

BreastScreen Aotearoa Programme Monitoring Report

For Māori, Pacific and Total women screened
during 1 July 2015 to 30 June 2017

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8 October 2018

INTRODUCTION

This report summarises the performance of BreastScreen Aotearoa (BSA) based on quality indicators for women screened during the two- year period to June 2017. Treatment indicators are for women screened during the four-year period to June 2016.

Breast cancer is the most commonly diagnosed cancer among women in Aotearoa New Zealand. Screening aims to detect cancers at an early stage when tumours are more amenable to treatment. A properly organised breast screening programme can significantly reduce illness and death from breast cancer.

BSA offers free two-yearly mammographic screening to women aged 45 to 69 years. It plays a vital role, firstly by finding breast cancer tumours at a very early and treatable stage; and secondly by systematic following up women whose cancer is found by the screening programme to ensure timely pathways through the cancer care continuum. Women screened by BSA have a third lower risk of dying from breast cancer than women who are not screened¹.

BSA has eight Lead Provider (LP) regions. Each LP is responsible for providing or subcontracting mammography screening and assessment services in their region. Support to Screening Providers are contracted by the National Screening Unit (NSU) to support women from priority groups to screening and assessment. District Health Boards (DHBs) provide breast cancer treatment after diagnosis. Surgery is performed by DHB services and private providers; oncology and radiation therapy are provided by six Cancer Centres (or by private providers in some areas). Data on the treatment provided to women whose breast cancer was detected by BSA is collected by each LP and reported to the NSU.

Māori and Pacific mortality rates from breast cancer are disproportionately higher than those of other women² and more equitable outcomes could be achieved if more Māori and Pacific women were diagnosed at an earlier stage. For this reason, BSA prioritises screening these women and those who are unscreened or under-screened. All quality indicators are monitored and reported by ethnicity.

Tables and graphs for each quality indicator can be found in an online data tool on the [NSU's website](#). Previous monitoring reports and details of the indicator measures are also available online.

This report summarises the results of BSA quality indicators related to coverage, screening quality and assessment, early detection, and timeliness for women screened between 1 July 2015 and 30 June 2017. Breast cancer treatment indicators are summarised for women whose breast cancer was detected by BSA during the four-year period 1 July 2013 to 30 June 2016.

The report has four sections:

- Overall programme performance
- Lead Provider variability
- Equity issues
- Is BSA making a difference?

¹ Ministry of Health. 2016. Summary of the BreastScreen Aotearoa Mortality evaluation 1999–2011. Wellington: Ministry of Health. Available on www.health.govt.nz

² Ministry of Health. 2016. Cancer: New registrations and deaths 2013. Wellington: Ministry of Health.

OVERALL PROGRAMME PERFORMANCE

This section examines the performance of the BSA programme at the national level. Quality indicators by Lead Provider may differ from those of the overall programme. Previous reports focused mainly on the findings for women aged 50 to 69 years since targets had only been developed for this age group. However, targets for women aged 45 to 49 are currently being developed. Indicators that are likely to have different targets for the younger age group are those related to cancer incidence (detection and assessment indicators). Other indicators related to coverage, screening quality, timeliness and treatment are likely to have the same targets for both age groups. Therefore, results for women aged 45 to 49 are discussed where relevant. The online data tool includes tables and graphs of trends over time for all indicators for both age groups by ethnicity.

Coverage – under 70% for Māori women, over 70% for Pacific and other women and inequitable

- Coverage was on target for Pacific and total women aged 50 to 69 years but not for Māori. BSA screened 64% of Māori women, 72% of Pacific women, and 73% of other women (target over 70%).
- An additional 3,409 Māori women aged 50 to 69 years needed to be screened to reach the target, while 5,012 were needed to achieve the same coverage as non-Māori.
- Among women aged 45 to 49 years, BSA screened 63% of Māori, 67% of Pacific and 74% of other women.
- To achieve 70% coverage for women aged 45 to 49 years, a further 1,602 Māori and 249 Pacific women needed to be screened. If coverage in this age group was the same as for non-Māori non-Pacific women, the additional number of Māori women would be 2,382, with 575 more Pacific women.
- To achieve 70% coverage for women aged 45 to 69 years, a further 5,011 Māori women needed to be screened. In contrast, the number of non-Māori women screened that were additional to 70% amounted to more than 17,000.

BSA screened 524,865 women during the two years to 30 June 2017, 9,531 more than the previous biennium to 30 June 2016.

The coverage target of more than 70% for women aged 50–69 years was met for BSA overall with 71.6% of eligible women screened between July 2015 and June 2017. The proportion of eligible women aged 45–49 years screened was also 71.6%. These proportions were 0.3% higher than were achieved for the previous biennium. The total eligible population (aged 45–69 years) increased by 10,240 (or 1.4%) between the biennia to June 2016 and to June 2017. The total number of women screened increased by 1.8%.

National coverage was highest for non-Māori non-Pacific women at 73% in both age groups.

Among Pacific women aged 50–69 years, national coverage was on target at 72% (1% lower than in 2016). The 70% target was met by the LPs with higher proportions of Pacific women, but not by other LPs. To achieve 70% coverage of Pacific women aged 50–69 years in all LP regions, a further 258 needed to be screened in total.

Among Pacific women aged 45–49 years, the declining trend in coverage continued, decreasing 2.5% from 70% to 67% in June 2017.

Māori screening participation remained below the target at 65% for women aged 50–69 and at 63% for women aged 45–49 years. These biennial rates have not changed over the past three years. The total number of Māori women screened increased by 1,724, or 3.3%, since the previous biennium, while the number of eligible Māori women increased by 3,070 or 3.8%. To achieve the 70% target for women aged 50–69 years, 3,409 additional Māori women needed to be screened. To reach 70% of women aged 45–49 years, a further 1,602 needed to be screened.

Of note, the total number of non-Māori non-Pacific women screened beyond 70% was 17,205. To achieve the same coverage as non-Māori women aged 45–69 years 7,394 more Māori women would need to have been screened.

Timely rescreening – lower after initial screens, declining trends and widening disparities

- Timely rescreen targets were not met for Māori or Pacific women, with no improvement for Māori and a slight worsening for Pacific women.
- Timely rescreening after an initial screen was below the target of 75% for all women aged 50–67 years with gaps widening between Māori (52%), Pacific (46%), and other women (67%). The downward trends continued, dropping 3% for Pacific women.
- Timely rescreening after a subsequent screen remained above the 85% target for non-Māori women (86%) but below target for Māori (80%) and Pacific women (76%).
- Women aged 45–49 were more likely to be rescreened within 27 months of an initial screen than women aged 50–67 years in each population group.

