TE AHO O TE KAHU CANCER CONTROL AGENCY

Te Rēhita Mate Ūtaetae Breast Cancer Foundation National Register

New Zealand Government

BREAST CANCER QUALITY PERFORMANCE INDICATOR DESCRIPTIONS

2025

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Te Rēhita Mate Ūtaetae Breast Cancer Foundation National Register

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CONTENTS

Background

What is the quality performance indicator programme?

Across Aotearoa New Zealand, cancer services deliver high-quality care for most people, most of the time. However, this high-quality care is not delivered consistently across the country and to all people living in Aotearoa equally.

This quality performance indicator (QPI) programme aims to provide information to support the improvement of the quality of cancer diagnosis and treatment services and, therefore, the achievement of better outcomes for people diagnosed with cancer across Aotearoa.

It does so by developing, calculating, and reporting on cancer-specific QPIs. The QPIs are chosen by clinical experts and key stakeholders. They can be either measurable now or 'aspirational' (that is, the agency hopes to be able to measure and report on them in the future).

Quality performance indicators must:

- address an area of clinical importance that could significantly impact on the quality and outcome of care
- support our goal of achieving Māori health gain and equity
- be measurable (with timely, complete, robust, national data)
- be evidence-based and appropriate for driving quality improvement.

We report QPIs by districts (previously known as district health boards).

The intention of the QPI reports is to highlight variation and to identify where there might need to be further investigation and/or quality improvement action. The programme also aims to highlight where we could make data collection or reporting improvements to support future quality improvement activity.

How were the breast cancer quality performance indicators selected?

The initial breast cancer QPI selection process, led by the Breast Cancer Foundation New Zealand (BCFNZ) was started in 2020. The BCFNZ held a sector-wide discussion at a well-attended workshop in November 2020, during the *Breast cancer inSIGhts* 2020 conference (SIG stands for 'special interest group').

In October 2021, responsibility for the development of the breast cancer QPIs transferred from BCFNZ to Te Aho o Te Kahu, Cancer Control Agency (Te Aho o Te Kahu). Te Aho o Te Kahu formed the national breast cancer quality performance indicator working group (the working group). The working group had its first meeting in December

2021 and has met throughout 2022 to draft and agree the descriptions contained in this document.

The QPIs in this document have undergone a rigorous selection and review process, starting with a comprehensive literature review that informed the long list of potential indicators and standards. The working group reviewed the long list to assess their clinical relevance in Aotearoa and their current and potential measurability. It also considered the work undertaken in developing the other cancer-specific QPIs, such as those Te Aho o Te Kahu has reported on for bowel, lung, and prostate cancers.

In September 2021, Te Aho o Te Kahu released the draft breast cancer QPI descriptions for public consultation. We received feedback from approximately 30 stakeholders across a range of sectors, including clinicians, non-governmental organisations, people with lived experience and peak bodies (eg, colleges and special interest groups). We analysed the information from the public consultation and presented the feedback to the working group to finalise the QPIs.

The descriptions were finalised in December 2022 and this document provides the rationale, evidence, and other information for 26 breast cancer QPIs selected.

Next steps

The next step is to select 10 QPIs to calculate and report in the *Breast Cancer Quality Improvement Monitoring Report.* This will be calculated using the BCFNZ's national registry, Te Rēhita mate Ūtaetae (Te Rēhita), which collects national breast cancer patient data for the purpose of facilitating high-quality research, for clinical decision making, audit, and health planning with a view to reduce the burden of breast cancer in New Zealand and improve equity, outcomes, and standard of care.

We will share the draft monitoring report with districts and other key health sector stakeholders to seek their feedback for quality improvement recommendations and undertake quality assurance of the data.

Once the review phase is complete, we will publish the *Breast Cancer Quality Performance Indicator Monitoring Report* on our website and share it with our stakeholders. Alongside the monitoring report, we will also publish the technical specifications, which will describe the calculation method for the QPIs reported in the monitoring report.

National data for indicators

As mentioned above, the national data source referred to in this document is Te Rēhita.

More information on other data sources in the QPI programme can be found on our website: **teaho.govt.nz**

Glossary

Term	Description
Adjuvant chemotherapy	Chemotherapy after surgery
Advanced breast cancer	Cancer that either has spread to other areas of the body (stage IV) or cannot be surgically removed
Biopsy	Removal of tissue to be looked at under a microscope to help in the diagnosis of a disease
Breast Cancer Foundation New Zealand (BCFNZ)	Non-government organisation focused on breast cancer education, awareness raising and advocating for breast cancer people
Breast-conserving surgery (BCS)	An operation that aims to remove breast cancer while avoiding a mastectomy (removal of the breast)
BreastScreen Aotearoa (BSA)	New Zealand's free breast screening programme for females aged 45–69; run by the National Screening Unit within Health New Zealand – Te Whatu Ora
Carcinoma	The medical term for cancer
Cardiac sparing radiation therapy	Therapy that seeks to keep the heart out of treated volumes (by use of prone position or specific breathing techniques, such as deep inspiration breath hold)
Chemotherapy	Treatment aimed at destroying cancer cells using anti-cancer drugs
Computed tomography (CT)	A form of tomography in which a computer controls the motion of the X-ray source and detectors, processes the data and produces the image
Cyclin-dependent kinase (CDK) 4/6 inhibitor	A class of drugs that target particular enzymes to interfere with cell cycle progression, in treating certain types of metastatic breast cancer
De novo metastatic breast cancer	Distant metastases at diagnosis or within 4 months of primary diagnosis is considered de novo metastatic breast cancer; (metastatic disease developed more than 4 months after a primary diagnosis is considered recurrent metastatic breast cancer)
Deep inspiration breath hold	A technique whereby people take a deep breath during radiation treatment and hold it while the radiation is delivered; this takes advantage of a more favourable position of the heart to minimise heart doses over a course of radiation therapy
Delayed reconstruction	Breast reconstruction that occurs sometime after initial mastectomy rather than at the same time as mastectomy (immediate reconstruction).

Term	Description
Diagnosis	The process of identifying a disease, such as cancer, from its signs and symptoms and investigations
Disease-free survival	The length of time after diagnosis and treatment of a primary cancer that the patient survives without any recurrence of that cancer
Ductal carcinoma in situ (DCIS)	The presence of abnormal cells inside a breast milk duct that look like cancer but have not yet invaded through the wall of the milk duct or spread elsewhere
Early breast cancer	Invasive breast cancer contained within the breast that may or may not have spread to nearby lymph nodes and has not spread to other parts of the body. For the purposes of these breast cancer QPIs, this is stage I–III
Early Breast Cancer Trialists' Collaborative Group (EBCTCG)	Established in 1983 to bring together and analyse evidence of all randomised trials of the treatment of breast cancer
Fraction prescription	The amount of radiation administered and the number of doses (fractions) to a given site
Grade of cancer	A description of a tumour based on how abnormal the cancer cells and tissue look under a microscope and how quickly the cancer cells are dividing. Grade is an important prognostic indicator and helps determine appropriate treatment
Human epidermal growth factor receptor 2 (HER2) receptor	A protein that may be overexpressed by breast cancer cells taken out during a biopsy or surgery. HER2-positive (overexpressing) breast cancer tends to be more aggressive than some of the other sub-types in the absence of targeted treatment. HER2 receptors can be targeted with antibodies; for example, trastuzumab. Knowing if the breast cancer is HER2-positive or negative is very important in deciding appropriate drug treatment options.
Histology	The study of tissues and cells under a microscope
Immediate reconstruction	Breast reconstruction completed at the same time as mastectomy
Invasive breast cancer	Breast cancer that has spread into surrounding breast tissue, and has the potential to spread elsewhere, as distinct from ductal carcinoma in situ
Local recurrence	Recurrence in the same breast or in the chest wall on the same side as the original cancer
Locoregional failure (LRF)	Recurrent or persistent disease, restricted to the same breast or in the chest wall on the same side as the original cancer or to regional nodes on the same side

