25	21	72	493	95
Northern Ireland	3	75	11	20	1	100	0	-	20	95
Wales	4	44	11	14	0	-	0	-	43	98
UK excl. Scotland	30	32	147	18	4	36	21	78	551	96

*Excluded cases with neo-adjuvant therapy

Sub-region	Total with positive nodal status	Had positive pre-op ax assessment	
		No	%
East Midlands	240	65	27
East of England	240	49	20
London	256	69	27
N East, Yorks & Humber	391	86	22
North West	275	63	23
South East	401	66	16
South West	288	38	13
West Midlands	240	57	24
England	2331	493	21
Northern Ireland	75	21	28
Wales	132	43	33
UK excl. Scotland	2406	557	23

*Excluded cases with neo-adjuvant therapy

Sub-region	Total without/unknown pre-op ax	Positive nodal status	
		No	%
East Midlands	1098	154	14
East of England	1330	174	13
London	1159	170	15
N East, Yorks & Humber	1809	273	15
North West	1464	194	13
South East	1986	301	15
South West	1602	231	14
West Midlands	1148	165	14
England	11596	1662	14
Northern Ireland	309	39	13
Wales	675	73	11
UK excl. Scotland	12580	1774	14

*Excluded cases with neo-adjuvant therapy

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	1	0	12	5	0	0	8	3	65	27	240
East of England	2	1	13	5	1	0	1	0	49	20	240
London	3	1	12	5	0	0	2	1	69	27	256
N East, Yorks & Humber	2	1	27	7	1	0	2	1	86	22	391
North West	2	1	14	5	0	0	2	1	63	23	275
South East	9	2	21	5	1	0	3	1	66	16	401
South West	3	1	13	5	0	0	3	1	38	13	288
West Midlands	2	1	16	7	0	0	0	0	57	24	240
England	24	1	128	5	3	0	21	1	493	21	2331
Northern Ireland	3	4	11	15	1	1	0	0	21	28	75
Wales	4	3	12	9	0	0	0	0	43	33	132
UK excl. Scotland	31	1	151	6	4	0	21	1	557	22	2538

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	1321	100	0	0	5	0	0	0
East of England	1629	1615	99	0	0	14	1	0	0
London	1444	1421	98	0	0	23	2	0	0
N East, Yorks & Humber	2198	2174	99	0	0	24	1	0	0
North West	1783	1767	99	0	0	16	1	0	0
South East	2338	2305	99	0	0	33	1	0	0
South West	1876	1857	99	0	0	19	1	0	0
West Midlands	1404	1390	99	0	0	14	1	0	0
England	13998	13850	99	0	0	148	1	0	0
Northern Ireland	417	407	98	0	0	10	2	0	0
Wales	871	856	98	0	0	15	2	0	0
UK excl. Scotland	15286	15113	99	0	0	173	1	0	0.0

Sub-region	With SLNB		Without SLNB		Unknown nodal procedure type		Total	
	No.	%	No.	%	No.	%	No.	%
East Midlands	1202	91	118	9	0	0	1320	100
East of England	1489	92	127	8	0	0	1616	100
London	1275	89	150	11	0	0	1425	100
N East, Yorks & Humber	2011	92	164	8	0	0	2175	100
North West	1634	92	135	8	0	0	1769	100
South East	2167	94	140	6	0	0	2307	100
South West	1772	95	91	5	0	0	1863	100
West Midlands	1277	92	113	8	0	0	1390	100
England	12827	93	1038	7	0	0	13865	100
Northern Ireland	371	91	38	9	0	0	409	100
Wales	784	91	74	9	0	0	858	100
UK excl. Scotland	13982	92	1150	8	0	0	15132	100

Sub-region	Total known nodal status	Positive		Negative	
		No.	%	No.	%
East Midlands	1321	268	20	1053	80
East of England	1615	286	18	1329	82
London	1421	286	20	1135	80
N East, Yorks & Humber	2174	427	20	1747	80
North West	1767	312	18	1455	82
South East	2305	434	19	1871	81
South West	1857	320	17	1537	83
West Midlands	1390	259	19	1131	81
England	13850	2592	19	11258	81
Northern Ireland	407	78	19	329	81
Wales	856	144	17	712	83
UK excl. Scotland	15113	2814	19	12299	81

Sub-region	Total with axillary surgery	0 node obtained		1,2,3 nodes obtained		≥4nodes obtained		Unknown	
		No.	%	No.	%	No.	%	No.	%
East Midlands	118	0	0	7	6	111	94	0	0
East of England	127	0	0	10	8	117	92	0	0
London	150	0	0	3	2	147	98	0	0
N East, Yorks & Humber	164	0	0	21	13	143	87	0	0
North West	135	1	1	4	3	130	96	0	0
South East	140	1	1	9	6	130	93	0	0
South West	91	0	0	4	4	87	96	0	0
West Midlands	113	0	0	5	4	108	96	0	0
England	1038	2	0	63	6	973	94	0	0
Northern Ireland	38	0	0	4	11	34	89	0	0
Wales	74	0	0	7	9	67	91	0	0
UK excl. Scotland	1150	2	0	74	6	1074	93	0	0

