



Public Health
Agency



Breast Screening Programme

Consolidated Annual Report
2021-2023

Contents

1. Introduction	3
2. Background	5
3. Programme Overview	10
4. Quality Assurance	13
5. The Impact of COVID-19	15
6. Programme Performance.....	16
6.1 Programme Standards	16
6.2 Monitoring Performance	16
6.3 Uptake	18
6.3.1 Screening Uptake	18
6.3.2 Screening Round Length.....	19
6.4 Test	21
6.4.1 Technical Recall/Repeat.....	22
6.4.2 Screen to Routine Recall.....	23
6.5 Referral.....	26
6.5.1 Referred for Assessment.....	26
6.5.2 Screen to Assessment (First Offered Appointment)	29
6.6 Diagnosis.....	32
6.6.1 Number of Cancers Detected	32
6.6.2 Early Recall	32
6.6.3 Non-Operative Diagnosis Rate.....	33
6.6.4 Non-Invasive Cancer Detection.....	35
6.6.5 Standardised Detection Ratio for Invasive Cancer	36
6.6.6 Standardised Detection Ratio for Small Invasive Cancer	38
6.6.7 Benign Biopsy Rates	39
7. Very High-Risk Breast Screening Programme.....	41
8. Promoting Informed Choice	43
References	46

1. Introduction

The Public Health Agency (PHA) monitors and quality assures the Northern Ireland Breast Screening Programme (NI BSP) to ensure that women in Northern Ireland have access to a high-quality breast screening service that meets national standards. This consolidated annual report describes the performance of the NI BSP during the two-year period between 2021 and 2023, including the impact of the COVID-19 pandemic on the delivery of breast screening in Northern Ireland.

The statistics presented within this report cover activity in the NI BSP between 1st April 2021 and 31st March 2023, including invitations for breast screening, breast screening uptake, the breast screening pathway, outcomes of breast screening and the number and type of breast cancers detected. Local performance against each key indicator outlined in the [NHS Breast Screening Programme Standards](#) has been assessed to determine whether an appropriate level of performance which aligns with national standards has been achieved.¹ Data are presented for each of the four Breast Screening Units (BSUs) in Northern Ireland, in addition to data describing overall regional performance.

Given that this is a consolidated annual report spanning the time-period between 2021 and 2023, statistics have been calculated to describe performance during each individual year, as well as average performance throughout the time-period. The majority of statistics have been derived from data submitted by each BSU in the form of Korner returns using data from the National Breast Screening System (NBSS), the IT system supporting the NI BSP. This information is routinely collected by the NI BSP for operational purposes, including quality assurance. Data on the number and subtype of screen-detected breast cancers in Northern Ireland between 2021 and 2023 have been obtained from bespoke NBSS reports.

A summary of key statistics in the NI BSP is included on Page 4. Page 5 includes a table showing performance of each Breast Screening Unit and Northern Ireland as a whole against the standards discussed in this report.

Summary of Key Statistics in the Northern Ireland Breast Screening Programme 2021-2023



Uptake

186,935 women aged between 50 and 70 years were invited for breast screening; 139,355 attended for screening, giving an average annual uptake rate of 74.5%.



Invitation

54.2% of women were offered an appointment for mammography screening that was within 36 months of their previous normal screen.*



Results

99.4% of women, who had a normal test result, received their results within two weeks of their screening appointment.



Assessment

98.3% of women who required further tests were offered an appointment within three weeks of their screening mammogram.



Cancer Detection

1,055 breast cancers were detected through screening; 861 (81.6%) of these were invasive cancers.



Treatment of Invasive Cancer

Of the 990 women diagnosed with screen-detected invasive cancer, 786 (79%) had breast conserving surgery, 170 (17%) had a mastectomy and 34 (3%) had no surgery.

*The NI BSP paused for a period of four months during 2020 due to the impact of the COVID-19 pandemic. This pause, and the infection control precautions put in place following the restart of the programme, meant that fewer were offered a mammography screening appointment within 36 months of their previous normal screen during 2021-23. Figures for this indicator during each individual year of this time period are as follows: 35.3% in 2021/22 and 75.3% in 2022/23.

Performance against key standards, 2021/22 – 2022/23

Table 1 outlines performance of the NI BSP against key standards in the years 2021/22 and 2022/23, providing data at regional level and by BSU.

The data in this table are colour coded green if the achievable standard is met, amber if the acceptable standard is met and red if the acceptable standard is not met. A definition of the acceptable and achievable performance thresholds is included in section 6.2.2.

Table 1: Performance of NI BSUs against key standards, 2021/22 – 2022/23

STANDARD	Region		Eastern		Northern		Southern		Western		National Standards
	2021/22	2022/23	2021/22	2022/23	2021/22	2022/23	2021/22	2022/23	2021/22	2022/23	
Uptake Rate (%)	74.8	74.3	72.2	72.3	77.2	77.6	76.1	75.1	76.5	74.6	Acceptable >70% Achievable >80%
Screening Round Length (%)	35.3	75.3	29.6	30.4	29.6	30.4	34.2	92.7	44.3	88.2	Acceptable >90.0% Achievable >99.0%
Technical Recall (%)	0.08	0.05	0.10	0.10	0.02	0.02	0.10	0.10	0.00	0.00	Acceptable <0.7% Achievable <0.2%
Technical Repeat (%)	2.2	1.8	2.5	1.5	2.0	2.0	1.4	1.9	2.8	1.9	Acceptable <2% Achievable <1.2%
Screen to Routine Recall (%)	99.8	98.9	99.8	98.4	99.9	99.4	100.0	100.0	99.9	98.4	Acceptable >95.0% Achievable >99.0%
Referred to Assessment (%)											
Prevalent Screen	5.0	4.7	5.1	4.8	5.6	4.2	5.6	5.1	3.3	4.8	Acceptable <9% Achievable <7%

STANDARD	Region		Eastern		Northern		Southern		Western		National Standards
	2021/22	2022/23	2021/22	2022/23	2021/22	2022/23	2021/22	2022/23	2021/22	2022/23	
Incident Screen	2.0	2.0	1.7	1.7	2.3	1.8	2.7	2.8	1.5	1.9	Acceptable <4% Achievable <3%
Screen to Assessment (Date of First Offered Appt.)	99.2	97.3	99.1	94.7	99.8	99.7	99.5	98.7	98.3	98.5	Acceptable >95.0% Achievable >99.0%
Short term recall rate (%)	0.00	0.02	0.00	0.03	0.07	0.01	0.00	0.00	0.01	0.02	Acceptable <0.25% Achievable <0.12%
Non Operative Diagnosis Rate											
Invasive	100.0	99.5	100.0	100.0	100.0	100.0	100.0	100.0	100.0	97.7	Acceptable >99%
Non-Invasive	94.3	93.0	92.3	100.0	95.2	93.8	100.0	100.0	90.9	73.7*	Acceptable >90.0% Achievable >95.0%
Non -Invasive Cancer Detection Rate per 1000											
Prevalent	1.6	1.8	0.9	2.6	3.0	0.9	1.0	0.5	2.4	2.6	Acceptable >0.5/1000

STANDARD	Region		Eastern		Northern		Southern		Western		National Standards
	2021/22	2022/23	2021/22	2022/23	2021/22	2022/23	2021/22	2022/23	2021/22	2022/23	
Incident	1.4	1.1	1.5	0.9	1.3	1.0	1.4	1.5	1.1	1.2	Acceptable >0.6/1000
Standardised Detection Rate (All Invasive Cancer)											
Prevalent	1.1	1.3	0.9	1.2	0.9	1.0	1.4	1.2	1.2	1.9	Acceptable ≥1.0 Achievable >1.2
Incident	1.1	1.2	1.2	1.4	1.1	0.8	1.3	1.4	1.0	1.2	Acceptable ≥1.0 Achievable >1.2
Standardised Detection Rate (Small Invasive Cancer)	1.1	1.0	1.0	1.0	1.0	0.7	1.5	1.3	1.0	1.2	Acceptable ≥1.0 Achievable ≥>1.2
Benign Biopsy Rate											
Prevalent	0.8	0.7	Due to small numbers, data are not presented at unit level								Acceptable <1.5/1000 Achievable <1.0/1000
Incident	0.2	0.2	Due to small numbers, data are not presented at unit level								Acceptable <1.0/1000 Achievable <0.75/1000

*Discussed with unit and related to data entry error (see section 6.6.3)

2. Background

2.1 The Northern Ireland Breast Screening Programme

The NI BSP invites women between the ages of 50 and 70 to attend for regular breast screening every three years. The main aim of breast screening is to detect breast cancer at an early stage, when treatment is more likely to reduce the risk of death from the disease.