Women who screen regularly have a lower risk of dying from breast cancer than those who screen less regularly³. If there is too long an interval between screens, new cancers have a longer time to develop beyond the early stages and screening is less effective at preventing illness and death. BSA aims to have 75% of women rescreened between 20 and 27 months of their initial screen and 85% rescreened within 20 and 27 months of any subsequent screen.

Previous reports noted a decline in the proportion of women being rescreened within 27 months of their first screen with BSA. This downward trend has increased for Māori and Pacific women over the last two years and remained steady for other women. Among women aged 50–67 years who were first screened during the two years to June 2015, the target was not met for any group and there were significant gaps between ethnic groups: 46% of Pacific women were rescreened within the desired timeframe compared to 52% of Māori women, and 67% of other women. Timely rescreening rates after an initial screen were more than 10 percentage points higher among women aged 45–49 years: Māori 68%, Pacific 61%, non-Māori non-Pacific 78%.

Rates of timely rescreening after subsequent screens were higher for all groups. The 85% target was exceeded for non-Māori non-Pacific women aged 50–67 years (87%) but below target for Māori women (80%) and Pacific women (76%) The results for women aged 45–49 years were similar to these.

Inequities continued to widen. Among women aged 50–67 years, 2,116 more Māori women needed to be rescreened within 20–27 months to achieve the targets for initial and subsequent screens. For Pacific women, the number was 1,627. For non-Māori non-Pacific women 1,226 more were required to achieve the initial screen target but there were 4,997 women beyond the rescreening target for subsequent screens. If the rescreen targets were applied to women aged 45–67 as a whole,

³ Ministry of Health. 2015. Summary of the BreastScreen Aotearoa Mortality Evaluation 1999 to 2011. Wellington: Ministry of Health.

the deficits would be 3,003 Māori women and 2,402 Pacific women while non-Māori non-Pacific women had a surplus of 4,982.

To achieve the same rescreening rates as non-Māori non-Pacific women (or equitable rates), BSA would need to have rescreened a further 3,534 Māori women within 20–27 months and 2,639 more Pacific women.

Screening quality – technical recall rates and image quality on track but greater numbers having more than four images

- Technical recall rates in mobile units remained in the target range ($\leq 0.5\%$).
- The proportions of women having no more than 4 images per screening episode were slightly lower in mobile units than in fixed sites, on target for non-Māori non-Pacific and just under the 80% target for Māori and Pacific women.
- The rate of rejected images (1%) remained well within the target range ($< 3\%$).

With all screening units using digital technology the low rate of women recalled for technical reasons has been maintained within the target range of less than 0.5%. This indicator is monitored to ensure the number of women having to return to a screening unit for further images to complete their screening episode is minimal.

The proportion of women having no more than four images has remained steady, within the target range of 80% or more for non-Māori non-Pacific women, but just under the target for Māori and Pacific women. The proportions were around 2% lower in mobile units than in fixed sites overall.

Only 1% of images were rejected (target $< 3\%$).

Timely reporting of screening results – on target

- Most women received their screening results within 10 working days (96%).

Assessment – quality on track, timeliness continued to improve

- Targets for assessment quality indicators continued to be met for all groups of women having a subsequent screen.
- Among women having an initial screen, assessment rates were around the target range ($< 10\%$) and similar for Māori, Pacific and other women aged 50–69 years (between 9% and 11%). Positive predictive values were well within the target range of 9% or more for all groups (16% for Māori, 15% for Pacific, 13% for other women).
- Among women having a subsequent screen, the rate of referral for assessment was around 3.5% for all groups of women aged 50–69 years (target $< 5\%$). Positive predictive values were two to three times the target of 9% or more. Māori women referred for assessment were a third more likely and Pacific women a fifth more likely than other women to have a cancer detected.
- The proportion of women offered their first assessment appointment within 15 working days increased by 8 percentage points to 86% (target 90%).
- For women aged 45–49 years positive predictive values were around half those of women aged 50–69 years. The proportion offered their first assessment (87%) in 15 working days was similar to that of women aged 50–69 years.

The proportion of women aged 50–69 years who were referred for further assessment after a subsequent screen remains steady and within the expected range of less than 5% for all groups. All assessment quality indicators were within the target ranges for subsequent screens overall. This

indicates that BSA is performing well for women who are returning for routine rescreening (the majority of women screened). Māori and non-Māori women had similar assessment rates from subsequent screens but Māori who were referred for assessment were more likely to have a cancer detected (24% compared to 18% for non-Māori).

For women having an initial screen the rates of referral to assessment, false positives, and positive predictive value were on target or the target was within the confidence interval for each population group. Specificity was slightly under the target of >93% at 90%. Around one in six Māori, one in seven Pacific, and one in eight other women referred for an assessment from an initial screen had a cancer detected.

To expedite diagnosis and minimise anxiety, BSA aims to have 90% of women offered their first assessment appointment within three weeks of their screening mammogram. This indicator increased by 8 percentage points from 78% to 86%, mainly due to significant improvements in two LPs (BreastScreen South Ltd and BreastScreen Otago and Southland).

Biopsies – most diagnosed without open surgery and on time, open biopsies less timely and benign biopsy weight remained below target

- Most women (96%) had a definitive diagnosis of breast cancer without open surgery and within 5 working days of their assessment.
- Some women required open surgery to obtain a definitive diagnosis. Fewer than one per 1,000 women screened had a benign open biopsy. Of those women, most (83%) had a benign biopsy that weighed under 30g but the target of >90% was not reached.
- Under two-thirds (59%) had their open biopsy within 20 working days (target 90%).
- The proportion of women who received their final diagnostic biopsy results within 5 working days was 85% overall (target 90%), but was lower for Pacific women (79%).

Around 96% of women diagnosed with breast cancer had a definitive diagnosis from a needle biopsy, meeting the target value for all groups of women. Most percutaneous biopsies (96%) were received within 5 working days of assessment.

The benign open biopsy rates were within the target ranges for initial (≤ 3.5 per 1000) and subsequent screens (≤ 1.6 per 1000). Fewer than three women per 1000 having an initial screen and less than one per 1000 women having a subsequent screen underwent an open biopsy for a benign condition. Among the women who had an open biopsy that turned out to be benign, just over four out of five had a biopsy weighing less than 30 grams. This was lower than the target value of 90%. This indicator relates to minimising harms from surgery that might not have occurred without screening.

The proportion of women who received their open biopsy within 20 working days of being notified that they needed it was 59% (target $\geq 90\%$). This is a small improvement since December 2014 when it was 51% (but not statistically significant).

The proportion of women who received their final diagnostic biopsy results within five working days increased one percentage point to 85% overall, but remained lower for Pacific women (79%). Trends over time varied by region and some LPs met the 90% target. This indicator aims to minimise anxiety and delays in treatment planning.