Sub-region	With SLNB				Without SLNB			
	Positive		Negative		Positive		Negative	
	No.	%	No.	%	No.	%	No.	%
East Midlands	182	15	1020	85	86	73	33	28
East of England	204	14	1284	86	82	65	45	35
London	170	13	1101	86	116	77	34	23
N East, Yorks & Humber	316	16	1694	84	111	68	53	32
North West	218	13	1415	87	94	70	40	30
South East	331	15	1835	85	103	74	36	26
South West	248	14	1518	86	72	79	19	21
West Midlands	178	14	1098	86	81	72	33	29
England	1847	14	10965	85	745	72	293	28
Northern Ireland	50	13	319	86	28	74	10	26
Wales	84	11	698	89	60	81	14	19
UK excl. Scotland	1981	14	11982	86	833	72	317	28

Sub-region	1-<4 nodes obtained					4+ nodes obtained				
	1 Ax op		2+ Ax ops		Total	1 Ax op		2+ Ax ops		Total
	No.	%	No.	%		No.	%	No.	%	
East Midlands	90	100	0	0	90	39	42	53	58	92
East of England	90	100	0	0	90	30	26	84	74	114
London	85	100	0	0	85	29	34	56	66	85
N East, Yorks & Humber	168	100	0	0	168	63	43	85	57	148
North West	112	98	2	2	114	34	33	70	67	104
South East	147	99	1	1	148	101	55	82	45	183
South West	142	100	0	0	142	59	56	47	44	106
West Midlands	95	100	0	0	95	25	30	58	70	83
England	929	100	3	0	932	380	42	535	58	915
Northern Ireland	17	100	0	0	17	2	6	31	94	33
Wales	46	100	0	0	46	12	32	26	68	38
UK excl. Scotland	992	100	3	0	995	394	40	592	60	986

Sub-region	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	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	1321	976	73.9	90	6.8	2	0.2	879	67	5	0.4	0	0
East of England	1615	1200	74.3	90	5.6	0	0.0	1100	68	10	0.6	0	0
London	1421	1066	75.0	85	6.0	0	0.0	978	69	3	0.2	0	0
N East, Yorks & Humber	2174	1658	76.3	168	7.7	1	0.0	1469	68	20	0.9	0	0
North West	1767	1323	74.9	114	6.5	1	0.1	1205	68	3	0.2	0	0
South East	2305	1812	78.6	148	6.4	1	0.0	1655	72	8	0.3	0	0
South West	1857	1486	80.0	142	7.6	1	0.1	1340	72	3	0.2	0	0
West Midlands	1390	1063	76.5	95	6.8	0	0.0	962	69	6	0.4	0	0
England	13850	10584	76.4	932	6.7	6	0.0	9588	69	58	0.4	0	0
Northern Ireland	407	290	71.3	17	4.2	1	0.2	269	66	3	0.7	0	0
Wales	856	671	78.4	46	5.4	1	0.1	618	72	6	0.7	0	0
UK excl. Scotland	15113	11545	76	995	6.6	8	0.1	10475	69	67	0.4	0	0

Sub-region	Total non-invasive cancers	Nodal status known		Nodes obtained but status unknown		No nodes obtained		Unknown if nodes obtained	
		No.	%	No.	%	No.	%	No.	%
East Midlands	330	67	20	0	0	263	80	0	0
East of England	310	73	24	0	0	237	76	0	0
London	473	118	25	0	0	355	75	0	0
N East, Yorks & Humber	546	144	26	0	0	402	74	0	0
North West	451	117	26	0	0	334	74	0	0
South East	615	123	20	0	0	492	80	0	0
South West	468	102	22	0	0	366	78	0	0
West Midlands	307	77	25	0	0	230	75	0	0
England	3500	821	23	0	0	2679	77	0	0
Northern Ireland	100	16	16	0	0	84	84	0	0
Wales	178	46	26	0	0	132	74	0	0
UK excl. Scotland	3778	883	23	0	0	2895	77	0	0

Sub-region	Conservation with known nodal status		Total Conservation	Mastectomy with known nodal status		Total mastectomy
	No.	%		No.	%	
East Midlands	6	2	255	61	81	75
East of England	15	6	246	58	91	64
London	27	7	375	91	93	98
N East, Yorks & Humber	21	5	416	123	95	130
North West	12	4	337	105	92	114
South East	31	6	517	92	94	98
South West	26	7	386	76	93	82
West Midlands	13	5	239	64	94	68
England	151	5	2771	670	92	729
Northern Ireland	2	2	82	14	78	18
Wales	11	8	137	35	85	41
UK excl. Scotland	164	5	2990	719	91	788