2.2 Benefits and Harms of Breast Screening

As with all screening programmes, breast screening results in both benefits and harms.² The main benefit is a reduction in breast cancer mortality. An independent review of the evidence on the benefits and harm of breast screening found a 20% reduced risk of death from breast cancer among women screened, compared to those not screened.² This equates to one breast cancer death prevented for every 235 women invited for screening, one breast cancer death prevented for every 180 women who attend screening and around 1300 breast cancer deaths prevented every year in the UK.²

The main harm of breast screening is overdiagnosis, which refers to the detection of low-risk or non-progressing breast cancers through screening that would not have been diagnosed without screening, and would not have become life threatening.² For every breast cancer death prevented by screening in the UK, three women are diagnosed with and treated for a cancer that would never have been found without screening and would never have become life threatening.² Other harms include the need for unnecessary invasive investigations, as well the psychological distress and anxiety, which can arise from false positive screening results.² False negative results due to missed cancer detection or incorrect diagnoses can also provide unwarranted reassurance, potentially affecting a woman's perception of her risk of breast cancer and resulting in delayed presentation following the development of symptoms.^{2,3}

3. Programme Overview

3.1 Eligibility

In Northern Ireland, eligible women aged between 50 and 70 are invited to attend for breast screening, by GP practice, every three years. Due to this three-yearly round of invites, about a third of women will be invited for the first time before their 51st birthday (the year they turn 50), a third before their 52nd birthday (the year they turn 51) and the rest before their 53rd birthday (the year they turn 52). All eligible women should be invited for the first time before their 53rd birthday. As the women who are invited before their 51st birthday are invited in the year they turn 50, some women will be invited for breast screening for the first time when they are 49.

Women invited for the first time the year they turn 50 are invited for the last time the year they turn 68. Women invited for the first time the year they turn 51 are invited for the last time the year they turn 69, and women invited for the first time the year they turn 52 are invited for the last time the year they turn 70. Women aged over 70 years are not automatically invited for screening, but are encouraged to continue attending every three years by phoning their local screening unit and requesting an appointment.

Women who have been identified as being at significantly increased risk of breast cancer (≥ 8 times the average risk) are invited to participate in more regular surveillance screening at an earlier age by the Very High-Risk (VHR) BSP, which commenced in 2013.

3.2 Screening Pathway

3.2.1 Invitation

- Invitations to attend for routine breast screening are sent to eligible women every three years based on their GP practice, along with information on breast screening, which describes the screening test and pathway involved.

- Approximately one third of the population eligible for breast cancer screening in Northern Ireland are invited to attend for screening every year.
- Each of the four Breast Screening Unit (BSUs) cover screening populations of varying sizes, with the number screened in each unit fluctuating on an annual basis, depending on the area being screened within the three-year round length.

3.2.2 Screening

- Women who accept the offer of screening attend their local BSU and undergo mammography, an imaging technique which involves low-dose radiation exposure to the breast tissue.
- The first time a woman enters the eligible age-range and attends for screening is referred to as a prevalent screen, the second and subsequent times a woman attends for screening are referred to as incident screens.
- Women should receive the results of the mammogram within two to three weeks of the screening appointment.
- A small number of women may be sent another screening appointment if their mammograms need to be repeated, for example, if the image was inadequate for diagnostic reporting.

3.2.3 Assessment

- If a potential abnormality is detected at initial screening, a woman may be asked to attend an assessment clinic for further investigations, including clinical examination, additional imaging or biopsy. A woman who receives a normal/benign result as the outcome of the assessment clinic should be returned to the routine screening programme for a further screen in three years.

3.3.4 Diagnosis

- If breast cancer is diagnosed, a woman should be referred for urgent treatment.
- If a definitive diagnosis cannot be made following the assessment process, a woman may be recalled for a further assessment at an interval shorter than the normal screening interval of three years.

3.3 Delivery

There are four BSUs in Northern Ireland; Eastern, Northern, Southern and Western. Table 2 outlines the locations and contact details of the headquarters of each unit.

Unit	Location	Contact Number
Eastern	12-22 Linenhall Street, Belfast	028 9033 3700
Northern	Antrim Area Hospital	028 9442 4425
Southern	Craigavon Area Hospital	028 3756 0820
Western	Altnagelvin Area Hospital	028 7161 1443

The Eastern Unit caters for the Belfast and South Eastern HSCT areas, while the Northern Unit covers most of the Northern HSCT, as well as providing surveillance screening for women at very high risk of breast cancer. The Southern Unit is responsible for delivering breast screening services in the Southern HSCT, while the Western Unit covers all of the Western HSCT areas and part of the Northern HSCT. The BSU in Linenhall Street provides mammography screening for women in the Belfast HSCT area. In the time period covered by this report, in other HSCT areas, most screening mammograms were carried out on mobile breast screening trailers, which rotate between a variety of locations across Northern Ireland.

4. Quality Assurance

Quality assurance (QA) is a fundamental part of all screening programmes. The aim of QA in the NI BSP is to maintain acceptable standards and continuously improve the performance of all aspects of breast screening in order to ensure that women have access to a high-quality service wherever they reside in Northern Ireland. QA helps to ensure that the benefits of breast screening outweigh the potential harms. It is a continuous process that is carried out externally by the PHA Breast Screening Team and internally by the BSUs and HSCTs.

4.1 Core QA Activities of the PHA

The core QA activities of the PHA Breast Screening Team include:

- Monitoring and review of programme management and delivery;
- Monitoring performance against agreed standards;
- Organising a rolling programme of formal QA Visits to BSUs;
- Review and monitoring of HSCT action plans to implement recommendations arising from QA visits;
- Adverse incident review and advice;
- Providing support and advice to HSCTs and BSUs.

4.2 QA Leads

The QA function is underpinned by an organised structure of public health and professional leads, supported by programme managers, information and administrative staff. There are seven QA Professional Leads in the NI BSP, covering each discipline involved in delivering the service. These include radiology, radiography, surgery, pathology, breast care nursing, administrative and clerical and medical physics. QA Professional Leads assist with the coordination of QA activities for the NI BSP and provide professional advice to the PHA Breast Screening Team on issues relevant to the commissioning of the screening programme within their area of expertise. Each QA Professional Lead chairs a QA subgroup for their speciality. These groups play an important part in the QA Advisory Structure and work together to ensure that safe and effective breast

screening continues to be available to the eligible population. This includes working to ensure relevant national and local standards are met and that appropriate continuous quality improvement processes are in place.

4.3 QA Visits

A key component of the NI BSP QA Programme is the cycle of QA visits to each of the four BSUs in rotation. The process for these visits is based on national and local guidance. Every BSU in Northern Ireland will receive a QA visit once every four years.

5. The Impact of COVID-19

Along with the majority of routine healthcare services, breast screening in Northern Ireland was paused on the 24th March 2020, due to the emergence of the COVID-19 pandemic. The programme restarted on the 20th July 2020, the intervening period constituting a four-month interruption to the delivery of breast screening in Northern Ireland. Screening for women over 70 recommenced in September 2020. The VHR BSP continued without interruption throughout the COVID-19 pandemic.

In the time period 2021-23, the BSP continued in the process of recovery from the pandemic. The capacity of BSUs to perform routine breast screening was impacted by staff absences due to sickness or isolation, as well as social distancing requirements and enhanced infection control measures implemented to reduce transmission of COVID-19, which led to longer appointment times.

Breast screening round length is the interval between each offered invitation for screening mammography and is an important indicator of the efficiency with which a screening programme is managed. The pause in the delivery of routine breast screening in Northern Ireland in March 2020 resulted in an extension of the round length beyond the recommended 36 months in all BSUs, to a maximum of 40 months in October 2020. Given the importance of the breast screening round length in ensuring the long-term effectiveness of the programme, as well as the potential impact of delays in screening on individual patient outcomes, intensive efforts to recover the round length as quickly as possible were implemented by all BSUs, in collaboration with the PHA Breast Screening Team.

Actions to address the round length delay in 2021-23 included work by all BSUs to decrease the appointment time for mammography and by the provision of additional screening clinics, both in-hours and out-of-hours, within mobile and static sites. In addition, in 2021/22 the charity Action Cancer provided some mammography appointments on behalf of the NI BSP.

6. Programme Performance

This section of the report presents statistics to describe the performance of the NI BSP during 2021-2023, which have been collated and evaluated using the approach outlined below.

6.1 Programme Standards

The NI BSP uses the [NHS Breast Screening Programme Standards](#), for the purposes of quality assurance and programme monitoring.¹ Local performance during 2021-2023 has been assessed against the programme standards valid for data collected from 1st April 2021.

6.2 Monitoring Performance

6.2.1 Data Returns

The PHA Breast Screening Team monitors the performance of each of the four BSUs and the NI BSP against national standards using data submitted through Körner returns:

KC62 – This is an annual return made by HSCTs on: outcome of initial screen, outcome of further assessment, cancers diagnosed (by size and type) and overall output and outcome measures. KC62 data are obtained from the National Breast Screening System (NBSS), the IT system that supports the NI BSP.