Early detection – on target for all indicators for Māori, Pacific and other women

- The programme is succeeding in its goal of early breast cancer detection with all targets met.
- Māori women aged 50–69 years were more likely to have an invasive breast cancer detected than non-Māori women (significant only for subsequent screens).

- Pacific women had similar rates of invasive cancer detection to non-Māori non-Pacific women for both initial and subsequent screens.
- The targets for detection of invasive cancers that are small ($\leq 15\text{mm}$) were met for all groups.
- The proportion of cancers that were DCIS was in the target range for all groups aged 50–69 years (range 18% to 24%). Women aged 45–49 had a higher proportion of cancers that were DCIS (35%).
- Data on the proportion of cancers without nodal involvement were not available for this report.

The invasive cancer detection rates were in the target range for initial and subsequent screens for each group of women.

Around half of breast cancers detected by BSA from initial screens were 15mm or less in diameter, as were two-thirds of those detected from subsequent screens. The rate of detection of small breast cancers per 10,000 screens was a third higher for Māori than for non-Māori women among women having a subsequent screen.

The proportion of breast cancers that were DCIS was within the target range of 10% to 25% for all groups of women, and was lower for Māori than for non-Māori women aged 50–69 years (17% compared to 25%).

Among women aged 45–49 years, the overall proportion of screen-detected cancers that were DCIS was significantly higher than for women aged 50–69 years (35% and 24% respectively). These proportions have increased since the transition to digital mammography screening which is more sensitive for younger women. The lower incidence of invasive breast cancers in this age group means that DCIS constitute a higher proportion than in the older age group.

Treatment – most indicators met targets with no ethnic differences, time to surgery under target and not equitable

- Just over half of BSA women had their first surgical treatment within 20 days of receiving their final diagnosis (target 90%). Māori and Pacific women were less likely than other women to receive timely surgery overall.
- Among women whose invasive cancer was detected by BSA during the four years to June 2016, and whose cancer was $\leq 30\text{mm}$, 78% had sentinel node biopsy as their first axillary procedure. There were no significant differences between ethnic groups.
- The proportion of women who had radiation therapy with breast conserving surgery for invasive cancer appears to be trending down.
- The targets were met for all other treatment indicators, with no differences between Māori, Pacific, and other women.

The proportion of women who had their first surgical treatment within 20 working days during the four years to 30 June 2016 was below target for all ethnic groups and in each LP region. Māori and Pacific women were less likely than other women to receive timely surgery.

Among women with invasive breast cancer 30mm or less, 78% had sentinel node biopsy as their first axillary procedure (an increase of 1% from the previous report). There is no target for this indicator. Sentinel lymph node biopsy helps in staging of cancers and may help avoid more extensive lymph node surgery.

The proportion of women who had radiation therapy with breast conserving surgery for invasive cancer appears to be trending down during this reporting period. In total, 92% had radiation therapy (target 95% or more). Pacific women had the lowest rate at 81%.

All other treatment indicators met the target values.

Women aged 45–49 years

- Just over half of the invasive breast cancers detected by BSA among women aged 45–49 years were small.
- The proportion of screen-detected cancers that were DCIS was higher for this age group.
- The rate of cancers detected per 1000 screens was about half the rate for women aged 50–69 years.

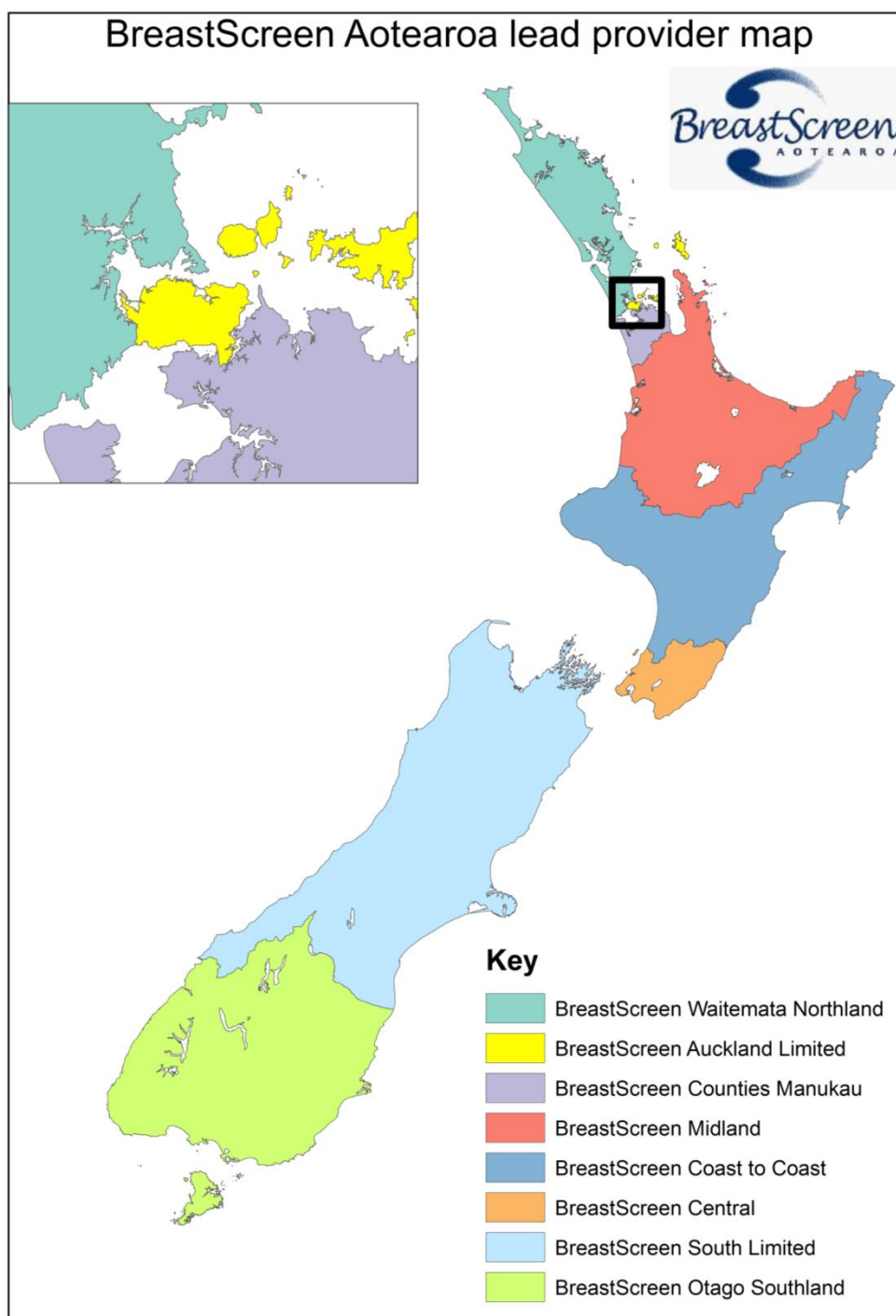
BSA has provided screening to women aged 45–49 years since 2004. Quality targets have not yet been set for this age group but are under development.