Sub-region	Total known nodal status	Positive		Negative	
		No.	%	No.	%
East Midlands	67	2	3	65	97
East of England	73	1	1	72	99
London	118	4	3	114	97
N East, Yorks & Humber	144	0	0	144	100
North West	117	3	3	114	97
South East	123	1	1	122	99
South West	102	1	1	101	99
West Midlands	77	1	1	76	99
England	821	13	2	808	98
Northern Ireland	16	0	0	16	100
Wales	46	0	0	46	100
UK excl. Scotland	883	13	1	870	99

Sub-region	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				
	No.	%	No.	%	No.	%	No.	%	No.	%			
East Midlands	59	79	2	3	0	0.0	0	0.0	0	0.0	75	61	97
East of England	54	84	0	0	4	6.3	0	0.0	0	0.0	64	58	93
London	88	90	0	0	3	3.1	0	0.0	0	0.0	98	91	97
N East, Yorks & Humber	122	94	1	1	0	0.0	0	0.0	0	0.0	130	123	99
North West	104	91	0	0	1	0.9	0	0.0	0	0.0	114	105	99
South East	91	93	1	1	0	0.0	0	0.0	0	0.0	98	92	99
South West	74	90	2	2	0	0.0	0	0.0	0	0.0	82	76	97
West Midlands	63	93	1	1	0	0.0	0	0.0	0	0.0	68	64	98
England	655	90	7	1	8	1.1	0	0.0	0	0.0	729	670	98
Northern Ireland	13	72	1	6	0	0.0	0	0.0	0	0.0	18	14	93
Wales	34	83	0	0	0	0.0	0	0.0	1	2.4	41	35	97
UK excl. Scotland	702	89	8	1	8	1.0	0	0.0	1	0.1	788	719	98

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	6	2	0	0	0	0.0	0	0.0	0	0.0	255	6	100
East of England	14	6	0	0	0	0.0	0	0.0	1	0.4	246	15	93
London	27	7	0	0	0	0.0	0	0.0	0	0.0	375	27	100
N East, Yorks & Humber	19	5	2	0	0	0.0	0	0.0	0	0.0	416	21	90
North West	12	4	0	0	0	0.0	0	0.0	0	0.0	337	12	100
South East	31	6	0	0	0	0.0	0	0.0	0	0.0	517	31	100
South West	24	6	0	0	1	0.3	0	0.0	1	0.3	386	26	92
West Midlands	10	4	1	0	0	0.0	0	0.0	2	0.8	239	13	77
England	143	5	3	0	1	0.0	0	0.0	4	0.1	2771	151	95
Northern Ireland	2	2	0	0	0	0.0	0	0.0	0	0.0	82	2	100
Wales	11	8	0	0	0	0.0	0	0.0	0	0.0	137	11	100
UK excl. Scotland	156	5	3	0	1	0.0	0	0.0	4	0.1	2990	164	95

Sub-region	Total known nodal status	Conservation			Mastectomy		
		Mean	Median	Maximum	Mean	Median	Maximum
East Midlands	67	1	1	2	2	2	15
East of England	73	2	1	6	2	2	23
London	118	2	1	6	2	2	18
N East, Yorks & Humber	144	2	2	4	2	2	17
North West	117	3	2.5	5	2	2	7
South East	123	2	2	4	2	2	7
South West	102	3	2	13	2	2	8
West Midlands	77	2	2	6	2	2	10
England	821	2	2	13	2	2	23
Northern Ireland	16	3	2.5	3	2	2	5
Wales	46	2	1	3	2	2	9
UK excl. Scotland	883	2	2	13	2	2	23

Sub-region	B5b						B5a					
	Total B5b	% 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.	%
East Midlands	1241	100	1236	100	1	0	69	99	25	36	43	62
East of England	1548	100	1543	100	0	0	66	92	28	42	33	50
London	1322	100	1317	100	0	0	102	87	48	47	41	40
N East, Yorks & Humber	2055	100	2043	99	2	0	121	91	56	46	54	45
North West	1698	100	1692	100	1	0	70	87	31	44	30	43
South East	2180	100	2169	99	1	0	130	85	49	38	62	48
South West	1768	100	1763	100	0	0	88	93	35	40	47	53
West Midlands	1318	100	1312	100	0	0	67	96	28	42	36	54
England	13130	100	13075	100	5	0	713	91	300	42	346	49
Northern Ireland	388	99	385	99	0	0	26	81	8	31	13	50
Wales	819	99	811	99	0	0	46	91	22	48	20	43
UK excl. Scotland	14337	100	14271	100	5	0	785	90	330	42	379	48