Term	Description
Lymph nodes	Glands found in clusters throughout the lymphatic system. They act as a form of filter of tissue fluid or lymph, which drains to regional nodes via tiny channels called lymphatics. These are one of the first places a cancer may spread.
Metastasis	The spread of cancer from a primary site (place where it started) to other places in the body via the bloodstream or the lymphatic system
Metastatic breast cancer (MBC)	Breast cancer that has spread beyond the breast and regional lymph nodes to other areas of the body; also called stage IV breast cancer
Morbidity	The extent of ill-health a particular condition causes
Mortality	The death rate, which reflects the number of deaths per unit of population in any specific region, age group, disease, or other classification, usually expressed as deaths per 1000, 10,000 or 100,000
Multidisciplinary meeting (MDM)	A treatment-planning approach that includes several doctors and other health care professionals who are experts in different specialties (disciplines)
Neoadjuvant chemotherapy	Chemotherapy before surgery
New Zealand Cancer Registry (NZCR)	A population-based register of all primary malignant diseases diagnosed in New Zealand, excluding squamous and basal cell skin cancers
Oestrogen receptor (ER), progesterone receptor (PR) receptors	Certain proteins expressed by breast cancer cells taken out during a biopsy or surgery. When the hormones oestrogen and progesterone attach to these receptors, they stimulate the cancer to grow. Cancers are called hormone receptor-positive or hormone receptor-negative based on the extent to which they have these receptors. Knowing the receptor status is very important in deciding appropriate drug treatment options
Positron emission tomography/computed tomography (PET CT)	A specialised imaging technique that demonstrates uptake of tracer in areas of high cell metabolism and can help differentiate between benign and malignant masses. It is most frequently used to help stage breast cancer by demonstrating or excluding distant metastases
Postmastectomy radiotherapy (PMRT)	Radiation therapy as an adjuvant treatment after mastectomy to help prevent locoregional recurrence and increase survival
Primary tumour	The mass of tumour cells at the original site of the cancer
Prognosis	An assessment of the expected future course and outcome of a patient with cancer

Term	Description
Radiation therapy	Treatment using radiation (eg, high-energy X-rays) to destroy cancer cells
Receptors	Proteins in or on cells that can attach to certain substances in the blood that are commonly found in breast cancer
Recurrence	New cancer cells, at the site of original tumour or elsewhere in the body, detected following treatment
Relative survival	A calculation made by dividing the overall survival after a breast cancer diagnosis by the survival as observed in a similar population not diagnosed with breast cancer
Stage	A way of describing the size of a cancer and how far it has spread. Staging is important because it helps indicate prognosis, and decide which treatments are required
Stratify	To arrange or classify (for example, in stratifying people into well-defined risk groups)
Tissue	A group or layer of cells that work together to perform a specific function
Triple-negative breast cancer	An aggressive kind of breast cancer that does not express any oestrogen, progesterone or HER2 receptors
Tumour	An abnormal mass of tissue that results when cells divide more than they should or do not die when they should. Tumours may be benign (not cancer) or malignant (cancer)
Tumour, node, metastasis (TNM) system	A global standard to record the anatomical extent or stage of disease. Each cancer is assigned a letter or number to describe the tumour, node, and metastases. T stands for the size of the original (primary) tumour. N stands for nodes (indicates whether the cancer has spread to the nearby lymph nodes). M stands for metastasis

BREAST CANCER QUALITY PERFORMANCE INDICATORS

The table below summarises the set of indicators. The indicator titles in this table are hyperlinked to the detailed descriptions on the following pages.

Indicator title	Indicator description
BrCQI 1: Route to detection	Proportion of people diagnosed with breast cancer by route to detection (BSA-detected, non-BSA image detected, symptomatic)
BrCQI 2: Histological grading	Proportion of people with invasive breast cancer and a histological grade of 3
BrCQI 3: Repeat receptor testing of people with first metastatic relapse	Proportion of people with first metastatic relapse of breast cancer who undergo biopsy and repeat oestrogen receptor (ER), progesterone receptor (PR) and human epidermal growth factor receptor 2 (HER2) testing
BrCQI 4: Appropriate staging investigation	Proportion of people with invasive breast cancer with: A. four or more positive lymph nodes or a tumour size >50 mm who have undergone an appropriate staging investigation B. fewer than 4 positive lymph nodes and a tumour size ≤50 mm who have not undergone an appropriate staging investigation
BrCQI 5: Breast-conserving surgery	Proportion of females with breast cancer (invasive and/or ductal carcinoma in situ (DCIS)) who undergo breast-conserving surgery (BCS)
BrCQI 6: Immediate reconstruction at the time of mastectomy	Proportion of people receiving reconstruction at the same time as mastectomy
BrCQI 7: Delayed reconstruction	Proportion of people referred for consideration of delayed reconstruction who have reconstruction within 12 months of referral
BrCQI 8: Single surgery	Proportion of people undergoing BCS who received an additional (breast) operation or operations to ensure adequate excision of the primary tumour
BrCQI 9: Adequate margins of excision of invasive and in situ breast cancer	Proportion of females undergoing BCS who have complete excision of their tumour, with a minimum circumferential margin of 1 mm for invasive disease and 2 mm for DCIS (with or without invasive component)

Indicator title	Indicator description
BrCQI 10: Metastatic breast cancer seen by medical oncologist	Proportion of people with metastatic breast cancer (MBC) seen by a medical oncologist
BrCQI 11: Chemotherapy with or without trastuzumab	Proportion of people: A. with triple-negative stage I–III breast cancer, a tumour >1 cm or node-positive who received chemotherapy B. with HER2-positive stage I–III breast cancer, with a tumour >1 cm or node-positive who received chemotherapy and trastuzumab
BrCQI 12: Endocrine therapy for metastatic breast cancer	Proportion of people with hormone receptor-positive, HER2-negative MBC treated with endocrine therapy with or without cyclin-dependent kinase (CDK) 4/6 inhibitor in first line (as opposed to chemotherapy)
BrCQI 13: Neoadjuvant chemotherapy	Proportion of people with triple-negative or HER2-positive stage II or III breast cancer who receive neoadjuvant chemotherapy
BrCQI 14: Adjuvant endocrine therapy adherence	Proportion of females with endocrine-sensitive stage I–III breast cancer who complete 2 years of endocrine therapy (after first script dispensed). Measure: proportion still being dispensed endocrine therapy at: A. 6 months B. 12 months C. 24 months
BrCQI 15: Adjuvant radiation therapy following breast-conserving surgery	Proportion of people receiving adjuvant radiation therapy to the breast after BCS for invasive breast cancer
BrCQI 16: Adjuvant radiation therapy following mastectomy	Proportion of post-mastectomy people receiving adjuvant radiation therapy
BrCQI 17: Use of cardiac sparing radiation therapy	Proportion of people with left-sided breast cancer or DCIS receiving adjuvant radiation therapy treatment with use of a cardiac sparing radiation therapy treatment technique
BrCQI 18: Use of five-fraction breast prescription	Proportion of adjuvant breast and chest wall only people receiving a five-fraction prescription
BrCQI 19: Overall and relative survival	A. Overall survival at 5 and 10 years from diagnosis B. Relative survival at 5 and 10 years from diagnosis