Half of the invasive cancers detected among women aged 45–49 years were small (15mm or less in diameter). This indicates that the majority of women in this age group whose cancer was detected by BSA had a favourable prognosis. The main difference in the effectiveness of screening for younger women is that the rate of invasive cancers and small cancers detected per thousand women screened is lower – about half that for women aged 50–69 years who have a higher underlying risk of developing breast cancer. In addition, women in the younger age group who are referred for further assessment after their screening mammogram are half as likely to have a cancer detected as women in the older age group.

Other indicators that showed a significant difference between women in the two age groups remained similar to those previously reported. Compared to women aged 50–69 years, women aged 45–49 years had a:

- Lower coverage among Māori and Pacific women but higher coverage among other women
- Higher rate of timely rescreening after an initial screen and slightly lower rate after a subsequent screen
- Higher technical recall rate from fixed and mobile units
- Lower rate of referrals to assessment from initial screens
- Higher rate of referrals to assessment and higher false positive rate for subsequent screens
- Lower positive predictive value for initial and subsequent screens – around half as likely to have a cancer detected from assessment
- Specificity slightly higher for initial screens and slightly lower for subsequent screens
- Slightly higher benign open biopsy rate for subsequent screens, but not for initial screens
- Higher proportion of cancers detected that were DCIS
- Higher receipt of chemotherapy among women in two diagnostic groups.
- Slightly less likely to receive first treatment surgery within 20 working days.

LEAD PROVIDER VARIATION



The eight BSA Lead Provider regions are shown in the figure above. BreastScreen Health Care was replaced with BreastScreen Otago Southland in August 2014. The treatment indicators in this report cover a four-year period when BreastScreen Health Care was still operating, as do the time trends for all indicators.

Coverage – LPs varied in coverage and equity

- For Māori women aged 50–69 years, BreastScreen South Ltd met the 70% coverage target and the target was within the confidence interval for BreastScreen Central which continued to show an increasing trend. BreastScreen Auckland Ltd showed a downward trend. BreastScreen Midlands and BreastScreen Auckland Ltd were below 60% coverage.
- Coverage for Māori women aged 45–49 years was 74% in BreastScreen South Ltd. Coverage in other LPs ranged from 56% (BreastScreen Midlands) to 68% (BreastScreen Waitemata Northland).
- Apart from BreastScreen Waitemata Northland, coverage was lower for Māori than for non-Māori women in both age groups.
- The 70% target was met for Pacific women aged 50–69 years in four LPs: BreastScreen Waitemata Northland, BreastScreen Counties Manukau, BreastScreen Auckland Ltd and BreastScreen Central. In other LPs Pacific coverage was below target (ranging from 61% to 66%) and lower than for non-Māori non-Pacific women.
- For Pacific women aged 45–49 years, coverage ranged from 56% (BreastScreen Midlands) to 74% (BreastScreen Auckland Ltd).
- For total women aged 50–69 years, four LPs achieved the target coverage: BreastScreen Coast to Coast, BreastScreen Central, BreastScreen South Ltd, BreastScreen Otago and Southland. The remainder screened 65% or more of their populations.
- For total women aged 45–49 years four LPs achieved over 70% coverage and the remainder screened 66% or more.

BreastScreen South Ltd achieved the highest 2-year coverage for Māori women, exceeding the target of 70% for women aged 50–69 years (72%). The target was within the confidence interval for Breast Screen Central (69%). BreastScreen Auckland Ltd and BreastScreen Midlands had the lowest coverage in this age group at 56% and 59% respectively (slightly lower than in the previous biennium). For Māori women aged 45–49 years, BreastScreen South Ltd screened 74%. Coverage in other LPs ranged from 56% (BreastScreen Midlands) to 68% (BreastScreen Waitemata Northland). The additional numbers needed to achieve the target for Māori women aged 50–69 years varied between 3 per month (BreastScreen Otago and Southland) and 75 per month (BreastScreen Midlands). If the 70% target was applied for women aged 45–49 years, the additional numbers of Māori women screened in this age group would range from 2 per month to 32 per month.

The 70% target was achieved for Pacific women aged 50–69 years by four LPs: BreastScreen Waitemata Northland, BreastScreen Counties Manukau, BreastScreen Auckland Ltd. Pacific coverage was higher than that of non-Māori non-Pacific women in these LPs. BreastScreen Central also achieved the target for the first time. In other LPs, Pacific participation was below the target and lower than that of non-Māori non-Pacific women. To achieve the target for Pacific women aged 50–69 these LPs needed to screen a further 1 to 5 women per month. If women aged 45–49 years were included, five LPs would have needed to screen an additional 1 to 7 women per month in this age group.

For non-Māori non-Pacific women aged 50–69 years, five of the eight LPs achieved the target coverage. Coverage was highest in BreastScreen South Ltd (78%) and lowest in BreastScreen Auckland Ltd (65%).

For non-Māori non-Pacific women aged 45–49 years, six LPs had over 70% coverage, highest in BreastScreen South Ltd at 86%. The other two LPs achieved 66% (BreastScreen Auckland Ltd) and 67% (BreastScreen Waitemata Northland).

Timely rescreening – lower after initial screens, Māori and Pacific lower than others in most LPs, time trends vary between LPs

- Two LPs met the target of 75% rescreened within 20–27 months of an **initial screen** among women aged 50–67 years (BreastScreen Coast to Coast at 77% and BreastScreen Central at 79%). Rates increased for women in BreastScreen Central while BreastScreen Midlands showed a declining trend.
- Timely rescreening rates after an initial screen were lower for Māori than for non-Māori women aged 50–67 years in each LP apart from BreastScreen Otago and Southland. The target was within the confidence interval for BreastScreen Central (71%) and BreastScreen Otago and Southland (70%). Rates declined for Māori in BreastScreen Auckland Ltd and BreastScreen Midlands. Pacific rates were significantly lower in six LPs, with a downward trend in BreastScreen Counties Manukau.
- The target of 85% for timely rescreening after a **subsequent screen** was met or was within the confidence interval for Māori, Pacific, and total women aged 50–67 years by three LPs (BreastScreen Coast to Coast, BreastScreen Central and BreastScreen South Ltd).
- Māori and Pacific rates of timely rescreens after a subsequent screen were lower than for other women in all LPs apart from BreastScreen Otago and Southland. Rates for Māori women increased in BreastScreen Central where the gap between Māori and non-Māori rates narrowed. A similar pattern was shown for Pacific women in BreastScreen Central. Timely rescreening among Pacific women decreased in BreastScreen Auckland Ltd, BreastScreen Counties Manukau, with widening gaps between Pacific and non-Māori non-Pacific rates.

