National Cancer Recovery Group
National Cancer Quality Steering Group

Breast Cancer
Clinical Quality Performance Indicators

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Revision History

Version	Date	Summary of Changes
V1.0	January 2012	Initial publication
V1.3	August 2013	Addition of QPI 1 – Multidisciplinary Team (MDT) Meeting
V2.0	October 2014	Baseline review changes
V3.0	July 2016	Formal review changes (1st Cycle)
V4.0	August 2019	Formal review changes (2nd Cycle)
V5.0	April 2023	Formal review changes (3rd Cycle)

Contents Update Record

April 2023 (v5.0)
This document was updated following formal review (3rd cycle) of the Breast Cancer Quality Performance Indicators (QPIs) which took place following analysis of year 9 of the breast cancer QPI data.

The following QPIs have been updated:

- QPI 8: Minimising Hospital Stay
- QPI 13: Re-excision Rates
- QPI 11: Adjuvant Chemotherapy
- QPI 19: Deep Inspiratory Breath Hold (DIBH) Radiotherapy

The following QPIs have been archived:

- QPI 10: Radiotherapy for Breast Conservation in Older Adults
- QPI 14: Referral for Genetics Testing
- QPI 15: 30 Day Mortality following Systemic Anti-Cancer Therapy (SACT)*
- QPI 16: Clinical Trial and Research Study Access*

The following new QPIs have been added:

- QPI 20: Optimal Time to Radiotherapy Treatment
- QPI 21: Axillary Node Clearance
- QPI 22: Recurrence Following Breast Cancer Treatment

***** These important indicators will continue to be monitored via other national reporting systems rather than through the QPI process.

As a result of the changes above, the contents page and page numbering differ from earlier versions of this document. Sections 1 – 11 and the appendices have also been updated.

Please note that this version of the Breast Cancer QPI document applies to cases diagnosed from 1st January 2022. Where amended or new QPIs require new data items for measurement, this will apply for patients diagnosed from 1st January 2023.

Previous Versions

August 2019 (v4.0)
This document was updated following formal review (2nd cycle) of the Breast Cancer Quality Performance Indicators (QPIs) which took place following analysis of year 6 of the breast cancer QPI data.

The following QPIs have been updated:

- QPI 6: Immediate Reconstruction Rate
- QPI 8: Minimising Hospital Stay
- QPI 9: HER2 Status for Decision Making
- QPI 10: Radiotherapy for Breast Conservation in Older Adults
- QPI 11: Adjuvant Chemotherapy
- QPI 14: Referral for Genetics Testing
- QPI 15: 30 Day Mortality following Systemic Anti-Cancer Therapy (SACT)

The following QPIs have been archived:

- QPI 1: Multidisciplinary Team Meeting (MDT)
- QPI 2: Non-operative Diagnosis
- QPI 3: Pre-Operative Assessment of Axilla
- QPI 4: Conservation Rate
- QPI 5: Surgical Margins

The following new QPIs have been added:

- QPI 17: Genomic Testing
- QPI 18: Neoadjuvant Chemotherapy
- QPI 19: Deep Inspiratory Breath Hold (DIBH) Radiotherapy

Please note the revised Clinical Trials and Research Study Access QPI has also been added (see QPI 16: Clinical Trials & Research Study Access).

As a result of the changes above, the contents page and page numbering differ from earlier versions of this document. Sections 1 - 10 and the appendices have also been updated.

Please note that this version of the Breast Cancer QPI Document applies to cases diagnosed from 1st January 2018 onwards. Where amended or new QPIs require new data items for measurement, this will apply for patients diagnosed from 1st January 2019.

July 2016 (v3.0)
This document was updated following formal review of the Breast Cancer Quality Performance Indicators (QPIs) which took place following analysis of year 3 of the breast cancer QPI data.

The following QPIs have been updated:

- QPI 1: Multidisciplinary Team Meeting (MDT)
- QPI 4: Conservation Rate
- QPI 6: Immediate Reconstruction Rate
- QPI 8: Minimising Hospital Stay – Day Case Surgery
- QPI 9: HER2 Status for Decision Making
- QPI 10: Radiotherapy for Breast Conservation
- QPI 11: Adjuvant Chemotherapy

The following QPIs have been archived:

- QPI 7: Negative Axillary Clearance Rate
- QPI 12: Anti-HER2 Positive Therapy

The following new QPIs have been added:

- QPI 13: Re-excision Rates
- QPI 14: Referral for Genetics Testing
- QPI 15: 30 Day Mortality Following Chemotherapy

Please note the extant Clinical Trials QPI has now been added into each tumour specific QPI document (see QPI 16: Clinical Trials).

As a result of the changes above, the contents page and page numbering differ from earlier versions of this document. Sections 1 - 11 and the appendices have also been updated.

Please note that this version of the Breast Cancer QPI Document applies to cases diagnosed from 1st January 2016 onwards.

Previous Updates:

October 2014 (v2.0)
This document was updated following baseline review of the Breast Cancer QPIs which took place following analysis of year 1 of the breast cancer QPI data. As a result, the following QPIs have been updated:

- QPI4: Conservation Rate
- QPI6: Immediate Reconstruction Rate
- QPI12: Anti-HER2 Positive Therapy

Please note that v2.0 of the Breast Cancer QPI Document applies to cases diagnosed from 1st January 2014 onwards.

August 2013 (v1.3)

The document was updated to include QPI 1: Multi-Disciplinary Team (MDT) Meeting.
The overall QPI numbering, contents page and the page numbering were amended as a result and therefore differ from earlier versions of this document.

Contents Page

1. National Cancer Quality Programme

Better Cancer: Ambition and Action (2016)[1] details a commitment to delivering the National Cancer Quality Programme across NHS Scotland, with a recognised need for national cancer QPIs to support a culture of continuous quality improvement. Addressing variation in the quality of cancer services is pivotal to delivering improvements in quality of care. This is best achieved if there is consensus and clear indicators of what good cancer care looks like.

Small sets of cancer specific outcome focussed, evidence based indicators are in place for 19 different tumour types. These QPIs ensure that activity is focused on those areas that are most important in terms of improving survival and individual care experience whilst reducing variation and supporting the most effective and efficient delivery of care for people with cancer. QPIs are kept under regular review and are responsive to changes in clinical practice and emerging evidence.

A programme to review and update the QPIs in line with evolving evidence is in place as well as a robust mechanism by which additional QPIs will be developed over the coming years.

1.1 Quality Assurance and Continuous Quality Improvement

The ultimate aim of the programme is to develop a framework, and foster a culture of continuous quality improvement, whereby real time data is reviewed regularly at an individual Multidisciplinary Team (MDT)/Unit level and findings actioned to deliver continual improvements in the quality of cancer care. This is underpinned and supported by a programme of regional and national comparative reporting and review.

NHS Boards are required to report against QPIs as part of a mandatory, publicly reported, programme at a national level. A rolling programme of reporting is in place, with approximately three national tumour specific summary reports published annually. These reports highlight the publication of performance data in the Cancer QPI dashboard held within the Scottish Cancer Registry and Intelligence Service (SCRIS). The dashboard includes comparative reporting of performance against QPIs at MDT/Unit level across NHS Scotland, trend analysis and survival. This approach helps to overcome existing issues relating to the reporting of small volumes in any one year.

In the intervening years, tumour specific QPIs are monitored on an annual basis through established Regional Cancer Network and local governance processes, with analysed data submitted to Public Health Scotland (PHS) for inclusion in the Cancer QPI Dashboard and subsequent national summary reports. This ensures that timely action is taken in response to any issues that may be identified through comparative reporting and systematic review.

2. Quality Performance Indicator (QPI) Development Process

The QPI development process was designed to ensure that indicators are developed in an open, transparent and timely way.