Indicator title	Indicator description
BrCQI 20: Metastatic breast cancer survival	A. Median overall survival from metastatic diagnosis B. Overall survival at 1, 2, 5 and 10 years from metastatic diagnosis All people and by subgroup: C. hormone-receptor-positive, HER-negative subtype D. hormone-receptor-negative, HER2-negative (triple-negative) subtype E. hormone-receptor-positive, HER2-positive subtype F. hormone-receptor-negative, HER2-positive subtype
BrCQI 21: Multidisciplinary discussion for early and metastatic breast cancer	Proportion of people discussed at a multidisciplinary meeting (MDM) prior to definitive treatment of: A. stage I–III breast cancer B. stage IV breast cancer (MBC)
BrCQI 22: Completeness of breast data within the New Zealand Cancer Registry	Proportion of people with breast cancer who have hormone receptor status, HER2 status, histological grade and tumour, node, metastasis (TNM) staging recorded in the NZCR
BrCQI 23: Timely diagnosis	Proportion of people for whom time from referral to diagnosis of breast cancer is within 28 days.
BrCQI 24: Time to surgery	Proportion of people treated with surgery within: A. six weeks of decision to treat[1] with breast surgery B. eight weeks of decision to treat with breast surgery and undergoing immediate reconstruction
BrCQI 25: Adjuvant chemotherapy	%age of people treated with adjuvant chemotherapy, starting within 6 weeks of surgery
BrCQI 26: Access to radiation therapy	Proportion of people who start adjuvant radiation therapy within: A. eight weeks of surgery B. six weeks of completing adjuvant chemotherapy

[1] Decision to treat - the date the patient agreed to the treatment plan and was placed on the surgical waitlist.

BrCQI 1.
Route to detection

Investigation, diagnosis and staging

Indicator description		Route to detection (BSA-detected vs non-BSA image detected vs symptomatic).
Rationale and evidence		Breast screening is associated with reduced breast cancer mortality and detection of breast cancer at an earlier stage (Duffy et al 2020). In Aotearoa New Zealand, breast screening is offered biannually for women between the ages of 45 and 69 years. Therefore, most breast cancers in females between the ages of 45 to 69 years, should be detected through the BSA programme rather than other routes. For all breast cancer pathways to detection, there should not be significant differences across geographic, socioeconomic and ethnic groupings within Aotearoa New Zealand.
Equity/Māori health gain		(Seneviratne et al 2016) concluded that providing equitable high-quality primary care and increasing mammographic screening coverage could be possible avenues to reduce late-stage cancer at diagnosis and reduce ethnic, socioeconomic, and geographical disparities in stage of breast cancer at diagnosis in Aotearoa. Variations in survival for Māori and Pacific females are only found in females with non-screen-detected breast cancer. No differences in stage at diagnosis or survival outcomes were seen for Māori or Pacific females diagnosed via BSA.
Specifications	**Numerator**	Number of people diagnosed by route to detection (BSA-detected vs non-BSA image detected vs symptomatic).
	Denominator	All people newly diagnosed with breast cancer.
Notes		
Measurability		Measurable.

BrCQI 2. Histological grading

Investigation, diagnosis and staging

Indicator description		Proportion of people with invasive breast cancer and a histological grade of 3.
Rationale and evidence		Nottingham histological grade (1, 2 or 3) of invasive breast cancer (>1 mm in maximum diameter) is one of the most powerful predictors of prognosis in early-stage disease, similar to lymph node status (Elston & Ellis 1991; Rakha et al 2008; Rakha et al 2010). This is particularly true for ER-positive disease, as HER2 over-expressing and triple-negative breast cancers are more likely to be grade 3. In the absence of multigene tests, high grade is currently one of the main indicators for use of adjuvant chemotherapy for hormone-receptor-positive breast cancers.
Equity/Māori health gain		According to the BCFNZ's recent publication using data from Te Rēhita, Māori and Pacific females with breast cancer are more likely to present with grade 2 and 3 invasive carcinoma (77.7% and 82.8% respectively) compared with Asian females (76.9%) and European females (75.9%) (Breast Cancer Foundation New Zealand 2022). That report also highlighted the regional (Auckland, Waikato, Wellington and Christchurch) range of grade 3 breast cancers (20.5%–40.1%); the lowest proportions were evident in those regions with highest Māori registrations. Māori females may therefore be at a greater risk of not being offered appropriate chemotherapy. This is likely to also apply to Pacific females.
Specifications	**Numerator**	Number of people with invasive breast carcinomas and a histological grade of 3.
	Denominator	All people with invasive breast carcinomas.
Notes		The BCFNZ's Te Rēhita data shows there is variation between regions.
Measurability		Measurable using Te Rēhita.

BrCQI 3.
Repeat receptor testing of people with first metastatic relapse

Investigation, diagnosis and staging

Indicator description		Proportion of people with first metastatic relapse of breast cancer who undergo biopsy and repeat oestrogen receptor (ER), progesterone receptor (PR) and human epidermal growth factor receptor 2 (HER2) testing.
Rationale and evidence		Changes in receptor testing results can occur between the primary invasive breast carcinoma and subsequent metastases, due, for example, to changes in disease biology (Schrijver et al 2018). Positive and negative receptor expression is used to guide decisions on the use of systemic therapy (Van Poznak et al 2015).
Equity/Māori health gain		According to the BCFNZ's recent data publication, making use of data from Te Rēhita, Māori females have lower rates of 5-year and 10-year disease-free survival than European or Asian females, and Pacific females have even lower rates than Māori females (Breast Cancer Foundation New Zealand 2022). Lower disease-free survival results, in part, from more metastatic disease. If Māori and Pacific females with metastatic disease had cancer treatment more specifically targeted to their current breast cancer biology in accordance with international guidelines (Cardoso et al 2020), they would likely experience better outcomes.
Specifications	**Numerator**	Number of people with first metastatic relapse who have undergone biopsy with receptor testing performed.
	Denominator	All people with first metastatic relapse.
Notes		Testing can be undertaken on both histological and cytological specimens with appropriately validated assays.
Measurability		Aspirational.

BrCQI 4. Appropriate staging investigation

Investigation, diagnosis and staging

Indicator description	Proportion of people with invasive breast cancer with: A. four or more positive lymph nodes or a tumour size >50 mm who have undergone an appropriate staging investigation B. fewer than four positive lymph nodes and a tumour size ≤50 mm who have not undergone an appropriate staging investigation.
Rationale and evidence	All females with breast cancer should be staged clinically according to the current TNM staging system for carcinoma of the breast, to define the anatomic extent of the disease and facilitate the planning of subsequent management (Edge & Compton 2010). Females with stage III breast cancer or with clinical signs and symptoms or laboratory values indicating the possible presence of metastases should routinely undergo further specialist staging tests if this may affect treatment decisions (Ministry of Health 2009). Routine use of specialised staging investigations for females with stage I–III is not indicated. Currently, clinical studies show that the percentage of females with stage I and II disease with asymptomatic metastases detected by staging tests is very low, and the risk of false positive results is much higher. Staging tests are therefore harmful in this setting (Del Turco et al 2010), resulting in unnecessary anxiety and further investigations at cost to both the patient and the health care system.
Equity/Māori health gain	As more Māori and Pacific females have advanced breast cancer at presentation, appropriate use of specialist staging investigations is more likely to result in changes to treatment decisions for these females (Breast Cancer Foundation New Zealand 2022).

Specifications	**Numerator**	Number of people with invasive breast cancer with: A. four or more positive lymph nodes or a tumour size >50 mm who have undergone computed tomography (CT) of the chest, abdomen, and pelvis, +/- bone scan; or contrast enhanced positron emission tomography/computed tomography (PET CT) scan. B. a tumour size ≤50 mm and fewer than four positive lymph nodes who have not had CT of the chest, abdomen, and pelvis; PET CT; or bone scan.
	Denominator	All people with invasive breast cancer with: A. four or more positive lymph nodes or tumour size >50 mm. B. a tumour size ≤50 mm and fewer than four positive lymph nodes.
Notes		
Measurability		Aspirational.