The proportion of women aged 50–67 years who were rescreened within 27 months of their previous screen varied significantly between LPs but was consistently lower for women whose previous screen was their first with BSA. Two LPs (BreastScreen Coast to Coast and BreastScreen Central) achieved the target of 75% after an initial screen. These two LPs and BreastScreen South Ltd also achieved the target of 85% or more for Māori, Pacific, and total women whose previous screen was a subsequent screen.

Timely rescreening rates after initial and subsequent screens were lower for Māori than for non-Māori women aged 50–67 years in each LP apart from BreastScreen Otago and Southland. In BreastScreen Central, Māori rescreening rates increased after initial and subsequent screens and the gap between Māori and non-Māori rates narrowed, as did the gap between Pacific and non-Māori non-Pacific rates.

Among women whose previous screen was their first, gaps in timely rescreening between Māori and non-Māori widened in BreastScreen Auckland Ltd (as Māori rates declined while non-Māori stayed the same) and in BreastScreen Midlands (where Māori rates declined more than non-Māori rates).

To achieve the target rescreening rates for women aged 50–67 years, the number of additional women in each LP who needed to be rescreened within 20–27 months ranged from 4 to 39 per month after initial screens (2 to 13 Māori, and 2 to 7 Pacific women), and 15 to 76 among women having a subsequent screen (2 to 31 Māori and 1 to 32 Pacific women).

If similar targets were set for women aged 45–49 years, four LPs would meet the targets for total women rescreened after an initial screen or a subsequent screen (BreastScreen Auckland Ltd, BreastScreen Coast to Coast, BreastScreen Central, BreastScreen South Ltd). Among other LPs, the number of additional screens required to reach the target values would range from 7 to 33 per month for initial screens, and from 5 to 24 per month for subsequent screens.

Screening quality – few differences between LPs

- Technical recall rates and technical reject rates were within the target range for mobile and fixed units for all LPs.
- BreastScreen Coast to Coast had a lower proportion of women screened in mobile units who had four images or fewer taken per screening episode (71%). All others met the target of 80% or more.

Assessment – some variability in initial screens but not in subsequent screens

- All LPs met the target values for referrals to assessment, false positives, specificity and positive predictive value for subsequent screens.
- For initial screens, two LPs were outside the target ranges for rates of referral to assessment but only one had a false positive rate outside the target range (BreastScreen Otago and Southland). The target was met or was within the confidence interval for positive predictive values for all LPs. Most LPs did not meet the 93% target for specificity for total women having initial screens, but four were within 3 percentage points.

For Māori, Pacific, and other women having subsequent screens, the rates of referral to assessment, false positives, specificity, and positive predictive values were within the target ranges in each LP.

There was some variability between LPs in assessment indicators for women having their first screen with BSA.

Among women having an initial screen with BreastScreen Waitemata Northland and Breast Screen Otago and Southland rates of referral to assessment were outside the target range of less than 10%. However, the false positive rate and positive predictive value was within the target range for BreastScreen Waitemata Northland. In BreastScreen Otago and Southland the false positive rate (13%) and specificity (86%) were outside the target ranges (<8.5% and >93% respectively) but the positive predictive value target was within the confidence interval. Most LPs were slightly under the specificity target for initial screens.

Biopsies – some variation in the proportion of benign open biopsies weighing less than 30g

Over 90% of women had a preoperative diagnosis of breast cancer in each LP.

The target for the benign open biopsy rate was met or was within the confidence interval for all LPs for initial and subsequent screens.

The proportion of benign open biopsies that weighed less than 30g was outside the target range of over 90% for two LPs (BreastScreen Coast to Coast and BreastScreen South Ltd).

Early detection – no significant variability between LPs

- There was little variation between LPs in rates of invasive breast cancer detection from subsequent screens and no significant variation in detection rates from initial screens.
- All LPs achieved at or above target levels for detection of small invasive breast cancers.
- The proportions of breast cancers detected that were DCIS were within the target range for all LPs.

For all LPs the target was met or was within the 95% confidence interval for rates of detection of invasive breast cancers and tumours 15mm or smaller for initial and subsequent screens. There

was little variation between LPs in these indicators. No data were available on the proportion of screen-detected cancers without nodal involvement.

The proportions of screen-detected breast cancers that were DCIS were within the target range for each LP.

Timeliness - variation evident in each indicator

- All LPs achieved the target of 90% of women receiving their screening results within 10 working days.
- Four LPs increased the proportions of women receiving their offer of a first assessment appointment within 15 working days. Two LPs maintained high levels exceeding the 90% target. BreastScreen Auckland Ltd remained at 70%. BreastScreen Coast to Coast shows a shallow downward trend to just below the target (88%).
- Most LPs achieved the target value (90% or more) for the percentage of women receiving their needle biopsy within five working days of their assessment. BreastScreen Auckland Ltd remained under target at 79%.
- Although relatively few women required an open biopsy, the 90% target for the percentage having the biopsy within 20 working days was not met by any LP but was within the confidence interval for two. BreastScreen Auckland Ltd (80%) and BreastScreen South Ltd (76%) had the highest proportions.
- Only three LPs met the 90% target for the percentage of women receiving their final diagnostic biopsy results within five working days. BreastScreen Auckland showed a significant increase. BreastScreen Otago and Southland remained lowest at 70%.
- In each LP, the timeliness indicators for women aged 45–49 years were generally similar to those for women aged 50–69 years.

The proportions of women receiving their screening results within 10 working days was within the target range of 90% or more, with BreastScreen Waitemata Northland, BreastScreen Counties Manukau, and BreastScreen Coast to Coast maintaining very high levels. Rates increased significantly in BreastScreen Midlands, BreastScreen South Ltd, and BreastScreen Otago and Southland. BreastScreen Central and BreastScreen Auckland remained within the target range. Across most LPs, results were slightly lower for women aged 45–49 years.

The proportions of women offered their first assessment appointment within 15 working days continued to improve significantly in BreastScreen South Ltd (from 74% to 92%), BreastScreen Otago and Southland (from 25% to 57%), and BreastScreen Midlands (from 83% to 87.5%) and BreastScreen Central (from 86% to 89%). BreastScreen Waitemata Northland and BreastScreen Counties Manukau maintained high levels (95% and 94% respectively). BreastScreen Coast to Coast shows a downward trend to just below the 90% target at 88%. BreastScreen Auckland has remained at around 70% over the last three years.

Nearly all LPs exceeded the 90% target for women receiving their needle biopsy within 5 working days of assessment. BreastScreen Auckland was below target at 79% (a 2% increase since the previous report). The proportions were similar for women aged 45–49 years.