The Breast Cancer QPI Development Group was convened in December 2010, chaired by Dr Jennifer Armstrong (Senior Medical Officer, Scottish Government). Membership of this group included clinical representatives drawn from the three regional cancer networks, Healthcare Improvement Scotland, Information Services Division (ISD) and patient/carer representatives.

The development process and membership of the development group can be found in appendix 1.

3. QPI Formal Review Process

As part of the National Cancer Quality Programme, a systematic rolling programme of national review has been developed. This ensures all tumour specific QPIs are subject to formal review following every 3rd year of comparative QPI data analysis.

The formal review process is clinically driven with proposals for change sought from specialty specific representatives in each of the Regional Cancer Networks. It is designed to be flexible in terms of the extent of review required with tumour specific Regional Clinical Leads undertaking a key role in this decision making. Formal review meetings to further discuss proposals are arranged where deemed necessary. The review builds on existing evidence using expert clinical opinion to identify where new evidence is available, and a full public engagement exercise will take place where significant revisions have been made or new QPIs developed.

During formal review QPIs may be archived and replaced with new QPIs. Triggers for doing so include significant change to clinical practice, targets being consistently met by all Boards, and publication of new evidence. Where QPIs have been archived, associated data items will continue to be collected where these are utilised for other indicators, or measures such as survival analysis.

Any new QPIs are developed in line with the following criteria:

- **Overall importance** – does the indicator address an area of clinical importance that would significantly impact on the quality and outcome of care delivered?
- **Evidence based** – is the indicator based on high quality clinical evidence?
- **Measurability** – is the indicator measurable i.e. are there explicit requirements for data measurement and are the required data items accessible and available for collection?

Three formal reviews of the Breast Cancer QPIs have been undertaken to date. Further information can be found in appendix 2.

4. Format of the Quality Performance Indicators

QPIs are designed to be clear and measurable, based on sound clinical evidence whilst also taking into account other recognised standards and guidelines.

- Each QPI has a **short title** which will be utilised in reports as well as a fuller **description** which explains exactly what the indicator is measuring.
- This is followed by a brief overview of the **evidence base and rationale** which explains why the development of this indicator was important.
- The measurability **specifications** are then detailed; these highlight how the indicator will actually be measured in practice to allow for comparison across NHSScotland.
- Finally a **target** is indicated, this dictates the level which each unit should be aiming to achieve against each indicator.

In order to ensure that the chosen target levels are the most appropriate and drive continuous quality improvement as intended they are kept under review and revised as necessary, if further evidence or data becomes available.

Rather than utilising multiple exclusions, a tolerance level has been built into the QPIs. It is very difficult to accurately measure patient choice, co-morbidities and patient fitness therefore target levels have been set to account for these factors. Further detail is noted within QPIs where there are other factors which influenced the target level.

Where ‘less than’ (<) target levels have been set the rationale has been detailed within the relevant QPI. All other target levels should be interpreted as ‘greater than’ (>) levels.

5. Supporting Documentation

A national minimum core dataset and a measurability specification have been developed in parallel with the indicators to support the monitoring and reporting of the Breast Cancer QPIs. The latest version of these documents can be found at:

Public Health Scotland Cancer Audit

6. Quality Performance Indicators for Breast Cancer

QPIs 1 – 5 have been archived during previous formal reviews (see contents update record – page 2).

QPI 6: Immediate Reconstruction Rate

QPI Title:	Patients undergoing mastectomy for breast cancer should have access to timely immediate breast reconstruction.
Description:	Proportion of patients who undergo immediate breast reconstruction at the time of mastectomy for breast cancer, and within 6 weeks of treatment decision[a]. **Please note:** The specifications of this QPI measure two distinct elements: (i) Patients with breast cancer undergoing immediate breast reconstruction at the time of mastectomy; and (ii) Patients with breast cancer undergoing immediate breast reconstruction at the time of mastectomy, and within 6 weeks of treatment decision.
Rationale and Evidence:	Evidence suggests that breast reconstruction is not associated with an increase in the rate of local recurrence, nor does it affect the ability to detect recurrence, and it can yield psychological benefit. There may be good reasons for individual patients not to undergo immediate breast reconstruction but this indicator is intended to demonstrate that mastectomy patients have access to a reconstructive service[2,3]. Access to immediate breast reconstruction is very difficult to measure accurately therefore uptake is utilised within this QPI as a proxy for access. Although it will not provide an absolute measure of patient access to this procedure it will give an indication of access across NHS Boards and highlight any areas of variance which can then be further examined. Timeliness of immediate breast reconstruction is being reviewed as part of this QPI to ensure that there is no impact on quality of care for patients undergoing this treatment option.
Specification (i):	**Numerator:** Number of patients with breast cancer undergoing immediate breast reconstruction at the time of mastectomy. **Denominator:** All patients with breast cancer undergoing mastectomy. **Exclusions:** • All patients with M1 disease‡. • All male patients.
Target:	20% The tolerance within this target accounts for patient choice and fitness for treatment. Patient choice is a key factor in the number of patients who undergo immediate breast reconstruction at the time of mastectomy.

[a] This is the date where mastectomy is agreed as the treatment option by consultation between the patient and the breast surgeon.

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QPI 6: Immediate Reconstruction Rate……..continued

Specification (ii):	**Numerator:**	Number of patients with breast cancer undergoing immediate breast reconstruction at the time of mastectomy within 6 weeks of treatment decision.
	Denominator:	All patients with breast cancer undergoing immediate reconstruction at the time of mastectomy.
	Exclusions:	• All patients with M1 disease[b]. • All male patients. • Patients who undergo neoadjuvant chemotherapy.
Target:	90% The tolerance within this target is designed to account for situations where immediate breast reconstruction may be delayed due to factors patient choice and fitness for treatment.	

Please note:
Additional information on the types of reconstruction undertaken across NHS Boards will be reported alongside this QPI. This information will be reviewed to identify variation and ensure there is no impact on the quality of care due to differing treatment options.

[b] The exclusion of patients with M1 disease is not intended to imply that mastectomy and immediate reconstruction is not a valid treatment option for patients with metastatic disease. All patients are discussed on an individual basis to determine the most appropriate treatment.

QPI 8: Minimising Hospital Stay

QPI Title:	Patients should have the opportunity for day case / 23 hour** breast surgery wherever appropriate.	
Description:	Proportion of patients undergoing day case / 23 hour surgery for breast cancer. **Please note:** This QPI measures two distinct elements. (ii) Patients with breast cancer undergoing mastectomy (without reconstruction) with a maximum hospital stay of 1 night following their procedure. (iii) Patients with breast cancer undergoing mastectomy (without reconstruction) as day case surgery. ***Note - specification (i) has been archived.***	
Rationale and Evidence:	It has been shown that major breast surgery can be delivered safely as day case or one night stay in the majority of patients without compromising clinical quality, surgical outcomes, and patient experience[4]. Benefits of short stay following surgery include: reduction in re-admissions, reduction in complications, improved patient mobility and enhanced recovery[5]. **Within the measurement of this QPI, day case surgery is defined as those patients who are admitted and discharged on the same day as their procedure. 23 hour surgery is defined as surgery which includes a maximum of one night stay following their procedure.	
Specification (ii):	**Numerator:**	Number of patients with breast cancer undergoing mastectomy (without reconstruction) with a maximum hospital stay of 1 night following their procedure.
	Denominator:	All patients with breast cancer undergoing mastectomy (without reconstruction).
	Exclusions:	• No exclusions
Target:	60% The tolerance within this target takes account of the fact that 23 hour surgery may not be appropriate for all patients due to social circumstances, co-morbidities and/or the geographical area in which they live.	

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QPI 8: Minimising Hospital Stay ….continued

Specification (iii)	Numerator	Number of patients with breast cancer undergoing mastectomy (without reconstruction) as day case surgery.
	Denominator	All patients with breast cancer undergoing mastectomy (without reconstruction).
	Exclusions	• No exclusions
Target:	20% The tolerance within this target takes account of the fact that day case surgery may not be preferable or appropriate for all patients due to social circumstances, co-morbidities and/or the geographical area in which they live. It may not always be safe or practical for patients to go home immediately after surgery; this may therefore affect short-stay surgery rates across NHSScotland.	