KC63 – This is an annual return made by HSCTs on: numbers of eligible women, invited and screened by age, numbers recalled, numbers self or GP referred, and time since most recent screen in 12-month blocks.

6.2.2 Performance Thresholds

Two performance thresholds are specified within the national standards; acceptable and achievable.

Acceptable Standards: This is the lowest level of performance which services are expected to attain in order to ensure patient safety and service effectiveness. All units are expected to exceed the acceptable threshold and to agree service improvement plans that develop performance towards an achievable level. Programmes not meeting the acceptable threshold are expected to implement recovery plans to ensure rapid and sustained improvement.

Achievable Standards: This represents the level at which the services are likely to be running optimally. Screening services should aspire to attain and maintain performance at this level.

This report provides information on both the individual performance of the four BSUs and the overall NI BSP. Information on the performance of individual staff is not provided.

6.2.3 Performance Indicators

Performance indicators have been reported according to the corresponding stage of the screening pathway: uptake, test, referral and diagnosis. Table 3 outlines the various indicators used in assessing performance of the NI BSP during 2021-2023.*

Stage	Indicator
Uptake	Screening Uptake
	Screening Round Length
Test	Technical Recall/Repeat
	Screen to Routine Recall
Referral	Referred for Assessment (Prevalent)
	Referred for Assessment (Incident)
	Screen to Assessment (First Offered Appointment)
Diagnosis	Number of Cancers Detected
	Early Recall
	Non-Operative Diagnosis (Invasive)
	Non-Operative Diagnosis (Non-Invasive)
	Non-Invasive Cancer Detection (Prevalent)
	Non-Invasive Cancer Detection (Incident)
	Standardised Detection Rate Invasive Cancer (Prevalent)
	Standardised Detection Rate Invasive Cancer (Incident)
	Standardised Detection Rate Small Invasive Cancer (Prevalent and Incident)
	Benign Biopsy (Prevalent)
	Benign Biopsy (Incident)

* Indicators are reported to either one or two decimal places, to align with performance thresholds specified for each standard. Figures for average performance over the two-year period are calculated based on cumulative numbers, rather than averages of the rounded individual year performances. In some instances, these figures may therefore differ slightly to those that would be obtained by averaging the figures displayed for the individual years. Percentages may not always total 100 due to rounding.

6.3 Uptake

6.3.1 Screening Uptake

Screening Uptake is the proportion of women who attend for breast screening each year, following an invitation.

- **Acceptable standard:** $\geq 70.0\%$ of women invited accept the offer of breast screening.
- **Achievable standard:** $\geq 80.0\%$ of women invited accept the offer of breast screening.

During 2021-2023, 74.5% of women invited (139,355 of 186,935) took up the offer to attend for breast screening in Northern Ireland.

On average, during the two-year period between 2021 and 2023, 74.5% of women invited for breast screening took up the offer to attend. Table 4 outlines the number of women who were invited and the number who attended for breast screening, as well as associated uptake figures, for each individual year and the overall two-year period. During the two-year period between 2021 and 2023, 186,935 women aged between 50 and 70 were invited for breast screening in Northern Ireland, of whom 139,355 attended.

	2021-2022	2022-2023	2021-2023
Invited	98,452	88,483	186,935
Attended	73,607	65,748	139,355
Uptake (%)	74.8	74.3	74.5

The acceptable level of uptake was maintained throughout the two-year period between 2021 and 2023. Table 5 shows uptake figures for each individual BSU and Northern Ireland overall during 2021 to 2023, as well as comparative figures for England to enable benchmarking of performance.^{4,5}

	2021-2022	2022-2023	2021-2023
Eastern	72.2	72.3	72.2
Northern	77.2	77.6	77.4
Southern	76.1	75.1	75.7
Western	76.5	74.6	75.7
Northern Ireland	74.8	74.3	74.5
England	62.3	64.6	63.5

Over the two-year period, all BSUs maintained uptake levels above the acceptable level. Figure 1 shows trends in breast screening uptake per BSU and Northern Ireland overall between 2017 and 2023.

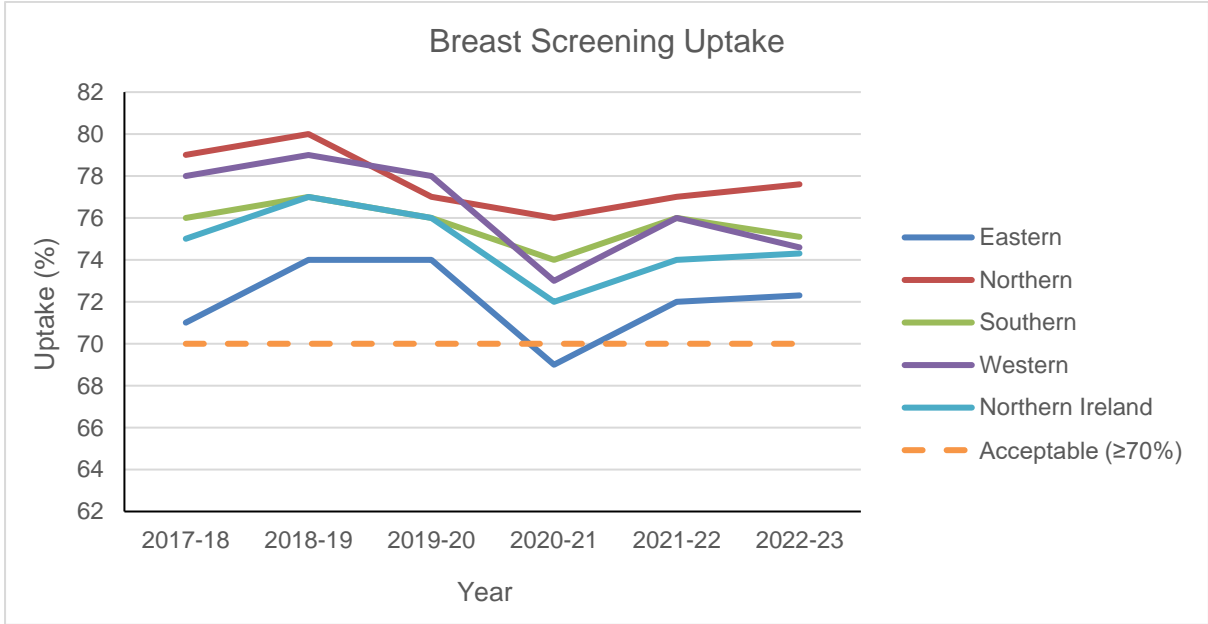


Figure 1: Breast screening uptake in Northern Ireland between 2017 and 2023

6.3.2 Screening Round Length

Screening Round Length is the interval between each offered invitation for screening mammography.

- **Acceptable standard:** $\geq 90.0\%$ of women should be offered an appointment that is within 36 months of their previous screen.
- **Achievable standard:** $\geq 99.0\%$ of women should be offered an appointment that is within 36 months of their previous screen.

On average during 2021-2023, 54.2% of women were offered an appointment that was within 36 months of their previous screen.

Measurement of the screening round length provides assurance that women with a previous invitation for screening have a subsequent invitation in a timescale that maximises the chance of cancer detection, whilst minimising harm to the woman. It also provides an indicator of the efficiency with which the screening programme is managed. The long-term effectiveness of the programme is dependent on women within the target age-group continuing to be screened at regular intervals.

On average during 2021 to 2023, 54.2% of women were offered a screening appointment that was within 36 months of their previous screen. This falls below the acceptable standard of $\geq 90\%$, being largely attributable to the pause in the delivery of breast screening that occurred as a result of the COVID-19 pandemic and the subsequent catch up phase. This is discussed further in Section 5 of this report.

Table 6 outlines the proportion of women offered a screening appointment that was within 36 months of their previous screen for each BSU and Northern Ireland overall by year.

	2021-2022	2022-2023	2021-2023
Eastern	33.6	85.1	58.5
Northern	29.6	30.4	30.0
Southern	34.2	92.7	59.0
Western	44.3	88.2	63.6
Northern Ireland	35.3	75.3	54.2

The data in this table show that the proportion of eligible women in Northern Ireland offered a screening appointment that was within 36 months of their previous screen was 35.3% in 2021-2022, an improvement from the previous year (12.3% in 2020-2021, data not shown) during which the NI BSP was paused for a period of four months. As outlined previously, intensive efforts to recover the breast screening round length were implemented by each BSU, in collaboration with the PHA Breast Screening Team, following the resumption of screening services in July 2020. Close monitoring of this indicator during 2021-2022 onwards was undertaken to ensure that performance recovered to an acceptable level in each BSU and the NI BSP overall. In 2022-23, screening round length had increased to 75.3%.