BrCQI 5.
Breast-conserving surgery

Treatment – surgery

Indicator description	Proportion of females with breast cancer (invasive and/or ductal carcinoma in situ (DCIS)) whose final breast operation is breast conserving surgery (BCS).
Rationale and evidence	While BCS is not always possible for or chosen by some females, for those for whom it is an option, there are advantages; however, we acknowledge that individual females may have an experience that differs from the body of evidence currently available. BCS is less invasive and less major surgery than mastectomy (especially when the mastectomy is followed by reconstruction, either at the time or subsequently). It is associated with less morbidity and quicker recovery. BCS operating times are shorter and complication rates lower than with mastectomy, unless more complex oncoplastic procedures are involved. Even where the oncoplastic procedures are more complicated, these are generally quicker and easier than a mastectomy and immediate reconstruction (Stein et al 2020). There is evidence that females who have had BSC have better self-reported body image and psychosocial scores compared with those who had total mastectomy (Al-Ghazal et al 2000; Hanson et al 2022; Kim et al 2015; Ng et al 2019). However, improved psychosocial outcomes with BCS compared to mastectomy and reconstruction (at 10 years) did not correlate with regret in decision-making around choice of surgery, breast satisfaction or physical wellbeing (Hanson et al 2022). Radiation therapy on the conserved breast has less of an impact (eg, on surrounding tissue) than it does post mastectomy, with or without immediate reconstruction (Tran et al 2001; Whitfield et al 2009). Also, there are fewer limitations on patient eligibility for BCS with more complex oncoplastic approaches than the limitations often imposed on immediate reconstruction candidates (eg, for people with a body mass index >35, smoking people and people having radiotherapy) (Ministry of Health 2021).

		Finally, a common reason that females give for wishing to have mastectomy is their belief that their outcomes will be improved. In fact, the original randomised controlled trials of BCS and radiotherapy compared with mastectomy showed no difference in long-term survival outcomes (EBCTCG 2005), though local recurrence rates were higher with BCS. Observational studies (Abrahimi et al 2021; Breast Cancer Foundation New Zealand 2022; de Boniface, Szulkin et al 2021; De la Cruz Ku et al 2022) have consistently shown better survival outcomes for BCS and radiotherapy, despite adjustments for known biases, and in particular the later average stage, and the worse biology of breast cancers necessitating mastectomy. The disadvantages of BCS and radiotherapy include the greater risk (approximately 20%) that females will need more than one operation to adequately remove their breast cancer and the need (in most cases) for radiation therapy (which is not typically required for females with earlier stage breast cancers undergoing mastectomy).
Equity/Māori health gain		Breast conservation rates among Māori females are lower than those for New Zealand European females (Campbell et al 2018). One explanation for this is that clinicians usually recommend that females undergoing BCS also undergo radiation therapy, and this can influence their choice, especially if they live further away from the treatment centre. A higher proportion of Māori females live some distance from radiation oncology centres; this has challenges for access (Lilley et al 2019). Another known factor influencing decision-making is larger average tumour size at diagnosis (Campbell et al 2018), so later diagnosis has a negative equity/health gain impact.
Specifications	**Numerator**	Number of newly diagnosed people with breast cancer (invasive and/or ductal carcinoma in situ (DCIS)) whose final breast operation is breast conserving surgery (BCS).
	Denominator	All newly diagnosed people who have received surgery for their breast cancer (invasive and/or DCIS), including mastectomy and breast-conserving surgery.
Notes		
Measurability		Measurable.

BrCQI 6.
Immediate reconstruction at the time of mastectomy

Treatment – surgery

Indicator description	Proportion of people receiving reconstruction at the same time as mastectomy.
Rationale and evidence	With the need for more major surgery; with greater potential for operative complication, longer recovery, and future procedures; or for other personal reasons, many females undergoing mastectomy do not wish to have breast reconstruction. Females who choose to have breast reconstruction report a number of psychosocial benefits, including enhanced self-confidence, positive body image, less depression and greater comfort without a prosthesis (Twaddle & Qureshi 2005; Chen et al 2018). Immediate reconstruction has the advantage of immediate replacement of a female's breast without requiring the female to return for a second primary breast procedure at some future date. It also offers the possibility for limited or no skin removal, which usually results in better aesthetic outcomes than with delayed reconstruction.
Equity/Māori health gain	Reconstruction rates for Māori females are significantly lower than those for non-Māori females (Breast Cancer Foundation New Zealand 2022; Campbell et al 2018). Patient choice is one possible reason for this; however, breast units apply eligibility criteria focused on comorbidities, smoking and body mass index, and these could cause inequities that disproportionally affect Māori and Pacific females because they have higher smoking rates than non-Māori females (Ministry of Health 2021). Distance from centres that offer reconstruction can also affect equitable reconstruction rates, due to the impacts of travel on patient and whānau work and lifestyle (Lilley et al 2019; Ministry of Health 2021).

Specifications	**Numerator**	Number of people who have undergone mastectomy who received immediate reconstruction.
	Denominator	All people who have undergone mastectomy.
Notes		Even with immediate reconstruction, many females require a second operation, including revision of implant or replacement of initial expander, nipple areola reconstruction, tidy-up of dog ears or revision of asymmetry. We may consider the availability of revisional surgery in future QPIs.
Measurability		Measurable.

BrCQI 7.
Delayed reconstruction

Treatment – surgery

Indicator description		Proportion of people referred for consideration of delayed reconstruction who have reconstruction within 12 months of referral.
Rationale and evidence		For females who wish to have reconstruction, numerous studies have shown improved outcomes from breast reconstruction, where this is possible (Chen et al 2018; Ministry of Health 2021; Yarnold 2009). For many females, immediate reconstruction is not possible or practical. These females should have access to delayed reconstruction. Ideally, reconstruction should occur within 12 months of referral, to provide females with the benefits of reconstruction within a reasonable timeframe.
Equity/Māori health gain		Reconstruction rates for Māori females are significantly lower than those for non-Māori females (Breast Cancer Foundation New Zealand 2022; Campbell et al 2018). Patient choice is one possible reason for this; however, breast units apply eligibility criteria focused on comorbidities, smoking and body mass index, and these could cause inequities that disproportionally affect Māori and Pacific females because they have higher smoking rates than non-Māori females (Ministry of Health 2021). Distance from centres that offer reconstruction can also affect equitable reconstruction rates, due to the impacts of travel on patient and whānau work and lifestyle (Lilley et al 2019; Ministry of Health 2021).
Specifications	**Numerator**	Number of people who have undergone delayed breast reconstruction who had their reconstruction operation within 12 months of referral.
	Denominator	All people referred for consideration of delayed reconstruction.
Notes		The intention of this QPI is to identify whether females needing delayed reconstruction are receiving it, and, within a reasonable timeframe.
Measurability		Measurable.

BrCQI 8.
Single surgery

Treatment – surgery

Indicator description	Proportion of people undergoing breast-conserving surgery who received an additional (breast) operation or operations to ensure adequate excision of the primary tumour.
Rationale and evidence	Adequate excision of a cancer is important to minimise local recurrence and optimise survival (Houssami et al 2014). Returning to theatre for second and third operations can result in anxiety for females and incur additional morbidity, cost, and use of resources. Additionally, re-excisions frequently result in worse cosmetic outcomes. Wide geographic variation in re-excision rates has been found in the United Kingdom (Jeevan et al 2012). Reoperation rates are higher in females with DCIS with or without invasive breast cancer, because most DCIS is impalpable, making clinical assessment of margin adequacy in the operating theatre more difficult, and because 2 mm minimum margins for DCIS are widely recommended (Breast SurgANZ 2018; BreastSurg ANZ 2020).
Equity/Māori health gain	A second or subsequent surgical procedure has the potential to create inequities in terms of: • Negative financial impacts, especially for people from low socioeconomic backgrounds and need additional time off work for the procedure (Ellison-Loschmann et al 2015; Haynes, Pearce, & Barnett 2008; Slater et al 2016; Tanuvasa & Neale 2015). • Travel and accommodation impacts, for people who live further away from major surgical centres and need to be away from home, whānau and employment (Lawrenson et al 2016; Lilley et al 2019; Masters-Awatere et al 2020; Seneviratne et al 2015). These factors are also linked to appointment non-attendance and declining treatment (Hopley et al 2009; McLeod et al 2011). Breast conservation rates are lower in Māori (Campbell et al 2018).