Please note:
SMR01 data will be utilised to support reporting and monitoring of this QPI rather than clinical audit. This will maximise the use of data which are already collected and remove the need for any duplication of data collection. Standard reports will be specified and direct access given for each Board to run these reports to ensure nationally consistent analysis and reporting.

QPI 9: HER2 Status for Decision Making

QPI Title:	HER2 status should be available to inform treatment decision making.
Description:	Proportion of patients with invasive breast cancer for whom the HER2 status (as detected by immunohistochemistry (IHC) and/or FISH analysis) is reported within 2 weeks of core biopsy.
Rationale and Evidence:	HER2 status has a significant impact on survival and so has a significant influence on decisions on neoadjuvant and adjuvant treatment[6]. Delay in the availability of a HER2 result may lead to a delay in appropriate neoadjuvant or adjuvant therapy and make communication of a clear plan to the patient more difficult. At present HER2 testing is undertaken in all relevant cases; however the point of the patient pathway at which this takes place varies across NHS Scotland. The purpose of this indicator is to synchronise practice across Scotland by ensuring the availability of HER2 status in a timely manner to inform treatment decision making.
Specifications:	**Numerator:** Number of patients with invasive breast cancer for whom the HER2 status (as detected by immunohistochemistry (IHC) and/or FISH analysis) is reported within 2 weeks of core biopsy. **Denominator:** All patients with invasive breast cancer. **Exclusions:** • Patients in whom no invasive carcinoma is present on core biopsy.
Target:	90% The tolerance within this target is designed to account for situations where insufficient disease is present on core biopsy. **Please note:** Varying evidence exists regarding the most appropriate target level; therefore this may need redefined in the future, to take account of new evidence or when baseline data becomes available.

QPI 11: Adjuvant Chemotherapy

QPI Title:	Patients with breast cancer should receive chemotherapy post operatively where it will provide a survival benefit for patients.
Description:	Proportion of patients with invasive breast cancer who have a >5% overall survival benefit of chemotherapy treatment predicted at 10 years[c] that undergo adjuvant chemotherapy. **Please note**: This QPI measures two distinct elements. (i) Patients with hormone receptor (ER plus/minus PR) positive, HER2 negative breast cancer with a >5% overall survival benefit of chemotherapy treatment predicted at 10 years or high risk genomic assay score[d]. (ii) Patients with triple negative (ER negative, PR negative, HER2 negative) or HER2 positive breast cancer with >5% overall survival benefit of chemotherapy treatment predicted at 10 years.
Rationale and Evidence:	Large randomised trials have confirmed that adjuvant systemic therapy improves relapse-free survival and overall survival[7]. Clinical trials have demonstrated that adjuvant drug treatments substantially reduce 5-year recurrence rates and 15-year mortality rates[8]. Success of treatment is based on a number of different factors including tumour size, grade and involvement of lymph nodes. Prognostic tools such as PREDICT assist clinicians and patients to make informed decisions on appropriate treatment by predicting survival and determining those patients likely to benefit from adjuvant treatment[9,10].
Specification (i):	**Numerator:** Number of patients with hormone receptor (ER plus/minus PR) positive, HER2 negative breast cancer who have a >5% overall survival benefit of chemotherapy treatment predicted at 10 years or high risk genomic assay score that undergo adjuvant chemotherapy. **Denominator:** All patients with hormone receptor (ER plus/minus PR) positive, HER2 negative breast cancer who have a >5% overall survival benefit of chemotherapy treatment predicted at 10 years or high risk genomic assay score. **Exclusions:** • Patients with breast cancer taking part in trials of chemotherapy treatment. • Patients who undergo neoadjuvant chemotherapy. • Patients with M1 disease. • Patients with a low risk genomic assay score.

(Continued overleaf)

[c] The validated tool PREDICT (version 2.1) should be used to calculate predicted benefit of adjuvant chemotherapy. Third generation chemotherapy should be selected as default for consistency.

[d] At the time of publication, Oncotype Dx is the only genomic test widely available for use within NHSScotland for breast cancer.

QPI 11: Adjuvant Chemotherapy…….continued

Specification (ii):	**Numerator:**	Number of patients with triple negative or HER2 positive breast cancer who have a >5% overall survival benefit of chemotherapy treatment predicted at 10 years that undergo adjuvant chemotherapy.
	Denominator:	All patients with triple negative or HER2 positive breast cancer who have a >5% overall survival benefit of chemotherapy treatment predicted at 10 years.
	Exclusions:	• Patients with breast cancer taking part in trials of chemotherapy treatment. • Patients who undergo neoadjuvant chemotherapy. • Patients with M1 disease.
Target:	80% The tolerance within this target accounts for factors of patient choice, co-morbidities and fitness for treatment.	

QPI 13: Re-excision Rates

QPI Title:	Patients undergoing surgery for breast cancer should only undergo one definitive operation where possible.	
Description:	Proportion of surgically treated patients with breast cancer (invasive or in situ) who undergo re-excision or mastectomy following their initial breast surgery.	
Rationale and Evidence:	It is important to minimise treatment related morbidity. Patients undergoing additional surgical procedures can be subject to unnecessary stress, as well as potential complications and delays in recovery[11]. Re-operation is also a factor related to poorer cosmetic outcomes for patients[12].	
Specifications:	**Numerator:**	Number of patients with breast cancer (invasive or in situ) having breast conservation surgery who undergo re-excision or mastectomy following initial breast surgery.
	Denominator:	All patients with breast (invasive or in situ) cancer having breast conservation surgery as their initial or only breast surgery.
	Exclusions:	• No exclusions.
Target:	<20% This QPI is measuring the proportion of patients who undergo more than one surgical procedure to achieve clear margins, therefore a 'less than' target level has been set. **Please note:** Varying evidence exists regarding the most appropriate target level; therefore this may need redefined in the future, to take account of new evidence or when further data becomes available.	

Please note:
A breakdown of surgical procedures (first surgery) across NHS Boards will be made available in audit reports for national comparative analysis.

QPI 17: Genomic Testing

QPI Title:	Patients with breast cancer should be offered genomic testing[e] where appropriate.	
Description:	Proportion of patients with ER positive, HER2 negative, node negative breast cancer who have a 3-5% overall survival benefit of chemotherapy treatment predicted at 10 years[f] that undergo genomic testing.	
Rationale and Evidence:	Gene expression profiling tests can provide an indication of how the disease may progress and therefore assist in treatment planning in relation to chemotherapy[13]. Tests such as EndoPredict, Oncotype DX Breast Recurrence Score and Prosigna are recommended for guiding adjuvant chemotherapy decisions for people with ER-positive, HER2-negative and lymph node-negative early breast cancer. Validated tools such as PREDICT or The Nottingham Prognostic Index should also be used to determine if a patient is at intermediate risk of distant recurrence[14].	
Specifications:	**Numerator:**	Number of patients with ER positive, HER2 negative, node negative breast cancer who have a 3-5% overall survival benefit of chemotherapy treatment predicted at 10 years that undergo genomic testing.
	Denominator:	All patients with ER positive, HER2 negative, node negative breast cancer who have a 3-5% overall survival benefit of chemotherapy treatment predicted at 10 years.
	Exclusions:	• Patients with breast cancer taking part in clinical trials of chemotherapy treatment. • Patients who undergo neoadjuvant therapy.
Target:	60% The tolerance within this target accounts for factors of patient choice and fitness for treatment.	

Please note:
Additional information on the proportion of ER positive, HER2 negative patients that undergo genomic testing (broken down by nodal status) across NHS Boards will be reported alongside this QPI for national comparative analysis.