Figure 2 shows trends in the proportion of women offered a screening appointment within 36 months of their previous screen in Northern Ireland between 2017 and 2023.

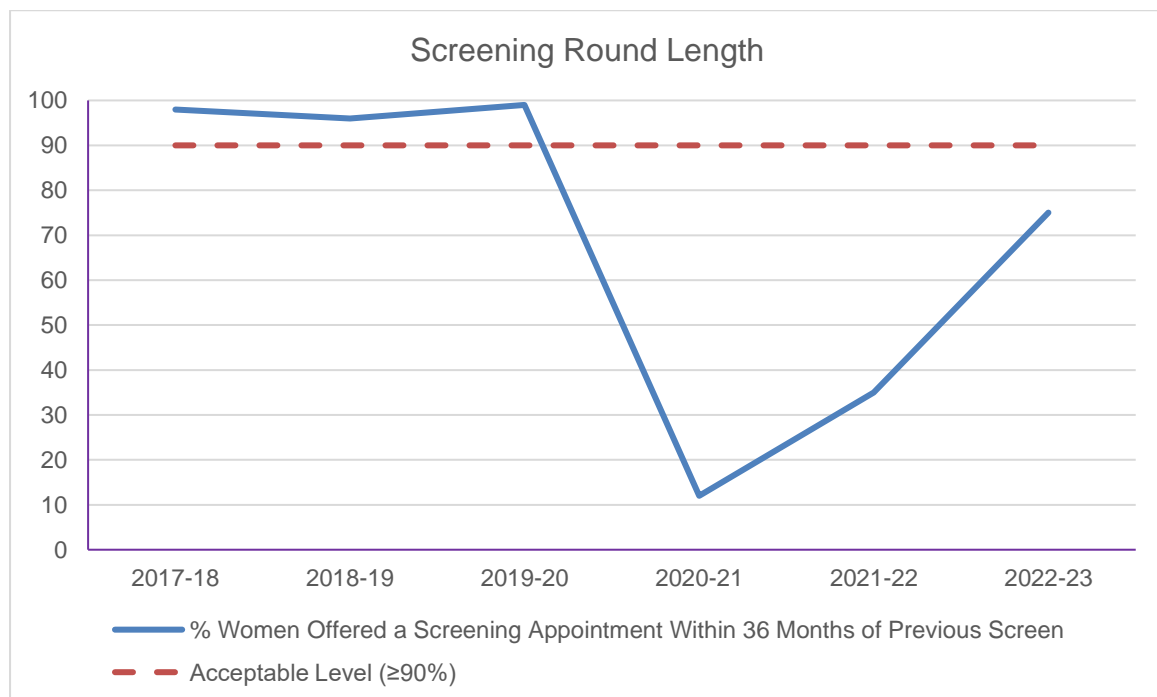


Figure 2: Percentage of women offered a screening appointment within 36 months of previous screen

6.4 Test

6.4.1 Technical Recall/ Repeat

Technical Recall/ Repeat measures the proportion of women who had additional mammograms due to technical recalls or technical repeats.

During 2021-2023, 0.1% of women screened in Northern Ireland had a repeat examination due to a technical recall. 2.0% had a repeat examination due to a technical repeat.

Technical recall:

- Acceptable standard: less than 0.7%
- Achievable standard: less than 0.2%

Technical repeat:

- Acceptable standard: less than 2.0%
- Achievable standard: less than 1.2%.

Mammograms may need to be repeated if the quality of the first image is not adequate for diagnostic reporting. Technical recall refers to when women are recalled for a further appointment for repeat images, while technical repeat refers to when women undergo repeat imaging during the initial screening appointment. BSUs should aim to deliver the optimum image quality with as low a radiation dose as possible to minimise anxiety for women, as well as their exposure to radiation. The number and type of repeat examinations undertaken are monitored to make sure good quality practice is provided. Tables 7a and 7b show the technical recall and repeat rates for each BSU and Northern Ireland between 2021 and 2023.

Table 7a: Technical Recall rate (%) by BSU and Northern Ireland overall			
	2021-2022	2022-2023	2021-2023
Eastern	0.1	0.1	0.1
Northern	0.02	0.02	0.02
Southern	0.1	0.1	0.1
Western	0.0	0.0	0.0
Northern Ireland	0.08	0.05	0.07

Table 7b: Technical Repeat rate (%) by BSU and Northern Ireland overall			
	2021-2022	2022-2023	2021-2023
Eastern	2.5	1.5	2.0
Northern	2.0	2.0	2.0
Southern	1.4	1.9	1.6
Western	2.8	1.9	2.4
Northern Ireland	2.2	1.8	2.0

The technical recall rate in Northern Ireland for the two year period between 2021-23 met the achievable standard of <0.2%.

The technical repeat rate for Northern Ireland for the two years 2021-23 was 2.0% (acceptable standard <2.0%). In 2021/22 the NI rate was 2.2% and in 2022/23 the NI rate was 1.8%.

6.4.2 Screen to Routine Recall

Screen to Routine Recall measures the proportion of women with a normal screening test who receive their results within two weeks of attendance for their screening mammogram.

During 2021-2023, 99.4% of women who had a normal screening test received their results within two weeks of attendance for their screening mammogram.

- Acceptable standard: $\geq 95.0\%$ women receiving their results within two weeks of attendance for their screening mammogram.
- Achievable standard: $\geq 99.0\%$ women receiving their results within two weeks of attendance for their screening mammogram.

To minimise anxiety, it is essential that women receive the results of screening in a timely manner. The date a woman receives her result is not

recorded, therefore the date her episode is closed on NBSS is taken as a proxy for this. This assumes the screening office has good administrative processes to minimise delays in posting the results letters. Table 8 shows the Screen to Routine Recall rate for each BSU and Northern Ireland overall, during each year between 2021 and 2023, as well as the average for the entire period.

Table 8: Screen to routine recall rate (%) by BSU and Northern Ireland overall			
	2021-2022	2022-2023	2021-2023
Eastern	99.8	98.4	99.1
Northern	99.9	99.4	99.6
Southern	100.0	100.0	100.0
Western	99.9	98.4	99.2
Northern Ireland	99.8	98.9	99.4

The achievable standard for Screen to Routine Recall was met consistently across all BSUs and Northern Ireland overall during 2021-2023, with the exception of the Eastern and Western BSUs which met the acceptable level (i.e. $\geq 95.0\%$) in 2022-2023. During 2021-2023 an average of 99.4% of women with a normal screening test received their results within two weeks of their screening appointment. In the Southern Unit, 100.0% of women with a normal screening test received their results within two weeks of their screening appointment during each year throughout this period.

Figure 3 shows the trend in the proportion of women with a normal screening test receiving their results within two weeks of attendance for their screening mammogram in Northern Ireland between 2017 and 2023.

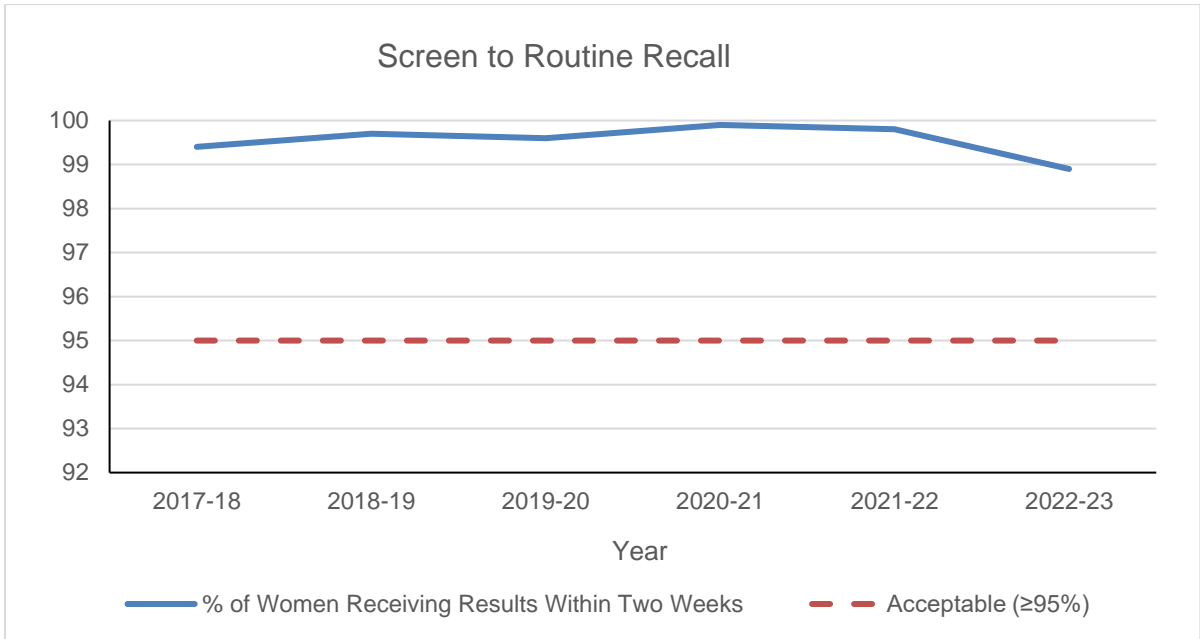


Figure 3: Percentage of women with a normal screening test receiving results within two weeks

6.5 Referral

About four in every one hundred women are asked to come back for more tests after screening as their mammogram looks abnormal. These women are invited to attend an assessment clinic for further tests (e.g. breast examination, ultrasound scan or biopsy) which will help confirm if the woman has breast cancer. On average, one in four women referred for assessment are found to have cancer. The three in four women confirmed as not having cancer are returned to the routine screening programme to be invited for screening again in three years (unless they will be over the age of 70, when they can self-refer).