Sub-region	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
	No	%	No	%			
East Midlands	51	19	3	1	268	54	94
East of England	84	29	3	1	286	87	97
London	56	20	1	0	286	57	98
N East, Yorks & Humber	84	20	2	0	427	86	98
North West	72	23	2	1	312	74	97
South East	82	19	3	1	434	85	96
South West	47	15	0	0	320	47	100
West Midlands	58	22	1	0	259	59	98
England	534	21	15	1	2592	549	97
Northern Ireland	31	40	0	0	78	31	100
Wales	26	18	1	1	144	27	96
UK excl. Scotland	591	21	16	1	2814	607	97

Appendix 5: Adjuvant therapy data tables (92 – 117)

ADJUVANT THERAPY AUDIT WITH TUMOUR DATA FROM THE 2017/18 AUDIT OF SCREEN-DETECTED BREAST CANCERS

Sub-region	Total submitted cases	Total pt matched *	% matched	Had previous cancers		No previous cancers	
				No.	%	No.	%
				East Midlands	1736	1736	100
East of England	1816	1816	100	237	13	1579	87
London	2246	2233	99	232	10	2001	90
N East, York's & Humber	2758	2758	100	377	14	2381	86
North West	2293	2293	100	288	13	2005	87
South East	2879	2875	100	337	12	2538	88
South West	2462	2460	100	315	13	2145	87
West Midlands	1776	1774	100	227	13	1547	87
England	17966	17945	100	2228	12	15717	87
Northern Ireland	537	537	100	69	13	468	87
Wales	1113	1111	100	133	12	978	88
UK excl. Scotland	19616	19593	100	2430	12	17163	88

* Where Matched refers to matching the current year's ABS data to NCRAS data for previous years.

Sub-region	Total matched	Total previous cancers	Invasive/micro-invasive*					Non-invasive*	
			Breast	Gynaecological	Bowel	Haematological	Other	Breast	Other
			East Midlands	1736	215	88	21	15	12
East of England	1816	237	87	19	21	9	28	35	55
London	2233	232	89	26	10	12	29	22	57
N East, York's & Humber	2758	377	138	49	22	9	48	37	113
North West	2293	288	116	26	18	10	37	26	81
South East	2875	337	142	29	18	12	40	31	87
South West	2460	315	104	37	16	17	42	34	84
West Midlands	1774	227	74	23	11	5	29	25	87
England	17945	2228	838	230	131	86	286	234	611
Northern Ireland	537	69	23	9	7	2	7	9	18
Wales	1111	133	59	14	7	10	13	13	27
UK excl. Scotland	19593	2430	920	253	145	98	306	256	656
% of previous cancers	-	100	38	10	6	4	13	11	27
% of matched	100	12	5	1	1	1	2	1	3

* a patient can have more than one previous cancer

Sub-region	Women with previous breast cancers	Had RT		Had CT		Had ET	
		No.	%	No.	%	No.	%
East Midlands	111	52	47	11	10	77	69
East of England	120	50	42	18	15	71	59
London	110	37	34	13	12	25	23
N East, York's & Humber	166	64	39	20	12	125	75
North West	140	60	43	40	29	99	71
South East	171	67	39	22	13	99	58
South West	137	57	42	18	13	103	75
West Midlands	95	42	44	13	14	63	66
England	1050	429	41	155	15	662	63
Northern Ireland	32	12	38	7	22	21	66
Wales	70	30	43	14	20	50	71
UK excl. Scotland	1152	471	41	176	15	733	64

Sub-region	Total Cancers	No data supplied		Excluded cases		Total Eligible		Complete data*	
		No.	%	No.	%	No.	%	No.	%
East Midlands	1736	4	0	109	6	1623	93	191	11
East of England	1816	8	0	118	6	1690	93	191	11
London	2246	21	1	105	5	2120	94	96	4
N East, York's & Humber	2758	9	0	163	6	2586	94	311	11
North West	2293	6	0	138	6	2149	94	356	16
South East	2879	19	1	163	6	2697	94	273	9
South West	2462	12	0	134	5	2316	94	313	13
West Midlands	1776	8	0	93	5	1675	94	218	12
England	17966	87	0	1023	6	16856	94	1949	11
Northern Ireland	537	33	6	32	6	472	88	467	87
Wales	1113	0	0	70	6	1043	94	1040	93
UK excl. Scotland	19616	120	1	1125	6	18371	94	3456	18

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

Sub-region	Total Eligible	Complete RT		Complete CT		Complete ET		Complete RT, CT & ET	
		No.	%	No.	%	No.	%	No.	%
East Midlands	1623	1316	81	315	19	1127	69	191	12
East of England	1690	1272	75	341	20	1142	68	191	11
London	2120	1460	69	446	21	611	29	96	5
N East, York's & Humber	2586	1941	75	492	19	1830	71	311	12
North West	2149	1453	68	599	28	1502	70	356	17
South East	2697	1864	69	542	20	1617	60	273	10
South West	2316	1664	72	489	21	1640	71	313	14
West Midlands	1675	1340	80	359	21	1132	68	218	13
England	16856	12310	73	3583	21	10601	63	1949	12
Northern Ireland	472	470	100	470	100	470	100	467	99
Wales	1043	1040	100	1040	100	1040	100	1040	100
UK excl. Scotland	18371	13820	75	5093	28	12111	66	3456	19