[e] Details of the genomic assay tests that are currently measured within this QPI are outlined within the associated measurability document. At the time of publication, Oncotype DX is the only genomic test widely available for use within NHSScotland for early breast cancer.

[f] The validated tool PREDICT (version 2.1) should be used to calculate predicted benefit of adjuvant chemotherapy. Third generation chemotherapy should be selected as default for consistency.

QPI 18: Neo-adjuvant Chemotherapy

QPI Title:	Patients with breast cancer who receive chemotherapy should be offered neoadjuvant chemotherapy with the aim of achieving pathological complete response where appropriate.	
Description:	Proportion of patients with triple negative (ER / PR / HER2 negative) or HER2 positive, Stage II or III ductal breast cancer who receive chemotherapy that undergo neoadjuvant chemotherapy with the aim of achieving pathological complete response. **Please note:** This QPI measures 2 distinct elements. (i) Patients with triple negative or HER2 positive, Stage II or III ductal breast cancer who receive chemotherapy that undergo neoadjuvant chemotherapy; and (ii) Patients with triple negative or HER2 positive, Stage II or III ductal breast cancer who undergo neoadjuvant chemotherapy who achieve a pathological complete response.	
Rationale and Evidence:	Pathological complete response is used as an endpoint to predict clinical benefit and survival. Those patients who achieve pathological complete response (defined as ypT0 ypN0) demonstrate improved survival with the greatest benefit shown in aggressive tumour subtypes[15]. Evidence has shown that pathologic response to neoadjuvant chemo is prognostic in HER2 positive and triple negative breast cancers[16].	
Specification (i):	**Numerator:**	Number of patients with triple negative or HER2 positive, Stage II or III ductal breast cancer who receive chemotherapy that undergo neoadjuvant chemotherapy.
	Denominator:	All patients with triple negative or HER2 positive, Stage II or III ductal breast cancer who receive chemotherapy.
	Exclusions:	• Patients who undergo palliative chemotherapy.
Target:	80% The tolerance within this target is designed to accounts for factors of patient choice in relation to treatment decisions for neo-adjuvant chemotherapy as well as patient fitness.	
Specification (ii):	**Numerator:**	Number of patients with triple negative or HER2 positive, Stage II or III ductal breast cancer who undergo neoadjuvant chemotherapy who achieve a pathological complete response.
	Denominator:	All patients with triple negative or HER2 positive, Stage II or III ductal breast cancer who undergo neoadjuvant chemotherapy.
	Exclusions:	• No exclusions.
Target:	30% The tolerance within this target is designed to account for the fact that due to tumour variations, not all patients will achieve a pathological complete response.	

QPI 19: Deep Inspiratory Breath Hold (DIBH) Radiotherapy

QPI Title:	Patients with left sided breast cancer or DCIS undergoing adjuvant radiotherapy treatment should use a deep inspiratory breath hold (DIBH) radiotherapy technique.	
Description:	Proportion of patients with left sided breast cancer or DCIS receiving adjuvant radiotherapy treatment who use a DIBH radiotherapy technique.	
Rationale and Evidence:	Left sided breast radiotherapy increases the risk of cardiac morbidity. Excluding the heart from the radiotherapy field minimises the radiation dose to the heart and therefore reduces the risk of longer term cardiac side effects[17]. Evidence has shown that the use of deep inspiratory breath-hold (DIBH) technique during breast radiotherapy leads to a significant reduction in cardiac side effects without compromising the target coverage. This has been shown to lead to a reduction in future cardiovascular morbidity and mortality[17,18].	
Specifications:	**Numerator:**	Number of patients with left sided breast cancer or DCIS receiving adjuvant radiotherapy treatment who use a DIBH radiotherapy technique.
	Denominator:	All patients with left sided breast cancer or DCIS receiving adjuvant radiotherapy treatment.
	Exclusions:	• Patients with bilateral disease.
Target:	80% The tolerance within this target level accounts for the fact that due to co-morbidities and fitness levels, not all patients will be suitable for DIBH radiotherapy. It also accounts for those patients who receive alternative treatment, e.g. left sided electron radiotherapy.	

QPI 20: Optimal Time to Radiotherapy Treatment

QPI Title:	Patients with breast cancer who undergo adjuvant radiotherapy treatment should commence this within 8 weeks of final surgery.
Description:	Proportion of patients with breast cancer who undergo adjuvant radiotherapy who commence this within 8 weeks of final surgery.
Rationale and Evidence:	Radiotherapy has an essential role in the prevention of local recurrence in breast cancer patients undergoing surgical treatment. Evidence suggests that time from surgery to post-operative radiotherapy in patients with breast cancer affects rates of local recurrence when administered as the sole modality of treatment. A delay of more than 8-12 weeks is associated with increased local recurrence[19].
Specifications:	**Numerator:** Number of patients with breast cancer who undergo adjuvant radiotherapy who commence this within 8 weeks of final surgery. **Denominator:** All patients with breast cancer undergoing adjuvant radiotherapy. **Exclusions:** • Patients who undergo adjuvant chemotherapy.
Target:	80% The tolerance within this target accounts for the fact that due to co-morbidities or surgical complications not all patients will be suitable for adjuvant radiotherapy within the optimal timeframe.

QPI 21: Axillary Node Clearance

QPI Title:	Patients with node positive breast cancer who undergo neoadjuvant chemotherapy with a complete pathological response in the axilla should avoid axillary node clearance where possible.	
Description:	Proportion of patients with node positive breast cancer undergoing neoadjuvant chemotherapy who achieve complete pathological response in the axilla that have an axillary node clearance.	
Rationale and Evidence:	Contemporary surgical management of the axilla aims to reduce unnecessary long term morbidity. Patients who are node positive at diagnosis that undergo neoadjuvant chemotherapy with a complete radiological response should be offered SLNB/Targeted axillary dissection to avoid unnecessary axillary node clearance where possible[20].	
Specifications:	**Numerator:**	Number of patients with node positive breast cancer undergoing neoadjuvant chemotherapy who achieve complete pathological response in the axilla that have an axillary node clearance.
	Denominator:	All patients with node positive breast cancer undergoing neoadjuvant chemotherapy who achieve complete pathological response in the axilla.
	Exclusions:	• No exclusions
Target:	<10% This QPI is measuring the proportion of patients who undergo axillary node clearance when it may be unnecessary, therefore a 'less than' target level has been set.	

QPI 22: Recurrence Following Breast Cancer Treatment

QPI Title:	5-Year recurrence rate following surgical treatment for patients with invasive breast cancer.	
Description:	Proportion of patients diagnosed[g] with invasive breast cancer who have a breast cancer recurrence (or new disease) in the treated breast within 5 years. **Please note:** The specifications of this QPI are separated to ensure clear measurement of the following: (i) Patients with local recurrence (or new cancer/DCIS) in the same breast after breast conservation; (ii) Patients with local recurrence (or new cancer/DCIS) in the treated side after mastectomy; and (iii) Patients with any recurrence (or new cancer/DCIS) in the same breast, axilla or distant site after surgical treatment.	
Rationale and Evidence:	The ultimate measure for assessing breast cancer quality performance is the cancer outcome of the patient. Beating Cancer: Ambition and Action (2016)[1] detailed a commitment to improve the quality and delivery of care for people with secondary and recurrent cancers by capturing and gathering recurrence data more accurately. Unit level measurement of local and systemic recurrence should provide comparison of actual breast cancer outcomes across Scotland and allow variation to be addressed.	
Specification (i):	**Numerator:**	Number of patients with invasive breast cancer who have undergone breast conservation and develop a local recurrence (or new cancer/DCIS) in the same breast.
	Denominator:	All patients with invasive breast cancer who have undergone breast conservation.
	Exclusions:	• Patients with M1 at diagnosis
Target:	<2.5%	
Specification (ii):	**Numerator:**	Number of patients with invasive breast cancer who have undergone mastectomy and develop a local recurrence (or new cancer/DCIS) in the treated side.
	Denominator:	All patients with invasive breast cancer who have undergone mastectomy.
	Exclusions:	• Patients with M1 at diagnosis
Target:	<5%	

(Continued overleaf)

[g] The clinical cohort within the denominator will incorporate patients diagnosed at least 6 years prior to the reporting year in order to allow time for complete 5 year follow-up.