6.5.1 Referred for Assessment

Referred for Assessment measures the proportion of women screened who are referred for further assessment.

The purpose of this standard is to provide assurance that women are not referred for further tests unnecessarily. Those responsible for interpreting the images from breast screening need to make sure that they are recalling women with areas of concern which require further investigation, whilst not recalling too many women where no abnormalities are subsequently found. The percentage of women who are recalled to an assessment clinic is normally higher in those attending their first screening mammogram (prevalent screens) than in those attending for subsequent screening mammography (incident screens).

Prevalent Screen

During 2021-2023, 4.9% of women screened during a prevalent screen were referred for assessment, while the equivalent figure for incident screens was 2.0%.

- **Acceptable standard:** <9.0% of women screened referred for further assessment.
- **Achievable standard:** <7.0% of women screening referred for further assessment.

During 2021 to 2023, 4.9% of women were referred for assessment from a prevalent (first screen), meeting the achievable standard of <7.0%.

Table 9 outlines the proportion of women referred for assessment from a prevalent screen each year between 2021 and 2023 by BSU and Northern Ireland overall. All BSUs met the achievable standard of <7.0% in each year during the period.

	2021-2022	2022-2023	2021-2023
Eastern	5.1	4.8	5.0
Northern	5.6	4.2	4.9
Southern	5.6	5.1	5.4
Western	3.3	4.8	4.0
Northern Ireland	5.0	4.7	4.9

Figure 4 shows trends in the proportion of women referred for assessment from a prevalent screen per BSU and Northern Ireland overall between 2017 and 2023.

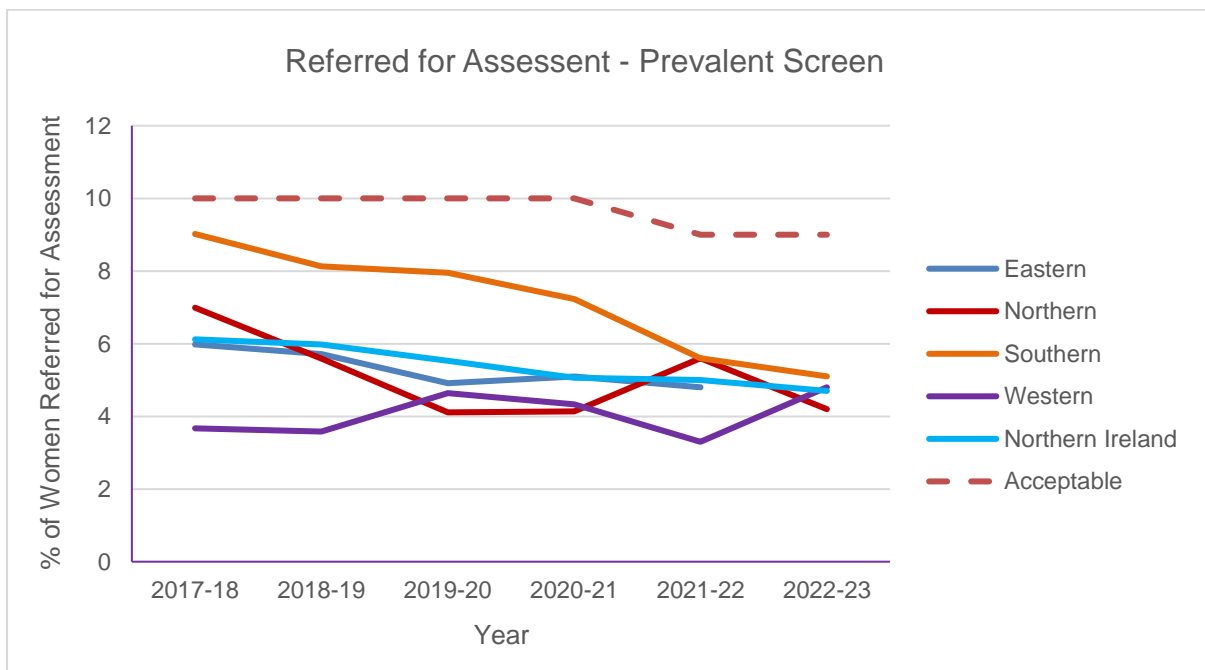


Figure 4: % of women referred for assessment from a prevalent screen

The acceptable standard changed in 2021, from less than 10.0% to less than 9.0%.

Incident Screen

- Acceptable standard: <4.0% of women screened referred for further assessment.

- **Achievable standard:** <3.0% of women screened referred for further assessment.

During 2021 to 2023, 2.0% of women were referred for assessment from an incident (subsequent screen), meeting the achievable standard of <3.0%. Table 10 outlines the proportion of women referred for assessment from an incident screen each year between 2021 and 2023 by BSU and Northern Ireland overall. All BSUs consistently met the achievable standard for the proportion of women referred for assessment from incident screens.

Table 10: Percentage of women referred for assessment by BSU and Northern Ireland overall – incident screen

	2021-2022	2022-2023	2021-2023
Eastern	1.7	1.7	1.7
Northern	2.3	1.8	2.0
Southern	2.7	2.8	2.7
Western	1.5	1.9	1.7
Northern Ireland	2.0	2.0	2.0

Figure 5 shows trends in the proportion of women referred for assessment from an incident screen per BSU and Northern Ireland overall between 2017 and 2023.

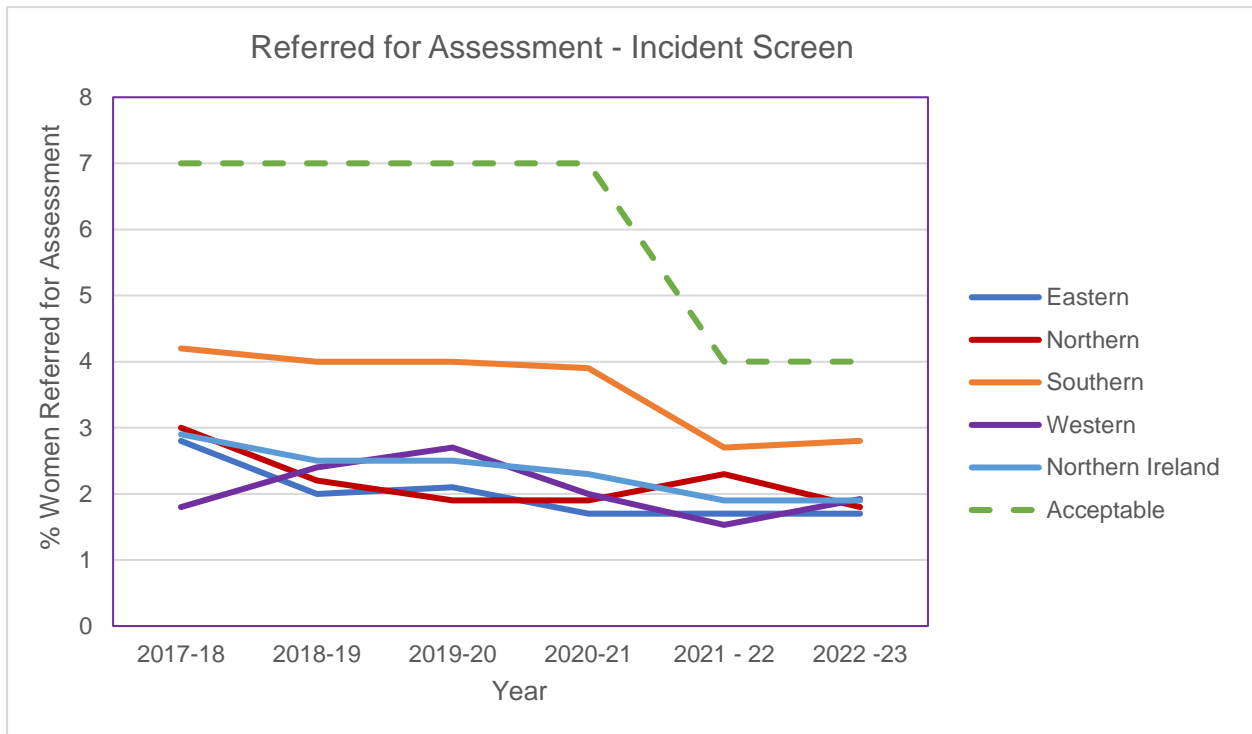


Figure 5: Percentage of women referred for assessment from an incident screen

The acceptable standard changed in 2021, from less than 7.0% to less than 4%.