Sub-region	Invasive							Non-invasive						
	RT		No RT		Unknown RT		Invasive total	RT		No RT		Unknown RT		Non-invasive total
	No.	%	No.	%	No.	%		No.	%	No.	%	No.	%	
East Midlands	1127	86	0	0	178	14	1305	178	58	0	0	127	42	305
East of England	1099	79	0	0	289	21	1388	155	56	0	0	121	44	276
London	1251	77	0	0	382	23	1633	206	43	0	0	274	57	480
N East, York's & Humber	1668	83	0	0	341	17	2009	266	48	0	0	289	52	555
North West	1254	75	0	0	416	25	1670	185	40	0	0	272	60	457
South East	1596	76	0	0	502	24	2098	254	44	0	0	319	56	573
South West	1461	81	0	0	353	19	1814	195	41	0	0	286	59	481
West Midlands	1139	86	0	0	184	14	1323	192	57	0	0	147	43	339
England	10595	80	0	0	2645	20	13240	1631	47	0	0	1835	53	3466
Northern Ireland	324	85	57	15	2	1	383	47	53	41	47	0	0	88
Wales	700	83	146	17	1	0	847	101	53	89	46	2	1	192
UK excl. Scotland	11619	80	203	1	2648	18	14470	1779	47	130	3	1837	49	3746

Sub-region	Overall						
	RT		No RT		Unknown RT		Overall total
	No.	%	No.	%	No.	%	
East Midlands	1316	81	0	0	307	19	1623
East of England	1272	75	0	0	418	25	1690
London	1460	69	0	0	660	31	2120
N East, York's & Humber	1941	75	0	0	645	25	2586
North West	1453	68	0	0	696	32	2149
South East	1864	69	0	0	833	31	2697
South West	1664	72	0	0	652	28	2316
West Midlands	1340	80	0	0	335	20	1675
England	12310	73	0	0	4546	27	16856
Northern Ireland	372	79	98	21	2	0	472
Wales	803	77	237	23	3	0	1043
UK excl. Scotland	13485	73	335	2	4551	25	18371

Sub-region	Invasive							Micro/non-invasive						
	CT		No CT		Unknown CT		Invasive total	CT		No CT		Unknown CT		Micro/non-invasive total
	No.	%	No.	%	No.	%		No.	%	No.	%	No.	%	
East Midlands	313	24	0	0	992	76	1305	2	1	0	0	316	99	318
East of England	338	24	0	0	1050	76	1388	2	1	0	0	298	99	300
London	443	27	0	0	1190	73	1633	3	1	0	0	483	99	486
N East, York's & Humber	490	24	0	0	1519	76	2009	2	0	0	0	574	100	576
North West	596	36	0	0	1074	64	1670	3	1	0	0	475	99	478
South East	529	25	0	0	1569	75	2098	13	2	0	0	586	98	599
South West	485	27	0	0	1329	73	1814	4	1	0	0	496	99	500
West Midlands	355	27	0	0	968	73	1323	4	1	0	0	348	99	352
England	3549	27	0	0	9691	73	13240	33	1	0	0	3576	99	3609
Northern Ireland	89	23	292	76	2	1	383	1	1	88	99	0	0	89
Wales	209	25	637	75	1	0	847	0	0	194	99	2	1	196
UK excl. Scotland	3847	27	929	6	9694	67	14470	34	1	282	7	3578	92	3894

Table 100: Chemotherapy							
Sub-region	Overall						
	CT		No CT		Unknown CT		Overall total
	No.	%	No.	%	No.	%	
East Midlands	315	19	0	0	1308	81	1623
East of England	341	20	0	0	1349	80	1690
London	446	21	0	0	1674	79	2120
N East, York's & Humber	492	19	0	0	2094	81	2586
North West	599	28	0	0	1550	72	2149
South East	542	20	0	0	2155	80	2697
South West	489	21	0	0	1827	79	2316
West Midlands	359	21	0	0	1316	79	1675
England	3583	21	0	0	13273	79	16856
Northern Ireland	90	19	380	81	2	0	472
Wales	209	20	831	80	3	0	1043
UK excl. Scotland	3882	21	1211	7	13278	72	18371