No LP was able to achieve the 90% for women having their open biopsy procedure within 20 working days although the target was within the confidence interval for two LPs. This target aims to minimise delays in definitive diagnosis and to reduce anxiety for women waiting for surgery. The highest proportions were in BreastScreen Auckland Ltd (80%) and BreastScreen South Ltd (76%). The lowest were in BreastScreen Coast to Coast (39%) and BreastScreen Counties Manukau (42%). This indicator may be affected by capacity issues within DHBs and prioritisation

of treatment surgery over biopsies. Further analyses could be undertaken including comparing the median times to open biopsy for women who were or were not found to have a cancer.

The 90% target for the percentage of women receiving their final diagnostic biopsy results within five working days was met by or was within the confidence interval for BreastScreen Waitemata Northland, BreastScreen Coast to Coast and BreastScreen South Ltd. BreastScreen Auckland Ltd continued to trend upwards from 66% in June 2016 to 82% by June 2017. BreastScreen Otago and Southland had the lowest proportion at 69%. Other LPs ranged between 81% and 85%. Results for women aged 45–49 years were similar to those of the older age group in each LP.

Treatment – some variation in timeliness of surgery and in radiotherapy

- All LPs were below target for the proportion of women receiving their first treatment surgery within 20 working days, with BreastScreen Counties Manukau significantly lower than others. Three LPs had significant disparities between Māori and non-Māori women for this indicator, with two also showing significant differences between Pacific and non-Māori non-Pacific women.
- The proportion of women with invasive cancer who had breast conserving surgery and radiotherapy was below target of 95% or more for three LPs (lowest for BreastScreen Auckland Ltd at 74%).
- All LPs met the targets for other treatment indicators with no significant differences between ethnic groups.

Treatment indicators are reported for women whose cancer was detected by BSA during the four years to June 2016.

The proportion of women receiving timely surgical treatment remained significantly lower in BreastScreen Counties Manukau than in other LPs with one in three women receiving timely surgery (32%) compared to just over one in two women nationally. Further analyses of this indicator could include looking at the median time to first treatment surgery; stratifying by DCIS and invasive cancers; whether neoadjuvant therapies have been used prior to surgery.

Māori women in BreastScreen Waitemata Northland, BreastScreen Coast to Coast and BreastScreen Central were less likely than other women to receive their first treatment surgery in 20 working days, as were Pacific women in BreastScreen Counties Manukau and BreastScreen Auckland Ltd. The reasons for these disparities need further investigation.

There was little variation between LPs in the proportions of women having sentinel node biopsy for their first axillary procedure. Among women aged 50–69 years, the proportions ranged from 76% to 81%. For women aged 45–49 years the proportions ranged from 60% to 85%. There were no clear trends at the LP level. This indicator has no target.

The target of 95% or more for proportion of women with invasive cancer who had breast conserving surgery and went on to have radiotherapy was met or was within the confidence interval for five LPs, but below target for BreastScreen Auckland Ltd (74%), BreastScreen Counties Manukau (87%), and BreastScreen Midlands (89%). For BreastScreen Counties Manukau and BreastScreen Auckland Ltd, the proportions were also lower than 95% for women aged 45–49 years (84% and 82% respectively).

All other treatment indicators were within the target range with little variation between LPs.

There was some variation between LPs in the proportions adjuvant therapies within diagnostic groups. A review of these indicators could focus specifically on groups most likely to benefit from the particular therapies and consider extending the monitoring to uptake and completion.

EQUITY ISSUES

BSA has a priority goal of providing equitable screening and achieving equitable outcomes for Māori, Pacific, and other populations in Aotearoa. Equity is a fundamental component of a high quality service. As the Health Quality and Safety Commission acknowledges, “there is no quality without equity” (Poynter et al, 2017. p.12)⁴ Equity has been defined as the absence of avoidable or remediable differences among groups of people, that are not only unfair and unjust, but are the result of differential access to necessary resources (Ministry of Health 2015)⁵. Systematic monitoring for equity by ethnicity is a critical element of quality assurance and quality improvement. Achieving equitable breast screening requires reallocating resources to where they are needed most.

Accelerating Māori coverage and timely rescreening are the most urgent equity issues facing BSA. Increased rescreening rates for Pacific women are also needed.

Māori women

Māori women have higher breast cancer mortality rates than other women aged 50 and over. If more Māori women have their breast cancer detected early the disparity in breast cancer mortality can be reduced. The higher incidence also means that more cancers will be detected per 1,000 Māori women screened than will be detected among 1,000 other women (i.e. screening is more cost effective).

National screening coverage of Māori women has remained relatively static. Although there has been an increase in the number of Māori women screened over time, the number of eligible Māori women has increased at a similar rate.

Figure 1 shows that the number of non-Māori non-Pacific women screened beyond the 70% target outweighed the additional number of Māori women needed to screen to achieve the coverage target by a factor of 3. Figure 2 shows the additional numbers of Māori and Pacific women needed to achieve the timely rescreening targets was about equivalent to the number of non-Māori non-Pacific women above the target value. These figures illustrate the urgent need to achieve a step change in the volumes of Māori being screened and in the volumes of Māori and Pacific women returning for screening within 27 months.

For most LPs, relatively small increases in volumes would be required due to the small Māori population. On the other hand, increases in Māori screening in LPs with higher numbers of eligible Māori, such as BreastScreen Midlands, will help lift the national coverage.

Strategies to support equitable Māori participation include: prioritising Māori appointments, providing after-hours clinics and flexible appointments, careful mobile unit scheduling in consultation with community services, working with GPs or PHOs to obtain data on Māori women due or overdue for screening, collaborating closely with adequately resourced services providing support to screening, providing tailored health promotion to increase knowledge and intent to screen, prioritising culturally safe service provision at all stages of the screening pathway.

⁴ Poynter M, Hamblin R, Shuker C, Cincotta J. 2017 Quality improvement: no quality without equity? Wellington: [Health Quality and Safety Commission](#).

⁵ Ministry of Health. 2014. He Korowai Oranga: Māori Health Strategy. Wellington: Ministry of Health.

The experience of screening is important. Brunton (2009)⁶ found taking opportunities to provide reassurance and information during the mammography process was important. Feeling supported to ask questions reduces anxiety, increases knowledge, and has a positive influence on women’s decisions to return. She contrasts ‘transactional communication’ with ‘relational communication’ with a supportive environment that valued interactional communication being particularly important for Māori and Pacific women considering whether to return. She also found the pressure to maximise screening volumes efficiently undermines effective screening, and that ‘the need for transactional efficiency collided with interactional communication needs of service-users’.