QPI 22: Recurrence Following Breast Cancer Treatment…….continued

Specification (iii):	**Numerator:**	Number of patients with invasive breast cancer who have undergone surgical treatment (conservation or mastectomy) and develop any recurrence (or new cancer/DCIS) in the same breast, axilla or distant site after surgical treatment.
	Denominator:	All patients with invasive breast cancer who have undergone surgical treatment (conservation or mastectomy).
	Exclusions:	• Patients with M1 at diagnosis
Target:	<15%	

Please note:
It is acknowledged that there are challenges in implementing this QPI within the current measurement framework due to the resource intensive nature of data capture. Trials within the South East Scotland Cancer Network (SCAN) region have successfully been undertaken and have allowed refinement of the measurement and derivation of realistic targets. The aim is to test this as an approach to determine whether accurate and reliable data for reporting of recurrence can be achieved across all NHS Boards.

7. Survival

Improving survival forms an integral part of the national cancer quality improvement programme. Breast cancer survival analysis will be reported and analysed on a 3 yearly basis by Public Health Scotland (PHS). The specific issues which will be addressed will be identified by an expert group ahead of any analysis being undertaken, as per the agreed national cancer quality governance and improvement framework.

The Breast Cancer QPI Group has identified the following issues for survival analysis:

- 5 and 10 year overall survival

To ensure consistent application of survival analysis, it has been agreed that a single analyst on behalf of all three regional cancer networks undertakes this work. Survival analysis is scheduled as per the national survival analysis and reporting timetable, agreed with the National Cancer Quality Steering Group and National Cancer Recovery Group. This reflects the requirement for record linkage and the more technical requirements of survival analyses which makes it difficult for individual Boards to undertake routinely and in a nationally consistent manner.

8. Areas for Future Consideration

The Breast Cancer QPI Groups have not been able to identify sufficient evidence, or determine appropriate measurability specifications, to address all areas felt to be of key importance in the treatment of breast cancer, and therefore in improving the quality of care for patients affected by breast cancer.

The following areas for future consideration have been raised across the lifetime of the Breast Cancer QPIs:

- Neoadjuvant endocrine therapy
- Partial breast radiotherapy
- Radiotherapy management of regional lymph nodes (including internal mammary lymph nodes)
- Genomic testing in node positive breast cancer patients
- Systemic Anti-Cancer Therapy (SACT) following incomplete pathological response
- Targeted therapy in breast cancer patients – neoadjuvant and adjuvant treatments

9. Governance and Scrutiny

A national and regional governance framework to assure the quality of cancer services in NHSScotland has been developed; key roles and responsibilities within this are set out below. Appendices 3 and 4 provide an overview of these governance arrangements diagrammatically. The importance of ensuring robust local governance processes are in place are recognised and it is essential that NHS Boards ensure that cancer clinical audit is fully embedded within established processes.

9.1 National

- National Cancer Recovery Group
    - Accountable for overall national cancer quality programme and overseeing the quality of cancer care across NHSScotland.

- Healthcare Improvement Scotland

- Proportionate scrutiny of performance.
- Support performance improvement.
- Quality assurance: ensure robust action plans are in place and being progressed via regions/Boards to address any issues identified.

- Public Health Scotland (PHS)
  - Publish national comparative report on tumour-specific QPIs and survival analysis for approximately three tumour types per annum as part of the rolling programme of reporting.

9.2 Regional – Regional Cancer Networks

- Annual regional comparative analysis and reporting against tumour-specific QPIs.
- Support national comparative reporting of specified generic QPIs.
- Identify and share good practice.
- In conjunction with constituent NHS Boards identify regional and local actions required to develop an action plan to address regional issues identified.
- Review and monitor progress against agreed actions.
- Provide assurance to NHS Board Chief Executive Officers and National Cancer Recovery Group that any issues identified have been adequately and timeously progressed.

9.3 Local – NHS Boards

- Collect and submit data for regional comparative analysis and reporting in line with agreed measurability and reporting schedule (generic and tumour-specific QPIs).
- Utilise local governance structures to review performance, develop local action plans and monitor delivery.
- Demonstrate continual improvements in quality of care through on-going review, analysis and feedback of clinical audit data at an individual multidisciplinary team (MDT) or unit level.

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11. Appendices

Appendix 1: QPI Development Process

Preparatory Work and Scoping

NHS Quality Improvement Scotland (formerly Clinical Standards Board for Scotland) Clinical Standards for Breast Cancer have been utilised nationally since 2001. It was therefore agreed that rather than undertake a lengthy QPI development process the extensive literature search and clinical discussion undertaken in the review of NHS Quality Improvement Scotland (NHSQIS) breast standards (in 2008) was used as the basis for QPI development.

The preparatory work involved the development group members independently reviewing and assessing the existing NHS QIS Breast Cancer Standards against agreed criteria and identifying any potential gaps where they considered a need to develop new outcome focussed quality indicators. Responses were then collated and the output of this exercise used to inform development group discussions.

Indicator Development

The Breast Cancer QPI Development Group defined evidence based, measurable indicators with a clear focus on improving the quality and outcome of care provided.

The Group developed QPIs using the existing NHS QIS clinical standards as a base. Draft QPIs were then assessed by the Breast Cancer QPI Development Group against three criteria:

- **Overall importance** – does the indicator address an area of clinical importance that would significantly impact on the quality and outcome of care delivered?
- **Evidence based** – is the indicator based on high quality clinical evidence?
- **Measurability** – is the indicator measurable i.e. are there explicit requirements for data measurement and are the required data items accessible and available for collection?

Engagement Process

A wide clinical and public engagement exercise was undertaken as part of development in 2011 where the Breast Cancer QPIs, along with accompanying draft minimum core dataset and measurability specifications, were made available on the Scottish Government website.

During the engagement period clinical and management colleagues from across NHSScotland, patients affected by breast cancer and the wider public were given the opportunity to influence the development of Breast Cancer QPIs. Several different methods of engagement were utilised:

Professional groups, health service staff, voluntary organisations and individuals:

- Wide circulation of the draft documentation for comment and feedback.

Patient representative groups:

- Organised patient focus group sessions were held in conjunction with Cancer Support Scotland (Tak Tent) and Breakthrough Breast Cancer.

Following the engagement period all comments and responses received were reviewed by the Breast Cancer QPI Development Group and used to produce and refine the final indicators.