Table 101: Endocrine Therapy														
Sub-region	Invasive							Micro/non-invasive						
	ET		No ET		Unknown ET		Invasive total	ET		No ET		Unknown ET		Micro/non-invasive total
	No.	%	No.	%	No.	%		No.	%	No.	%	No.	%	
East Midlands	1122	86	0	0	183	14	1305	5	2	0	0	313	98	318
East of England	1121	81	0	0	267	19	1388	20	7	0	0	280	93	300
London	583	36	0	0	1050	64	1633	28	6	0	0	458	94	486
N East, York's & Humber	1786	89	0	0	223	11	2009	43	7	0	0	533	93	576
North West	1391	83	0	0	279	17	1670	110	23	0	0	368	77	478
South East	1545	74	0	0	553	26	2098	72	12	0	0	527	88	599
South West	1563	86	0	0	251	14	1814	77	15	0	0	423	85	500
West Midlands	1122	85	0	0	201	15	1323	10	3	0	0	342	97	352
England	10233	77	0	0	3007	23	13240	365	10	0	0	3244	90	3609
Northern Ireland	340	89	41	11	2	1	383	7	8	82	92	0	0	89
Wales	751	89	95	11	1	0	847	5	3	189	96	2	1	196
UK excl. Scotland	11324	78	136	1	3010	21	14470	377	10	271	7	3246	83	3894

Table 102: Endocrine Therapy							
Sub-region	Overall						
	ET		No ET		Unknown ET		Overall total
	No.	%	No.	%	No.	%	
East Midlands	1127	69	0	0	496	31	1623
East of England	1142	68	0	0	548	32	1690
London	611	29	0	0	1509	71	2120
N East, York's & Humber	1830	71	0	0	756	29	2586
North West	1502	70	0	0	647	30	2149
South East	1617	60	0	0	1080	40	2697
South West	1640	71	0	0	676	29	2316
West Midlands	1132	68	0	0	543	32	1675
England	10601	63	0	0	6255	37	16856
Northern Ireland	347	74	123	26	2	0	472
Wales	756	72	284	27	3	0	1043
UK excl. Scotland	11704	64	407	2	6260	34	18371

Sub-region	≤ 14 days		≤ 30 days		≤ 60 days		≤ 90 days		≤ 120 days		≤ 200 days		Median	Total No.
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
East Midlands	0	0	1	0	342	40	775	91	838	99	848	100	63	850
East of England	0	0	17	2	412	52	736	92	779	97	792	99	59	800
London	0	0	4	0	506	58	797	91	833	95	854	97	56	878
N East, York's & Humber	0	0	2	0	646	52	1179	94	1237	99	1245	100	60	1250
North West	0	0	9	1	473	63	726	96	743	98	750	99	56	755
South East	0	0	2	0	478	42	1029	91	1103	97	1129	99	63	1135
South West	0	0	3	0	430	42	946	92	1009	98	1026	99	63	1033
West Midlands	0	0	0	0	241	29	697	85	794	97	817	99	69	822
England	0	0	38	1	3528	47	6885	92	7336	98	7461	100	62	7482
Northern Ireland	2	1	3	2	81	49	159	95	165	99	167	100	62	167
Wales	0	0	0	0	177	40	385	87	437	98	445	100	64	445
UK excl. Scotland	2	0	41	1	3786	47	7429	92	7938	98	8073	100	62	8094

Sub-region	≤ 14 days		≤ 30 days		≤ 60 days		≤ 90 days		≤ 120 days		≤ 200 days		Median	Total No.
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
East Midlands	0	0	0	0	82	46	167	94	176	99	176	99	63	178
East of England	0	0	7	5	96	62	139	90	147	95	154	99	56	155
London	0	0	2	1	125	62	180	89	186	92	191	95	55.5	202
N East, York's & Humber	0	0	0	0	152	57	254	96	261	98	264	100	58.5	265
North West	0	0	6	3	131	71	173	94	182	99	182	99	52	184
South East	0	0	1	0	117	47	228	92	240	97	245	99	62	248
South West	0	0	1	1	79	41	175	90	190	98	191	98	64	194
West Midlands	0	0	0	0	48	25	155	82	185	98	187	99	69	189
England	0	0	17	1	830	52	1471	92	1567	98	1590	99	60	1604
Northern Ireland	0	0	0	0	17	50	32	94	34	100	34	100	61	34
Wales	0	0	0	0	43	49	81	92	87	99	88	100	61	88
UK excl. Scotland	0	0	17	1	890	52	1584	92	1688	98	1712	99	60	1726

Sub-region	≤ 14 days		≤ 30 days		≤ 60 days		≤ 90 days		≤ 120 days		≤ 200 days		Median	Total No.
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
East Midlands	0	0	1	0	12	1	289	34	633	74	834	98	99	850
East of England	0	0	0	0	39	5	319	40	647	81	779	97	97	801
London	0	0	1	0	7	1	273	31	666	76	842	96	102	881
N East, York's & Humber	0	0	0	0	12	1	436	35	1018	81	1234	99	98	1251
North West	0	0	0	0	21	3	288	38	610	81	734	97	96	755
South East	0	0	0	0	3	0	250	22	789	70	1104	97	106	1135
South West	0	0	3	0	10	1	271	26	766	74	1008	97	103	1038
West Midlands	0	0	0	0	2	0	174	21	553	67	793	96	111	822
England	0	0	5	0	106	1	2300	31	5682	75	7328	97	101	7533
Northern Ireland	0	0	1	1	4	2	60	36	134	80	165	99	98	167
Wales	0	0	0	0	5	1	150	34	337	76	437	98	100	446
UK excl. Scotland	0	0	6	0	115	1	2510	31	6153	76	7930	97	101	8146