Specifications	**Numerator**	Number of people who underwent breast-conserving surgery as their first breast cancer operation and who received an additional (breast) cancer operation (either wider excision or mastectomy) for the primary tumour: • for females with invasive breast cancer only • for females with DCIS or invasive cancer with DCIS. Note: a diagnostic excision or incisional biopsy should not be counted as a cancer operation; nor should an operation on the axilla alone.
	Denominator	All people for whom breast-conserving surgery was the initial cancer resection operation (this does not include cases where the first operation was a diagnostic excision or incisional biopsy).
Notes		Analysis of this QPI will need to use data for a 12-month timeframe, from the patient's first operation, and exclude operations for people with recurrent breast cancer.
Measurability		Measurable.

BrCQI 9. Adequate margins of excision for invasive and in situ breast cancer

Treatment – surgery

Indicator description	Proportion of females undergoing BCS who have complete excision of their tumour, with a minimum circumferential margin of 1mm for invasive disease and 2mm for DCIS (with or without invasive component).
Rationale and evidence	Local recurrence after breast-conserving surgery and radiotherapy has steadily decreased over the last 30 years, ultimately leading to North American Guidelines recommending that a margin of 'no tumour on ink' is sufficient for all females undergoing BCS and radiation therapy (Moran et al 2014). This consensus was based on interpretation of a meta-analysis (Houssami et al 2014) of local recurrence according to the margin threshold used by the reporting unit. Because most females in any reported series have greater margins of excision than the margin threshold for re-excision set by that unit, it was perhaps not surprising that significant differences in local recurrence were not seen using this criterion. A subsequent meta-analysis by actual margin of excision (Shah et al 2020) and an analysis of the New Breast Cancer Register data (Campbell et al 2019) have both shown that local recurrence after breast-conserving surgery is reduced by larger margins of clearance (Shah et al 2018). Both studies show this reduction is significant for margins of 1 mm or more compared with narrower margins. One meta-analysis shows that modern local recurrence rates are on average very low but is unable to assess variation by patient factors such as age or tumour factors such as grade and tumour subtype, or by adjuvant treatments given (Shah et al 2020). The Campbell 2019 analysis suggests that while a margin of 'no tumour on ink' may be adequate for older females with strongly hormone receptor

		positive breast cancers who take endocrine therapy and have radiation therapy, larger margins should be achieved for females of young age, or with higher grade or worse biology breast cancers. Because the appropriate margin of excision to achieve reasonably low rates of local recurrence requires consideration of multiple factors, this QPI does not seek to set a minimum standard for margin but does seek to determine that at least a significant proportion of females do receive excision with more than a margin of 'no tumour on ink'. Less debate exists for DCIS, where a 2 mm or greater margin is widely adopted (Marinovich et al 2016).
Equity/Māori health gain		No data available.
Specifications	**Numerator**	Number of people who have undergone breast-conserving surgery who had complete excision of their tumour with a minimum circumferential margin of 1mm for invasive disease and 2mm for DCIS (with or without invasive component).
	Denominator	All people who have undergone breast-conserving surgery.
Notes		
Measurability		Measurable using Te Rēhita.

BrCQI 10. Metastatic breast cancer seen by medical oncologist

Treatment – systemic therapy

Indicator description		Proportion of people with metastatic breast cancer (MBC) seen by a medical oncologist
Rationale and evidence		Systemic therapy improves survival for people with MBC (Cardoso et al 2020). However, BCFNZ's report *'I'm still here': Insights into living and dying with advanced breast cancer in New Zealand* (Breast Cancer Foundation New Zealand 2018) identified that a median of 23% of New Zealand people with MBC do not receive any systemic therapy.
Equity/Māori health gain		Māori and Pacific females are less likely to be treated with chemotherapy (Tin Tin et al 2018), and the *'I'm still here'* report (Breast Cancer Foundation New Zealand 2018) identified that Māori females' median survival with MBC is worse than that of non-Māori.
Specifications	**Numerator**	Number of people with MBC who had a medical oncology first specialist assessment.
	Denominator	All people with MBC.
Notes		
Measurability		Measurable using national collections.

BrCQI 11. Chemotherapy with or without Trastuzumab

Treatment – systemic therapy

Indicator description		Proportion of people: A. with triple-negative early breast cancer (EBC), with a tumour >1 cm or node-positive who received chemotherapy B. with HER2-positive EBC, with a tumour >1 cm or node-positive who received chemotherapy and trastuzumab.
Rationale and evidence		Data from the EBCTCG demonstrates the improvement in breast cancer outcomes for ER-negative tumours achieved by adjuvant chemotherapy (EBCTCG 2005; EBCTCG 2008). The addition of trastuzumab to adjuvant chemotherapy improves survival (Bradley et al 2021). Use of chemotherapy in the stage I–III population is endorsed in international guidelines (Burstein et al 2019; Denduluri et al 2021).
Equity/Māori health gain		Māori and Pacific females have inferior breast cancer-specific survival rates and more HER2-positive cancers (Breast Cancer Foundation New Zealand 2022). We expect that increased provision of systemic therapy in these breast cancer subgroups would improve outcomes (Breast Cancer Foundation New Zealand 2022).
Specifications	**Numerator**	A. Number of people with triple-negative stage I–III breast cancer with a tumour >1 cm or node-positive who received chemotherapy. B. Number of people with HER2-positive stage I–III breast cancer with a tumour >1 cm or node-positive who received chemotherapy and trastuzumab.
	Denominator	A. All people with triple-negative stage I–III breast cancer with a tumour >1 cm or node-positive. B. All people with HER2-positive stage I–III breast cancer with a tumour >1 cm or node-positive.
Notes		
Measurability		Measurable using Te Rēhita.

BrCQI 12. Endocrine therapy for metastatic breast cancer

Treatment – systemic therapy

Indicator description		Proportion of people with hormone-receptor-positive, HER2-negative MBC treated with endocrine therapy with or without cyclin-dependent kinase (CDK) 4/6 inhibitor in first line (as opposed to chemotherapy).
Rationale and evidence		First-line systemic therapy for ER-positive, HER2-negative MBC with endocrine therapy, with or without CDK 4/6 inhibitors, leads to at least equivalent survival outcomes, is associated with better quality of life and is strongly recommended in international guidelines (Cardoso et al 2012; Cardoso et al 2020). It is more convenient for people and uses less resource. Pathologic complete response to neoadjuvant chemotherapy also offers useful prognostic information for an individual patient (Cortazar et al 2014).
Equity/Māori health gain		Māori and Pacific females are more likely to present with MBC, and Māori females are more likely to have the higher-risk hormone-receptor-positive, HER2-negative subtype (Breast Cancer Foundation New Zealand 2022; Tin Tin et al 2018).
Specifications	**Numerator**	Number of people with hormone-receptor-positive, HER2-negative breast cancer whose first systemic therapy for metastatic disease is endocrine therapy with or without CDK 4/6 inhibitor.
	Denominator	All people with hormone-receptor-positive, HER2-negative metastatic disease treated with first-line systemic therapy (either chemotherapy or endocrine therapy with or without CDK 4/6 inhibitor).
Notes		In visceral crisis, chemotherapy is preferred.
Measurability		Aspirational.