Breast Cancer QPI Development Group Membership (2012)

Name	Designation	Cancer Network/Base
Jennifer Armstrong	Senior Medical Officer (CHAIR)	Scottish Government
Ruth Adamson	Consultant Pathologist (Clinical Lead – Subgroup 1)	WoSCAN (Crosshouse Hospital, Kilmarnock)
Matthew Barber	Consultant Surgeon (Clinical Lead – Subgroup 2)	SCAN (Western General Hospital, Edinburgh)
Sophie Barrett	Consultant Oncologist	WoSCAN (Beatson West of Scotland Cancer Centre)
Carolyn Bedi	Consultant Oncologist	SCAN (Western General Hospital, Edinburgh)
Emma Bennett	Lead Breast Care Nurse Specialist	SCAN (Western General Hospital, Edinburgh)
Janet Clarke	Consultant Radiographer	SCAN (Western General Hospital, Edinburgh)
John Dewar	Consultant Oncologist (Clinical Lead – Subgroup 3)	NOSCAN (Ninewells Hospital, Dundee)
Heather Deans	Consultant Radiologist	NOSCAN (Aberdeen Royal Infirmary, Aberdeen)
Hilary Dobson	Clinical Director (Clinical Lead – Subgroup 1)	WoSCAN (WoS Breast Screening Service, Glasgow)
Christine Dodds	Senior Cancer Audit Facilitator	SCAN (Western General Hospital, Edinburgh)
Clare Echlin	Acting Head of Standards Development	Healthcare Improvement Scotland
Steven Heys	Consultant Breast Surgeon	NOSCAN (Aberdeen Royal Infirmary, Aberdeen)
Alison Lannigan	Consultant Breast Surgeon (Clinical Lead – Subgroup 2)	WoSCAN (Wishaw General Hospital, Lanarkshire)
Joseph Loane	Consultant Pathologist	SCAN (Western General Hospital, Edinburgh)
Evelyn Macdonald	Clinical Nurse Specialist	NOSCAN (Raigmore Hospital, Inverness)
Stella MacPherson	Patient Representative	
Carol Marshall	Information Manager	WoSCAN
Andy Maylon	Consultant Plastic Surgeon	WoSCAN (Royal Infirmary, Glasgow)
Pauline McIlroy	Clinical Nurse Specialist	WoSCAN (Beatson West of Scotland Cancer Centre)
Brian Murray	National Cancer Information Coordinator	Information Services Division
Colin Purdie	Consultant Pathologist	NOSCAN (Ninewells Hospital, Dundee)

Name	Designation	Cancer Network/Base
Iona Scott	Project Manager	WoSCAN
Carole Smith	Patient Representative	
Evelyn Thomson	Regional Manager (Cancer)	WoSCAN
Eva Weiler-Mithoff	Consultant Plastic Surgeon	WoSCAN (Royal Infirmary, Glasgow)
Philippa Whitford	Consultant Surgeon	WoSCAN (Crosshouse Hospital, Kilmarnock)

NOSCAN - North of Scotland Cancer Network
SCAN – South East Scotland Cancer Network
WoSCAN – West of Scotland Cancer Network

Appendix 2: Breast Cancer QPI Formal Reviews

Formal review of the Breast Cancer QPIs was undertaken for the first time in December 2015 following reporting of 3 years of national QPI data. . A Formal Review Group was convened, chaired by Dr Hilary Dobson (Chair, National Cancer Quality Steering Group). Membership of this group is outlined below.

Breast Cancer QPI Formal Review Group Membership (2015)

Name	Designation	Cancer Network
Hilary Dobson	Chair, National Cancer Quality Steering Group	WoSCAN
Evelyn Thomson	Regional Manager (Cancer)	WoSCAN
Iona Reid	Clinical Lead Breast Cancer MCN	WoSCAN / NHS Greater Glasgow & Clyde
Glyn Neades	Clinical Lead Breast Cancer MCN	SCAN / NHS Lothian
Douglas Brown	Clinical Lead Breast Cancer MCN	NOSCAN / NHS Tayside
Wilma Jack	Senior Clinical Research Fellow	SCAN / NHS Lothian
Christine Urquhart	Cancer Audit Manager	NOSCAN
Iona Scott	Quality & Service Improvement Manager	WoSCAN
Jen Doherty	National Cancer Quality Programme Co-ordinator	National Cancer Quality Programme

Formal review of the Breast Cancer QPIs has been undertaken in consultation with various other clinical specialties e.g. Oncology and Genetics Services

NOSCAN - North of Scotland Cancer Network
SCAN – South East Scotland Cancer Network
WoSCAN – West of Scotland Cancer Network

2nd Cycle Formal Review

The 2nd cycle of formal review commenced in December 2018. This review was more selective and focussed on ensuring the ongoing clinical relevance of the QPIs. A Formal Review Group was convened, with Mr Seamus Teahan, Consultant Urological Surgeon and Regional Lead Cancer Clinician, WoSCAN was appointed as Clinical Advisor/Chair to the group. Membership of this group is outlined below.

Breast Cancer QPI Formal Review Group Membership – 2nd Cycle (2018)

Name	Designation	Cancer Network/Base
Seamus Teahan (Chair)	Consultant Urological Surgeon and Regional Lead Cancer Clinician	WoSCAN
Dougal Adamson	Consultant Clinical Oncologist	NCA
Abdulla Alhasso	Consultant Clinical Oncologist	WoSCAN

Name	Designation	Cancer Network/Base
Sharon Armstrong	Consultant Medical Oncologist	NCA
Douglas Brown	Clinical Lead Breast Cancer MCN	NCA
Christine Dodds	Senior Audit Facilitator	SCAN
Jen Doherty	National Cancer Quality Programme Co-ordinator	National Cancer Quality Programme
Lisa Fowler	Cancer Support Manager	NCA
Graeme Lumsden	Consultant Clinical Oncologist	WoSCAN
Kate MacDonald	Regional Manager (Cancer)	SCAN
Husam Marashi	Consultant Clinical Oncologist	WoSCAN
Trevor McGoldrick	Consultant Medical Oncologist	NCA
James Mansell	Clinical Lead Breast Cancer MCN	WoSCAN
Lorraine Stirling	Project Officer	National Cancer Quality Programme
Christine Urquhart	Cancer Audit Manager	NCA
Frances Yuille	Consultant Clinical Oncologist	SCAN

Formal review of the Breast Cancer QPIs has been undertaken in consultation with various other clinical specialties e.g. Oncology and Genetics Services

3rd Cycle Formal Review

The 3rd cycle of formal review commenced in October 2021. Mr Seamus Teahan, Consultant Urological Surgeon and Regional Lead Cancer Clinician, WoSCAN was appointed as Clinical Advisor/Chair to the group. Membership of this group is outlined below:

Breast Cancer QPI Formal Review Group Membership – 3rd Cycle (2022)

Name	Designation	Cancer Network/Base
Seamus Teahan (Chair)	Consultant Urological Surgeon and Regional Lead Cancer Clinician	WoSCAN
Matthew Barber	Clinical Lead	SCAN
Carolyn Bedi	Consultant Clinical Oncologist	SCAN
David Cameron	Quality Programme Coordinator	NCA
Jen Doherty	National Cancer Quality Programme Co-ordinator	National
Judith Fraser	Consultant Medical Oncologist	WoSCAN

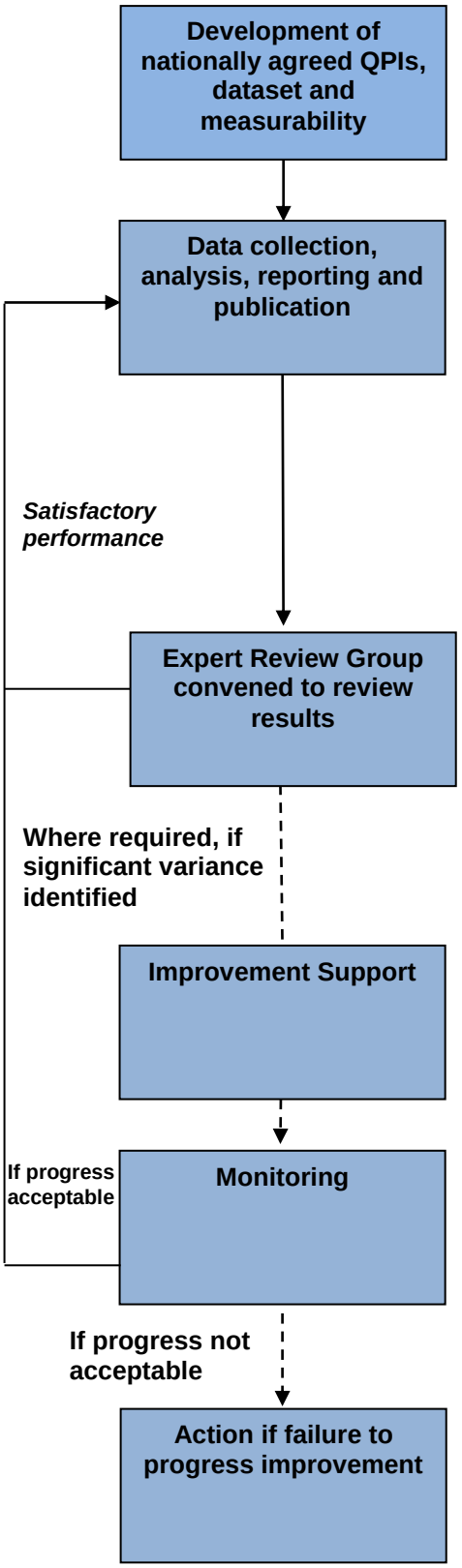
Name	Designation	Cancer Network/Base
Peter Hall	Consultant Medical Oncologist	SCAN
James Mansell	Clinical Lead	WoSCAN
Husam Marashi	Consultant Clinical Oncologist	WoSCAN
Bryan McKellar	Interim Regional Manager (Cancer)	NCA
Julie McMahon	Information Analyst	WoSCAN
Noelle O'Rourke	Lead for the Scottish Cancer Network	National
Elizabeth Smyth	Consultant Breast Surgeon	NCA
Rosemary Stevens	Consultant Clinical Oncologist	WoSCAN
Lorraine Stirling	Project Officer, National Cancer Quality Programme	National
Evelyn Thomson	Regional Manager (Cancer)	WoSCAN
Frances Yuille	Consultant Clinical Oncologist	SCAN