Sub-region	≤ 14 days		≤ 30 days		≤ 60 days		≤ 90 days		≤ 120 days		≤ 200 days		Median	Total
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		No.
East Midlands	0	0	0	0	4	2	48	27	124	70	175	98	101	178
East of England	0	0	0	0	6	4	60	39	113	73	150	97	99	155
London	0	0	0	0	1	0	52	26	137	67	193	95	109	203
N East, York's & Humber	0	0	0	0	1	0	95	36	208	78	260	98	99	265
North West	0	0	0	0	2	1	75	41	148	80	178	97	95.5	184
South East	0	0	0	0	0	0	48	19	149	60	240	97	112	248
South West	0	0	0	0	0	0	28	14	114	59	186	96	113.5	194
West Midlands	0	0	0	0	0	0	17	9	113	60	183	97	118	189
England	0	0	0	0	14	1	423	26	1106	68	1565	97	105	1616
Northern Ireland	0	0	0	0	0	0	9	26	20	59	34	100	108.5	34
Wales	0	0	0	0	0	0	21	24	54	61	85	97	105	88
UK excl. Scotland	0	0	0	0	14	1	453	26	1180	68	1684	97	105	1738

Sub-region	Median	First quartile	Third quartile
East Midlands	63	55	75
East of England	59	50	70
London	56	49	69
N East, York's & Humber	60	53	69
North West	56	48	66
South East	63	54	75
South West	63	55	72
West Midlands	69	58	83
England	62	53	72
Northern Ireland	62	52	72
Wales	64	55	79
UK excl. Scotland	62	53	72

Sub-region	Within 52 days		Total invasive with BCS
	No	%	
East Midlands	175	21	816
East of England	220	29	767
London	300	36	836
N East, York's & Humber	301	25	1215
North West	323	44	730
South East	257	23	1094
South West	198	20	1003
West Midlands	91	12	768
England	1865	26	7229
Northern Ireland	42	26	159
Wales	73	17	429
UK excl. Scotland	1980	25	7817

Sub-region	Invasive		Micro-invasive		Non-invasive		Unknown		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	1305	80	13	1	305	19	0	0	1623	100
East of England	1388	82	24	1	276	16	2	0	1690	100
London	1633	77	6	0	480	23	1	0	2120	100
N East, York's & Humber	2009	78	21	1	555	21	1	0	2586	100
North West	1670	78	21	1	457	21	1	0	2149	100
South East	2098	78	26	1	573	21	0	0	2697	100
South West	1814	78	19	1	481	21	2	0	2316	100
West Midlands	1323	79	13	1	339	20	0	0	1675	100
England	13240	79	143	1	3466	21	7	0	16856	100
Northern Ireland	383	81	1	0	88	19	0	0	472	100
Wales	847	81	4	0	192	18	0	0	1043	100
UK excl. Scotland	14470	79	148	1	3746	20	7	0	18371	100

Sub-region	Conservation surgery		Mastectomy		No Surgery		Unknown		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	1062	81	211	16	32	2	0	0	1305	100
East of England	1090	79	259	19	39	3	0	0	1388	100
London	1231	75	272	17	130	8	0	0	1633	100
N East, York's & Humber	1655	82	314	16	40	2	0	0	2009	100
North West	1330	80	312	19	28	2	0	0	1670	100
South East	1710	82	339	16	49	2	0	0	2098	100
South West	1490	82	266	15	58	3	0	0	1814	100
West Midlands	1058	80	240	18	25	2	0	0	1323	100
England	10626	80	2213	17	401	3	0	0	13240	100
Northern Ireland	302	79	74	19	7	2	0	0	383	100
Wales	666	79	162	19	15	2	4	0	847	100
UK excl. Scotland	11594	80	2449	17	423	3	4	0	14470	100

Sub-region	Radiotherapy		No/unknown radiotherapy		Total	
	No.	%	No.	%	No.	%
East Midlands	1024	96	38	4	1062	100
East of England	994	91	96	9	1090	100
London	1094	89	137	11	1231	100
N East, York's & Humber	1561	94	94	6	1655	100
North West	1155	87	175	13	1330	100
South East	1464	86	246	14	1710	100
South West	1362	91	128	9	1490	100
West Midlands	1016	96	42	4	1058	100
England	9670	91	956	9	10626	100
Northern Ireland	298	99	4	1	302	100
Wales	633	95	33	5	666	100
UK excl. Scotland	10601	91	993	9	11594	100