6.5.2 Screen to Assessment (First Offered Appointment)

Screen to Assessment measures the proportion of women who are offered an appointment at an assessment centre within three weeks of attendance for their screening mammogram.

During 2021-2023, 98.3% of women referred for assessment were offered an assessment appointment that was within three weeks of their screening mammogram.

- **Acceptable standard:** $\geq 95.0\%$ women receiving an appointment for assessment within three weeks of attendance for their screening mammogram.
- **Achievable standard:** $\geq 99.0\%$ women receiving an appointment for assessment within three weeks of attendance for their screening mammogram.

Monitoring this standard aims to minimise the time taken for women who need further investigations to obtain a definitive malignant, benign or

normal diagnosis. Overall between 2021 and 2023, 98.3% of women who were referred for assessment in Northern Ireland were offered an assessment appointment that was within three weeks of their screening mammogram. Table 11 outlines the achievement of this standard by BSU and Northern Ireland overall for each individual year, as well as the two-year average.

The acceptable standard was consistently met in all BSUs, with the exception of the Eastern BSU during 2022-2023, in which 94.7% of women referred for assessment were offered an assessment appointment that was within three weeks of their screening mammogram (acceptable level $\geq 95\%$). The achievable level had been met by the Eastern BSU during the previous time period 2021-2022 i.e. 99.1%. The Northern and Southern BSUs met the achievable standard of $\geq 99.0\%$ throughout 2021-2023.

	2021-2022	2022-2023	2021-2023
Eastern	99.1	94.7	96.9
Northern	99.8	99.7	99.7
Southern	99.5	98.7	99.1
Western	98.3	98.5	98.4
Northern Ireland	99.2	97.3	98.3

Figure 6 shows trends in the proportion of women referred for assessment who are offered an assessment appointment within three weeks of their screening mammogram per BSU and Northern Ireland overall between 2017 and 2023.

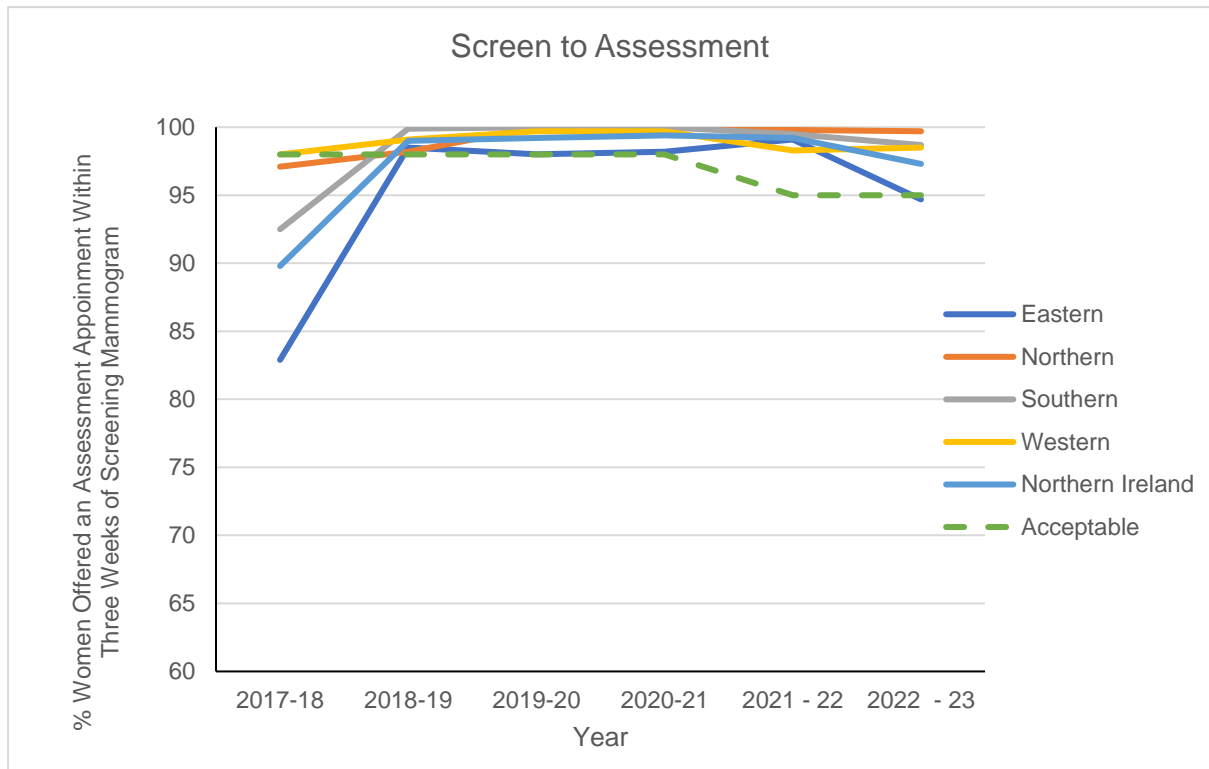


Figure 6: Percentage of women offered an assessment appointment within three weeks of screening mammogram

The acceptable standard changed in 2021, from 98.0% to 95.0%.

6.6 Diagnosis

6.6.1 Number of Cancers Detected

1055 breast cancers were detected through screening in Northern Ireland between 2021-2023.

Between 2021 and 2023, 1055 breast cancers were detected through screening in Northern Ireland, 601 in 2021/22 and 454 in 2023/23. 861 (81.6%) of these were invasive cancers. Of the remainder, the majority were micro-invasive and non-invasive cancers with a small number (<5) of cancers with unknown invasive status.

6.6.2 Early Recall

Early Recall measures the proportion of women screened who are referred for further tests and invited back to assessment at an interval of at least one year (short-term recall).

During 2021-2023, 0.02% of women who were screened and referred for further tests were placed on short-term recall.

- Acceptable standard: <0.25% of women who are screened and referred for further tests should be placed on short-term recall.
- Achievable standard: <0.12% of women who are screened and referred for further tests should be placed on short-term recall.

Table 12 illustrates the proportion of women placed on short-term recall within each BSU and Northern Ireland overall during 2021 to 2023. Performance in each BSU and Northern Ireland overall consistently met the achievable threshold of <0.12%.

	2021-2022	2022-2023	2021-2023
Eastern	0.00	0.03	0.05
Northern	0.07	0.01	0.03
Southern	0.00	0.00	0.00
Western	0.01	0.02	0.01
Northern Ireland	0.01	0.02	0.02

6.6.3 Non-Operative Diagnosis Rate

Non-Operative Diagnosis measures the proportion of women who have a non-operative diagnosis of cancer by needle histology or cytology after a maximum of two assessment clinic visits, as a proportion of all women screened diagnosed with breast cancer. This standard is reported separately for invasive and non-invasive cancers.

During 2021-2023, diagnosis was established prior to surgery for 99.8% of women with an invasive screen-detected cancer and 93.7% of women with a non-invasive screen-detected cancer.

It is important to minimise the number of operative procedures and to enable treatment planning in advance of surgery. To achieve this, the majority of women should receive a non-operative pathological diagnosis of cancer. However, some women may need to have a surgical biopsy i.e. a biopsy taken during surgery, if the diagnosis is difficult to establish beforehand.

Invasive Cancer

- Acceptable standard: $\geq 99.0\%$ of invasive screen-detected cancers should be diagnosed before surgery.

Overall, 99.8% of invasive screen-detected cancers in Northern Ireland diagnosed between 2021 and 2023 had a non-operative pathological diagnosis of cancer, meeting the acceptable standard of $\geq 99\%$.

Table 13 shows non-operative diagnosis rates for invasive screen-detected cancers for each BSU and Northern Ireland overall during 2021 to 2023. The performance of all BSUs, with the exception of the Western BSU, consistently exceeded the acceptable standard of $\geq 99.0\%$, with 100.0% of women receiving a non-operative diagnosis of invasive cancer throughout the period. During 2022-2023, the Western BSU did not meet the acceptable standard, at 97.7%.