Formal review of the Breast Cancer QPIs has been undertaken in consultation with various other clinical specialties as required.

NCA - North Cancer Alliance
SCAN – South East Scotland Cancer Network
WoSCAN – West of Scotland Cancer Network

Appendix 3: 3-Yearly National Governance Process and Improvement Framework for Cancer Care

This process is underpinned by the annual regional reporting and governance framework (see appendix 4).



1. National QPI Development Stage

- QPIs developed by QPI development groups, which include representation from Regional Cancer Networks, Healthcare Improvement Scotland, PHS, patient representatives and the Cancer Coalition.

2. Data Analysis Stage:

- NHS Boards and Regional Cancer Advisory Groups (RCAGs)* collect data and analyse on yearly basis using nationally agreed measurability criteria and produce action plans to address areas of variance, see appendix 4.
- Submit yearly reports to PHS for collation and publication every 3 years.
- National comparative report approved by NHS Boards and RCAGs.
- PHS produce comparative, publicly available, national report consisting of trend analysis of 3 years data and survival analysis.

3. Expert Review Group Stage (for 3 tumour types per year):

- Expert group, hosted by Healthcare Improvement Scotland, review comparative national results.
- Write to RCAGs highlighting areas of good practice and variances.
- Where required NHS Boards requested to submit improvement plans for any outstanding unresolved issues with timescales for improvement to expert group.
- Improvement plans ratified by expert group and National Cancer Recovery Group.

4. Improvement Support Stage:

- Where required Healthcare Improvement Scotland provide expertise on improvement methodologies and support.

5. Monitoring Stage:

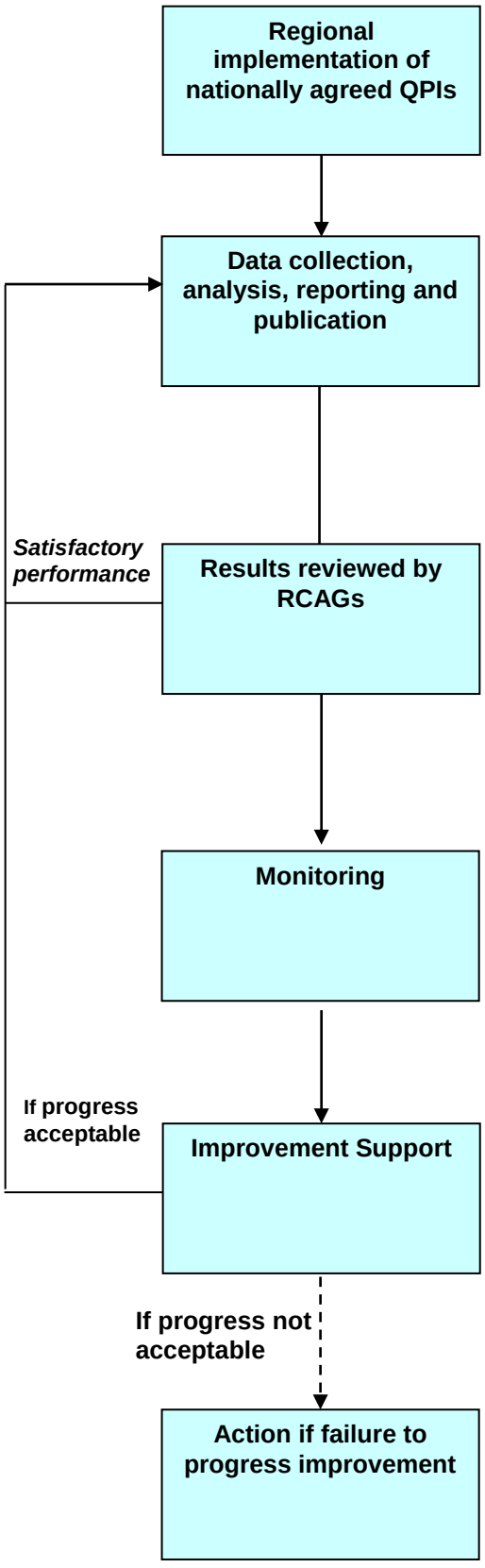
- RCAGs work with Boards to progress outstanding actions, monitor improvement plans and submit progress report to Healthcare Improvement Scotland.
- Healthcare Improvement Scotland report to National Cancer Recovery Group as to whether progress is acceptable**.**

6. Escalation Stage:

- If progress not acceptable, Healthcare Improvement Scotland will visit the service concerned and work with the RCAG and Board to address issues.
- Report submitted to National Cancer Recovery Group and escalation with a proposal to take forward to Scottish Government Health Department.

**The Regional Cancer Planning Group (South and East of Scotland) and the North Cancer Clinical Leadership Group (North Cancer Alliance) are equivalent to the Regional Cancer Advisory Group (RCAG) in the West of Scotland.*

Appendix 4: Regional Annual Governance Process and Improvement Framework for Cancer Care



1. Regional QPI Implementation Stage:

- National cancer QPIs and associated national minimum core dataset and measurability specifications, developed by QPI development groups.
- Regional implementation of nationally agreed dataset to enable reporting of QPIs.

2. Data Analysis Stage:

- NHS Boards collect data and data is analysed on a yearly basis using nationally agreed measurability criteria at local/ regional level.
- Data/results validated by Boards and annual regional comparative report produced by Regional Networks.
- Areas of best practice and variance across the region highlighted.
- Yearly regional reports submitted to PHS for collation and presentation in national report every 3 years.

3. Regional Performance Review Stage:

- RCAGs* review regional comparative report.
- Regional or local NHS Board action plans to address areas of variance developed.
- Appropriate leads identified to progress each action.
- Action plans ratified by RCAGs.

4. Monitoring Stage:

- Where required, NHS Boards monitor progress with action plans and submit progress reports to RCAGs.
- RCAGs review and monitor regional improvement.

5. Improvement Support Stage:

- Where required Healthcare Improvement Scotland maybe requested to provide expertise to NHS Boards/RCAGs on improvement methodologies and support.

6. Escalation Stage:

- If progress not acceptable, RCAGs will escalate any issues to relevant Board Chief Executives. If progress remains unacceptable RCAGs will escalate any relevant issues to Healthcare Improvement Scotland.