BrCQI 13.
Neoadjuvant chemotherapy

Treatment – systemic therapy

Indicator description		Proportion of people with stage II or III breast cancer who are either triple negative or HER2-positive and receive neoadjuvant chemotherapy, including neoadjuvant trastuzumab.
Rationale and evidence		People with HER2-positive and triple-negative breast cancer have the best responses to neoadjuvant chemotherapy, with pathologic complete responses ranging from 30 to 60% (Cortazar et al 2014). Pathologic complete response to neoadjuvant chemotherapy is used to stratify subsequent systemic therapy, which has the potential to significantly improve overall survival and freedom from distant recurrence. Tumour downstaging may also enable BCS/improved cosmetic outcome in people where mastectomy would otherwise have been necessary.
Equity/Māori health gain		(Tin Tin et al 2018) found that Māori and Pacific females were less likely to be diagnosed through screening and more likely to present with later stage at diagnosis. They also found that Māori and Pacific females were less likely to receive BCS, even after adjusting for stage at diagnosis, and Pacific females were less likely to receive chemotherapy. Increasing rates of neoadjuvant chemotherapy would allow more Māori and Pacific people to achieve breast conservation (Tin Tin et al 2018).
Specifications	**Numerator**	Number of people with triple-negative or HER2-positive stage II or III breast cancer (>2 cm and/or clinically node-positive) treated with chemotherapy before breast cancer surgery.
	Denominator	All people with triple-negative or HER2-positive stage II or III breast cancer (>2 cm and/or clinically node-positive) treated with chemotherapy (adjuvant and neoadjuvant).
Notes		
Measurability		Measurable using Te Rēhita.

BrCQI 14. Adjuvant endocrine therapy adherence

Treatment – systemic therapy

Indicator description		Proportion of females with endocrine-sensitive stage I–III breast cancer who complete two years of endocrine therapy (after first script dispensed). Measure: proportion still being dispensed endocrine therapy at: A. 6 months B. 12 months C. 24 months.
Rationale and evidence		Adjuvant endocrine therapy significantly increases disease-free survival and reduces mortality (EBCTCG 2005), and this benefit increases over time (EBCTCG 1998). In 2015, Seneviratne et al found that only 70.4% of females adhered to endocrine therapy in year one, and this declined to 59.3% by the fifth year of treatment (Seneviratne et al 2015).
Equity/Māori health gain		(Seneviratne et al 2015) found that Māori females had low rates of adherence to endocrine therapy. These low rates were associated with a higher risk of breast cancer mortality and recurrence. Being unable to adhere to adjuvant endocrine therapy was a likely contributor to breast cancer mortality inequity.
Specifications	**Numerator**	Of people initially dispensed endocrine therapy, the number of people with an adherence index of ≥80 % at 6, 12 and 24 months. Adherence index = (number of days covered by prescriptions/total number of days in treatment period) x 100%.
	Denominator	All stage I-III people dispensed adjuvant endocrine therapy.

Notes	The consensus is that having ≥80% of time covered by prescriptions represents the most readily measurable indicator of adherence. However, the accuracy of measurement of adherence is questionable (Chirgwin et al 2016). The majority of non-adherence is related to access to care, and negative side-effects of treatment; therefore, increasing support has the potential to increase adherence. Publicly funded endocrine therapy drugs include tamoxifen, exemestane, letrozole and anastrozole (with or without goserelin).
Measurability	Measurable.

BrCQI 15. Adjuvant radiation therapy following breast-conserving surgery

Treatment – localised therapy (radiation therapy)

Indicator description		Proportion of people receiving adjuvant radiation therapy to the breast after BCS for invasive breast cancer.
Rationale and evidence		People with breast cancer should receive adjuvant radiation therapy after BCS. Post-operative radiation therapy decreases the local recurrence risk and increases long-term survival (Darby et al 2011).
Equity/Māori health gain		(Seneviratne et al 2017) found that Māori females were less likely to receive adjuvant radiation therapy than New Zealand European females.
Specifications	**Numerator**	Number of people whose final operation for invasive breast cancer was a form of BCS who have received radiation therapy.
	Denominator	All people with invasive breast cancer whose final operation for invasive breast cancer was a form of BCS.
Notes		
Measurability		Measurable.

BrCQI 16. Adjuvant radiation therapy following mastectomy

Treatment – localised therapy (radiation therapy)

Indicator description	Proportion of post-mastectomy people receiving adjuvant radiation therapy
Rationale and evidence	Post-mastectomy radiation therapy improves survival and reduces recurrence in people at increased risk of these events. Data from the EBCTCG suggests that post-mastectomy radiation therapy is beneficial in females who have a 20% or greater risk of local recurrence at 10 years (EBCTCG 2014). After mastectomy and axillary dissection, radiation therapy reduced both recurrence and breast cancer mortality in females with 1–3 positive lymph nodes even when systemic therapy was given (EBCTCG 2014). In a 2016 statement, the American Society of Clinical Oncology and the American Society for Radiation Oncology (Recht et al 2016) stated: 'Postmastectomy radiotherapy (PMRT) reduces the risks of locoregional failure (LRF), any recurrence, and breast cancer mortality for people with T1-2 breast cancer with 1–3 positive axillary nodes. However, some subsets of these people are likely to have such a low risk of LRF that the absolute benefit of PMRT is outweighed by its potential toxicities. In addition, the acceptable ratio of benefit to toxicity varies among people and physicians. Thus, the decision to recommend PMRT requires a great deal of clinical judgment. The panel agreed clinicians making such recommendations for individual people should consider factors that may decrease the risk of LRF, attenuate the benefit of reduced breast cancer–specific mortality, and/or increase risk of complications resulting from PMRT.'

Equity/Māori health gain		(Seneviratne et al 2017) found that Māori females were less likely to receive adjuvant radiation therapy than New Zealand European females.
Specifications	**Numerator**	Number of people who have undergone mastectomy and received adjuvant radiation therapy.
	Denominator	All people who have undergone mastectomy.
Notes		
Measurability		Measurable.

BrCQI 17.
Use of cardiac sparing radiation therapy

Treatment – localised therapy (radiation therapy)

Indicator description		Proportion of people with left-sided breast cancer or DCIS receiving adjuvant radiation therapy treatment with use of a cardiac sparing radiation therapy treatment technique.
Rationale and evidence		Excess cardiac toxicity is associated with left-sided radiation therapy. (Darby et al 2013) found that rates of major coronary events increased linearly with the mean dose to the heart by 7.4% per gray. The deep inspiration breath hold technique reduces the cardiac dose, the projected increased risk of heart disease and the projected percentage increase in the rate of major coronary events (Hayden et al 2012).
Equity/Māori health gain		No data available.
Specifications	**Numerator**	Number of people with left-sided breast cancer or DCIS who have received radiation therapy and have received adjuvant radiation therapy treatment using a cardiac sparing radiation therapy treatment technique.
	Denominator	All people with left-sided breast cancer or DCIS who have received adjuvant radiation therapy treatment.
Notes		
Measurability		Aspirational.