	2021-2022	2022-2023	2021-2023
Eastern	100.0	100.0	100.0
Northern	100.0	100.0	100.0
Southern	100.0	100.0	100.0
Western	100.0	97.7	98.8
Northern Ireland	100.0	99.5	99.8

Figure 7 shows trends in the proportion of invasive screen-detected cancers with a diagnosis established prior to surgery per BSU and Northern Ireland overall between 2017 and 2023.

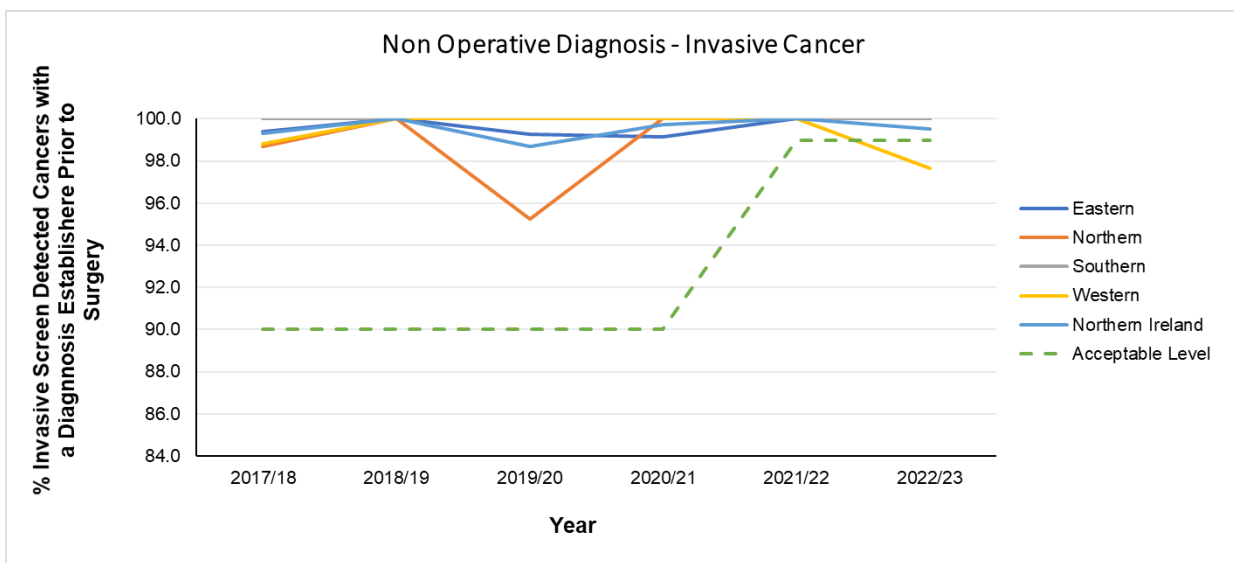


Figure 7: Percentage of invasive screen-detected cancers with a diagnosis established prior to surgery

The acceptable standard changed in 2021, from greater than or equal to 90% to greater than or equal to 99%.

Non-Invasive Cancer

- **Acceptable standard:** $\geq 90.0\%$ of non-invasive screen-detected cancers should be diagnosed before surgery.
- **Achievable standard:** $\geq 95.0\%$ of non-invasive screen-detected cancers should be diagnosed before surgery.

Overall, 93.7% of non-invasive screen-detected cancers in Northern Ireland diagnosed between 2021 and 2023 had a non-operative

pathological diagnosis of cancer, meeting the acceptable standard of $\geq 90.0\%$. Table 14 illustrates non-operative diagnosis rates for non-invasive screen-detected cancers for each BSU and Northern Ireland overall during 2021 to 2023. Performance dropped below the acceptable level of $\geq 90.0\%$ in the Western Unit, from 90.0% in 2021-2022 (meeting the acceptable level) to 73.7% 2022-2023. This was explored with the unit and found to be due to a data entry error.

	2021-2022	2022-2023	2021-2023
Eastern	92.3	100.0	95.9
Northern	95.2	93.8	94.5
Southern	100.0	100.0	100.0
Western	90.9	73.7*	82.9
Northern Ireland	94.3	3.0	93.7

*Discussed with unit – related to data entry error

6.6.4 Non-Invasive Cancer Detection

Non-Invasive Cancer Detection measures the number of non-invasive carcinoma (in situ) cancers that are detected per 1,000 women screened.

Between 2021-2023, the average non-invasive cancer detection rate was 1.7 per 1,000 women screened during a prevalent screen and 1.2 per 1,000 women screened during an incident screen.

Prevalent

- Acceptable standard: ≥ 0.5 non-invasive cancers detected per 1,000 women screened.

The average non-invasive cancer detection rate from a prevalent screen was 1.7 per 1,000 eligible women screened, meeting the acceptable standard. Table 15 outlines non-invasive cancer detection rates for the prevalent screen during each year between 2021 and 2023, as well as the two-year average for each BSU and Northern Ireland overall. Each BSU met the acceptable standard.

Table 15: Non-invasive cancer detection rate (%) by BSU and Northern Ireland overall – prevalent screen

	2021-2022	2022-2023	2021-2023
Eastern	0.9	2.6	1.7
Northern	3.1	0.9	2.0
Southern	1.0	0.5	0.8
Western	2.4	2.6	2.5
Northern Ireland	1.6	1.8	1.7

Incident

- Acceptable standard: ≥ 0.6 non-invasive cancers detected per 1,000 women screened.

The average non-invasive cancer detection rate from an incident screen was 1.2 per 1,000 women screened, meeting the acceptable standard. Table 16 outlines non-invasive cancer detection rates from incident screens during each year between 2021 and 2023, as well as the two-year average for each BSU and Northern Ireland overall. The performance of all individual BSUs consistently exceeded the acceptable standard throughout the two-year period.

Table 16: Non-invasive cancer detection rate (%) by BSU and Northern Ireland overall – incident screen

	2021-2022	2022-2023	2021-2023
Eastern	1.5	0.9	1.2
Northern	1.3	1.0	1.1
Southern	1.4	1.5	1.4
Western	1.1	1.3	1.2
Northern Ireland	1.4	1.1	1.2

6.6.5 Standardised Detection Ratio for Invasive Cancer

The Standardised Detection Ratio is the ratio of the observed number of invasive cancers to the expected number in the eligible population invited and screened, given the age distribution of the population.

The SDR for invasive cancers in Northern Ireland between 2021-2023 was 1.2 for prevalent screens and 1.2 for incident screens.

It is important to be able to compare cancer detection between screening services with differing mean ages of screening populations. This is corrected for by using a standard detection ratio (SDR). This allows the observed invasive cancers to be compared to the expected number of invasive cancers, given the age distribution of the population. The expected number of cancers is based on applying criteria from the Swedish Two Counties randomised control trial which is used as a comparator of performance. A 20% increase on the original expected levels has been used since 2021 to account for the increase in background incidence in invasive breast cancer in the population since the previous rates were applied in 1993.¹ An SDR of one indicates the observed number of invasive cancers is the same as that expected; greater than one indicates a higher detection rate, and less than one a lower detection rate.

Prevalent Screen

- Acceptable standard: SDR ≥ 1.0
- Achievable standard: SDR ≥ 1.2

The overall SDR for invasive cancers from a prevalent screen in Northern Ireland between 2021 and 2023 was 1.2, meeting the achievable standard. Table 17 shows the SDR for invasive cancers from a prevalent screen each year between 2021 and 2023, as well as the two-year average, for each BSU and Northern Ireland overall.

	2021-2022	2022-2023	2021-2023
Eastern	0.9	1.2	1.0
Northern	0.9	1.0	1.0
Southern	1.4	1.2	1.4
Western	1.2	1.9	1.5
Northern Ireland	1.1	1.3	1.2

Incident Screen

- Acceptable standard: SDR ≥ 1.0
- Achievable standard: SDR ≥ 1.2

The overall SDR for invasive cancers from an incident screen in Northern Ireland between 2021 and 2023 was 1.2, meeting the achievable standard. Table 18 shows the SDR for invasive cancers from an incident screen each year from 2021 - 2023, as well as the two-year average, for each BSU and Northern Ireland overall.

	2021-2022	2022-2023	2021-2023
Eastern	1.2	1.4	1.3
Northern	1.1	0.8	1.0
Southern	1.3	1.4	1.4
Western	1.0	1.2	1.1
Northern Ireland	1.1	1.2	1.2

6.6.6 Standardised Detection Ratio for Small Invasive Cancer

Standardised Detection Ratio Small Invasive Cancer is the ratio of the observed number of small invasive cancers (<15mm) to the expected number in the eligible population invited and screened, given the age distribution of the screened population.

This standard is measured for both prevalent and incident screens combined.

The SDR for small invasive cancers in Northern Ireland between 2021-2023 was 1.1.