**The Regional Cancer Planning Group (South and East of Scotland) and the North Cancer Clinical Leadership Group (North Cancer Alliance) are equivalent to the Regional Cancer Advisory Group (RCAG) in the West of Scotland.*

Appendix 5: Glossary of Terms

Adjuvant therapy / treatment	Treatment given in addition to the primary therapy, or a secondary remedy assisting the action of another.
Age-standardised	Age-standardisation facilitates comparisons across geographical areas by controlling for differences in the age structure of local populations.
Axilla	The armpit.
Axillary clearance	Operation to remove all the lymph glands from under the arm.
Biopsy	Removal of a sample of tissue from the body to assist in diagnosis of a disease.
Breast	Glandular organ located on the chest. The breast is made up of connective tissue, fat, and breast tissue that contains the glands that can make milk. Also called mammary gland.
Cause-specific survival	A method of estimating net survival. Only deaths attributable to the cancer of diagnosis are counted as deaths, giving the probability of survival in the absence of other causes of death.
Chemotherapy	The use of drugs that kill cancer cells, or prevent or slow their growth.
Co-morbidity	The condition of having two or more diseases at the same time.
Conservation surgery	An operation to remove the breast cancer but not the breast itself. Types of breast-conserving surgery include lumpectomy (removal of the lump), quadrantectomy (removal of one quarter, or quadrant, of the breast), and segmental mastectomy (removal of the cancer as well as some of the breast tissue around the tumour and the lining over the chest muscles below the tumour).
Core biopsy	Removal (using a needle) of a piece of a breast tissue for diagnosis.
Day case	Day surgery is the admission of selected patients to hospital for a planned surgical procedure, returning home on the same day.
Deep Inspiratory Breath Hold (DIBH) Radiotherapy	A radiation therapy technique where patients take a deep breath during treatment, and hold this breath for up to 30 seconds while the radiation is delivered. This action inflates the lungs and pushes your heart away from the chest wall and away from the area being treated.
Definitive procedure/ treatment	The treatment plan for a disease or disorder that has been chosen as the best one for a patient after all other choices have been considered.
Deprivation	Currently, the Scottish Index of Multiple Deprivation (SIMD) is used to estimate an individual's level of affluence. This is based on seven domains (income, employment, education, housing, health, crime, and geographical access) combined into an overall index.
Ductal Carcinoma In Situ (DCIS)	When the breast cancer cells are completely contained within the ducts (the channels in the breast that carry milk to the nipple) and have not spread into the surrounding breast tissue.
Excision Margins	The edge or border of the tissue removed in surgery.
Fine Needle Aspiration (FNA)	The withdrawal of fluid, containing cells, from the body by means of suction using a fine needle. The samples obtained are used to provide information on the cells of tumours or cysts.
Fluorescence In Situ	This is a lab test that measures the amount of a certain gene

Hybridization (FISH)	in cells. It can be used to see if an invasive cancer has too many HER2 genes.
Genetic	Inherited; having to do with information that is passed from parents to offspring through genes in sperm and egg cells.
Genomic Testing	A type of medical test that identifies changes in chromosomes, genes, or proteins. The results of a genetic test can confirm or rule out a suspected genetic condition or help determine a person's chance of developing or passing on a genetic disorder.
Histological / Histopathogical	The study of the structure, composition and function of tissues under the microscope, and their abnormalities.
Hormonal therapy	Treating a disease with hormones, or by blocking the action of hormones.
Human Epidermal growth factor Receptor (HER) 2	One of many receptors on the surface of certain cells which can protect the cell from damage or stimulate it to grow. This is the target, present on some breast cancer cells, which is hit by Herceptin (trastuzumab).
Immediate Breast Reconstruction	Breast reconstruction carried out at the same time as the operation to remove the breast.
Immunohistochemistry (IHC)	A technique used to identify specific molecules in different kinds of tissue. The tissue is treated with antibodies that bind the specific molecule. These are made visible under a microscope by using a colour reaction, a radioisotope, colloidal gold, or a fluorescent dye. Immunohistochemistry is used to help diagnose diseases, such as cancer, and to detect the presence of micro organisms. It is also used in basic research to understand how cells grow and differentiate (become more specialized).
In situ	A cancer that is 'in place', is non-invasive, has not spread beyond the initial location.
Invasive	Cancer that can or has spread from its histological original site.
Lesion	Tumour, mass, or other abnormality.
Lobular Carcinoma In Situ (LCIS)	A condition in which abnormal cells are found in the lobules of the breast. Lobular carcinoma in situ seldom becomes invasive cancer; however, having it in one breast increases the risk of developing breast cancer in either breast.
Lymph Nodes	Small bean shaped organs located along the lymphatic system. Nodes filter bacteria or cancer cells that might travel through the lymphatic system.
Malignant/Malignancy	Cancerous. Malignant cells can invade and destroy nearby tissue and spread to other parts of the body.
Mastectomy	Surgical removal of a breast.
Metastases/Metastatic	Spread of cancer away from the primary site to somewhere else via the bloodstream or the lymphatic system.
Morbidity	How much ill health a particular condition causes.
Morphology / Morphologically	The science of the form and structure of organisms (plants, animals, and other forms of life).
Multidisciplinary team meeting	A meeting which is held on a regular basis, which is made up of participants from various disciplines appropriate to the disease area, where diagnosis, management, and appropriate treatment of patients is discussed and decided.
Multifocal disease	Occurring in more than one location in the breast.
Neoadjuvant therapy / treatment	Drug treatment which is given before the treatment of a primary tumour with the aim of improving the results of

	surgery or chemotherapy and preventing the development of metastases.
Observed survival	A method of estimating the actual survival prospects of patients following diagnosis. Includes deaths from all causes and does not adjust for underlying differences in patient populations.
Pathological	The study of disease processes with the aim of understanding their nature and causes. This is achieved by observing samples of fluid and tissues obtained from the living patient by various methods, or at post mortem.
Prognostic indicators	Factors, such as staging, tumour type or deprivation that may influence treatment effectiveness and outcomes.
Psychological	Having to do with how the mind works and how thoughts and feelings affect behaviour.
Radiotherapy	The use of radiation, usually X-rays or gamma rays, to kill tumour cells.
Randomised Clinical Trials	A study to test a specific drug or other treatment in which people are randomly assigned to two (or more) groups: one (the experimental group) receiving the treatment that is being tested, and the other (the comparison or control group) receiving an alternative treatment, a placebo (dummy treatment) or no treatment. The two groups are followed up to compare differences in outcomes to see how effective the experimental treatment was. (Through randomisation, the groups should be similar in all aspects apart from the treatment they receive during the study.)
Recurrence	When new cancer cells are detected at the site of the original tumour, following treatment.
Relative survival	A method of estimating net survival. The ratio of observed survival divided by expected survival, where the expected survival is based on the life expectancy of the population (from lifetables). This can be thought of as a measure of the survival expectation after developing cancer, or the probability of survival from cancer in the absence of other causes of death.
Sentinel node biopsy	The lymph node near a body organ or part of an organ which is thought to be the first reached by tissue fluid draining from that organ, this lymph node may be the one most likely to contain cancer cells if the cancer has begun to spread.
Staging	Process of describing to what degree cancer has spread from its original site to another part of the body. Staging involves clinical, surgical and pathology assessments.
Surgery/Surgically	Surgical removal of the tumour/lesion.
Surgical margins	See *Excision Margins*
Survival	The percentage of people in a study or treatment group who are alive for a certain period of time after they were diagnosed with or treated for a disease, such as cancer.
Trastuzumab	A manufactured antibody (a small part of our immune defences) which is attracted to the HER2 receptor on some breast cancers. It signals to the immune system to destroy these cells.
Tumour/s	A lump or mass of cells which can be either benign (not cancerous) or malignant.
Ultrasound	An imaging test that bounces sound waves off tissues and converts the echoes into pictures.

Wide excision	The removal of the breast lump together with some surrounding tissue.