Figure 1: Number of women needed to screen to achieve 70% coverage, 45–69 years, 1 July 2015 to 30 June 2017

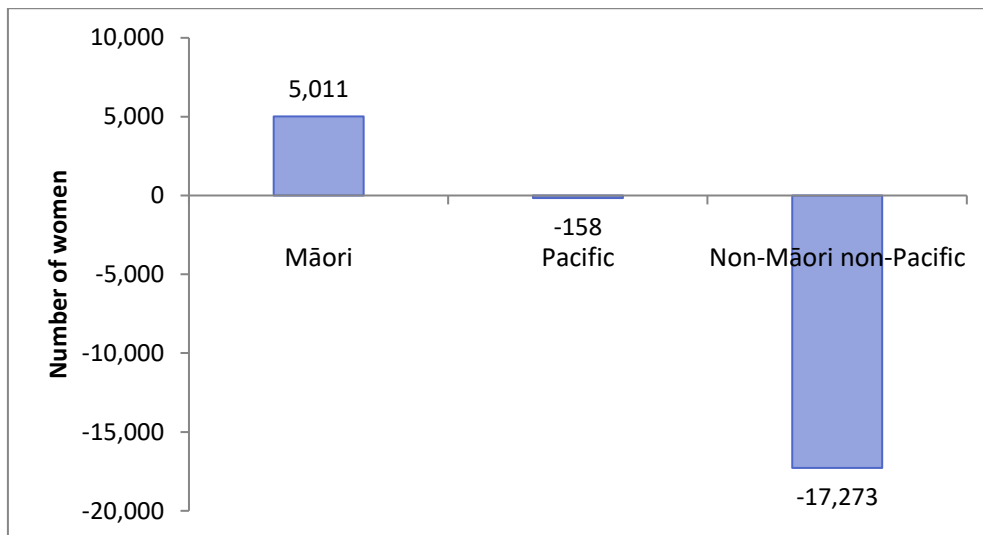
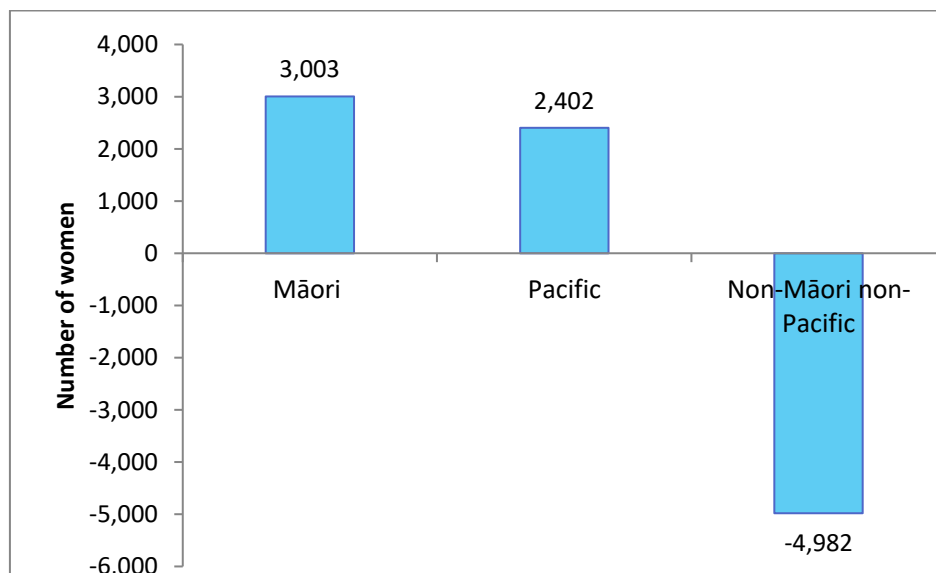


Figure 2: Number of additional women needed to be rescreened within 20–27 months if targets were applied to women aged 45 to 67 years for initial and subsequent screens combined



⁶ Brunton MA. The role of effective communication to enhance participation in screening mammography: A New Zealand case. *Int. J. Environ. Res. Public Health* 2009, 6, 844-861; doi:10.3390/ijerph6020844

There were no differences in the proportions of cancers that were small and the rate of small cancers detected per 10,000 screens was higher for Māori than for non-Māori in this reporting period. Thus BSA is most certainly making a difference to breast cancer outcomes for Māori women whose cancer is diagnosed through screening. However, lower coverage and lower rates of timely resccreens among Māori are the two key factors preventing BSA from achieving greater reductions in breast cancer mortality and morbidity among the Māori population.

In an analysis of factors contributing to breast cancer survival disparities between Māori and non-Māori in the Auckland/Waikato region, Tin Tin et al (2018)⁷ found later stage at diagnosis accounted for a substantial proportion of the survival differential, partly explained by lower screening coverage. Neighbourhood deprivation also contributed to survival disparities indicating an analysis of screening coverage by deprivation and ethnicity may be useful for prioritising screening recruitment and retention efforts.

Māori women diagnosed by BSA are waiting longer for their first surgical treatment than non-Māori non-Pacific women. However, Tin Tin et al (2018) found differences in times to treatment made little contribution to survival disparities for Māori and Pacific women compared to delays in diagnosis.

All other treatment indicators were similar for Māori and non-Māori. This is positive since Tin Tin et al (2018) found differences in receipt of loco-regional therapies also contributed to survival disparities.

Pacific women

Pacific women have a higher incidence and mortality rate than non-Māori non-Pacific women. Close to three-quarters of Pacific women in the screening age group reside in three LP regions: BreastScreen Waitemata Northland, BreastScreen Auckland Ltd, and BreastScreen Counties Manukau. The national rates are therefore strongly influenced by the performance of these LPs. Coverage is higher for Pacific women in these LPs than for Māori or other women, as is the national coverage rate. It is encouraging to see the increase in Pacific screening coverage in BreastScreen Central – now also reaching the 70% target.

However, Pacific coverage in other LPs is lower than target and lower than non-Māori non-Pacific coverage, despite the smaller numbers of women to be screened. Relatively small additional numbers of Pacific women per month were required to achieve the target of 70% across all regions. Tin Tin et al (2018) found less than half of Pacific women in the screening age group were diagnosed through screening, contributing to survival differentials with non-Māori non-Pacific women.

Although coverage was higher overall for Pacific women, timely rescreeing rates were lower than for non-Māori non-Pacific women after both initial and subsequent screens.

A range of tools are available to support health systems and providers to monitor for equity and implement strategies to achieve equitable outcomes. Strategies that improve equity generally benefit all populations. Equity needs to be prioritised at the system level (policy, contracting, standard setting, monitoring and responses to identified inequities), organisation level (are systems in place to identify and respond promptly to equity issues?), workforce level (e.g., composition, professional development and expectations), and at the community level.