Prevalent and Incident Screen:

- Acceptable standard: SDR ≥ 1.0
- Achievable standard: SDR ≥ 1.2

The overall SDR for small invasive cancers in Northern Ireland between 2021 and 2023 was 1.1, meeting the acceptable standard. Table 19

shows the SDR for small invasive cancers from 2021 - 2023, as well as the two-year average, for each BSU and Northern Ireland overall.

	2021-2022	2022-2023	2021-2023
Eastern	1.0	1.0	1.0
Northern	1.0	0.7	0.8
Southern	1.5	1.3	1.4
Western	1.0	1.2	1.1
Northern Ireland	1.1	1.0	1.1

6.6.7 Benign Biopsy Rates

Benign Biopsy Rate is a measure of the number of women per 1,000 women screened who had surgery for benign breast disease i.e. an open surgical biopsy with a benign or normal histological outcome.

0.7 women per 1,000 women screened during a prevalent screen had surgery for benign breast disease, while the equivalent figure for incident screens was 0.2 per 1,000 women screened.

The aim of this standard is to minimise harm to women due to unnecessary surgery. The number of open surgical biopsies performed because of screening that prove to be benign should be as low as possible.

Prevalent Screen

- **Acceptable standard:** <1.5 benign biopsies per 1,000 women screened.
- **Achievable standard:** <1.0 benign biopsies per 1,000 women screened.

The Northern Ireland average benign biopsy rate from prevalent screens between 2021 and 2022 was 0.7 per 1,000 women screened, meeting the achievable standard. Table 20 shows benign biopsy rates from prevalent

screens for Northern Ireland overall during 2021 to 2023. Due to small numbers these data are not presented at BSU level.

Table 20: Benign biopsy rate (%) for Northern Ireland overall – prevalent screen			
	2021-2022	2022-2023	2021-2023
Northern Ireland	0.8	0.7	0.7

Incident Screen

- **Acceptable standard:** <1.0 benign biopsies per 1,000 women screened.
- **Achievable standard:** <0.75 benign biopsies per 1,000 women screened.

The Northern Ireland average benign biopsy rate from incident screens between 2021 and 2023 was 0.2 per 1,000 women screened, meeting the achievable standard. Table 21 outlines benign biopsy rates from incident screens for Northern Ireland overall during 2021 to 2023. The performance of all BSUs consistently exceeded the achievable standard throughout the two-year period. Due to small numbers these data are not presented at BSU level.

Table 21: Benign biopsy rate (%) for Northern Ireland overall – incident screen			
	2021-2022	2022-2023	2021-2023
Northern Ireland	0.2	0.2	0.2

7. Very High-Risk Breast Screening Programme

Surveillance screening for women at very high risk (VHR) of developing breast cancer was introduced in Northern Ireland in 2013. In September 2020, the programme title was changed from the 'Higher Risk Breast Surveillance Screening Programme' to the 'Very High-Risk Breast Screening Programme (VHR BSP)', to reflect national guidance. This title change does not indicate any increase in cancer risk for those enrolled in the programme.

Women at VHR are defined as those with more than or equal to eight times the relative risk of developing breast cancer compared to women in the general population. A woman may be at VHR of developing breast cancer due to a genetic mutation, most commonly in the BRCA gene, or a result of previous radiotherapy to the chest area. Women may be referred into the VHR BSP by a specialist in genetics, family history or oncology, where their family or medical history indicate a higher risk of developing breast cancer. The VHR BSP offers breast imaging at an earlier age and on a more regular basis than the routine BSP. Women enrolled in the programme are invited for annual Magnetic Resonance Imaging (MRI), mammography, or both depending on their age and reason for referral, up until their 50th birthday. After this, some women will remain within the VHR BSP, while others will enter routine breast screening. The protocols for each risk category determine screening frequency.

The VHR BSP is provided regionally at Antrim Area Hospital, in the Northern HSCT. The VHR BSU at Antrim Area Hospital is managed by a lead radiologist, with input from other radiologists, radiographers and administrative support. The programme is managed in line with the Northern HSCT VHR Breast Screening Operational Policy and overseen by a VHR BSP Coordinating Group, chaired by the PHA Consultant Lead for the NI VHR BSP. The VHR BSP Coordinating Group meets twice per year (and by exception) and includes representation from all HSCTs and disciplines involved in the delivery of the VHR BSP. A representative from BRCA Link NI (a voluntary organisation helping people to access information and support about BRCA genetic mutations), who were involved in the establishment of the VHR BSP, also sits on the VHR BSP

Coordinating Group. The programme is included in the QA Visits to the Northern Unit and in internal QA activities undertaken by the Northern HSCT.

In line with the NI BSP (outlined in section 6), the VHR BSP uses the NHS Breast Screening Programme Standards, for the purposes of quality assurance and programme monitoring.¹

National standards for the VHR BSP came into effect for data collected from April 2021. Table 22 below outlines those standards applicable for the VHR BSP.

Standard	Description	Acceptable level	Achievable level
Screening Uptake	The proportion of eligible women who have a technically adequate screen \leq 6 months from date of first offered appointment.	\geq 85.0%	\geq 95.0%
Screening Round Length (shadow)	The proportion of eligible women whose date of first offered appointment is \leq 12 months from their previous episode.	To be set	To be set
Screen to Routine Recall	The proportion of women who have a results letter with no referral for further testing produced on NBSS \leq 2 weeks from a technically adequate screen.	\geq 95.0%	\geq 99.0%
Rate of Referral to Assessment	The proportion of eligible women with a technically adequate screen who are referred for assessment.	$<$ 10.0%	$<$ 7.0%
Time to First Offered Appointment for Assessment	The proportion of women referred for assessment whose date of first offered appointment at an assessment centre is \leq 3 weeks (\leq 21 calendar days) from attendance for the screening mammogram.	\geq 95.0%	\geq 99.0%

* Round length for the VHR BSP remains in shadow format, as data continues to be evaluated in order to determine an acceptable and achievable level.

Once NI have implemented the new software system to support breast screening (see section 9.2), VHR activity data and standards will be available for presentation.

8. Promoting Informed Choice

Although the overall uptake of breast screening in Northern Ireland meets the acceptable standard, uptake rates within certain geographical areas and subpopulations of women remain consistently lower than the general population. During 2021 to 2023, the PHA Breast Screening Team, in partnership with other stakeholders, continued to work to ensure that all eligible women in Northern Ireland can make an informed choice about attending for breast screening and that the service is as accessible as possible.

Key actions to promote informed choice during 2021 to 2023 included:

Regional Group on Promoting Informed Choice in Breast Screening.

This group is chaired by a member of the PHA Breast Screening team and has representation from all BSUs, as well as HSCT Health Promotion staff. The remit of the group is to identify opportunities to promote informed choice in the NI BSP, with a particular focus on women from disadvantaged communities, women who have learning/physical/sensory disabilities, women from minority ethnic groups, older women and other women considered to have additional needs. The group also aims to identify and share good practice in relation to promoting informed choice within breast screening and to advise on the provision of information to the public and health care professionals.

Inclusion of Promoting Informed Choice meetings in QA Visits to BSUs.

The PHA Breast Screening Team includes standalone meetings related to promoting informed choice in breast screening in the four-yearly QA Visits to BSUs. A dedicated chapter on promoting informed choice is included within each QA visit report.

Working with the Women's Resource and Development Agency (WRDA).⁶

In 2015, the PHA commissioned the [WRDA](#), a local not-for-profit organisation, to raise awareness of the Breast, Cervical and Bowel Cancer Screening Programmes and to promote informed choice among

individuals from communities and populations with historically lower cancer screening uptake rates compared with the general population. The aim of the WRDA's programme of work is to provide individuals with sufficient information to enable them to make an informed decision about participating in cancer screening programmes. The WRDA recruit, train and support Peer Facilitators to deliver Educational Awareness Sessions to targeted service user groups, including people from deprived areas, those from ethnic minorities, those from the LGBT+ community, homeless individuals and those with physical disabilities, learning disabilities or mental health issues. WRDA also carry out Bespoke Workshops for those latter groups with additional support needs.

Collaborating with HSCTs to ensure that comprehensive, up to date, information on screening is available on their website.

9. Other developments in the Breast Screening Programme

9.1 Digital mammography equipment and breast screening mobile unit replacement

In 2021 the PHA and the five HSC Trusts established a project to support the development of a regional business case to replace, and add to, the mammography equipment used by the screening and symptomatic breast services and the breast screening mobile trailers. This regional capital business case was led by the Belfast HSC Trust on behalf of the Northern Ireland Breast services. This was finalised in 2023.

9.2 Maintaining the integrity and functionality of NBSS in Northern Ireland

A project was established by the PHA in 2021 to obtain and implement a software solution to allow NBSS, the IT system underpinning the Breast Screening Programme, to continue to be updated and operate effectively. The project involves multiple stakeholders within Northern Ireland and the NHS in England.

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