Sub-region	Radiotherapy		No/unknown radiotherapy		Total	
	No.	%	No.	%	No.	%
East Midlands	176	77	54	23	230	100
East of England	153	72	59	28	212	100
London	193	60	130	40	323	100
N East, York's & Humber	265	64	149	36	414	100
North West	181	52	166	48	347	100
South East	247	55	200	45	447	100
South West	193	51	183	49	376	100
West Midlands	186	74	67	26	253	100
England	1594	61	1008	39	2602	100
Northern Ireland	45	68	21	32	66	100
Wales	101	71	41	29	142	100
UK excl. Scotland	1740	62	1070	38	2810	100

Sub-region	High		Intermediate		Low		Not assessable		Unknown		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	6	11	30	56	12	22	3	6	3	6	54	100
East of England	14	24	22	37	20	34	2	3	1	2	59	100
London	36	28	54	42	24	18	7	5	9	7	130	100
N East, York's & Humber	26	17	76	51	35	23	10	7	2	1	149	100
North West	41	25	79	48	38	23	7	4	1	1	166	100
South East	48	24	81	41	41	21	23	12	7	4	200	100
South West	59	32	76	42	27	15	20	11	1	1	183	100
West Midlands	7	10	42	63	14	21	3	4	1	1	67	100
England	237	24	460	46	211	21	75	7	25	2	1008	100
Northern Ireland	4	19	5	24	11	52	1	5	0	0	21	100
Wales	4	10	27	66	10	24	0	0	0	0	41	100
UK excl. Scotland	245	23	492	46	232	22	76	7	25	2	1070	100

Sub-region	<15mm		15-≤40mm		>40mm		Not assessable		Unknown		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	35	65	11	20	1	2	3	6	4	7	54	100
East of England	33	56	12	20	2	3	1	2	11	19	59	100
London	57	44	28	22	7	5	7	5	31	24	130	100
N East, York's & Humber	79	53	31	21	1	1	8	5	30	20	149	100
North West	88	53	38	23	4	2	7	4	29	17	166	100
South East	104	52	51	26	3	2	23	12	19	10	200	100
South West	104	57	38	21	4	2	19	10	18	10	183	100
West Midlands	46	69	10	15	2	3	3	4	6	9	67	100
England	546	54	219	22	24	2	71	7	148	15	1008	100
Northern Ireland	17	81	2	10	0	0	1	5	1	5	21	100
Wales	29	71	11	27	0	0	0	0	1	2	41	100
UK excl. Scotland	592	55	232	22	24	2	72	7	150	14	1070	100

Sub-region	ER Positive		ER Negative		Unknown		Total	
	No.	%	No.	%	No.	%	No.	%
East Midlands	1195	74	120	7	308	19	1623	100
East of England	1317	78	127	8	246	15	1690	100
London	1643	78	169	8	308	15	2120	100
N East, York's & Humber	1956	76	190	7	440	17	2586	100
North West	1732	81	207	10	210	10	2149	100
South East	2039	76	224	8	434	16	2697	100
South West	1907	82	203	9	206	9	2316	100
West Midlands	1229	73	110	7	336	20	1675	100
England	13018	77	1350	8	2488	15	16856	100
Northern Ireland	362	77	41	9	69	15	472	100
Wales	773	74	86	8	184	18	1043	100
UK excl. Scotland	14153	77	1477	8	2741	15	18371	100

Sub-region	Invasive		Micro-invasive		Non-invasive		Unknown		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
East Midlands	1180	99	1	0	14	1	0	0	1195	100
East of England	1268	96	13	1	35	3	1	0	1317	100
London	1485	90	5	0	152	9	1	0	1643	100
N East, York's & Humber	1835	94	6	0	115	6	0	0	1956	100
North West	1512	87	7	0	212	12	1	0	1732	100
South East	1894	93	13	1	132	6	0	0	2039	100
South West	1675	88	7	0	225	12	0	0	1907	100
West Midlands	1214	99	3	0	12	1	0	0	1229	100
England	12063	93	55	0	897	7	3	0	13018	100
Northern Ireland	345	95	1	0	16	4	0	0	362	100
Wales	762	99	0	0	11	1	0	0	773	100
UK excl. Scotland	13170	93	56	0	924	7	3	0	14153	100

Sub-region	CT		No CT		Unknown CT		Total
	No.	%	No.	%	No.	%	
East Midlands	126	55	0	0	102	45	228
East of England	119	48	0	0	127	52	246
London	179	59	0	0	124	41	303
N East, York's & Humber	183	52	0	0	170	48	353
North West	179	64	0	0	102	36	281
South East	219	54	0	0	184	46	403
South West	183	58	0	0	132	42	315
West Midlands	146	57	0	0	111	43	257
England	1334	56	0	0	1052	44	2386
Northern Ireland	43	62	26	38	0	0	69
Wales	90	59	62	41	0	0	152
UK excl. Scotland	1467	56	88	3	1052	40	2607