⁷ Tin Tin et al. Ethnic disparities in breast cancer survival in New Zealand: which factors contribute? BMC Cancer (2018) 18:58
DOI 10.1186/s12885-017-3797-0

BPAC has previously discussed how general practices can support breast screening equity in a variety of ways⁸. The removal of breast screening from primary care performance funding may have affected the focus on breast screening in some primary care organisations. Consideration could be given to strengthening the relationship between BSA and general practice and developing strategies to support primary care's role in achieving equitable screening participation.

Previous BSA monitoring reports have pointed to equity tools available to the health sector, including:

- The Ministry of Health's framework on [Equity of Healthcare for Māori](#), which suggest actions at the system, organisation and practitioner levels, based on the need for knowledge, commitment and leadership to achieve equitable health care.
- The [Health Equity Assessment Tool](#) which supports planning and review of current programmes to consider who is most advantaged and how, and what could be done to increase equity and mitigate unintended consequences.
- The [Whanau Ora Tool](#) which supports consideration at the organisation, programme, project and service delivery levels.

Other resources from overseas include:

- the [Roadmap to Reduce Disparities](#);
- the [Equity of Care Toolkit](#);
- the Institute for Healthcare Improvement (IHI)'s [Achieving Health Equity: A Guide for Health Care Organizations](#),
- a [Health Equity Tools Inventory](#).

Previous recommendations have included:

- Evaluation of the impact of being able to access real-time reports on timely rescreening rates.
- Auditing whether LPs are implementing core evidence-based activities known to support timely rescreening, with additional activities tailored to the local context. This would include identifying access enablers and employing strategies to maximise them.

[Chin et al \(2018\)](#)⁹ recommend explicitly designing quality of care and payment policies to achieve equity, increasing accountability through monitoring and evaluating for equity, sharing power, addressing social determinants, and having fearless discussions about structural racism and colonialism ensuring root causes of inequity are addressed.

Inequities in coverage and timely rescreening have continued for several years, yet they are not inevitable, since there is major variation between LPs. Inaction in the face of need is one indicator of institutionalised racism (Jones 2000).¹⁰ Reprioritisation of screening resources – funding, focus, and effort – is required to achieve equitable participation.

⁸ <https://bpac.org.nz/BPJ/2009/November/breastscreening.aspx>

⁹ Chin M, King P, Jones RG, Jones B, et al. Lessons for achieving health equity comparing Aotearoa/New Zealand and the United States. *Health Policy* 2018; 122:837-853.

¹⁰ Jones CP. Levels of Racism: A Theoretic Framework and a Gardener's Tale. *American Journal of Public Health*. 2000;90(8):1212-1215.

IS BSA MAKING A DIFFERENCE?

- BSA is meeting its goals for early detection and treatment of breast cancers among screened women but not its goals for equitable screening coverage and timely rescreening.
- More than half of the invasive breast cancers detected by BSA were detected while they were still small among women aged 45–49 and 50–69 years. These cancers have a better prognosis and reduced morbidity from treatment.
- Māori women were more likely than non-Māori to have a small breast cancer detected. Increasing the coverage and timely rescreening of Māori women will help achieve its goal of equitable breast cancer mortality outcomes for Māori women in Aotearoa.
- Pacific women no longer have the highest national coverage but have similar coverage to non-Māori non-Pacific women, and similar rates of small cancers detected from subsequent screens.
- Although younger women have lower detection rates, reflecting the lower underlying incidence, the proportions of screen detected cancers that are small are close to those of older women.
- Four out of five women had breast conserving surgery, with the majority (90%) also having radiotherapy. Chemotherapy and hormone therapy rates were similar for all ethnic groups.
- The programme aims to minimise harm by keeping false positive rates and open biopsy rates as low as possible. These were generally within the target range for this period.
- Trends in some timeliness indicators show signs of a system under stress. Reducing wait times for first assessments, open biopsies, first surgical treatment could reduce anxiety and improve outcomes for screened women.
- Continuing declines in timely rescreening rates need to be addressed since they may affect future rates of small cancer detection and interval cancer rates.

Maximising benefits

Detecting breast cancers while they are small and before they have spread to the axillary lymph nodes (armpit) means that the treatment can be breast conserving and cause less long-term illness and disability since fewer lymph nodes need removing reducing the chance of swelling in the arm. The risk of dying from breast cancer is also reduced.

Half of the cancers detected from initial screens were small (15mm or less in diameter) as were nearly two-thirds of those detected from subsequent screens (slightly lower among Pacific women). Most women were treated with breast conserving surgery and only underwent a single surgical procedure.

These indicators show BSA is making a positive difference to breast cancer mortality and morbidity in Aotearoa.

Minimising harms

High quality screening programmes aim to minimise any harms from screening, since well women are invited to participate in an intervention. Possible harms include unnecessary procedures and surgery from false positive screens, or increased anxiety while waiting for an assessment or biopsy results.

BSA is achieving most targets relevant to harm minimisation, including low numbers of women recalled for technical reasons; low false positive rates for subsequent screens; nearly all women

have a definitive diagnosis without undergoing open surgery; the benign biopsy rate was on target; as was the timely receipt of needle biopsy.

Improvements in the timely receipt of screening results and the proportion of women waiting longer for their first assessment appointment are positive. Continuing low proportions of women receiving timely open biopsies and timely surgical treatment are of concern, since they heighten anxiety levels for some women and potentially affect outcomes.

The decreasing trend in timely rescreening after initial screens and widening gaps are also of concern since the effectiveness of mammography screening depends on regular screening within the recommended screening interval.

In summary BSA is providing a high quality screening service to women in Aotearoa, and is contributing to reduced illness and deaths from breast cancer. Most potential harms are being minimised. Reprioritising resources to increase coverage of Māori women nationally, increase coverage of Pacific women in five regions, and improve timely rescreening rates, are essential to enhance the programme's effectiveness and contribution to equitable outcomes from breast cancer for women in Aotearoa.

APPENDIX ONE: PREVIOUS RECOMMENDATIONS FROM THE MĀORI MONITORING AND EQUITY GROUP

- There should be focussed engagement for 45–49 year old Māori women, who have lower participation rate in screening, but higher rates of cancer detection.
- To increase access to the service, Māori women must all be provided with information about after-hours screening appointments, be empowered to negotiate appointment times that are convenient *and* be proactively supported to access these appointment times.
- There should be continued work to make women feel welcome when attending breast screening clinics (to improve coverage and rescreening rates)
 - Training for staff to support whānau to feel welcome and accommodated at screening clinics
 - Whānau rooms
 - Gowns that can fit any women
- Look at what fail-safes are in place when women miss appointments
- Further analysis of the higher proportion of Māori women having more than 4 images per screen compared to non-Māori women
- Work on co-ordination of care with support services that help women through treatment services and address longer wait time to first surgical treatment
- Support for “a strong, ongoing commitment to prioritising Māori women” (pg 15, BSA PMR)