BrCQI 18. Use of five-fraction breast prescription received

Treatment – localised therapy (radiation therapy)

Indicator description		Proportion of adjuvant breast and chest wall only people receiving a five-fraction prescription.
Rationale and evidence		Until recently, 15-fraction prescriptions were standard. However, due to recent evidence, five-fraction prescriptions are becoming more common. Five-fraction radiation therapy provides benefits in terms of patient convenience (including fewer treatments and a shorter treatment duration) and departmental resources, with equivalent five-year local control and toxicity compared to 15-fractions (Brunt et al 2020). People who live a long distance from radiation oncology centres particularly benefit from receiving five-fraction rather than 15-fraction prescriptions, because this represents reduced time away from family and support, reduced travel costs and reduced time off work.
Equity/Māori health gain		(Lawrenson et al 2016) found that rural females aged 60 and over are older (10.4% to 25.4%) were more likely to receive a diagnosis of invasive breast cancer than urban females (8.6% to 22.6%). There are proportionately more rural Māori females who receive a diagnosis of invasive breast cancer (13.2%) than urban Māori females (8.7%). Rural Māori females had inferior breast cancer-specific survival and all-cause survival at 10 years, at 72.1% and 55.8% respectively, compared to urban Māori females (77.9% and 64.9% respectively). Given a higher proportion of Māori females live some distance from radiation oncology centres and therefore have reduced access, shorter treatment schedules may be of particular benefit to this population (Lilley et al 2019).
Specifications	**Numerator**	Number of people who have received breast and chest wall only adjuvant radiation therapy and have received a five-fraction prescription.

	Denominator	All people who have received adjuvant breast and chest wall only adjuvant radiation therapy.
Notes		
Measurability		Measurable using Te Rēhita.

BrCQI 19.
Overall and relative survival

Clinical performance monitoring, research and other

Indicator description	A. Overall survival at 5 and 10 years from diagnosis. B. Relative survival at 5 and 10 years from diagnosis.
Rationale and evidence	Survival is the most important outcome for people with breast cancer. Five-year and ten-year survival are important measures in breast cancer, as a high proportion of distant recurrences and deaths occur more than five years after initial diagnosis. For ER-positive breast cancer (approximately 85% of diagnoses), distant recurrences occur at a steady rate for up to 20 years (Pan et al 2017). Measuring relative survival is important, to give an indication of what proportion of deaths are due to breast cancer as opposed to other causes.
Equity/Māori health gain	Māori are twice as likely to die from cancer as non-Māori (Te Aho o Te Kahu 2021). One frequently proposed explanation for the observed survival differences between Māori and non-Māori is differential stage at diagnosis – Māori are less likely to be diagnosed at an earlier stage, when treatment is more feasible, and outcomes are better for the patient (Breast Cancer Foundation New Zealand 2022; Brewer et al 2012; Robson et al 2010; Tin Tin et al 2018). The BCFNZ has reported that 10-year and 5-year breast cancer-specific survival has improved over time for all ethnicities (Breast Cancer Foundation New Zealand 2022). However, survival is lower for Māori and Pacific females compared to New Zealand European females. After adjusting for age, Māori females were 33% and Pacific females 52% more likely to die of breast cancer compared with New Zealand European females across the 2003–2020 reporting period (Breast Cancer Foundation New Zealand 2022). Information on difference in survival by ethnicities would clarify the degree of inequity. This could potentially lead to increased research and funding and thereby drive health gains for Māori.

Specifications	**Numerator**	A. Number of people surviving at 5 and 10 years from diagnosis. B. Overall survival at 5 and 10 years from diagnosis.
	Denominator	A. All people diagnosed with invasive breast cancer. B. Overall survival for a similar breast cancer-free population.
Notes		The steady rate of distant recurrences up to 20 years from diagnosis means there should be an aspirational QPI to measure survival out to 20 years, as complete, high-quality data becomes available. It is likely that survival disparities by ethnicity will be more marked at 20 years. Breast cancer survival varies widely by subtype, and survival differences between subtypes are greater at 10 years than at 5 years. Overall and relative survival by subtype are aspirational aims for this indicator.
Measurability		Measurable using national collections.

BrCQI 20. Metastatic breast cancer survival

Clinical performance monitoring, research and other

Indicator description		A. Median overall survival from metastatic diagnosis. B. Overall survival at 1, 2, 5 and 10 years from metastatic diagnosis. All people and by subtype: C. hormone-receptor-positive, HER-negative subtype D. hormone-receptor-negative, HER2-negative (triple-negative) subtype E. hormone-receptor-positive, HER2-positive subtype F. hormone-receptor-negative, HER2-positive subtype.
Rationale and evidence		Over the last decade, as new, life-extending therapies have become available, the life expectancy of people with MBC has greatly improved. Internationally, there is a trend toward viewing MBC as a condition with which people can live for a prolonged period. In 2018, the Advanced Breast Cancer Global Alliance set a goal of doubling median MBC survival by 2025 (Cardoso et al 2018).
Equity/Māori health gain		In 2018, BCFNZ identified that Māori females' median survival with MBC is worse than that of non-Māori, and 5-year survival for Māori is significantly worse (Breast Cancer Foundation New Zealand 2018). More information about MBC survival rates by ethnicity would provide us with greater understanding about inequities. This could inform and promote change in practice and health gains for Māori.
Specifications	**Numerator**	A. Time from diagnosis of MBC until 50% of people with MBC are still alive. B. Number of people surviving at 1, 2, 5 and 10 years from metastatic diagnosis.

	Denominator	A. No denominator. B. Number of people diagnosed with MBC.
Notes		
Measurability		Aspirational.

BrCQI 21. Multidisciplinary discussion for early and metastatic breast cancer

Clinical performance monitoring, research and other

Indicator description		Proportion of people discussed at a multidisciplinary meeting (MDM) prior to treatment of: A. stage I–III breast cancer B. stage IV breast cancer (MBC).
Rationale and evidence		Multidisciplinary care results in better clinical and process outcomes for cancer people (Prades et al 2015). It is associated with improved survival for breast cancer and reduced variation in survival among hospitals (Kesson et al 2012).
Equity/Māori health gain		Māori present with more advanced stage breast cancer at diagnosis than non-Māori (Lawrenson et al 2018; Seneviratne et al 2016). Care for more advanced stage breast cancer is more complex, and MDM discussion typically leads to more personalised specialist care. Increased access to multidisciplinary care would therefore be likely to bring health gains for Māori.
Specifications	**Numerator**	A. Number of stage I–III people discussed at an MDM prior to treatment. B. Number of MBC people discussed at an MDM prior to first treatment.
	Denominator	A. All people diagnosed with stage I–III breast cancer. B. All people diagnosed with MBC.
Notes		This QPI will be stratified by stage.
Measurability		Measurable using Te Rēhita.

BrCQI 22. Completeness of breast data within the New Zealand Cancer Registry

Clinical performance monitoring, research and other

Indicator description		Proportion of people with breast cancer who have hormone receptor status, HER2 status, histological grade and TNM staging recorded in the NZCR.
Rationale and evidence		Receptor status data is necessary to evaluate key breast cancer outcomes, especially for systemic therapy, but also other therapies. Systemic therapy is stratified by breast cancer subtype, according to hormone and HER2 receptor status, and by stage (Waks & Winer 2019). Cancer stage and histological grade are also important determinants of treatment, and necessary for useful interpretation of other major breast cancer treatment and outcomes, such as overall survival.
Equity/Māori health gain		To constructively assess inequities, particularly about systemic therapy, we require more national data on breast cancer stage and receptor status. This information could lead to changes in breast cancer practice and health gains for those currently receiving inequitable cancer diagnosis and treatment.
Specifications	**Numerator**	Number of people with a breast cancer diagnosis recorded in the NZCR with: A. ER status recorded B. PR status recorded C. HER2 status recorded D. TNM stage recorded E. histological grade recorded.
	Denominator	All people with a breast cancer diagnosis recorded in the NZCR.
Notes		The TNM stage is from the American Joint Committee on Cancer staging system version 8, anatomic stage (Ibis, et al 2018).
Measurability		Measurable using national collections.

BrCQI 23. Timely diagnosis

Investigation, diagnosis and staging – timeliness

Indicator description		Proportion of people for whom time from referral to diagnosis of breast cancer is within 28 days.
Rationale and evidence		The most common routes to diagnosis for breast cancer are through general practice referral and screening. A small proportion of people are diagnosed through other referral routes (for example, other outpatient, unplanned or planned admission routes), but rarely via emergency presentation (Danckert et al 2021; Elliss-Brookes et al 2012). The optimal timeframe from referral to diagnosis for cancer is within 28 days (Miles & Asbridge 2019).
Equity/Māori health gain		In terms of breast cancer diagnoses, key barriers, especially for Māori and Pacific females, are in accessing primary health care (eg, because of cost, inability to get a suitably timed appointment, the need to take time off work or fear) (Ellison-Loschmann et a, 2015). Māori and Pacific peoples experience longer delays in seeing a specialist care provider (Ellison-Loschmann et al 2015).
Specifications	**Numerator**	Number of people diagnosed within 28 days from referral. This time period is measured as: A. for BSA-detected females, the date of the outcome of the screening mammogram, to the date of diagnostic biopsy (including cytological procedure). B. for females with non-BSA image detected breast cancer, the date of the initial abnormal imaging to the date of diagnostic biopsy (including cytological procedure). C. for symptomatic females, the date of the receipt of specialist referral to the date of diagnostic biopsy (including cytological procedure).
	Denominator	All people diagnosed in each category (A, B or C, to match numerator).
Notes		This indicator applies to all people diagnosed with breast cancer irrespective of their referral route. This is an important indicator in terms of equity.
Measurability		Measurable.

BrCQI 24.
Time to surgery

Treatment – surgery – timeliness

Indicator description	Proportion of females treated with surgery (excluding females having neoadjuvant chemotherapy[2] or neoadjuvant endocrine therapy) within: A. six weeks of decision to treat with breast surgery (excluding females whose first surgery was a mastectomy with immediate reconstruction). B. eight weeks of decision to treat with breast surgery and undergoing mastectomy with immediate reconstruction as their first surgery.
Rationale and evidence	Excessive delay to surgery causes anxiety and may result in worse cancer outcomes (Hanna et al 2020). Females considering immediate reconstruction face added complexity in the treatment decision-making process. The pros and cons of additional surgery over cancer resection, and of the different reconstruction options, need to be communicated and considered. This frequently requires additional consultations, and often referral to another service (eg, plastic surgery). The two weeks' difference in the indicator reflects the fact that the decision to also undergo immediate reconstruction requires more thinking time, and often referral to another service (eg, regional plastic surgery services).
Equity/Māori health gain	Māori females experience longer median wait times for surgery (Breast Cancer Foundation New Zealand 2022; Seneviratne et al 2015; Tin Tin et al 2018). Reporting this QPI by ethnicity will assist us to identify this inequity and work to resolve it.

[2] Chemotherapy includes chemotherapy, biological and targeted therapy

Specifications	**Numerator**	Number of people who received their first surgical treatment for breast cancer within: A. six weeks of being placed on the waiting list for surgery B. eight weeks of being placed on the waiting list for surgery, for females having immediate breast reconstruction. This excludes females having neoadjuvant chemotherapy or neoadjuvant endocrine therapy.
	Denominator	All people who have had breast surgery.
Notes		In terms of neoadjuvant endocrine therapy, the intent should be at least three months of treatment with a view to the treatment having a significant effect on the cancer – not short-term temporising treatment to reduce anxiety for the patient and surgeon because of a delay in accessing surgery, or to meet timeliness indicators. Short-term treatment is not a standard evidence-based strategy.
Measurability		Measurable.

BrCQI 25.
Adjuvant chemotherapy

Systemic therapy – timeliness

Indicator description		Percentage of people treated with adjuvant chemotherapy, starting within six weeks of surgery.
Rationale and evidence		Delayed initiation of adjuvant chemotherapy leads to worse outcomes, particularly for triple-negative breast cancer (Cai et al 2020; Tin Tin et al 2018). International guidelines recommend that adjuvant chemotherapy is be commenced within six weeks of surgery (Cancer Council Victoria and Department of Health Victoria 2021).
Equity/Māori health gain		(Tin Tin et al 2018) found that Māori and Pacific females were less likely to be treated in a private care facility and waited significantly longer for their first treatment after diagnosis.
Specifications	**Numerator**	Number of people treated with adjuvant chemotherapy within six weeks of completion of their last breast or axillary surgery.
	Denominator	All people treated with adjuvant chemotherapy.
Notes		
Measurability		Measurable.

BrCQI 26.
Access to radiation therapy

Localised therapy (radiation therapy) – timeliness

Indicator description		Proportion of people with invasive cancer who start adjuvant radiation therapy within: A. eight weeks of surgery B. six weeks of completing adjuvant chemotherapy.
Rationale and evidence		The local recurrence rate is significantly higher in people treated with adjuvant radiation therapy for breast cancer more than 8 weeks after surgery than it is in those treated within 8 weeks of surgery (Huang et al 2003). Similarly, delaying the initiation of radiation therapy after completion of adjuvant chemotherapy adversely impacts on survival outcomes (Cao et al 2021; Raphael, Saskin & Singh 2020).
Equity/Māori health gain		Higher proportions of Māori compared with New Zealand European females (39.8% compared to 30.6%) experience delays longer than thresholds for adjuvant radiation therapy (Seneviratne et al 2014).
Specifications	**Numerator**	A. Number of people who have undergone surgery for invasive breast cancer, but are not receiving adjuvant chemotherapy, who received radiation therapy within eight weeks of completion of their surgery. B. Number of people who received adjuvant radiation therapy within six weeks of completing adjuvant chemotherapy.
	Denominator	A. All people who have undergone surgery for invasive breast cancer, but are not receiving adjuvant chemotherapy, who received radiation therapy. B. All people who received adjuvant radiotherapy after completing adjuvant chemotherapy.
Notes		
Measurability		Measurable.

APPENDIX 1: WORKING GROUP MEMBERS

In 2023/2024, the National Breast Cancer (QPI) Working Group members were as follows.

Co-chairs

Ian Campbell, professor / oncoplastic breast and general surgeon, University of Auckland

Sarah Barton, medical oncologist, Te Whatu Ora – Capital, Coast and Hutt Valley

Members

Adele Gautier, research and strategic programmes manager, New Zealand Breast Cancer Foundation

Alex Brown, oncoplastic Breast and specialist general surgeon, Te Whatu Ora -Capital, Coast and Hutt Valley

Alison Foster, breast physician, Te Whatu Ora – Capital, Coast and Hutt Valley, Te Whatu Ora – Capital, Coast and Hutt Valley, Bowen Hospital, Wakefield Hospital

Cheryl MacDonald, clinical nurse specialist breast care, Te Whatu Ora – Te Pae Hauora o Ruahine O Tararua MidCentral

Christine Sapwell, consumer representative

Eletha Taylor, oncoplastic breast and general surgeon, Te Whatu Ora – Te Toka Tumai Auckland

Fay Sowerby, consumer representative

Gavin Harris, anatomical pathologist, Canterbury Health Laboratories

Helen Nott, oncology physiotherapy and lymphoedema therapist, Activate Physiotherapy

Karen Spells, nurse practitioner, Te Pūriri o Te Ora, Te Whatu Ora – Te Toka Tumai Auckland

Madeline Wall, breast radiologist and clinical director, Te Whatu Ora – Capital, Coast and Hutt Valley

Marion Kuper, medical oncologist, Te Whatu Ora Waikato – Te Manawa Taki

Melissa James, radiation oncologist, Te Whatu Ora – Waitaha Canterbury

Melissa Warren, nurse consultant, Breast Cancer Foundation New Zealand

Natalie James, nurse lead and support programme manager, Breast Cancer Foundation New Zealand

Nina Bevin, general practitioner, Westmere Medical Centre, Auckland

Sheridan Wilson, medical oncologist, Te Pūriri o Te Ora, Te Whatu Ora – Te Toka Tumai Auckland

APPENDIX 2: REFERENCES

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